



House of Commons
Environment, Food and Rural
Affairs Committee

GM Planting Regime

Eleventh Report of Session 2003–2004

*Report, together with formal minutes, oral and
written evidence*

*Ordered by The House of Commons
to be printed 30 June 2004*

HC 607

Published on 8 July 2004
by authority of the House of Commons
London: The Stationery Office Limited
£17.50

Environment, Food and Rural Affairs Committee

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Summary

The Government has announced in principle that it will permit the commercial cultivation of GM crops in the United Kingdom. However, the details of the regime which will allow GM and non-GM and organic crops to co-exist, and of liability for contamination or admixture, still have to be worked out. The Government has said that it will launch a consultation to determine such details.

The Government may hope that now that the decision in principle has been made it will be easier to finalise the details of a planting regime. But it should be under no such illusions: it is apparent that the prospect of agreement is remote.

In this report we examine the areas in which consultation should concentrate. These are primarily, at what level the threshold for contamination or admixture of GM in non-GM or organic crops should be set and how liability should be approached.

The Government will no doubt proceed with great caution. There is no immediate prospect of commercial cultivation of GM maize, so the Government is no longer under tight time constraints. There is also no appetite at all amongst consumers for GM products, so again there may not be pressure for rapid resolution of these issues. But now that the Europe-wide moratorium on new GM food, feed and crops has been lifted, it is important to establish co-existence and liability regimes.

1 Introduction

Before March 2004

1. Decisions about the planting of genetically modified (GM) crops are made within a framework set out in a European Directive.¹ Part C of the Directive deals with licensing crops for commercial marketing, which may include cultivation, or may extend only to importation and processing, across the European Union. Currently there are twelve crops with Part C product approval, including herbicide-tolerant strains of oilseed rape, maize and sugar beet.²

2. However, in order for a crop to be cultivated in the United Kingdom the Government must also give its consent. It must consider the safety of the crop, and also its environmental impact, particularly in respect of the use of pesticides and other chemicals.

3. The Government has therefore engaged in a lengthy process of testing and consultation about the cultivation of GM crops. That process has included the farm scale evaluation of four crops – spring-sown oilseed rape, beet, forage maize, and winter-sown oilseed rape – over a number of years since 2000.³ It also included a process of public consultation, on which we have commented previously,⁴ as well as economic and scientific studies.⁵ The results of most of the farm scale evaluations, the public debate, and the economic and scientific studies were delivered to Government during 2003.

The Government's announcement

4. On 9 March 2004, the Secretary of State for Environment, Food and Rural Affairs announced that the Government would “agree in principle” to the cultivation of a GM herbicide-tolerant maize, Chardon LL.⁶ However, it placed two conditions on its approval: that the crop must be cultivated in the way it had been in the field-scale evaluations; and that the consent holders (Bayer CropScience) should provide further scientific evidence if the existing European Union marketing consent was to be renewed in 2006. The Government also said that it would define a regime to permit the co-existence of GM and non-GM crops in advance of the first likely planting of the crop, in Spring 2005.⁷

5. On 31 March 2004 Bayer announced that it would not in fact try to cultivate Chardon LL on a commercial basis in the United Kingdom. It said that because details of the conditions to be applied to cultivation were not yet known there would be “yet another 'open-ended' period of delay. These uncertainties and undefined timelines will make this five-year old

¹ Council Directive of 23 April 1990 on the deliberate release into the environment of genetically modified organisms; Council Directive 90/220/EEC

² See *The legal framework for decision-making on the release and marketing of GMOs in the European Union*, on the Gm pages of the Defra website, <http://www.defra.gov.uk>

³ More details of the farm scale evaluations can be found on the Defra website <http://www.defra.gov.uk>; and a history of the evaluations is contained in the Report of the Environmental Audit Committee, *GM Foods – Evaluating the farm scale trials*, HC (2003-04) 90-I, particularly paras.4 ff.

⁴ *Conduct of the GM Public Debate*, HC (2002-03) 1220

⁵ Strategy Unit (2003) *Field work: Weighing up the costs and benefits of GM crops*, 11 July 2003; and GM Science Review Panel (2003) *GM Science Review: First report*, 21 July 2003

⁶ A forage maize, developed and marketed by Bayer CropScience; see also HC Deb, 9 March 2004, col.1382

⁷ HC Deb, 9 March 2004, col.1382

variety economically non-viable”.⁸ The Government confirmed that the decision made by Bayer meant that the commercial cultivation of GM crops had effectively been shelved “for the foreseeable future”.⁹

Our inquiry

6. Before the Bayer announcement we had already said that we would set up a Sub-committee to undertake a short inquiry following the Government’s decision and following the earlier inquiry by the Environmental Audit Committee.¹⁰ We set out terms of reference (below) which dealt exclusively with GM maize.¹¹ Once Bayer’s position became clear we decided to extend the scope of our inquiry to address the *principle* of the Government’s decision, and thus to look at GM crops more generally. By that stage it was clear that the primary focuses of those submitting evidence were, in any event, issues of co-existence and liability more generally, rather than the specifics of GM herbicide-tolerant maize.

Our terms of reference

The Committee will inquire into the likely implications of the Government’s recent decision to agree in principle to the commercial cultivation of GM herbicide-tolerant maize in the UK. In particular, it will consider:

- in relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against cross-contamination
- if cross-contamination occurs, how liability will be established and responded to, who should be legally responsible and what the limits of that responsibility should be—and what role Government should play in determining these matters
- what processes will be involved in determining how GM-free zones will be established at both a regional and local level and what role Government should play in this development
- what changes to legislation will be required to allow GM crops to be grown
- what will be the scope and scale of the 2006 re-licensing procedures.

7. We received 22 written memoranda. Our Sub-committee took oral evidence on two occasions in May 2004. Our first session included witnesses from environmental NGOs, farming, and the biotechnology sector. At our second session we took evidence from Professor Malcolm Grant, Chair of the Agriculture and Environment Biotechnology Commission (AEBC), a group of scientists set up in 2000 by the Government to provide “independent, strategic advice on developments in biotechnology and their implications for agriculture and the environment”.¹² We also heard from the Minister for Environment and Agri-Environment. We are most grateful to all those who gave evidence and thus assisted our inquiry.

⁸ *Bayer CropScience discontinues further efforts to commercialise GM forage maize in the UK*, Bayer Press Release, 31 March 2004; see <http://www.bayercropscience.com>

⁹ See *Bayer deals blow to UK GM crops*, on the BBC website, 31 March 2004 (<http://www.bbc.co.uk>); see also the evidence given to the Sub-committee by the Minister, at Q218

¹⁰ *GM Foods - Evaluating the Farm Scale Trials: the Government Response*, HC (2003-04) 564

¹¹ See our press release, 11 March 2004

¹² For more information, go to the AEBC website: <http://www.aebc.gov.uk>

2 Issues raised

8. As we have indicated, the bulk of our written evidence focussed on the related issues of co-existence and liability. An important part of the information received dealt with the Government's proposal to allow voluntary 'GM-free' zones. These were also the issues discussed in oral evidence.

Co-existence

Thresholds

9. European legislation requires that food and feed which contains more than a certain threshold of GM content must be labelled as containing GM. Regulation (EC) No. 1829/2003 sets that threshold at 0.9 percent, provided that "this presence is adventitious or technically unavoidable".¹³ There is also capacity for lower thresholds to be set when appropriate.¹⁴

10. We received a great deal of evidence about threshold levels. There was much disagreement about the matter. However, there was one area of common ground: it was accepted that current techniques for testing for GM material mean that 'zero GM' in practice means less than 0.1 percent GM content.¹⁵

11. In her March 2004 statement the Secretary of State referred specifically to threshold levels, citing a report by the AEBC on co-existence and liability, published in November 2003.¹⁶ She said that the details of co-existence regimes still needed to be worked out, but that "farmers who wish to grow GM crops should be required to comply with a code of practice based on the European Union's 0.9 per cent. labelling threshold, and that this code should have statutory backing".¹⁷ She also suggested that the Government accepted that there should be a lower threshold for GM presence in organic farming, and said that it would "explore further with stakeholders whether a lower threshold should be applied".¹⁸

12. In their oral evidence the environmental NGOs suggested that the 0.9 percent figure had been misused by Government. GeneWatch says that the figure has been "wrongly interpreted in science and law", and that the "common presumption that routine contamination of up to 0.9 percent is allowed, and therefore that co-existence measures must be designed to only ensure that contamination does not rise above 0.9 percent in non-GM crops ... is incorrect".¹⁹ It told us that

¹³ Regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed, Article 12(2).

¹⁴ Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs

¹⁵ See, for example, Ev 9, para.9 [Soil Association]

¹⁶ AEBC (2003) *GM Crops? Coexistence and Liability*, AEBC, November 2003

¹⁷ HC Deb, 9 March 2004, col.1383

¹⁸ HC Deb, 9 March 2004, col.1383

¹⁹ Ev 9, para.5

- “the 0.9% limit applies at the retail stage (though at the farmgate for feed), meaning that contamination levels have to be lower at the farm-gate as additional contamination can accrue during transport, storage and processing”; and
- “there is a *zero* threshold for known and avoidable GM contamination”, since the 0.9 percent threshold applies only to “adventitious and technically unavoidable presence”.²⁰

13. The arguments are made even more strongly in respect of organic crops. The Soil Association pointed out that “organic food is defined by a European Union regulation. There is a limit on GM in organic food, and it is zero; and that is set by European law, not by the British Government”.²¹ The AEBC report also noted that European legislation states that “the use of GMOs by organic farmers is forbidden ... No legal threshold has been set for adventitious presence in organic produce, although there is provision in EU law to do so”.²²

14. The Minister told us that in the view of the Government the legal position was clear.²³ He cited European Commission guidance that “it would be disproportionate if statutory coexistence measures went beyond those needed to meet the EU labelling threshold”.²⁴ On that basis he said that

in terms of the legal and statutory position and the potential liability, the 0.9 is the threshold and the baseline figure because that is now established within European Union law and within this country.²⁵

However, he agreed that it was possible to set different threshold levels for organic farming, and that the Government would look into the matter.²⁶

Why are threshold levels so important?

15. The importance of this issue is spelt out in the AEBC report, which presents both sides of the argument.²⁷ Those who argue that a ‘zero’ threshold is unworkable and unachievable, and that 0.9 percent is an acceptable compromise, “strongly suspect on the basis of the available evidence that successful co-existence at 0.1 percent would be unachievable if there were significant areas of GM crop cultivation ... There is moreover a suspicion that the *de facto* ‘zero’ threshold of 0.1% is being used by some – though perhaps not all – interested parties as a way *de facto* to rule out the introduction of the option of growing GM crops”.²⁸ The argument advanced on the other side is that consumers do not wish to consume GM products: and that “if consumers want to buy non-GM products at a low a threshold as is

²⁰ Ev 9, paras.5 and 6

²¹ Q3

²² *GM Crops? Coexistence and Liability*, p.58

²³ Q155

²⁴ Q149

²⁵ Q150

²⁶ Q149

²⁷ *GM Crops? Coexistence and Liability*, p.57 ff

²⁸ *GM Crops? Coexistence and Liability*, p.58

technically practicable, i.e. 0.1%, this option should be open to all farmers”.²⁹ Any co-existence regime should recognise this view.

16. In oral evidence, Professor Grant agreed that there was “some confusion” about the 0.9 percent figure. He quoted Recital 24 of the food and feed labelling regulation, which he said

seems to be saying that such [GM] material may be present in minute traces in conventional food and feed as a result of adventitious or technically unavoidable presence during seed production, cultivation, harvest, transport and processing, and it may be possible to read into that that the 0.9 threshold is intended to be a tolerance. Where the presence of the material is avoidable, in other words it is under the control of the producer, then there is an obligation to take reasonable or appropriate steps to avoid it, but where it is adventitious, which may mean that it is as a result of cross-pollination or as a result of contamination through the production process due to the acts of others, then it seems to me that it is at least arguable that it is adventitious ...³⁰

In short Professor Grant said that it was *arguable* that cross-pollination might be considered to be “adventitious”, which in turn would mean that a co-existence regime should aim for no more than 0.9 percent contamination or admixture.

17. The argument, then, turns on the interpretation of the phrase “adventitious or technically unavoidable”. On the basis of one interpretation of the phrase, the Soil Association has produced legal opinion in support of its case that any co-existence regime should be founded on a threshold for GM content in non-GM crops of 0.1 percent.³¹ The Minister told us that he would certainly look at the arguments, but nonetheless said that the legal advice he had received was clear: that the threshold should be 0.9 percent.

18. There is huge confusion in both the Government’s and the European Union’s position in relation to GM crops, especially in relation to the thresholds of contamination of non-GM crops and thus liability. The Government cannot allow the commercial cultivation of GM crops in the United Kingdom until there is clarification of these critical issues. Until this is done no credible co-existence regime can be constructed.

19. The argument that the threshold for GM content in organic crops should be lower than 0.9 percent seems to be more widely accepted. In its report on co-existence and liability the AEBC noted the perspective that

organic producers are responding to consumer demand for as little GM material as possible in their food, so 0.1% is a realistic and reasonable threshold to set. The onus should therefore be on GM cropping to take place, if it takes place at all, in a way that respects the 0.1% standard widely adopted in organic agriculture.³²

²⁹ *GM Crops? Coexistence and Liability*, pp.58 and 59

³⁰ Q106

³¹ Presented to the Committee, but not published

³² *GM Crops? Coexistence and Liability*, p.9

In her statement, the Secretary of State said that “we will explore further with stakeholders whether a lower threshold should be applied on a crop-by-crop basis”.³³ However, there may be resistance from some quarters: the Chairman of the Supply Chain Initiative on Modified Agricultural Crops told us that “I do not see why there should be any different level from that applied to non-GM conventional growers, which is 0.9 per cent”.³⁴

20. We, however, *can* see that a lower threshold level of permissible admixture or contamination of organic crops with GM is appropriate. We are mindful that European law, after all, requires organics to contain no GM content. However, as Professor Grant pointed out, if a lower threshold was set, “reasonable behaviour” would be required on both sides. Thus if a farmer sought to introduce GM crops to a neighbourhood where an organic farmer was already established, that would “impose obligations ... on the GM farmer to ... work to appropriate separation distances”; but equally, “we would not expect an organic farmer to have a right of action if they deliberately went and planted an organic crop right alongside a GM crop”.³⁵

21. The current European Union interpretation of ‘zero’ contamination is that it is set at the limit of technical measurability: 0.1 percent. This is therefore the standard set for organic crops. We believe that proposals to allow “adventitious or technically unavoidable” contamination are likely to be confusing, unworkable, unacceptable to consumers and potentially destructive of the UK organic food industry. We recommend that the planting regime for GM crops respect the legal requirement that organic crops suffer zero contamination, and so does not undermine the Government’s encouragement of the organic sector exemplified by the Organic Action Plan.

Separation distances

22. Coexistence regimes depend primarily but not exclusively on setting separation distances. Separation is required to prevent the transfer of GM traits to non-GM and organic crops by cross pollination. Under EU law, any such transfer, detectable at 0.1 percent contamination in the final product, is incompatible with organic status. But transfer from GM to conventional non-GM crops, detectable up to 0.9 percent contamination in the final product, would allow those crops to retain a non-GM status. This presents an obvious difficulty in establishing a regime of separation distances.

23. In May 1999 the Government endorsed the guidelines issued by the Supply Chain Initiative on Modified Agricultural Crops (SCIMAC) relating to separation distances.³⁶ It was these guidelines which underpinned the farm scale evaluations.³⁷ The separation distances prescribed are intended to “reduce any potential cross-pollination to below 0.9 percent under worst case conditions (ie. those most favourable to cross-pollination)”.³⁸ The separation distances for a number of crops are set out below.

³³ HC Deb, 9 March 2004, col.1383

³⁴ Q82

³⁵ Q114

³⁶ *New measures on biotechnology announced*, Cabinet Office Press Release, CAB 109/99, 21 May 1999

³⁷ Ev 32

³⁸ Ev 34, para.1.8

Table 1: Separation distances to restrict cross-pollination to 0.9 percent, as defined by SCIMAC³⁹

Crop type	Certified seed crops (same species)	Registered organic crops (same species)	Non-GM crops (same species)
Oilseed rape	200m	200m	50m
Sugar beet	600m	600m	6m
Fodder beet	600m	600m	6m
Forage maize	200m	200m	200m sweetcorn 50m forage maize

24. The SCIMAC guidelines were robustly defended by some of those who gave evidence to us. Evidence from the farm scale evaluations was cited. The National Farmers' Union told us that "the separation distances were found by the farmers who participated in the farm-scale trials to be workable ... There was no incidence of non-GM production being compromised throughout the farm-scale trials", and that "separation distances are effective in maintaining crop purity".⁴⁰ SCIMAC itself told us that "the precautionary approach that we took [in the guidelines] ... in other words conditions that are ideally suited to cross-pollination occurring – certainly has been borne out by the gene flow studies that were carried out of the maize trials".⁴¹

25. The environmental NGOs were unpersuaded. Greenpeace, for example, told us that the distances set out in the SCIMAC guidelines have "already been found insufficient to stop contamination".⁴² It pointed to research by the National Pollen Research Unit, which "recommended a separation distance of 3000 metres for GM maize to prevent cross-pollination [with non-GM and organic crops]".⁴³ GeneWatch UK said that "evidence exists that current separation distances are not sufficient to meet the demands of avoiding contamination".⁴⁴

26. The Soil Association cited studies which had looked at cross-pollination. One study involving maize had found cross-pollination at 1.6 percent at 200 metres, 0.7 percent at 300 metres, and 0.2 percent at 500 metres; another found that it was 0.8 percent at 600 metres and 0.2 percent at 800 metres.⁴⁵ On this basis the Association concluded that even to meet a 0.9 percent threshold the separation distance would have to be 600 metres, and to keep contamination at negligible levels the recommendation of the National Pollen Research Unit, 3 kilometres, was appropriate.⁴⁶ The Soil Association's conclusions about oilseed rape were even more dramatic: it suggested a separation distance of 6 kilometres.⁴⁷

³⁹ Taken from *Guidance for growing newly developed herbicide tolerant crops*, SCIMAC, May 1999; see the SCIMAC website, at <http://www.scimac.org.uk>

⁴⁰ Q46

⁴¹ Q88

⁴² Ev 6, para.10

⁴³ Ev 6, para.10

⁴⁴ Ev 3, para.19

⁴⁵ Ev 11, para.20

⁴⁶ Ev 11, para.21

⁴⁷ Ev 11, para.23

27. In short, the environmental NGOs concluded that separation distances should be greater than proposed by SCIMAC because (a) the threshold for GM content in non-GM crops should be lower than 0.9 percent, and (b) because cross-pollination takes place over longer distances than SCIMAC envisaged. The second point of dispute is less easy to deal with than the first. SCIMAC points out that *gene flow* does not take place between plants which are cultivated with its recommended distances between them. The environmental NGOs say that *cross-pollination* takes place across much wider distances. We note that, as SCIMAC told us, its guidelines are under constant review.⁴⁸ And we discuss below the proposal of the AEBC that there should be an ‘introductory period’ if commercial planting is permitted.

28. Government guidelines on separation distances should be regularly and independently audited and reviewed. The Government should clarify how a regime of auditing and review would be funded and conducted. Any audit regime must, in particular, carry the confidence of the organic farming movement in the United Kingdom.

An introductory period

29. In its report the AEBC recommended that if GM crops are commercialised “there should be an initial introductory period where there would be intensive monitoring and auditing of coexistence arrangements to determine whether and how far coexistence was actually being achieved”.⁴⁹ Professor Grant told us that “a period of very close monitoring of crops [would allow us to] learn from experience rather than necessarily regarding that statutory separation distances were binding for all time”.⁵⁰ In his evidence the Minister seemed receptive to the idea, although he said that it was a matter for the forthcoming consultation.⁵¹

30. There is the question of who should be responsible for monitoring and auditing the regime of separation distances. Professor Grant told us that responsibility rested with Government.⁵² The Minister was more cautious, saying again that it was a matter for the consultation. We are also cautious: whether all sides would consider the Government’s monitoring to be independent is perhaps a moot point.

31. Separation distances will be statutory. However, we note the lesson of buffer zones proposed in respect of pesticides use. If farmers have found it difficult to maintain separation distances in respect of pesticides it is likely that they may find it difficult in respect of GM crops. This point should be borne in mind if any monitoring period were to be established.

⁴⁸ Q89

⁴⁹ *GM Crops? Coexistence and Liability*, p.9

⁵⁰ Q122

⁵¹ Q177

⁵² Q123

GM-free zones

32. Another aspect of co-existence is the suggestion that there should be areas wholly free of GM cultivation. Indeed several nations and regions within the United Kingdom have said that they would like to be GM-free, including Wales and Cornwall. But mandatory ‘GM-free zones’ would not be consistent with EU legislation (specifically EU Directive 2001/18/EC), although the European Commission has indicated that voluntary zones would be permissible.⁵³ In her statement the Secretary of State said that the Government would “issue guidance on the establishment of voluntary GM-free zones”. The guidance – to farmers – will set out the legal framework and address “practical issues which farmers may wish to consider”.⁵⁴

33. Our witnesses seemed unimpressed by the idea of voluntary GM-free zones. Greenpeace, for example, told us that “the commercial planting of GM crops will effectively make GM-free zones unenforceable”.⁵⁵ Professor Grant said that “voluntary GM free zone is only as good as the volunteers who sign up to it and are willing to abide by it”.⁵⁶ He also raised the prospect of possible contamination from vehicles carrying GM products which pass through any ‘GM-free’ zone.⁵⁷ Of course it might be possible to change European law to permit regions or nations to become wholly GM free. We have already mentioned Wales and Cornwall: in addition, it seems that Austria might also be interested in being ‘GM-free’.

34. We are sceptical about the concept of ‘voluntary’ GM-free zones. We recommend however that the Government consider carefully the arguments in favour of mandatory GM-free zones, particularly at the level of regions, and nations such as Wales. We recommend that the Government set out its views on this point in its response to this report.

Liability

35. There are two aspects of the debate about liability in relation to GM crops. One relates to economic losses which might be incurred by non-GM farmers: for example, by organic farmers who lose their organic status due to GM contamination of their crops. The other relates to the wider issue of environmental liability arising if the GM features of the commercial crop become transferred to other plants in the wild.

36. Although we focus below on economic liability, environmental liability is obviously a matter of vital importance. It has been discussed at length by the AEBC,⁵⁸ and was referred to in its evidence by Defra.⁵⁹ **We believe that environmental damage and liability is inextricably linked with the matters we have discussed in this report. We therefore believe that it should properly be subject to the Government’s consultation process. The Government cannot proceed to allow cultivation of GM crops until this matter is resolved.**

⁵³ Ev 64, paras.24 and 25

⁵⁴ Ev 64, para.25

⁵⁵ Ev 8, para.21

⁵⁶ Q129

⁵⁷ Q132

⁵⁸ *GM Crops? Coexistence and Liability*, pp.94 ff; see also P5, paras.20-29

⁵⁹ Ev 64, paras.21-23

Economic liability

37. In her statement the Secretary of State said that she would “consult stakeholders on options for providing compensation to non-GM farmers who suffer financial loss through no fault of their own”.⁶⁰ She made clear, though, that a compensation scheme would be funded by the “GM sector”, rather than “by Government or producers of non-GM crops”.⁶¹ In his evidence the Minister for Environment and Agri-Environment set out the Government’s thinking in more detail. He told us

You could have liability on the farmers who are growing GM produce ... You could have liability on the GM companies. You could have some form of joint liability. You could have a liability fund that is managed by the GM companies who could theoretically, just for the sake of argument, recover some of that money if it was due to a failure or a breaking of the regulations by a particular GM farmer ... There are a number of choices to be taken on this, a number of options.⁶²

38. The AEBC’s advice is that farmers who suffer financial loss as a result of their produce exceeding statutory thresholds through no fault of their own should be compensated, and that “in principle insurance would be the best means of financial redress, but cover is unavailable at present, and there would remain the question of who should be responsible for paying insurance premiums”.⁶³ It suggests that a “special compensation scheme” should be put in place until an insurance market developed – and that “Government will wish to promote the development of an insurance market”.⁶⁴ The Minister’s position seems somewhat at odds with this advice. He told us that he favoured a liability fund – which of course may in effect act as an insurance product – telling us that “we are looking at the concept of a liability fund or provision. Our stated view is that should come from the [GM] sector”.⁶⁵

39. Who should be liable for economic losses resulting from admixture or contamination was a matter of some debate amongst our witnesses. There are a number of possible models: the sources of funds or insurance premiums might be all farmers; GM farmers; biotechnology companies; the Government; or combinations of some or all of them. Not surprisingly the environmental NGOs were adamant that the biotech companies should pay: GeneWatch UK, for example, told us that liability should rest “with the company or institution who holds the consent to market or experiment with the GM crop involved”.⁶⁶ On the other side, the Agricultural Biotechnology Council simply said that it looked forward to discussions about liability, in which it would participate fully.⁶⁷ Of course, if threshold levels and separation distances are set correctly, and more importantly if they are adhered to, the question of compensation should not in any event arise.

⁶⁰ HC Deb, 9 March 2004, col.1383

⁶¹ HC Deb, 9 March 2004, col.1383

⁶² Q189

⁶³ *GM Crops? Coexistence and Liability*, p.10

⁶⁴ *GM Crops? Coexistence and Liability*, p.10

⁶⁵ Q204

⁶⁶ Ev 4, para 25; see also Ev 5 [Greenpeace] and Ev 8 [Soil Association].

⁶⁷ Q98

40. **The second major strand of the consultation exercise should be the question of how liability should be determined and how compensation should be funded. In particular the Government must decide who should accept liability and fund compensation, and the mechanisms by which compensation should be paid. At the centre of this mechanism must be a guiding principle that economic liability should extend to the level of proven economic losses suffered by non-GM and organic farmers as a result of admixture or contamination. It is a duty of Government to ensure a consistent approach to environmental and economic liability.**

3 Conclusion

41. The decision of Bayer CropScience not to press ahead with the commercial cultivation of GM maize has given the Government time to consider many of the issues of co-existence and liability in more detail. It has announced that it will launch consultations on a range of matters. **We recommend that the Government begin the process of consultation soon, so that final details of a co-existence and liability regime for GM crop cultivation can be settled. To do so, the consultation exercise must focus on threshold levels and on the details of economic and environmental liability. In conducting the consultation, we urge the Government to keep in mind the recommendations made in this report. We will examine closely the way in which the consultation is conducted, specifically in relation to the way issues of damage and liability are addressed.**

Conclusions and recommendations

1. There is huge confusion in both the Government's and the European Union's position in relation to GM crops, especially in relation to the thresholds of contamination of non-GM crops and thus liability. The Government cannot allow the commercial cultivation of GM crops in the United Kingdom until there is clarification of these critical issues. Until this is done no credible co-existence regime can be constructed. (Paragraph 18)
2. The current European Union interpretation of 'zero' contamination is that it is set at the limit of technical measurability: 0.1 percent. This is therefore the standard set for organic crops. We believe that proposals to allow "adventitious or technically unavoidable" contamination are likely to be confusing, unworkable, unacceptable to consumers and potentially destructive of the UK organic food industry. We recommend that the planting regime for GM crops respect the legal requirement that organic crops suffer zero contamination, and so does not undermine the Government's encouragement of the organic sector exemplified by the Organic Action Plan. (Paragraph 21)

3. Government guidelines on separation distances should be regularly and independently audited and reviewed. The Government should clarify how a regime of auditing and review would be funded and conducted. Any audit regime must, in particular, carry the confidence of the organic farming movement in the United Kingdom. (Paragraph 28)
4. We are sceptical about the concept of 'voluntary' GM-free zones. We recommend however that the Government consider carefully the arguments in favour of mandatory GM-free zones, particularly at the level of regions, and nations such as Wales. We recommend that the Government set out its views on this point in its response to this report. (Paragraph 34)
5. We believe that environmental damage and liability is inextricably linked with the matters we have discussed in this report. We therefore believe that it should properly be subject to the Government's consultation process. The Government cannot proceed to allow cultivation of GM crops until this matter is resolved. (Paragraph 36)
6. The second major strand of the consultation exercise should be the question of how liability should be determined and how compensation should be funded. In particular the Government must decide who should accept liability and fund compensation, and the mechanisms by which compensation should be paid. At the centre of this mechanism must be a guiding principle that economic liability should extend to the level of proven economic losses suffered by non-GM and organic farmers as a result of admixture or contamination. It is a duty of Government to ensure a consistent approach to environmental and economic liability. (Paragraph 40)
7. We recommend that the Government begin the process of consultation soon, so that final details of a co-existence and liability regime for GM crop cultivation can be settled. To do so, the consultation exercise must focus on threshold levels and on the details of economic and environmental liability. In conducting the consultation, we urge the Government to keep in mind the recommendations made in this report. We will examine closely the way in which the consultation is conducted, specifically in relation to the way issues of damage and liability are addressed. (Paragraph 41)

Formal minutes

Wednesday 30 June 2004

Members present:

Mr Michael Jack, in the Chair

Candy Atherton	Mr Austin Mitchell
Mr Colin Breed	Diana Organ
Mr Mark Lazarowicz	Joan Ruddock
Mr David Lepper	Alan Simpson
Mr Ian Liddell-Grainger	

The Committee deliberated.

Draft Report [*GM Planting Regime*], proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 41 read and agreed to.

Summary read and agreed to.

Resolved, That the Report be the Eleventh Report of the Committee to the House.

Ordered, That the Chairman do make the Report to the House.

Ordered, That the provisions of Standing Order No. 134 (Select committees (reports)) be applied to the Report.

Several papers were ordered to be appended to the Minutes of Evidence.

Ordered, That the Appendices to the Minutes of Evidence taken before the Committee be reported to the House.-(*The Chairman*).

Several memoranda were ordered to be reported to the House.

The Committee further deliberated.

[Adjourned till Wednesday 14 July at a quarter past Two o'clock.

Witnesses

Monday 17 May 2004

Dr Sue Mayer, **GeneWatch UK**, Dr Doug Parr, **Greenpeace**, and Lord Melchett, **Soil Association** Ev 13

Meurig Raymond and Elizabeth Hogben, **National Farmers' Union** Ev 22

Dr Colin Merritt and Dr Julian Little, **Agricultural Biotechnology Council**, Bob Fiddaman and Daniel Pearsall, **Supply Chain Initiative on Modified Agricultural Crops** Ev 36

Monday 24 May 2004

Professor Malcolm Grant, **Agriculture and Environment Biotechnology Commission** Ev 54

Elliot Morley MP and Dr Linda Smith, **Department for Environment, Food and Rural Affairs** Ev 65

List of written evidence

GeneWatch UK	Ev 1
Greenpeace	Ev 5
Soil Association	Ev 8
National Farmers' Union	Ev 21, 28
Agricultural Biotechnology Council (abc)	Ev 30, 42
Supply Chain Initiative on Modified Agricultural Crops (SCIMAC)	Ev 32, 44
Agriculture and Environment Biotechnology Commission	Ev 48
Department for Environment, Food and Rural Affairs	Ev 61
Friends of the Earth (Swindon)	Ev 74
National Farmers' Union (Scotland)	Ev 75
PG Economics	Ev 78
Munlochy GM Vigil	Ev 82
Consumers' Association	Ev 83
Scientists for Global Responsibility	Ev 85
Food and Drink Federation	Ev 86
Biosciences Federation	Ev 88
UK Environmental Law Association Biotechnology Working Group	Ev 95
Scientific Alliance	Ev 99
Federal Ministry of Consumer Protection, Food and Agriculture, Germany	Ev 103
Friends of the Earth	Ev 105

List of unprinted written evidence

Additional papers have been received from the following and have been reported to the House but to save printing costs they have not been printed and copies have been placed in the House of Commons library where they may be inspected by members. Other copies are in the Record Office, House of Lords and are available to the public for inspection. Requests for inspection should be addressed to the Record Office, House of Lords, London SW1. (Tel 020 7219 3074) hours of inspection are from 9:30am to 5:00pm on Mondays to Fridays.

Scottish Parliament European and External Relations Committee (Background note)

Family Farmers' Association (Memorandum)

Scientists for Global Responsibility (Background note)

Joanna Clarke (Memorandum)

Reports from the Committee since 2001

Session 2003–04

Tenth Report	Marine Environment: Government reply to the Committee's Report	HC 706
Ninth Report	Milk Pricing in the United Kingdom	HC 335
Eighth Report	Gangmasters (follow up)	HC 455
Seventh Report	Implementation of CAP Reform in the UK	HC 226-I
Sixth Report	Marine Environment (<i>Reply, HC 706</i>)	HC 76
Fifth Report	The Foods Standards Agency and Shellfish (<i>Reply, HC 601</i>)	HC 248
Fourth Report	Environmental Directives (<i>Reply, HC 557</i>)	HC 103
Third Report	Caught in the net: Cetacean By-catch of dolphins and porpoises off the UK coast (<i>Reply, HC 540</i>)	HC 88
Second Report	Annual Report of the Committee 2003	HC 225
First Report	Water Pricing (<i>Reply, HC 420</i>)	HC 121

Session 2002–03

Eighteenth Report	Conduct of the GM Public Debate (<i>Reply HC 443 Session 2003-04</i>)	HC 220
Seventeenth Report	Biofuels (<i>Reply, HC 88 Session 2003-04</i>)	HC 929-I
Sixteenth Report	Vets and Veterinary Services	HC 703
Fifteenth Report	New Covent Garden Market: a follow-up (<i>Reply, HC 123 Session 2003-04</i>)	HC 901
Fourteenth Report	Gangmasters (<i>Reply, HC 122 Session 2003-04</i>)	HC 691
Thirteenth Report	Poultry Farming in the United Kingdom (<i>Reply, HC 1219</i>)	HC 79-I
Twelfth Report	The Departmental Annual Report 2003 (<i>Reply, HC 1175</i>)	HC 832
Eleventh Report	Rural Broadband (<i>Reply, HC 1174</i>)	HC 587
Tenth Report	Horticulture Research International (<i>Reply, HC 1086</i>)	HC 873
Ninth Report	The Delivery of Education in Rural Areas (<i>Reply, HC 1085</i>)	HC 467
Eighth Report	The Future of Waste Management (<i>Reply, HC 1084</i>)	HC 385
Seventh Report	Badgers and Bovine TB (<i>Reply, HC 831</i>)	HC 432
Sixth Report	Rural Payments Agency (<i>Reply, HC 830</i>)	HC 382
Fifth Report	The Countryside and Rights of Way Act 2000 (<i>Reply, HC 748</i>)	HC 394
Fourth Report	Water Framework Directive (<i>Reply, HC 749</i>)	HC 130
Third Report	The Mid-term Review of the Common Agricultural Policy (<i>Reply, HC 615</i>)	HC 151
Second Report	Annual Report of the Committee 2002	HC 269
First Report	Reform of the Common Fisheries Policy (<i>Reply, HC 478</i>)	HC 110

Session 2001–02

Tenth Report	The Role of Defra (<i>Reply, HC 340, Session 2002-03</i>)	HC 991
Ninth Report	The Future of UK Agriculture in a Changing World (<i>Reply, HC 384, Session 2002-03</i>)	HC 550
Eighth Report	Hazardous Waste (<i>Reply, HC 1225</i>)	HC 919
Seventh Report	Illegal Meat Imports (<i>Reply, HC 1224</i>)	HC 968
Sixth Report	Departmental Annual Report 2002 (<i>Reply, HC 1223</i>)	HC 969
Fifth Report	Genetically Modified Organisms (<i>Reply, HC 1222</i>)	HC 767
Fourth Report	Disposal of Refrigerators (<i>Reply, HC 1226</i>)	HC 673
Third Report	Radioactive Waste: The Government's Consultation Process (<i>Reply, HC 1221</i>)	HC 407
Second Report	The Countryside Agency (<i>Reply, HC 829</i>)	HC 386
First Report	The Impact of Food and Mouth Disease (<i>Reply, HC 856</i>)	HC 323

Oral evidence

Taken before the Environment, Food and Rural Affairs Committee, GM Planting Regime Sub-Committee

on Monday 17 May 2004

Members present

Mr David Drew, in the Chair

Patrick Hall
Mr Michael Jack
Diana Organ

Joan Ruddock
Alan Simpson
Paddy Tipping

Memorandum submitted by GeneWatch UK

GM MAIZE DECISION

EXECUTIVE SUMMARY

1. The Government's "in principle" decision to proceed with commercial growing of certain GM crops still leaves important questions of co-existence and liability unresolved. When considering these questions, the level of contamination that is to be allowed is being wrongly interpreted in science and law as 0.9% when it should be effectively zero.

2. Economic liability for losses incurred as a result of contamination should rest with the legal consent holder for the GM organism involved. The unique identifier system being established for traceability and labelling will facilitate this.

3. Environmental liability must also be addressed to ensure remediation is required when possible and that costs can be claimed from the company involved.

4. The legal rules underpinning co-existence, economic and environmental liability and provision for statutory GM-free zones must be in place before commercial growing is allowed in the UK.

INTRODUCTION

5. Although the recent announcement by Bayer CropScience, that it will no longer seek to commercialise its GM herbicide tolerant (HT) fodder maize in the UK, makes it unlikely that GM crops could be grown in the UK before 2006, the Committee's inquiry remains important and timely. There is much work that needs to be undertaken on co-existence and liability across a much wider range of GM crops than maize, and the breathing space provided by Bayer's decision provides the opportunity to ensure a proper system is in place.

6. It is important to understand that the "in principle" approval of maize announced by the Government could soon be applied to other GM crops in the short and longer-term. These include:

- winter oilseed rape—the outcome of the farm-scale trials are expected this summer and, given the weight the Government has placed on these results, may lead to a positive assessment if this type of GMHT oilseed rape is not considered harmful;
- GM crops for non-food uses including oilseed rape and sugar beet as biofuels. The industry and others are promoting such applications in the hope they will attract less adverse reaction than GM crops for food. However, they will pose considerable "back door" threats of contamination of food and native species¹;
- GM crops for pharmaceutical production. There are no clear rules in Europe on the crops that might be used for drug production although if food crops are used they could form sources of contamination of foods².

7. Furthermore, although the UK has said that it will oppose the marketing of GMHT spring oilseed rape and sugar beet in Europe, it is possible that the Government will be outvoted during the approval process. Therefore, the UK should not be complacent about its ability to control GM crops and rules to protect the non-GM market must be put in place.

¹ See: GeneWatch UK (2004) Non-food GM crops: New dawn or false hope? Part 2: Grasses, flowers, trees, fibre crops and industrial uses. GeneWatch UK: Tideswell, Derbyshire.

² GeneWatch UK (2003) Non-food GM crops: New dawn or false hope? Part 1: Drug production. GeneWatch UK: Tideswell, Derbyshire.

CO-EXISTENCE MEASURES

8. It is not only separation distances that will be required to ensure that non-GM crops are not contaminated by GM crops. Depending on the crop involved, a package of measures will be needed to guard against spillage, prevent GM crops becoming weeds in following crops and ensuring an uncontaminated seed supply.

9. For example, French research concluded that transgene escape to wild sea beet occurred via human-mediated long-distance dispersal events such as the movement of seed on tractor tyres and these events were surprisingly important³. Canadian research on the production of non-GM oilseed rape seed has revealed how mixing at seed harvesting and cleaning can lead to contamination levels of 0.57% with herbicide tolerance genes⁴. A level of 7.2% in one case was thought to be a result of a Foundation seed lot being contaminated.

10. The degree and extent of coexistence measures will depend on the level of contamination which is to be allowed. In their response to the GM dialogue⁵, the Government described the 0.9% contamination threshold for labelling of food as containing GM as a “pragmatic tolerance for perceived impurities” (see paras 5.32—5.33) and that their intention was to propose co-existence measures that would achieve this.

11. However, in European regulations (No 1829/2003 on genetically modified food and feed), the 0.9% threshold is not defined in this way. Article 12 (2) of 1829/2003 in relation to labelling states that:

“This section shall not apply to foods containing material which contains, consists of or is produced from GMOs in a proportion no higher than 0.9% of the food ingredients considered individually or food consisting of an individual ingredient, provided that this presence is adventitious or technically unavoidable”

12. It goes on at Article 12 (3) to say:

“In order to establish that the presence of this material is adventitious or technically unavoidable, operators must be in a position to supply evidence to satisfy competent authorities that they have taken steps to *avoid* the presence of such material” (emphasis added)

13. Similarly, Regulation 1830/2003 on traceability and labelling of GMOs and food and feed products derived from them, in Article 4, C (paras 7&8), also refers to the need to ensure that “traces of GMOs are adventitious or technically unavoidable”.

14. The non-binding recommendations by the European Commission on the development of co-existence practices (2003/556/EC), at para 2.1.4 say that:

“Measures for coexistence should be efficient, cost-effective and proportionate. They shall not go beyond what is necessary in order to ensure that adventitious traces of GMOs stay below the tolerance thresholds set out in Community legislation. They should avoid any unnecessary burden for farmers, seed producers, cooperatives and other actors associated with any production type.”

15. This might seem to contradict the principle of avoidance of adventitious presence laid out in the Regulations 1829/2003 and 1830/2003. However, the Commission recommendations at para 2.2.2 emphasise the potential for increasing contamination over time:

“It is important to recognise the cumulative effect of the various sources of admixture, including effects over time that may affect the seed bank or the sowing of farm-saved seed”.

16. Therefore, a system designed to provide a 0.9% threshold now, is unlikely to be adequate in the future.

17. In relation to gene flow and resulting contamination, new evidence is constantly emerging, as this is an area which has had relatively little investigation in the past. For example, as already referred to, movement of sugar beet seed on tractor tyres was found to be surprisingly important in the hybridisation between sugar beet and weedy beet⁶. Insects have recently been discovered to be much more important in the long-distance movement of oilseed rape pollen than was previously appreciated⁷.

³ Arnaud, J. F., *et al.* (2003) Evidence for gene flow via seed dispersal from crop to wild relatives in *Beta vulgaris* (Chenopodiaceae): consequences for the release of genetically modified crops species with weedy lineages. *Proceedings of the Royal Society (London). Series B: Biological sciences* 270: 1565–1571.

⁴ Downey, R.K. & Beckie, H. (undated) Report on project entitled “Isolation effectiveness in canola pedigree seed production. Agriculture and Agri-food Canada, Saskatoon Research Centre: Saskatoon.” 14pp.

⁵ The GM dialogue: Government response. DEFRA, Scottish Executive, Welsh Assembly and DOE, Northern Ireland. 9 March 2004.

⁶ Arnaud, J. F., *et al.* (2003) Evidence for gene flow via seed dispersal from crop to wild relatives in *Beta vulgaris* (Chenopodiaceae): consequences for the release of genetically modified crops species with weedy lineages. *Proceedings of the Royal Society (London). Series B: Biological sciences* 270:1565–1571.

⁷ Ramsay, G., Thompson, C. & Squire, G. (2003) Quantifying landscape-scale gene flow in oilseed rape. Final report of DEFRA Project RG0216.

18. Therefore, GeneWatch believes the Government is wrong in law, and fails to recognise the scientific uncertainty that exists, when it aims to define a co-existence system to allow 0.9% contamination by intent (not adventitiously) and where technical means could avoid contamination as required under the relevant EC law. Co-existence measures, whether to protect organic or conventionally produced non-GM foods, must be aimed at avoiding contamination entirely.

19. Although separation distances are only one part of a co-existence regime, they will be one important safeguard. Evidence exists that current separation distances are not sufficient to meet the demands of avoiding contamination.

20. Below is a table of the separation distances used in the SCIMAC guidelines designed to restrict contamination to a level of 1% (these may not meet the 0.9% level now enshrined in European law), together with recent evidence on contamination levels recorded at distances greater than these.

<i>GM crop</i>	<i>Non-GM crop</i>	<i>SCIMAC separation distance (metres)</i>	<i>Contamination evidence</i>
Maize	Sweetcorn	130	Purple grains of maize were detected in ears of yellow maize grown up to 1,600 feet away (approx 500 meters) ⁸
	Fodder maize	80	
Oilseed rape	Fully fertile	50	Levels of over 0.5% contamination were detected at 200 metres in one UK farm-scale evaluation ⁹ . Pollen can be carried up to 26km and successfully fertilise other oilseed rape plants at low frequencies ¹⁰ .
	Varietal associations	100	
Sugar/fodder beet	Sugar/fodder beet	6	Research into Italian wild sea beet has shown that genes from sugar beet can become established in wild sea beet populations that are 30-40km away ¹¹ . Pollen does not move this distance all at once, but moves in steps over time.

21. Seed purity is another important issue in relation to co-existence. Here the issue is not only related to consumer choice and human safety through traceability schemes, environmental protection is also important. If, as has been proposed, a 0.3% contamination of non-GM oilseed rape seed with GM oilseed rape is allowed and this is with a herbicide tolerant variety, the contaminating plants growing from the GM seeds may have to be removed with potentially harmful herbicides.

22. GeneWatch agrees with the AEBC that whatever measures are chosen for co-existence a period of monitoring will be needed to see whether they work in practice. In their study of GM crops and food, the Royal Society of Canada noted in this context¹² “. . . the inherent difficulties in the containment of genetic material in the context of normal farming practices in which literally millions of small seeds are produced and harvested over large areas of the landscape. Industry argues that as long as “good farming practices” are followed, these problems should not occur. This perspective may be unduly naïve.”

23. As well as the issue of contamination of non-GM crops, GeneWatch believes attention should also be paid to native flora and any measures that may be needed to restrict contamination. In the UK this would apply to oilseed rape and sugar beet because related wild species with which they can hybridise exist. Research in the UK has revealed that earlier, small-scale research had underestimated the likelihood of gene escape from GM oilseed rape to its relative, wild turnip. It showed 32,000 hybrids between oilseed rape and the waterside form of wild turnip form each year and 17,000 with the weedy populations¹³. Extra controls may be required in those areas where wild relatives are found and any co-existence measures should allow for this according to the crop involved.

⁸ Corn pollen drifts further than thought 29 Sep 2003 http://www.agriculture.com/default.sph/AgNews.class?FNC=goDetail_ANewsindex_html_50672_1

⁹ Norris, C & Sweet, J. (2002) Monitoring large scale releases of genetically modified crops (EPG 1/5/84). Final report of monitoring studies of field scale releases of GM oilseed rape crops in England from 1994–2000. www.defra.gov.uk/environment/gm/research/epg-1-5-84.htm

¹⁰ Ramsay, G., Thompson, C. & Squire, G. (2003) Quantifying landscape-scale gene flow in oilseed rape. Final report of DEFRA Project RG0216.

¹¹ Bartsch, D. and Schmidt, M. (1997) Influence of sugar beet breeding populations of *Beta vulgaris ssp. Maritima* in Italy. *Journal of Vegetation Science* 8, 81–84

¹² Elements of precaution: recommendations for the regulation of food biotechnology in Canada. The Royal Society of Canada, January 2001.

¹³ Wilkinson MJ, et al (2003) Hybridization between *Brassica napra* and *B. rapa* on a national scale in the United Kingdom. *Science*. [October 2003]

ECONOMIC LIABILITY

24. An important “back stop” to coexistence rules is a system of liability to ensure that if the system fails, and a non-GM farmer finds his crop contaminated and loses economically as a result, he or she will be compensated. The AEBC’s report on coexistence and liability showed that there is no means for economic losses to be claimed under existing law¹⁴. Therefore, a new system is required which ensures that farmers are compensated without undue obstacles.

25. Attributing liability for contamination could be made simple by placing the liability with the company or institution who hold the consent to market or experiment with the GM crop involved (as granted under the EC’s Deliberate Release Directives 2001/18 or 90/220, or the food and feed regulation, 1829/2003). This consent will relate to the particular crop containing a particular gene construct. Under the new European labelling and traceability rules (Regulation 1830/2003, Article 8), unique identifiers for GM food and feeds will have to be provided and contamination will, therefore, be able to be linked to this unique identifier and the consent to market it.

26. The consent holder will have information on who has licensed or used the GM crop and will, via contracts, be able to claim any costs from them if they have not complied with the relevant rules. For example, farmers would be expected to follow any co-existence rules and if they had not done so, would be expected to reimburse any costs arising from contamination to the consent holder.

27. The advantages of such a system would be that it would be simple for any person suffering losses from contamination of their crops. They would not have to prove who was immediately responsible for causing the contamination, this would be the responsibility of the company given the initial consent and which should have access to the relevant information. If there was no fault, and an unanticipated event occurred, the company which had produced and profited from the production of the GM crop would have to cover the costs—a situation which seems fair and equitable.

28. It would assist the smooth workings of such a system if an independent tribunal was established to confirm that a contamination event had taken place and with what genetic material. The tribunal could also assist in determining whether fault could be attributed to allow a company to reclaim any compensation costs.

29. Importantly, any such system would be easy for the affected farmer or food producer. Their only responsibility would be to show that contamination had occurred and led to economic losses. Once this had been done they would be confident that any losses would be reimbursed.

30. Although Government have said that they would speak to stakeholders about an industry funded compensation scheme, it is clear from the evidence given by the biotechnology industry to the AEBC, that they will not willingly contribute to a fund. Whilst industry claim co-existence measures will work, they are not willing to take responsibility if this does not prove to be the case even though, based on their own logic, costs should be minimal.

31. Insurance is also not an option at this stage as insurers say they do have the evidence upon which to estimate risk. Not only does this underline the limited nature of our knowledge in this area and the need for caution, but it highlights the extent of losses they must consider possible. Therefore, a statutory liability scheme with the consent holders made liable is the only practicable solution.

ENVIRONMENTAL LIABILITY

32. Although environmental liability is not specifically referred to in the terms of reference, GeneWatch urges the Committee to consider this subject. Critical debate of environmental liability has been lacking and the Government have used this absence to avoid addressing the issue.

33. As the AEBC pointed out in its report, and the Government acknowledged in its response to the public dialogue (paras 5.26–5.27), whilst there may be unforeseen adverse effects on the environment, the EU Liability Directive to address remediation only relates to specified habitats and species. For the vast majority of the UK’s agricultural landscape and species there would be no requirement for remediation if harm arose through the use of GMOs. There is also no mechanism to claim reimbursement for this from those responsible unless a criminal act had been proven. The Government has merely said that it will respond to the AEBC’s recommendations to address this gap in “due course”.

34. GeneWatch believes that the Government has failed to act in the public interest in this area. Pressure must be placed upon them to act before harm occurs and history repeats itself with society and the environment picking up the bill.

¹⁴ AEBC (2003) GM crops? Coexistence and liability. Available on www.aebc.gov.uk.

GM-FREE ZONES

35. Providing advice to farmers on how to establish voluntary GM-free zones was one element of the Government's GM policy announcement on 9 March. However, there remain important questions on whether voluntary GM-zones will work in practice or will meet the expressed wishes of democratically elected bodies such as the Welsh Assembly.

36. In particular, GeneWatch is concerned that one farmer in an area will be able to obstruct the wishes of the majority in a region that wish to take advantage of a GM-free zone for environmental, health, social or economic reasons. Therefore, there needs to be a change to European legislation to allow regions to establish GM-free zones on a statutory basis.

CHANGES TO LEGISLATION

37. There are four areas in which changes to legislation are required:

- Statutory coexistence rules for farmers as the Government has indicated are needed.
- Economic liability rules.
- European rules allowing for GM-free zones to be established.
- Changes to environmental liability provisions as laid out in the AEBC's report.

38. There should be no cultivation of GM crops in the UK unless this package of measures is put in place.

SCALE AND SCOPE OF 2006 RE-LICENSING PROCEDURES

39. It is difficult to predict the scope and scale of re-licensing in 2006 as this will depend in large part on whether companies decide it is worth proceeding. It is likely that some crops which were licensed under 90/220 but never grown will not be re-licensed. The majority of re-licensing may concern crops for import for use in food and feed such as Roundup Ready soybeans.

40. GeneWatch believes that the system of re-licensing will demand data to address assumptions in the original risk assessment relating to human health and environmental safety. The extent to which regulators will demand data or be reassured by "an absence of evidence of harm" remains to be seen but is an important point of inquiry.

GeneWatch UK

April 2004

Memorandum submitted by Greenpeace

GM GOVERNMENT DECISION

1. Greenpeace welcomes the opportunity to submit evidence to the Committee on the implications of the Government's decision to allow commercialisation of genetically modified (GM) maize in the UK.

2. Greenpeace believe that, even though Bayer CropScience has subsequently withdrawn *Chardon LL* from the marketplace, the fact that Government agreed to commercialise Bayer's GM maize highlighted serious errors in the way evidence presented to them had been considered and serious deficiencies in the scope of that evidence.

3. The basis of the Government's decision to allow commercialisation of GM maize appeared to be largely based on the results of the Farm-Scale Evaluations (FSEs), which suggested that GM maize was better for the environment than conventional maize. Greenpeace believes this was a flawed basis for a number of reasons.

4. Firstly, the banning of Atrazine effectively invalidated the FSE results for GM maize, since the evaluations no longer reflected a real world comparison of how GM and non-GM maize would be managed and their respective impact upon biodiversity. The Environmental Audit Committee echoed these sentiments, concluding that the "maize trials were based on an unsatisfactory, indeed invalid, comparison."¹⁵ Further, the US experience indicates that the management of GM crops in the FSEs was more wildlife-friendly than would be the case if commercially cultivated.¹⁶

5. Secondly, the FSEs only addressed a very limited biodiversity issue within the much broader question of whether GM crops were safe for the environment. For instance they did not examine:

- The unpredictable nature of GM crops.

¹⁵ *GM Foods—Evaluating the Farm Scale Trials*. Second Report of Session 2003–04 (Vo 1), House of Commons Environmental Audit Committee, March 2004 <http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmenvaud/90/90.pdf>

¹⁶ *Appendix 2 to Greenpeace evidence submitted to ACRE hearings on farm scale Evaluations*. JM Marshall, November 2003 <https://www.livegroup.co.uk/acrefarmscaleevaluations/SSL/files/Greenpeace2.PDF>

- Whether GM crops are safe to eat.
- What effect growing GM crops has on soil ecology.
- To what extent GM crops will contaminate non-GM, organic and wild equivalents.
- Real life farming practices with GM crops in countries like America and Argentina where use of chemical weed control has spiralled far beyond the predictions of the biotech industry.¹⁷

6. The GM Science Review concluded that there are significant gaps in our knowledge on many of these topics,¹⁸ whilst the Agriculture and Environment Biotechnology Commission said the FSEs were “not sufficient” evidence upon which to base a decision to commercialise GM crops.¹⁹ The GM Nation? Debate and the Strategy Unit review of the economic case for GM have both raised further questions that Government had failed to answer in its decision to commercialise GM maize.^{20,21}

7. In Greenpeace’s opinion, should all of the above issues and uncertainties be thoroughly explored and assessed, a Government making a future decision would reasonably decide not to grow GM crops in the UK.

8. At the time of approving GM maize the Government had not put in place any sort of statutory or robust co-existence regime to control GM contamination of non-GM crops and the environment. In Greenpeace’s opinion it was irresponsible to conclude that such measures could be addressed after approving GM maize for commercialisation in the UK, or that such measures could be adjusted retrospectively if initial rules had been found to be inadequate.

9. In this situation, a sensible approach would have been for the Government to develop statutory controls of GM contamination based on a 0.1% (ie limit of detection) threshold for organic and non-GM crops. This level would have been far more likely to protect the consumer’s choice to eat truly GM-free food and help to protect non-GM farmers from contamination (through GM farmers managing their crops more cautiously). Such coexistence measures could have been enacted to protect the environment and integrity of non-GM and organic farming and not, as the European Commission suggests,²² to ensure farmers can grow GM crops as they chose.

10. The separation distances proposed by Government at the time of commercialisation were based upon SCIMAC guidelines that a 200 metre buffer zone should be used between GM maize and organic maize²³ and an 80 metre buffer between GM maize and conventional maize.²⁴ However these distances had already been found insufficient to stop contamination. In a recent study for DEFRA it was found that cross-pollination “occurred not only beyond the 80m isolation distance recommended for forage/fodder crops, but also beyond the 200m distance recommended for sweet corn and organic crops.”²⁵ This was supported by the European Environment Agency²⁶ and the National Pollen Research Unit (NPRU). The NPRU for example stated that “it is clear that maize pollen spreads far beyond the 200m metres cited in several reports as being an acceptable separation distance to prevent cross pollination.”²⁷ They recommended a separation distance of 3000m for GM maize to maintain a “very low risk” of contaminating non-GM and organic crops.²⁸

11. Moreover, however great the separation distances had been made, Greenpeace does not believe that they would have ever been 100% effective at controlling GM contamination. Other factors such as seed contamination meant that there was still no guarantee that the GM contamination could be ruled out.

¹⁷ *Impacts of Genetically Engineered Crops on Pesticide Use in the United States: The First Eight Years*. CM Benbrook, BioTech InfoNet Technical Paper No 6, November 2003 <http://www.biotech-info.net/technicalpaper6.html>

¹⁸ *GM Science Review: Second Report*. GM Science Review Panel, January 2004 <http://www.gmsciencedebate.org.uk/report/pdf/gmsci-report2-full.pdf>

¹⁹ *Crops on Trial*. Agriculture and Environment Biotechnology Commission, September 2001 <http://www.aebc.gov.uk/aebc/pdf/crops.pdf>

²⁰ *GM Nation? The findings of the public debate*. GM Public Debate Steering Board, 24 September 2003 http://www.gmpublicdebate.org.uk/docs/gmnation_finalreport.pdf

²¹ *Field Work: Weighing up the Costs and Benefits of GM crops*. Strategy Unit, October 2003 http://www.number-10.gov.uk/su/gm/downloads/gm_crop_report.pdf

²² *Commission publishes recommendations to ensure co-existence of GM and non-GM crops*. European Commission. July 2003 <http://europa.eu.int/rapid/start/cgi/guesten.ksh?p—action.gettxt=gt&doc=IP/03/1096...0...RAPID&lg=EN&display=>

²³ *Guidelines for growing newly developed herbicide tolerant crops*. Supply Chain Initiative on Modified Agricultural Crops, May 1999 <http://www.ukasta.org.uk/scimac/guidelines.pdf>

²⁴ *Background note on separation distances*. Ministry of Agriculture, Fisheries and Food, February 2001 <http://www.ukasta.org.uk/scimac/other-doc/MAFFAddendumtoNIABSeparationDistanceReport.pdf>

²⁵ *Farm scale evaluations of GM crops: monitoring gene flow from GM crops to non-GM equivalent crops in the vicinity EPG 1/5/138. Part I: Forage Maize*. C Henry, D Morgan et al. DEFRA / CSL / CEH 2003, September 2003 http://www.defra.gov.uk/environment/gm/research/pdf/epg_1-5-138.pdf

²⁶ *Genetically modified organisms (GMOs): The significance of gene flow through pollen transfer*. K Eastham & J Sweet, European Environment Agency, Environmental Issue Report No 28, 2002 http://reports.eea.eu.int/environmental_issue_report_2002_28/en/GMOs%20for%20www.pdf

²⁷ *A Report on the Dispersal of Maize Pollen*. J Emberlin, B Adams-Groom & J Tidmarsh. National Pollen Research Institute, January 1999 <http://www.soilassociation.org/web/sa/saweb.nsf/0/80256ad8005545498025672800383801?OpenDocument>

²⁸ Environment Minister Michael Meacher MP, House of Commons Hansard Written Answers for 22 July 2002, Column 701W <http://www.parliament.the-stationery-office.co.uk/pa/cm200102/cmhansrd/vo020722/text/20722w03.htm>

12. If GM contamination had occurred, there were no statutory rules in place to determine who should compensate for damage caused. Such damage could be economic (eg loss of income for a contaminated organic farmer) or environmental (eg damage to soil ecology). Whilst Government indicated that the GM operators (ie industry and farmers) in their opinion should be held liable for damage caused,²⁹ there were no regulations in place to guarantee this scenario. Moreover, at the time of the Government's announcement GM companies like Bayer remained firmly opposed to the concept that they could be held liable. As a company spokesman said, "we have not been asked to do anything of the kind anywhere else in the world, we do not intend to start in the UK."³⁰

13. Given that the insurance industry equally refused to cover damage caused by GM crops,³¹ this void in regulation opened the door to tax-payers and non-GM farmers bearing the costs of GM contamination, economic loss and remediation. It is not improbable that such costs would be incurred. The Government's own Strategy Unit warned in its advice to Government (in relation to the economics of commercialising GM crops) that there were legitimate concerns about unexpected negative outcomes of GM.⁷

14. Moreover contamination incidents could have been extremely costly. A recent example of this kind of unanticipated, extremely costly event was witnessed as a result of the foot and mouth disease epidemic in the UK. According to the Government, this disease cost the taxpayer over £2 billion³² and the cost to the tourist industry was over £3 billion.³³ Whilst insurance was available, most farmers had not taken out cover because they believed the disease had died out.³⁴

15. There have already been examples of GM contamination incidents. In 2000 Advanta admitted that its conventional oilseed rape sold across the UK was accidentally contaminated with a GM variety.^{35, 36} Also in 2000 the GM maize variety StarLink, which was approved only for use in animal feed, accidentally entered the human food chain. StarLink was not given approval for use in human food because the authorities were concerned it could cause allergic reactions. Food companies all over the world were forced to withdraw millions of dollars worth of products. The developers of StarLink thought the accident occurred because had not warned customers of the restrictions over the use of StarLink. Analysts estimate that recalling StarLink could ultimately cost over \$100 million.³⁷

16. Yet another example occurred in 2002 when the US biotech company ProdiGene admitted that a GM maize variety engineered to produce a vaccine for pigs had contaminated thousands of bushels of soya destined for the human food chain. This was in spite of promises by ProdiGene that the GM maize "would be grown under rigorously controlled conditions and only used for the express purpose of vaccine production."³⁸ They later acknowledged that no human safety testing had been done on the GM maize.³⁹ Amid fears that the GM maize may have cross-pollinated with maize in surrounding fields, ProdiGene was also forced to destroy 155 acres of conventional maize that may have been contaminated. ProdiGene was ordered to pay \$2.8 million in compensation and were fined \$250,000 by the US Government.⁴⁰ Had this maize entered the human food chain and had any negative health impacts, compensation costs could have been far higher.

17. It is clear that if Government does allow the commercial growing of GM crops, issues such as liability must be statutorily regulated in advance. This should mean that the GM industry (and those farmers who choose to grow GM) bears full liability for any subsequent detrimental economic or environmental effects. In addition, there must be an undertaking from the biotech industry collectively that they will accept liability in perpetuity—since impacts could be cumulative or not be immediately apparent, especially in the case of environmental problems. Furthermore compensation could be difficult to recover if companies were to subsequently go out of business.

²⁹ *Secretary of State Margaret Beckett's statement on GM policy*. Department for Environment, Food and Rural Affairs, 9 March 2004 <http://www.defra.gov.uk/corporate/ministers/statements/mb040309.htm>

³⁰ *Green light for GM crop, but rift threatens planting*. P Brown, The Guardian, 10 March 2004 <http://www.guardian.co.uk/gmdebate/Story/0,2763,1166051,00.html>

³¹ *Insurers "would not cover" GM farmers*. S Bolton, The Guardian, 7 October 2003 <http://www.guardian.co.uk/gmdebate/Story/0,2763,1057974,00.html>

³² *The cost of foot-and-mouth—how the figures break down*. The Times, 31 January 2002 <http://www.timesonline.co.uk/article/0,,1081-193152,00.html>

³³ *Economic cost of Foot and Mouth Disease in the UK—a joint working paper*. DEFRA / DCMS, March 2002 <http://www.defra.gov.uk/corporate/inquiries/lessons/fmdeconcost.pdf>

³⁴ *Foot and Mouth—the lessons to be learnt*. S Simison & D Whelan, BLG Insurance Law Quarterly, Autumn 2001 <http://www.blg.co.uk/downloads/ILQ45.pdf>

³⁵ *GMO inspection and enforcement annual report published*. Department for Environment, Food and Rural Affairs, 28 September 2001 <http://www.defra.gov.uk/news/2001/010928b.htm>

³⁶ *Farmers advised to destroy GM crops*. BBC News, 27 May 2000 http://news.bbc.co.uk/1/hi/uk_politics/766539.stm

³⁷ *USDA Reviews Aventis's Conduct in StarLink Corn Contamination*. G Hess, Chemical Market Reporter, 11 December 2000 http://www.findarticles.com/cf_dls/m0FVP/24-258/68323843/p1/article.jhtml

³⁸ *Edible Vaccine success*. K Savoie. Nature Biotechnology, Vol.18, pg. 367, April 2000 <http://life.bio.sunysb.edu/ee/geeta/PharmingHistory.html#Edible>

³⁹ *Biopharm Corn Contaminates Food Crop*. Maine Organic and Growers Association, 2002 <http://www.mofga.org/news20021213.html>

⁴⁰ *Alarm as GM pig vaccine taints US crops*. S Goldenberg. The Guardian, 24 December 2000 <http://www.guardian.co.uk/gmdebate/Story/0,2763,865030,00.html>

18. The UK Government has a poor record in failing to recognise that potential liability may come back to haunt them, with a series of precedents in the nuclear industry. The Nuclear Installations Act governs liability and compensation for nuclear damage caused by a licensed producer. The Act requires companies to pay for damages to persons or property up to £140 million. However, this liability only lasts for 10 years after the incident causing damage. Between ten and thirty years afterwards the Government must meet the obligation.⁴¹ In addition, farms in Cumbria are still being checked for the effects of the Chernobyl nuclear disaster—almost 17 years after the event.⁴²

19. Moreover the costs of failing to recognise the importance of putting the costs of liability on the polluter (the “polluter pays” principle) can be very large indeed. Contaminated land remediation had already cost the taxpayer £137 million by the end of the 2001–2 financial year through additional credits from national Government,^{43,44} as well as much more through individual local authorities who have responsibility for sorting out the mess. The companies causing the problem had no responsibility for clean up under previously lax liability regimes.

20. Even if such statutory regulation were in place, there would remain big problems about how to quantify and address environmental contamination. Besides the intractable problem of deciding what actually constitutes “damage” to the environment, and who decides this, how is it possible to put a price tag on such damage? For instance, though there are no wild relatives of maize growing in the UK, we still do not know what effect growing GM maize will have on soil ecology. If it were found in the future that GM maize damaged soil ecology, how can you plan to value this loss to native biodiversity? More importantly, how do you quantify the compensation to the public for such a loss? Greenpeace believe it is impossible to answer adequately these questions. As the Government Biodiversity Strategy notes, loss of biodiversity constitutes “both economic and spiritual loss.”⁴⁵ Preventing this spiritual loss requires Government to intervene before it happens and not hope that liability regulations can tidy up the problem afterwards.

21. In respect of possible “GM-free zones”, it has already been acknowledged that commercial planting will make GM contamination inevitable to a greater or lesser extent. The commercial planting of GM crops will effectively make GM-free zones unenforceable. However, Greenpeace believes that if the basic concept of GM-free zones implies that in some areas GM crops should not be grown, then it follows that some areas are considered suitable for growing GM and the genetic contamination that will arise as a result. This is fundamentally unacceptable—there is enough scientific uncertainty for the Government to refuse approval for commercial planting of GM maize throughout the whole UK.

22. Greenpeace is opposed to the release of GM crops because of the irreversible and unpredictable long-term risks they pose to the environment and health. We believe that the Government should not have allowed GM maize to be commercialised in the UK and that this conclusion was only reached because much evidence was absent in their decision making process.

23. It would be extremely unfortunate if all the available evidence was not thoroughly assessed during this temporary period of reprieve from GM crops. Impenetrable issues such as contamination and liability should be resolved in law prior to the Government making any further decisions to allow GM crops to be grown.

24. Overall Greenpeace hope that should Government undertake a wider assessment of the environmental and economic risks that GM crops pose to the UK, they would reach the conclusion that it is not in the public's interest to commercialise these crops.

Greenpeace

April 2004

Memorandum submitted by Soil Association

GM GOVERNMENT DECISION

EXECUTIVE SUMMARY

- Co-existence measures must be based on a 0.1% limit of detection threshold. Our legal advice is that the EU labelling legislation allows *no* threshold for avoidable contamination in non-GM food/feed, and the prohibition on GMOs in organic production includes GM contamination. Additionally, all the supermarkets are using a 0.1% threshold for their own brands (2–13).
- Controls must be particularly strict for seed production (15–17).

⁴¹ *Liability and Compensation for nuclear damage*. Department of Trade and Industry, July 2002 <http://www.dti.gov.uk/energy/nuclear/safety/liability.shtml>

⁴² *Farms tested for Chernobyl fallout*. BBC News, 4 March 2003 <http://news.bbc.co.uk/1/hi/england/2819769.stm>

⁴³ *The Contaminated Land Supplementary Credit Approval Programme (SCA)*. Department for Environment, Food and Rural Affairs. February 2004 <http://www.defra.gov.uk/environment/landliability/funding.htm>

⁴⁴ *More money for contaminated land clean up*. Department for Environment, Food and Rural Affairs News Release. 1 August 2002 <http://www.defra.gov.uk/news/2002/020801c.htm>

⁴⁵ *The UK Biodiversity Action Plan (UKBAP)*. Department for Environment, Food and Rural Affairs. October 2002 <http://www.defra.gov.uk/wildlife-countryside/ewd/ewd07.htm>

- GM crop management protocols must be statutory and include: consideration of regional GM-free policies; notification of non-GM producers; no GM production if organic crops are at risk; a map-based public register; separation distances; management of rotations; control of volunteers; control of machinery, storage areas and transport containers; testing of non-GM crops; and record-keeping (18).
- Based on scientific information on pollen dispersal, separation distances for maize should be 3km, or 75m less if pollen barriers are used (19–21).
- For oilseed rape, the distances would need to be at least 6km but because of the additional problems of volunteers and feral populations, no farm co-existence protocols would be adequate. GM-free zones must be used (22–24).
- New legislation for a liability regime for GM crops must be introduced which makes the biotechnology companies strictly liable for all damages (25–31).
- Economic damages must be actual economic costs and losses, not just those in relation to official thresholds or from breaches of co-existence measures (29).

INTRODUCTION

1. We strongly welcomed Margaret Beckett's announcement on 9 March, that statutory protocols for co-existence between GM and non-GM crops will be introduced. The Soil Association is the main certifier and promoter of organic food and farming in the UK. Organic farming accounts for 4% of UK farmland and UK organic food sales are worth over £1 billion. We are completely opposed to GM crops for health, environmental, and ethical reasons and because of the threat of contamination of non-GM food.

BASIS OF CO-EXISTENCE MEASURES—0.9% OR 0.1% THRESHOLD

2. EFRA should first clearly establish the legal basis and the objectives of co-existence measures. A casual and incorrect interpretation of the GM labelling rules has been widely used in the discussions on co-existence.

3. In its July 2003 guidelines on co-existence, the European Commission said national co-existence measures must be introduced to enable non-GM crop production within the EC labelling thresholds. The AEBC report on co-existence and liability on 25 November said statutory GM crop management protocols must achieve at least a 0.9% maximum contamination level. However, we believe that the measures must be designed to achieve a maximum 0.1% level.

4. We have taken legal advice on the EU legislation on both GM labelling and the prohibition on GMOs in organic production. We would be pleased to discuss this further with the committee in an oral evidence session.

5. There is a common presumption that routine contamination of up to 0.9% is allowed, and therefore co-existence measures must be designed to only ensure that contamination does not rise above 0.9% in non-GM crops. This is incorrect. First, the 0.9% limit applies at the retail stage (though at the farmgate for feed), meaning that contamination levels have to be lower at the farmgate as additional contamination can accrue during transport, storage and processing. Lower farmgate thresholds are required in the Danish co-existence regime for this reason.

6. Secondly, there is a zero threshold for known and avoidable GM contamination. Under the EU labelling rules (EC Regulation 1829/2003), all GM food, feed, derivatives, and products containing GMOs that are sold to the "final consumer or mass caterers" must be labelled, *however little the GM content*. There is a 0.9% threshold for GM contamination but this is only for "adventitious and technically unavoidable presence" (Articles 12.2 and 24.2). "Operators must be in a position to supply evidence to satisfy the competent authorities that they have taken appropriate steps to avoid the presence of such material" (Article 12.3 and 24.3). "Operators should avoid the unintended presence of GMOs" (recital 28).

7. "There is no tolerance threshold for GM presence that is avoidable, or is unavoidable but above 0.9%"; also "this threshold will only apply to ingredients obtained from non-GM sources. There will be no threshold for supplies obtained from sources of unknown origin" (FSA draft guidance notes, circulated 30.3.2004).

8. It is worth noting that this is the same official interpretation that has been used for the 1% labelling threshold for GM maize and GM soya, which has applied since 10 April 2000 under EC regulation 49/2000.

9. Therefore, co-existence measures must be designed to achieve zero contamination of non-GM crops, as anything less rigorous would be avoidable and result in the need to label the food/feed. In practical terms, this means that GM contamination must be kept below the reliable, repeatable limit of detection, currently 0.1%.

10. The use of a limit of detection value is also needed to protect the organic sector. EC Regulation 2092/91 on the standards for organic production prohibits the use of GMOs. In its July 2003 guidelines on co-existence, the European Commission stated that this only refers to GM labelled inputs and not GM

contamination, and that without a separate lower threshold for organic products, the 0.9% threshold applies. However, our legal advice is that this is incorrect. There is no mention of any restriction of the scope of the prohibition to GM labelled inputs, only a general prohibition on using GMOs which would apply to all GMOs whether labelled or not, whether present intentionally or as contamination.

11. There is also a clear market requirement for the co-existence measures to ensure that contamination of non-GM crops is below 0.1%. All the UK supermarkets and major food companies have non-GM policies (including Tesco, Sainsbury's, Safeway, Waitrose, ASDA, Iceland, Marks and Spencer, Co-op, Somerfield, and Morrisons). All the supermarkets are using a 0.1% contamination threshold (although ASDA's policy needs confirmation) for the supplies for their own brand produce. They say this is to meet their consumers' demands and to have leeway to ensure that they do not breach the 0.9% labelling limit, since they cannot test every batch. The ability of UK farmers to supply the domestic UK market must not be jeopardised.

12. It has been argued by the GM industry and Government that the use of a limit of detection threshold would amount to a ban on GM crops (and the EC guidelines say that the co-existence measures must not prevent GM crops from being grown). However, GM crops could still be grown in regions where non-GM varieties are not grown; they could be grown in contained conditions, species which cannot cross with food crops could be grown for industrial or medical purposes, and it is possible that some GM food crops could be grown more widely if it is clear that there is no risk of cross-pollination with non-GM crops because of the characteristics of the plant. Moreover, there is actually no legal prohibition on the contamination of non-GM crops, only that they would have to be labelled as GM.

13. It has also been suggested that the measures should be limited to "pragmatic" (presumably light) measures. However, the EC legislation only refers to "appropriate" measures. Our legal advice is that if producers/retailers wish to avail themselves of the provision to avoid a GM label, all possible measures must have been taken to avoid contamination.

PHYSICAL SEPARATION MEASURES REQUIRED

14. It is important to note that separation measures will be required throughout the food chain, not just at the farming stage.

(i) *Protocols for seed production*

15. The most important stage for which separation measures are required is at the seed production stage as this is the start of the food chain. Contamination is also best controlled at this stage, since the area and amounts increase enormously once a seed is grown for a crop. The increase during crop production of maize is 110–130 fold, while for oilseed rape it is 121–132 fold (*source*: FAO). The seed industry is also used to implementing purity standards and can pass on the costs to their buyers of GM seeds.

16. We wish to stress that the market cannot be relied on to supply sufficient guaranteed GM-free seed—this has not happened in North America. A 2002 study of 54 non-GM seed samples in Manitoba found that 97% of certified oilseed rape seed stocks were GM contaminated, up from 59% three years ago.

17. GM-free zones and testing protocols would be needed for certified non-GM seed production, and must apply EU-wide since much seed is sourced from abroad. Protocols for GM seed production will need to include the list below.

(ii) *Protocols for GM crop production*

18. The European Commission July 2003 guidelines said that farmers who want to grow GM crops must notify their neighbours before the seeds are ordered, and must bear the burden of farm co-existence measures. We agree. In addition, crop co-existence protocols must be statutory and cover:

i. *Consideration of local/regional GM-free policies*—farmers contemplating growing GM crops should be required to consider whether to respect GM-free policies of local/regional authorities or voluntary non-GM farmer agreements.

ii. *Pre-notification & negotiation with non-GM neighbours*—all organic and other non-GM farmers and beekeepers within a six mile notification zone should be informed of the wish to plant GM crops before seeds are ordered. This should be followed by a detailed assessment of the contamination risks using criteria (such as type of crop, scientific data on pollen transfer, time of flowering and prevailing wind direction), followed by negotiation with the non-GM producers if

there is a risk of contamination. There should be a general presumption in favour of the non-GM producer. Where co-existence measures cannot ensure that contamination will not rise above 0.1% of an organic crop, GM production should not proceed.

iii. *Map-based register*—if GM crop cultivation is to proceed, registration on a national publicly accessible map-based land register must be required. The new deliberate release directive requires a land register, but we are very concerned that the Government has been swayed by the arguments of the biotechnology companies that this need not be comprehensive or easily available to the public.

iv. *Separation distances*—see below

v. *Management of crop rotations*—including separation times between GM and “non-GM” crops and to alternate with non-GM crops in the vicinity

vi. *Control of volunteers and bolters*

vii. *Machinery*—drilling and harvesting machinery used on GM crops must be thoroughly cleaned before use on non-GM crops. Where machinery is shared or hired, only separately dedicated machinery can be used for GM crops.

viii. *Seed and crop storage*—GM crops must be stored in dedicated storage areas.

ix. *Transport*—GM and non-GM crops would have to be transported separately, with GM crops in completely enclosed containers which would have to be cleaned thoroughly afterwards. There should preferably be separate dedicated containers for GM crops.

x. *Testing of non-GM crops*—this would have to be carried out within and around the separation distances to test if the protocols are working.

xi. *Record-keeping*—records of all GM crops must be kept for 10 years. All containers of GM crops must be accompanied by records of the specific GM event. Copies must be kept by all companies handling the consignment.

xii. *Reimbursement of costs to non-GM producers*—all costs of the risk assessment and any testing must be reimbursed by the GM farmer or biotechnology companies.

(a) *Maize*

19. Our advice follows the recommendations of the National Pollen Research Unit which reviewed the scientific literature on pollen transfer (“Pollen dispersal in the crops maize, oilseed rape, sugar beet and wheat”, by Dr Treu and Professor Emberlin, 2000). The scientific evidence shows that the Government’s current separation distances for maize—50m for conventional crops, and 200m for organic and seed crops—are completely inadequate for commercial conditions.

20. The main concern is cross-pollination with non-GM maize and sweetcorn, and the inclusion of pollen in honey. One study found that the cross pollination level was 1.6% at 200m, 0.7% at 300m, and 0.2% at 500m (Jones and Brooks, 1950). Another study found that it was 0.8% at 600m and 0.2% at 800m (Salmov, 1940). This was conservative as the receiving plants were opposite to the prevailing wind).

21. So, just to avoid breaching a 0.9% level, the separation distance would need to be over 600m. To reduce contamination to “negligible” levels, the NPRI recommend 3km. In addition, border rows of non-GM maize have been found to be better than a 75m separation distance through the dilution effect of the non-GM pollen, and so could be used to reduce the 3km distance by 75m.

(b) *Oilseed rape*

22. GM oilseed rape would provide an extremely high risk of contamination of non-GM crops. The Government’s current recommended separation distances of only 100m for varietal associations and partially restored hybrids, 50m for other conventional crops, and 200m for organic crops, are completely inadequate. We do not believe that crop management protocols can keep contamination within 0.1% (or even reliably within 0.9%). The only practical option would be GM-free zones in all areas where non-GM oilseed rape production is important.

23. Oilseed rape is grown for oil. It is also the most important forage crop for beekeepers. Small-scale studies have given misleadingly low levels of cross-pollination. Agricultural scale studies have found a 0.8% cross-pollination rate at 2.5km (Timmons et al, 1995) and a 5% rate at 4km (Thompson et al, 1999). The NPRI have recommended a separation distance of 6km. However, rape is also highly interfertile with cabbage, cauliflower, broccoli and Brussels-sprout.

24. Seed mediated gene flow is an additional high risk with oilseed rape. GM volunteers would be a major problem. In Canada, GM herbicide tolerant (HT) volunteers are now common in fields that have never grown GM crops. A Defra study found that even with the most rigorous control measures it would take five

years for GM volunteers to fall below 1% following a GM HT rape crop.⁴⁶ We cannot propose any measures adequate to control this problem. In addition, feral populations are common and provide another source of contamination. All in all, the only practical option would be GM rape-free zones.

Liability provisions

25. The European Commission has said that national liability laws should be reassessed to see if they are adequate. Having considered this issue in depth, we are certain that a new specific liability regime must be introduced for GM crops.

26. If GM crops are widely grown, the need for legal recourse could be very great, as all experts including the Government's Science Review panel consider the contamination of non-GM crops to be inevitable. Currently the legal protection available to organic farmers suffering costs or reduced income due to the risk of or actual GM contamination is completely inadequate. There also should be liability provisions for environmental and health damages. We note that according to EC Regulation 1829/2003, "The granting of authorisation shall not lessen the general civil and criminal liability of any food producer".

27. Organic farmers cannot rely on case law in the civil courts as the current legal situation is unclear and not encouraging. Under the laws of nuisance, a person whose activity caused damage to another's property is not strictly liable if the activity is considered a "natural" use of the land or has statutory authority. Would the cultivation of GM crops be considered a "natural" use; would the fact that it has a Government approval mean its cultivation on a particular farm is covered by statutory authority? Would organic farming be considered a "sensitive" use of land, to which normal legal protection does not apply?

28. The liability provisions must not require a farmer to prove the source of the GMO, since if several farmers are growing GM crops in the region, it will be impossible to know the farm source of the contamination.

29. Liability must not be narrowly defined. Damage should be defined as the actual economic costs and losses, not just in relation to the breaching of official thresholds for contamination or if co-existence protocols are breached. This could be, for example, from the costs of measures taken to avoid contamination or testing, loss of a market, lower prices, or the inability to continue producing a particular crop.

30. Those liable should be those seeking to gain from GM crops—the patent holders. It should certainly not be non-GM users or society at large. Making the companies, rather than GM farmers, strictly liable avoids pitting farmers against each other and avoids the intractable problem of identifying the farm source of the contamination. The specific GM "event", however, and thus the patent holder is always identifiable.

31. Because of the costs and time of prosecution for individual farmers pursuing cases against multinational companies, there will also be a need for a Government run compensation scheme, whereby organic and other non-GM farmers would have instant access to compensation. This should be funded by the biotechnology companies. Such a scheme is being considered by the Danish Government.

Processes for the determination of GM-free zones

32. GM-free zones should be introduced for:

- crops such as oilseed rape where farm co-existence measures would be completely inadequate;
- to protect strategically important crops, such as certified seed production;
- where a majority of farmers and/or public support such zones.

The establishment of GM-free zones must not mean contamination controls can be lax outside the zones, as farmers everywhere must be able to produce non-GM crops.

CHANGES TO LEGISLATION TO ALLOW GM CROPS TO BE GROWN

33. New UK legislation will have to be brought in for:

- a compulsory map-based land register of all GM sites;
- compulsory GM crop management protocols;
- a strict liability regime for economic damages to non-GM farmers.

34. New EU legislation will be needed for:

- compulsory GM contamination seed production protocols.

Soil Association

April 2004

⁴⁶ "G Squire, G Begg and M Askew, "The potential for oilseed rape feral (volunteer) weeds to cause impurities in later oilseed rape crops". Report of DEFRA project RG0114, August 2003.

Witnesses: Dr Sue Mayer, Director, GeneWatch UK, Dr Doug Parr, Chief Scientist, Greenpeace, and Lord Melchett, Policy Director, Soil Association, examined.

Q1 Chairman: Welcome to the first of two sessions on an inquiry into the GM planting regime. It is fair to say that we have slightly changed our terms of reference, but this does come at an opportune time, so we can look at where the Government is, and obviously where those either in favour of GM or against GM are in relation to what the Government is saying. It would be very useful for us to start with a quick explanation, although all three of you are very well known to us. Would you make a short statement as to who you are and whom you are representing?

Dr Mayer: I am Dr Sue Mayer, the Director of GeneWatch UK. We are a small not-for-profit policy research group, and we monitor developments in genetic technologies across the board, with a public interest to environmental welfare to the animal protection perspective.

Dr Parr: I am Doug Parr, the Chief Scientist at Greenpeace UK. Greenpeace is a fairly well known environmental pressure group, direct action and so on. We have been campaigning on GM for well over a decade.

Lord Melchett: I am Peter Melchett, the Policy Director of the Soil Association, which is the main organisation representing organic farmers, food manufacturers and retailers and consumers of organic food in the UK. Our certification subsidiary certifies about 80% of the organic food sold in this country.

Q2 Chairman: The sub-text of this inquiry is looking at the twin issues of co-existence and product liability, so you will understand that we are going to spend most of our time around that. It would be useful however to refer to the arguments on the tolerance level of 0.9% that the Government has fixed. I know that there are arguments about the reliability of that figure, but it would be very useful to quickly have your views on both the sense of that figure and whether it can be enforced in a practical manner.

Dr Mayer: Our feeling is that if you look at the environmental law in this area and the regulations on genetically modified food and feed, the threshold set there is for adventitious presence, and that is meant to be accidental or technically unavoidable. Therefore, our feeling is, and the correct interpretation of that is, that the aim should be to avoid contamination, and if measures do not work we are going to allow for accidental contamination up to 0.9% before it is labelled—that that interpretation is the one which would meet with the aspirations of the public when they think about non-GM food. Further, because we believe that we will be going into largely unknown territory when we are trying to manage co-existence, to start aiming for the limit at the moment would not leave us with much room for manoeuvre if it proves to be the case that the measures do not work in practice. You can go the opposite way, if you find things are working terribly well and you need less stringent rules; then you can loosen them off. However, if we start too loose, we may have contamination that we cannot then deal

with. Our feeling is that we should aim for 0.1%, effectively zero, and design a system around that, particularly in the current climate of public opinion across Europe.

Dr Parr: Greenpeace has a slight difficulty with the conversation starting with thresholds because, of course, our organisational stance is that we should not be releasing GMOs to the environment at all. So this starting-point of saying we should have a measurable threshold of 0.9% to some extent is beginning from a point we would rather not be starting from. Having said that, we very much echo the thrust of what Sue said, in that there are a number of points along the chain at which contamination with a GM stream of products could arise to be 0.9% in the final product. If you were to start designing the farming system in a managerial way, and that was what you were aiming for, it could very easily prove to be difficult or impossible to meet that and retract from that position after GM plantings. We would see 0.9% to be an adventitious presence, something that might creep in by accident, but not something that one should be aiming for to start with. The aim should be to keep the streams separate completely.

Q3 Chairman: You might like to come in on the back of that, Peter. The Soil Association has taken advice on the legalities of this. It would be useful for the sub-committee for you to basically give us a run-down on what that legal advice says.

Lord Melchett: First, I think the use of the words “tolerance level” or “threshold” is liable to be misleading. Under the EU labelling regulation, which is where the 0.9% comes from, not from the British Government, that is the point above which products have to be labelled as GM, as long as the contamination has happened accidentally. Any product that deliberately has got GM in it has to be labelled as GM at any level; and that is clear from the EU labelling regulation. This talk about thresholds or tolerance levels has misled a number of people. I think the Agricultural Environment Biotechnology Commission, which Sue was on, misled itself, or omitted to be clear about this. I think Defra have misled themselves, and the European Commission has got the legal position about the EU regulations wrong. That is the first point. On labelling, for any deliberate GM content the product must be labelled at any level. If it happens accidentally, above 0.9%, we have to label it. Organic food is defined by an EU regulation. There is a limit on GM in organic food, and it is zero; and that is set by European law, not by the British Government or by organisations like my own, the Soil Association. We have taken leading barrister’s advice on both these issues, and we have communicated that to Defra. Elliott Morley has responded and told us that basically Defra accepts the Commission’s position that 0.9% is a threshold, and because it is in labelling regulations, for some reason it therefore should be imported into an earlier regulation defining organic food and farming. Our barrister says that that is wrong, and the European Court would not agree with it.

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Q4 Chairman: Is this likely to be tested in the courts?

Lord Melchett: Unless the position that Defra adopts—either they have some miraculous legal argument they have not yet revealed to us, or they accept the legal advice we have—yes, it will have to be decided by the European Court. The European Commission cannot give legal advice about its own advice; it has to be the Court.

Q5 Paddy Tipping: Are you saying there should be no threshold level on the farm and that the 0.9% arises because of transport/storage/processing issues?

Lord Melchett: No, that is not what I am saying. I am saying that both for organic and non-organic, if you are selling a product to the consumer, to the public, which is not GM, you should aim for zero. You should not aim for anything more than that, and to do so seems to us to be a fraud on the public. If, by accident, you get more than 0.9% GM at any stage anywhere, then under European law you have to label it as GM. For organic you should have no GM; that is European law.

Q6 Paddy Tipping: You are all agreed that when it comes to organic, there should be no tolerance level at all.

Dr Mayer: It is quite clear that that is what the organic movement wants. It is my understanding that it is what the consumers of organic foods expect it to be.

Lord Melchett: It is a legal requirement; it is not what we want or you want. Our advice is that it is already the law. The European Commission and the Council of Ministers could change that law: there is provision in the regulation for the law to be changed, and to allow a threshold of GM and organic. But the Council of Ministers and the European Commission have not chosen to do that. It is not us deciding it, it is the law.

Q7 Paddy Tipping: There are two issues, are there not? There is the issue that Doug raised earlier on, “we are against it full-stop”, which is an understandable position; and there is the question of the law; but there is a third position, which is that there could be some accidental contamination. If you are using the same transport vehicles, however well you clear them out, or the same storage—all this is conceivable and there could be some cross-contamination there. With those kinds of practical issues, is 0.9% acceptable?

Dr Mayer: It is set in law in terms of the labelling threshold now, so that is one thing that we have to live with. It is another question about whether people feel that that should be the case, and we argued unsuccessfully that it was unlikely that people would think that should be the case; but I am talking from the position we find ourselves in at the moment.

Lord Melchett: From an organic perspective, one of the major motivators for people to buy organic food is to avoid GM, so the idea that you might have nearly one in a hundred mouthfuls of organic food with GM is a bit ridiculous, frankly.

Dr Mayer: It is worth remembering on this point that there is a very large non-GM conventional market, which works at the moment to 0.1%, and it seems to make sense from the point of view of that sector as well, and in its interests if we are designing for what is a very healthy sector of the market at the moment, a co-existence scheme—that their interests should also form an important part of any scheme that emerges as well, so it is not just organic. It is important that there is this other big sector too that we need to take cognisance of, which is trying to work to that now in response to their customers.

Q8 Joan Ruddock: People who choose to buy organic and eat organic are often buying products that are coming from other European countries, where conceivably there will be GM planting when we do not have GM planting, so it is very significant what the EU does. Is there any suggestion that the Commission, which has the powers, might move away from the zero tolerance at the moment, that you have no GM in organic, because that would make a huge difference to consumers?

Chairman: As the Americans have done.

Lord Melchett: There is no sign of that, and no preliminary discussions in the Commission, as I understand it, are taking place with a view to doing that. I suspect that is because it would be impossible to get political agreement in the European Union to change the current position; and it would be disastrous from a marketing point of view. Organic food is sold; it costs more to produce; people buy it because they trust it, and one of the things they trust organic farmers, food manufacturers and retailers to deliver is an absence of GM down to the detectable level, down to 0.1%. It would be stupid when you have one bit of the food market, which is growing and which has high levels of consumer trust, simply to try and destroy it by European diktat. I do not think that would be popular in any European country.

Q9 Diana Organ: You have talked about it being the law, and what is acceptable and what is not acceptable in contamination. Have any of you been involved with any kind of inquiry or research into contamination that might occur through transport or processing, for instance, certain warehousing or mills that might hold soya? Have you done any work on looking at products that are saying, “this is not GM” but actually they are found to have contamination that is above the level and has not been labelled?

Lord Melchett: Certainly our certification subsidiary has, yes, because we have an obligation to certify products as organic, which means they should not contain GM. We test both for pesticide residues and now GM. About 18 months ago we found some GM in organic soya and organic maize. Two or three samples were contaminated altogether. It was one of the things that led us to get legal advice about what was the legal position under European law. That is why we are fairly confident that European law prohibits this. One of the batches of soya appeared to have been imported from Italy, but whether that is

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where it was grown, or whether it came from North America, I do not know. We are now working with feed mills that handle organic animal feed to come up with a protocol and a system of due diligence and testing which will allow them to provide what the organic market demands, which is animal feed with no GM in it down to the level of detection. It is commercially possible.

Q10 Mr Jack: To follow on Diana's point, in terms of materials coming from non-EU sources, what information do you have about levels of contamination you are finding there across the range of products coming in to the United Kingdom?

Lord Melchett: From an organic point of view, we find that there are more exporters willing to provide the ingredients for animal feed—and these are the main products that are imported in the organic chain, soya and maize—guaranteed down to 0.1%. Indeed, the Canadian Government organised a trade mission to Europe recently and they were going round a number of European countries offering GM soya, including organic products, but the non-organic as well; and they could offer it at 1%, 0.5% or 0.1%, and they had started growing soya in areas of Canada that had not grown it before in order to compete with American exporters who could not reach those levels of purity. The market is responding pretty well to the demand in Europe, I would say.

Dr Parr: All our evidence is somewhat indirect since it results from dealing with supermarkets, but the availability is less of an issue as compared to the cost trade-off they are looking at for a specified level of purity. It is not that it is impossible to obtain or that it can't be verified, because supermarkets are obviously very keen to make sure that what they are paying for is what they get; it is more a question of the costs, which is subject to some robust discussion.

Q11 Patrick Hall: I would like to explore a little more the zero level. The evidence that we have from the Agricultural Biotechnology Council includes this statement: "It is important to remember that zero tolerance cannot be achieved in any agricultural situation, including non-GM and organic."⁴⁷ It cites a definition of organic which means that there must be more than 95% organic to be labelled as such; so that is not 100% either. What are your comments on the technical ability to accurately claim zero percentage? Is this achievable, whatever the law may or may not say?

Dr Parr: I would start with the comment I have just made, which is that in our dealings with supermarkets, they are of course very keen to get what they pay for. They would appear to have been able to source, to their own satisfaction at any rate, very low percentages, around 0.1 or zero. My further point would be that there is a certain level of unknown about how easy it would be to do this if we were operating a GM planting regime in this

country, which in policy terms would emphasise the need for a very precautionary approach to any planting taking place in the first instance.

Dr Mayer: Undoubtedly, the larger the areas of GM crops internationally the more difficult it would be to source. That is undoubtedly the case. For example, if we were to grow GM oilseed rape in Europe, that would seriously undermine efforts to provide GM-free because it is an important substitute for other GM oilseeds. There are issues like that. It is not wholly a question of whether a system is working; it is to do with a whole complex variety of different factors that would depend on the status of the crops and where things are grown. As Doug has said, in terms of Europe at the moment, the information available leads you to believe that if you set those stringent limits, you can work very closely to them for quite long periods of time—obviously with some breakdowns on occasion because some accidental contamination does seem to occur.

Lord Melchett: The trend in organic standards, certainly in the Soil Association but also in Europe generally and North America, is constantly to try and tighten things up. For example, there has been a derogation allowing organic farmers—and I farm myself—to use some non-organic animal feed. That has been removed. There is a derogation allowing the use of non-organic seed and that has been phased out. There are some derogations which were to do with getting the system started and practicalities; but the drive all the time is to remove them so that it is 100% organic animal feed, 100% day-old chicks being used to produce, organic chicken and so on. I agree with my colleagues. Oilseed rape was really a huge potential threat because of it crossing with weeds, and the difficulty with the agricultural situation in this country of controlling that was nightmarish. Overall, in the last few months, the international situation seems to have eased. We have three states in Australia with moratoria on GM, and they are all capable of growing the sort of crops we have imported from North America in the past. Canada has seen a niche developing in the market for exports of GM-free (down to 0.1%) crops. At the moment, things are going in the right direction, tentatively.

Q12 Diana Organ: You have made your view quite clear about this, but you have talked a little about the separation distances. What is your view of what would be sufficient to prevent contamination? If you were to set a distance, what would that be; and have you agreed it amongst yourselves?

Lord Melchett: It depends on the crop. For oilseed rape, there is no separation distance, in my view, because oilseed rape is a very ubiquitous volunteer plant. In my part of Norfolk we had a very wet winter and we have got oilseed rape plants growing along the sides of the roads everywhere where a drainage channel has been cleared during the winter. It is capable of crossing with weeds and therefore spreading all over the country. GM grass would pose exactly the same threat; it would basically be the end of any attempt to control things. Wheat: we were very, very concerned about that, and so Monsanto's

⁴⁷ Ev 31 (para 2.7)

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decision to stop the introduction of GM wheat in North America is extraordinarily welcome to the organic movement, there as well as here.

Q13 Diana Organ: Let us talk more practically; let us talk about maize, because the Government has made certain decisions and maize is really at the moment the only one that might be possible for planting in the UK. What would you want as a separation distance, and do you have a problem with what the Government's separation rate is?

Lord Melchett: Yes. Our advice would be that the maize separation distance—and I do not have the figure in my head—would have to be greater than the Government has set. It depends quite a lot on topography and other things. It is not a simple matter of taking a minimum distance.

Q14 Diana Organ: The Government is saying 200 metres, is it not?

Lord Melchett: The company has pulled out of the maize market, so we are not so concerned about it as we were.

Q15 Diana Organ: One company has pulled out, but at the moment it is only maize that is being allowed by the present Government, and if another company or that company comes back having had a re-think, we have to think about the separation distances and what you would find acceptable, because the Government has put down 200 metres.

Dr Mayer: I understand they have put down 130 for sweetcorn and 80 for fodder maize, and we would not think they were adequate. The recent information from the States, for example, suggests you need to be looking at something more like 500 metres to start with. We would also emphasise in this discussion that separation distances are only one part of the co-existence regime, which will depend on the crop. Although they are important to focus upon, they are not the only issue, as we would see it.

Q16 Diana Organ: Can you tell us a little more, because we were interested in what your package of measures might involve, to stop contamination, not just separation distances but other things?

Dr Mayer: It will depend from crop to crop, so oilseed rape would be volunteer control, for example, which would be crucial in long-term management. There would be transport systems to stop the seed escaping. With sugar beet, you would have to be sure that you did not have bolters that were flowering, which would be an important part of it, and also you would have to be careful about the transporting of sugar beet. With maize, it would be important—in fact with all of the crops—to have registers of where the crops were grown so that past histories were known, and that people were informed about past practice. Of course, we do not have the issue of volunteers with maize, but you would want to know how the maize was handled and where it went to—whether it stayed on the farm or left the farm and so on. It is those packages of measures that you would want to see, including a land register.

Q17 Diana Organ: You talked about using volunteers, but for other crops who would you want to see monitoring all of this, because it is a huge job?

Dr Mayer: I am sorry, when I spoke about volunteers, I meant a situation where you have the seed shed at harvest, and when they come up in the next crop they are called volunteers.

Q18 Diana Organ: I was talking about the monitoring of the separation, the transport, all of this. Who would you want to see monitoring that this was put into place, and done correctly?

Dr Mayer: You would have to firstly have a whole system, which basically had a legally binding system that farmers have to follow. Secondly, it would be backed up with a liability regime, and as part of that it must have some kind of inspectorate that would do some checking, in the same way that other farm assurance schemes are audited at the moment. That may not be perfect, but we would have to have an auditing system to go with it.

Lord Melchett: We have a slightly different view on that, partly because I just do not see any chance of any Government going down that road of hundreds of inspectors looking at lorries with bits of oilseed rapeseed.

Q19 Diana Organ: It is bad enough dealing with meat, is it not? If we are doing it for a wide variety of crops—

Lord Melchett: We have seen in recent years just how ineffective that can be in preventing disasters. Our view was that the way to ensure compliance would be to put the legal liability for any losses on the GM companies and have them police their own products. They claim that they are able to do this and that it has happened under previous agricultural systems. Some of us have grave doubts about that, but nevertheless, let us take them at their word; so if it is not going to cause contamination and you can stop this happening in combine harvesters, tractors and trailers, and all the rest of it, fine. If you are wrong, you pay for any damage that is caused. On sugar beet, as an ex sugar beet farmer, I know that some growers have claimed it would be possible to stop sugar beet going to seed—that is bolting. I just think that is nonsense. It is practically impossible unless you did have literally an army of hundreds of individuals going round checking the field. It is just not economic and is miles away from the economic reality. On maize, we think you would need about three kilometres to safeguard organic crops. That is part of the package that Sue mentioned.

Dr Mayer: I agree with the liability scheme as being one of the best ways of ensuring policing of the crop, but under the Deliberate Release Directive there is a requirement for monitoring post marketing of these crops. I think that there will need to be an approved system, and there is no reason why there cannot be one, and at some level some auditing of those systems, because we could see a situation where they were not followed. At GeneWatch we are also concerned about environmental liability, not solely economic liability, but the systems that are in place for co-existence will equally be important for

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protecting the environment in certain ways, or could be important. There will need to be systems independent usefully, not with volunteers out massively checking; but at least there should be some auditing to ensure procedures are in place and are actually working.

Q20 Chairman: Have you undertaken any independent modelling of this? Obviously, you have not done any research on the distances, but have you looked at modelling to see the implications for different crops?

Dr Mayer: Do you mean in terms of the distances?

Q21 Chairman: Yes, to look at some form of scientific rationale, which you could then present to the Government and say, “according to our projections, you are way within the zone of practicable contamination”.

Dr Mayer: We have not done that specifically to set distances at the moment. We certainly would agree with the Soil Association that oilseed rape, for a variety of reasons, is a foolish GM crop to grow commercially, not just because of the co-existence problems. We think that is a really difficult one to handle. We would definitely want to go much higher than the 100 metres that have been suggested at the moment, and we would have to think about a kilometre as the very minimum. With sugar and fodder beet, again we have a 6-metre separation distance at the moment, but we would need to go wider than that. We have to think of the other measures that have to be in place as well, not just separation distances.

Lord Melchett: There have been plenty of scientific studies, and we quote some of them in our evidence, paragraphs 19–24. There is plenty of work being done, which tends to show quite variable results, which is why I said you cannot under-estimate the influence of topography and geography, the relationship between different fields, the flight patterns of honey bees, the presence or absence of bees, and the numbers of wild bees as well as honey bees—all sorts of complex variables in the countryside, which always mess up neat scientific or bureaucratic views about what you should and should not do.

Dr Mayer: Underlying the need for that precautionary period of introduction, AEBC state, and we would endorse, that because of these uncertainties, it is incredibly difficult to say, “this distance will work”; it may or may not. A precautionary period with monitoring is vital.

Q22 Mr Jack: Lord Melchett, people buying organic produce at the present time, putting aside GM for one moment, would not like to think that it was contaminated by anything, because they are buying organic. Are there other types of contaminant that you monitored which give some clue as to practical answers and guidance in relation to GM—either chemical or, in the case of non-GM seed invading GM crops? What does non-GM contamination tell us about this problem in the real world?

Lord Melchett: Only a limited amount, but there is some monitoring. As mentioned, we monitor pesticide presence in organic food ourselves, as part of our certification role. When a farmer is converting to organic, one of the requirements of the certifying body would be to look at the likely susceptibility of spray drift from neighbours who are not organic, and to require measures to be taken—buffer zones, hedges to be planted and things of that sort.

Q23 Mr Jack: In the case of crops, other than contamination through spray drift, if you had contamination by seed from adjoining fields, what clues would that give as far as dealing with the problem the Government of the day would have if we were in a regime where the approved GM crop was going to be planted? I do not disagree with your analysis that in the countryside it does not work in neat packages, with micro-climates, *et cetera*, which could all influence that, but in terms of existing crops and their contamination, and movement of seed, what lessons does that teach us? There must be parallels with that. I presume GM seed and GM pollen is not different from any other.

Dr Mayer: The main lessons come from seed purity, because that is an important standard for the industry to maintain. It has some usefulness and has been important in thinking about separation distances. Its limitation comes because when you look at seed purity, you are not looking at genetic purity; you are usually looking at what the crop looks like. That does not necessarily look dramatically different from when you introduce a gene for herbicide tolerance or insect resistance. So you can have a crop that broadly looks the same but may have had more genetic contamination than you might imagine. There are data that are useful, but they are not always directly applicable.

Lord Melchett: The other difference that has concerned us is the risk with a crop like oilseed rape, and in a more limited way sugar beet, is of the genetic engineering, the DNA, spreading to a wild relative. This is a living thing. It is not like a spray or a particular seed coated with some chemical that is not used in organic agriculture. A wheat seed can be conventional or organic; the only difference is whether there is some chemical treatment on the seed, which you cannot use in organic. It is nothing about the wheat plant or the stuff inside the seed that makes it not organic and it is perfectly usable. A GM wheat seed would have altered DNA, which would make it unacceptable for organic, and there is nothing you could do about that. You could not just coat it with something and it would be all right. If that then spreads to plants that grow wild on a farm, that is a huge risk to organic status because then you have GM material growing on the farm. So there is not a lot to learn from—

Q24 Mr Jack: I have one question about the real world practicalities. If it came to pass that a GM crop eventually were planted in this country, the Government would try to define the basis of the regime and the separation distance would be decided. Assuming a situation where ringed round

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the organic crop, at the appropriate separation distances, is a complete circle of GM crops, and a contamination situation occurred, if you are using identical seed by what means would you determine who the contaminator was?

Lord Melchett: You would not need to ring the poor old organic farmer with GM crops. If there were a couple within six miles, he would not know who to sue. Our legal advice is that he would have no basis to take legal action unless you have a liability regime which put liability on the consent-holder, the company that has consent to release the GM. From our point of view, as a farming organisation, this would have the huge advantage that you would not have farmers trying to sue other farmers, which has happened to some extent in the United States and Canada; there has been that risk. We think that if there is one thing you should avoid, it is that. Liability should be on the consent-holder, the chemical company with permission, with the seed company with permission to release that product into the environment; and then you do not need to worry about which of your neighbours might or might not have been to blame. It could have been all of them if you were ringed by them.

Chairman: We are going to look at that in more detail in a minute, but before we get to product liability let us look at the idea of GM-free zones.

Q25 Joan Ruddock: You have concentrated a great deal on organic, and let us bear in mind that the vast majority of consumers want non-GM, albeit they are happy with conventional. Many people want to campaign to have GM-free zones, but the Government has said it would be inconsistent with European law to put such zones on a statutory basis; but they say there should be the possibility of having them on a voluntary basis. Do you think there is any chance that European law might be varied so that statutory provision could be made, and, if so, what would be the changes required to European law to produce a statutory regime for GM-free zones?

Dr Mayer: It should not be left for national jurisdictions to put in their own rules, and it should be done on a Europe-wide basis. There are other countries across Europe that would agree with that. That would be the logical place for the facility for GM-free zones—the piece of European law where that should sit.

Lord Melchett: We would welcome GM-free zones, and a lot of the pressure for this has come from areas where organic farming is a significant part of the local agricultural economy. You can see people grouping together, elected representatives and others, wanting to protect those interests. There are interests in local food, and there is a trust in local food, whether it is organic or not—although in the majority it is not organic. I think there is sufficient pressure from a large number of different regions in Europe, and from Wales in particular in the United Kingdom, for the Commission to need to move a little. They are only being as difficult as they are because of the impending WTO case, not because there is anything in European law or the constitution

that prevents them responding to the views of locally-elected, democratically-elected representatives, which is where this pressure is coming from.

Q26 Joan Ruddock: While it is not yet known if there is any prospect for that change, do any of you see any merit in having voluntary GM-free zones, and, if so, how could they work, and what advice would the Government need to give?

Dr Parr: It is extremely difficult to see how you could make a voluntary GM-free zone stick. Even with the fuss in Scotland about GMOs, the Scottish Executive is still not sure that it could make a voluntary GM-free zone stick in the circumstances where commercial planting of maize was permitted, because it only takes one farmer after all to completely nullify that. It does not seem to us to be a viable mechanism on any sort of sensible scale.

Q27 Joan Ruddock: So Defra has really got it wrong!

Dr Parr: If they are advocating voluntary GM-free zones, I just think it is not in real-world practicality.

Dr Mayer: In other areas such as waste, where you have voluntary schemes, they are usually backed up by some kind of system. People enter into them voluntarily, but then you have a legal back-up system so that people do not suddenly drop out of them or change their minds, or leave a group of farmers perhaps in the middle of a season at a complete disadvantage. To envisage that they would work, just as purely voluntary happy little events—there are individual farmers who are very keen to try GM and it may be that they could stop a whole area going ahead, even if the local parish councils would prefer to have a GM-free area.

Lord Melchett: Another difficulty is the extent to which the management of farmland changes pretty regularly. The average age of farmers is high and people retire. Very often, farms are amalgamated and contract-farming arrangements are made. There are companies farming bits of farmland all over England, Wales and Scotland. It seems to me very unlikely that you could have a system that did not prevent a change of ownership or a change of management of the land, altering what had been agreed under some prior management or ownership.

Q28 Joan Ruddock: You would have to have statutory back-up to a voluntary scheme if it was to hold for any length of time.

Lord Melchett: You definitely would, but I also think that the voluntary GM-free zone movement has been extremely valuable as an expression of local public opinion and local democratic opinion, because most of these zones have been established, although not all of them, by democratically elected councils and assemblies and so on. That has been a counterweight to a national government that has not been responding to public opinion in this area.

Q29 Chairman: When organisations such as county councils pass motions to say they are going to be GM-free, that may be a statement of their wish to be

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so, but do you think that could be upheld in law; or is it fairly meaningless, a bit like nuclear-free statements—nice in theory but not really effective?

Lord Melchett: Nuclear-free zones is an unfair one. First of all, councils have public procurement policies that can insist on no GM, and the food they serve in a wide range of places they are responsible for. They are often landowners that own farmland and allotments. They can impose GM-free policies there. They have more say than they do when a cloud of radiation from Chernobyl is going to come over their area. As I say, it is important that the public should have some democratic means of expressing their point of view on this issue.

Q30 Alan Simpson: For those of us who do not understand how co-existence can work, you fairly quickly come to the question of liability. You will know that the Government is currently consulting with stakeholders about this. Bayer CropScience, which is due to follow you this afternoon, is on record as stating effectively, “not us, Guv!” They say: “We have not been asked to do anything of the kind anywhere else in the world. We do not intend to start in the UK.” What is your reaction to that?

Dr Mayer: It is one of horror really. The industry is in dire straits across the UK and Europe. To tell the British public on the one hand that everything is safe and manageable, and you can provide for non-GM food and it is controllable; and on the other hand people ask if there is any back-up to that system—“because any losses you are going to face will be very small because you are telling us the system is going to work”—when they say they are not going to do that, it does not work very well logically. There is an issue of justice and fairness in people’s minds, given the unwillingness of people to want to run those risks. I think they are shooting themselves in the foot. One thing that might give people confidence would be if they put their money where their mouth was and that we are not going to be covering the country in GM crops in the near future. Why not put forward a system in good faith and back it up? Then maybe they would have a much better future. I am puzzled.

Dr Parr: If you look at the public attitude and research done right across Europe, the Public Perception of Agricultural Biotechnology in Europe project looked at why people are concerned about GM, and their concerns include health and the environment, but one of the main reasons they are concerned is that they do not feel the people and organisations who are charged with taking forward GM technology are going to behave responsibly. It seems to me that it is impossible to consider people behaving responsibly if they will not claim ownership for any effects their products will have if they effectively push them out into the marketplace and say “it is your problem now”. As Sue said, they are both shooting themselves in the foot and also, quite rightly, it raises deep concerns in the public mind.

Lord Melchett: My reaction is to say that it is not up to Bayer CropScience; it is up to governments to decide, and the European Commission has made it

clear that they were devolving decisions about liability to national governments not to multinational chemical companies. It is true that as far as I know they have not been asked to or been made to do this anywhere else in the world. But one basis of the dispute between the European Union and North America is that the European Union is trying to think through problems and sort out solutions before introducing this technology, rather than introducing the technology and then having to run around working out what we do when the problems emerge, which is exactly what has happened in the United States and Canada. It is not surprising they have not been able to do it elsewhere, and I think the European Union has a chance, and this country particularly, to give a lead in this area. It has clearly got to be done. We have had experience in this country of governments bailing out the farming industry when things go badly wrong, and it is not a happy experience. I do not personally think that anyone should have the cheek to ask the Treasury to do it in the case of GM. I think that the people who stand to profit should be willing to take the risk and pay if things go wrong.

Dr Parr: The public purse has ended up picking up previously, where liability has not been established, over contaminated land and nuclear waste. Millions and millions of pounds have flowed from the Treasury in order to sort this out, and we should not let it happen over GM.

Q31 Alan Simpson: You might find a consensus in the Committee that does not believe the Government should pick up the tab on this. Can I ask you to explore the different dimension, which is the industry saying there should be shared responsibility and liability. Why should the industry be held liable for the decisions made by a farmer to plant GM crops, knowing that they would be planting next to an organic farmer, and causing the contamination that follows? Why should the farmer be excluded from the liability?

Dr Mayer: I can envisage a system where the farmer would not be excluded. If you made the biotechnology company liable in the first instance, which is the easiest thing to do because the identified contaminant could be traced back to a company through the unique identifier system which is coming in in Europe, then you would expect as a result of that the industry to have established a set of contractual agreements with the people it licenses the technology to. That would go on and on, down to the farmer. The farmer will be expected to follow the co-existence rules, for example. As soon as the company finds they are not, they would indeed be able to reclaim their costs from the farmer. You can see that that is the way that the system would work most easily, without the public purse also having to pick up those costs, or the affected farmer having to pick up that complicated process of working out exactly where the contamination came from.

Q32 Chairman: It is quite possible for somebody to plant these crops illegally, and that would be a perfectly valid defence for one of the companies, to

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say “it was not at our instigation”. There are also many people in farming that I would not define as a farmer; they have smallholdings and may have a particular reason to want to grow some specific crop which they think is going to grow quicker. How do we deal with these kinds of problems?

Lord Melchett: It would not be that easy for someone to plant one of these things illegally; they have to get the seed from somewhere, and the seed is the company’s profit. The company that produces the seed is hanging on to it and being very careful about selling it, and not allowing people to save farm-produced seed. In America they have employed the Pinkerton Detective Agency to go around checking that American farmers are not saving seed, because they have to be able to sell you new seed each year to make their profit from this technology. I do not think illegal planting is that easy, and in any event, if this is a technology which has some risks and which the companies cannot control and is going to illegally spread anywhere, should that not give us pause for thought about letting it be used at all? They are saying: “We can control it; it will be safe; we will know exactly what is happening; there will be clear rules; farmers will be told what to do; we have years of experience of doing this with other crops.” Fine: take them at their word; and if something goes wrong, they should be liable.

Chairman: From our experience of our visit to Brazil, we know that not to be the case.

Q33 Alan Simpson: We do also know that the companies that are connected with the illegal movement of seeds from Argentina to Brazil are seeking to sue the Brazilian farmers or the Brazilian Government if they try and export the crops.

Lord Melchett: I am speechless that you should think our agricultural industry is exactly comparable to the Brazilian situation in all sorts of ways.

Chairman: We have just finished dealing with sugar, so we know a lot about Brazil.

Q34 Alan Simpson: I wanted to finish with a question about what we mean by “liability”. If we assume that in one form or another a liability regime is going to be brought in, how wide would you want the Government to make the concept of liability? We were talking initially about the genetic contamination of a non-GM crop. Would you want the definition to extend into the consequences of that contamination as it impacted upon the food chain, on animal health, human health and the environment? How wide a definition of “liability” ought we to be considering as workable?

Dr Mayer: I understand that product liability should address the health effects, if that were to be the case, and might demand a bit more attention. The real gap in that range of areas that you said seems to exist, for us would be environmental liability. The Government has said it is going to look at this in due course. We know that the

European Directive will not cover the majority of UK agriculture and environment. The AEBC has made some very sensible and not very radical suggestions to improve it and we certainly think those ought to be looked at and taken forward quite seriously so at least we could have some environmental system where there would be the potential for remediation if it is possible and reclaiming those costs from the people responsible, if that could be identified.

Lord Melchett: From an organic perspective, we want to be sure that the liability regime would allow organic farmers, food manufacturers, feed manufacturers and retailers to recover economic loss as would be normal in suing for damages, in tort. It would be the full range of economic loss, which could be very considerable, and this is why this is such a frightening prospect for organic farmers. Converting land to organic farming and building up fertility, getting the system working, is a very long-term process, altogether about ten years. It is possible that if GM contamination got into wild plants on that farm, the farm would lose its organic status and the loss of capital value and future income would be enormous. The other nightmare scenario for organic manufacturing companies particularly, and retailers, is the possibility of a huge product recall. If we found, for example, cows had been fed GM animal feed and nobody knew until later and then hundreds of thousands of pounds worth of cheese had been made, stored for years, gone into supermarkets, we would be looking at millions of pounds’ worth of potential losses to completely innocent third parties like a retailer or a food manufacturer. That was the case with StarLink contamination, the maize contamination in the United States, it was a very expensive product recall because of contamination.

Dr Parr: I would just like to reiterate Sue’s call for environmental liability which at the moment I do not feel is adequately covered anywhere, but with the corollary, of course, that should any commercial plantings go ahead that this is not an empty statute because historically it has been shown how difficult it is to make a case stick for environmental liability, partly because there is not the appropriate level of scientific support and baseline information to give information about that. We would want an environmental regime, but with the corollary of something to help it actually be made manifest and real.

Chairman: Joan, could you just finish with the tribunal.

Q35 Joan Ruddock: Before I do that, Chairman, I just wanted to check with Lord Melchett, in the disaster scenario that you described as an economic one, are you saying very clearly that no existing laws would be adequate to deal with that scenario?

Lord Melchett: Not from the point of view of the farmer. It depends on the circumstance. If you bought a product from somebody who sold it to you with a contract of sale and they hold out the product to be organic and that turns out to be wrong, you can

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sue them under contract law for just selling you something that was not fit for the purpose you sold it for. When you get back to the source of the contamination and where did it come from, as has already been said, there could be more than one person planting the thing, and it is not just that, it could have been the lorry that collected your grain that contaminated it, it could have been the contract combine that came in and had not been completely 100% cleaned, which frankly is a physical impossibility during any realistic harvest. The sources of contamination and, therefore, the cause of your economic loss are a lot more than just neighbouring farmers, in real life on ordinary farms. For that reason alone, as an ordinary farmer, there is no hope of recouping your economic loss. You might get the bizarre situation where farmers would be bankrupted by this but supermarkets would not be.

Q36 Joan Ruddock: GeneWatch recommended that it would help if an independent tribunal could be set up to look at GM liability. If that were to be the case, who would you see being represented on that tribunal?

Dr Mayer: We are taking this cue partly from the AEBC, who also suggested that you could have a tribunal to arbitrate and see fairness to all parties, be it the industry or the contaminated farmer. You would have a mixture probably of lawyers and technical experts and possibly also public interest or lay representatives who would be able to ensure that fair play was done. There are, if you like, best practices for tribunals and how they should work and operate and they would be important to bring into play in something like this.

Chairman: Thank you for your time. If you said anything that you wish you had not said, it is hard luck because we are being televised as well as being on the record. There may be things you wish to clarify or expand upon and we would be only too happy to receive further evidence. Thank you.

Memorandum submitted by National Farmers' Union

GM GOVERNMENT DECISION

The NFU welcomes this opportunity to contribute to the Committee's inquiry into the implications of the Government's recent decision to agree in principle to the limited commercial cultivation of GM maize in the UK. In view of the subsequent decision by Bayer to discontinue efforts to commercialise Chardon LL in the UK, however, we wish to take the opportunity to further consult our members about the complex issues highlighted in the terms of reference of the inquiry.

In the course of the debate thus far the NFU has consulted its members at length about the concerns regarding coexistence, liability and non-GM zones. Please find enclosed our previously prepared policy statements on these practical implications:

- (a) NFU policy statement on biotechnology and GM crops;⁴⁸ and
- (b) NFU policy statement on coexistence of GM crops with conventional and organic production.⁴⁹

Together with other interested parties we are expecting to be consulted soon by Defra about proposed Government solutions to these concerns, as foreshadowed by the Secretary of State in her announcement to the House of Commons in March. In the meantime we hope that the committee will emphasise the importance of adopting a science-led focus in the continued public debate on the relevant issues.

National Farmers' Union

April 2004

⁴⁸ Not Printed: Available at www.nfu.org.uk

⁴⁹ Not Printed: Available at www.nfu.org.uk

Witnesses: Mr Meurig Raymond, Vice-President, and Ms Elizabeth Hogben, Assistant Director of NFU Brussels Office, National Farmers' Union, examined.

Q37 Chairman: Mr Raymond, welcome. It would be useful if you could introduce yourself and Ms Hogben and say who you are and whom you are representing.

Mr Raymond: Thank you, Chairman. My name is Meurig Raymond, Vice-President of the National Farmers' Union of England and Wales representing 130,000 members. May I introduce Elizabeth Hogben, our Deputy Director in our Brussels office.

Ms Hogben: Also I used to be the food science adviser at the NFU based in London covering topics such as GM crops and biotechnology.

Q38 Chairman: You have obviously got a taste from those who are against GM and you might want to listen to the third session, those who will be advocating a GM regime. I think it would help me to know where you think your members are, and, therefore, the NFU representing their views, in terms of this issue of the tolerance level which we took some time at the beginning of that last session trying to deal with. Do you think the 0.9% is a realistic and fair way of deciding whether a particular product is GM or not GM?

Mr Raymond: Thank you. I will open and then Elizabeth can pick up the technical issues. Obviously we have consulted with our membership over the years on this issue of GM, we have listened to our members' views and, as far as the tolerance level is concerned, we believe 0.9% is reasonable. It has to be practical, it has to be workable, it has to deliver and I think as far as the NFU is concerned we do desperately need a system that is deliverable and practical at farmer level.

Ms Hogben: It may be worth bearing in mind that we do not see it as our position as a farming organisation to set threshold levels. However, we are concerned, as the Vice-President has said, that they have to be practical, that is the main concern, and should take into account actual farming practice rather than what is technically possible in terms of detection levels.

Q39 Chairman: So what are you going to say to a member who actually thought that they were going to be classified as a GM-free producer and yet they have gone above the 0.9% threshold? Is that a case that you think is going to happen sooner rather than later if GM is allowed to be grown commercially?

Mr Raymond: All farmers sell on contract and they have to abide by those contracts. If 0.9% is the threshold level we are fairly convinced the majority, all farmers, will abide by that contract. We have seen it in the past, we have seen it in seeds that are purchased, that farmers will sell on contract and those contracts dictate what those thresholds are to be.

Q40 Chairman: If the contract says GM-free and yet for some reason outside of their control the crop becomes contaminated and it goes above the one% threshold, what is your view going to be? I predict a court case.

Ms Hogben: In terms of the term "GM-free", it is perhaps better to refer to the term "non-GM" rather than "GM-free" because, as we have already heard, it is generally accepted that in an open agricultural system it is impossible to guarantee that you can have freedom from all impurities. If a farmer was being asked to enter into a contract that required him to declare his product as being GM-free then it is perhaps not the most sensible thing to sign down to. In terms of meeting contractual requirements, obviously it is up to every individual business to do the best that they can to make sure they meet the requirements of the market that they would like to supply to.

Q41 Chairman: We have heard the drive in the organic sector is to be even purer than it currently is. With someone who is saying they are organic, the public perception is that they are GM-free. How is this going to play?

Ms Hogben: I think there is a distinction here between a legal threshold set for the purposes of whether or not a product has to be labelled as non-GM and a marketing threshold which may well be set at below 0.9% if customers are willing to pay any additional costs that may be involved in meeting that level of threshold. For example, if there is a section of consumers who would wish to buy products which are at a lower level, whether we are talking about 0.1% or even those consumers who would like absolutely zero contamination, which as we have heard is practically very difficult to achieve, then it is up to those businesses and those bodies that wish to market such products to that demand to be able to make sure that they can deliver on those consumers' expectations.

Mr Raymond: Can I just add that we would have no objection whatsoever to voluntary thresholds being applied to contracts. If a farmer believes that he wishes to sell to gain a premium in the marketplace at 0.1 or 0.5 he can go ahead and abide by that contract. I think the farming industry has proved that at the end of the day the marketplace dictates and that farmer will produce to his contract.

Q42 Joan Ruddock: Given the fact that the supermarkets are requiring farmers to produce to 0.1% to be accepted as non-GM at the moment, whether they are organic or conventional, that is the level to which farmers are operating. They clearly have that capability and, indeed, in the organic sector we know that the intention is to be zero% but in all honesty one has to say it is 0.1% simply because that is the level of detection. Why would there be any reason for farmers to produce to a higher level when they have the capability, and that is what the consumer wants, to go to 0.1%?

Ms Hogben: In terms of a particular marketing standard that retailers are setting for their suppliers, that is very admirable. As I said before, I think there is a distinction between a threshold set in law and thresholds which may be used doing a marketing process. If you are producing a product and you are doing your very best to meet a high standard then

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you would be striving for absolutely zero presence of impurities such as GM, but on the practical basis, as we have heard, it is perhaps not achievable and you cannot, in fact, test for the absence.

Q43 Joan Ruddock: I am suggesting that it is achievable because that is what the supermarkets are currently requiring.

Ms Hogben: 0.1%, yes, but for zero presence of impurities—

Q44 Joan Ruddock: I am not asking that.

Ms Hogben: At the current time it may well be achievable but there is a distinction between what is achievable at the moment and what level should be set as a legal threshold which has to encompass the whole of Europe as the threshold is set in European legislation, and also the difference between a legal standard, which is an absolute and you are not supposed to go above that threshold or else it would have to be labelled as a GM product and what retailers or other businesses within the food chain would set for their own supply procedures.

Chairman: Could you carry on and talk about separation distances.

Q45 Joan Ruddock: Yes. I am trying to digest what has just been said because it seems to me that what we are being told is that the advent of GM is going to make it necessary to contaminate what we regard as non-GM crops.

Mr Raymond: I do not think we have said that at all. The legislation laid down through European statute is a 0.9% threshold. If there are people in the supply chain who wish to have a tighter threshold than that, that comes down to negotiations and to contracts that are available. We would have no problem whatsoever if some of our members and the farmers out there wish to abide by a tighter threshold than 0.9%. In general terms, as the statute states 0.9% we do not have a problem with that level.

Q46 Joan Ruddock: If that is the case and some of your members would want to go to a lower level, and we assume some commercial pressures will continue but that is achieved, do you believe that the current separation distances being proposed, albeit they are different for different crops, are adequate to prevent contamination or not?

Mr Raymond: I am a simple farmer, I am not a scientist, so I will ask Elizabeth to pick that up. Over the years through the trials concerning GM crops, and also if we look at oilseed rape, and oilseed rape was touched upon earlier, there has been the cropping of industrial oilseed for a number of years for industrial purposes and the separation distances there have not caused any problems. This is oilseed that has gone into the industrial sector, not into the human food chain. We believe that with the management available the protocols can be adhered to, but as far as the science is concerned on the separation distance I am going to hand over to Elizabeth.

Ms Hogben: I have just a small point to add really in terms of the separation distances used for the SCIMAC guidelines, which I am sure you will hear about later on. The separation distances were found by the farmers who participated in the farm-scale trials to be workable and were also based on scientific assessments of what would be needed to deliver a reasonable level of purity. In that respect, and the fact that there was no incidence of non-GM production being compromised throughout the farm-scale trials, I think there is a reasonable history there both within the farm-scale trials and the protocols used there and also in current farming practice, as Meurig has said, that separation distances are effective in maintaining crop purity.

Q47 Joan Ruddock: I have a feeling that some of us will disagree in terms of looking at the broader picture but we will try to concentrate on where we are here. In the context of what you have just said, what do you think about the National Pollen Research Unit which looked at maize and suggested that a separation distance of 3,000 metres was required to achieve a very low contamination level?

Ms Hogben: I am not sure exactly how they came up with a figure of 3,000. There is a distinction between how far pollen will move within the environment and whether or not that movement of pollen will result in gene flow in itself. The pollen may not be viable if it has travelled that distance, it may not find a receptive plant to fall on. There are a number of issues there in terms of what is physically possible in terms of pollen movement and what is biologically the result and separation distances used in the farm-scale trials were based on evidence of the distance that is needed to make a biological separation to prevent cross-pollination in that way.

Q48 Joan Ruddock: Who do you think should monitor separation distances?

Ms Hogben: I suppose experience from the farm-scale trials is quite useful here. The separation distances there were monitored by an independent body and in terms of monitoring on a wider scale it depends on what kind of system would be in place. If you had statutory protocols for farmers to be following then you would expect some kind of statutory monitoring system. If you are suggesting a voluntary system then there might be another approach that is needed. I would suggest that the monitoring system would depend on what kind of co-existence framework you are looking at in the first place.

Q49 Joan Ruddock: We have spoken a lot about pollen flows and that method of contamination, but many of us have looked at other forms of contamination and GeneWatch has described a package of measures. What do you think are the additional measures, if any, that ought to be put in place other than just separation distances in order to keep contamination at the lowest possible level?

Mr Raymond: I would suggest there would be tremendous pressures on all of the supply chain from farmer right through to processor in making certain

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that there would not be any cross-contamination. Protocols are in place at present on farms and through the haulage systems to restrict any contamination. I think it is important, if we get to this stage, that protocols are put in place. Obviously there would be a huge education process and, I would suggest, that pressure should fall on Government. Then there should be less risk of contamination.

Q50 Joan Ruddock: Government should do what, make the rules or pay? What are you suggesting?

Mr Raymond: I think the industry in general, along with the supply chain, should sit down and work out the protocols and then it would be up to Government to actually advise and to audit and to make certain that the protocols that have been agreed through the industry are adhered to.

Chairman: Michael, do you want to go on to the notion of GM-free zones?

Q51 Mr Jack: I think the previous evidence was fairly stark on this. Our previous witnesses did not give much houeroom to the idea that you can practically define GM-free zones. What is the NFU's view?

Mr Raymond: We are against the concept of statutory GM-free zones. I think it would pitch farmer against farmer. As far as voluntary zones, if people in a given area believe that there is a commercial advantage in declaring it a GM-free zone then maybe there is the possibility of a voluntary zone. To tie people's hands at this stage to a statutory zone would not help the industry in the long-term. We do not know what developments there are going to be as far as GM technology is concerned and to tie the farming industry down at this stage could prevent the industry benefiting in the years ahead. I picked up a paper this morning and I did read that it may be possible in time to come for Omega 6 and 3 oils to be transferred to plants. When you start thinking of the medical advantages from the possibility of actually carrying out this GM work, it is important that we, the farming industry in the UK, are in a position to benefit in the years ahead.

Q52 Mr Jack: Tempted as I am to go down that route, I shall resist that temptation. Given that there was reference earlier to farmers in Canada, for example, recognising that there was a niche market for a GM-free product, when it was still a practical possibility, if you like, that we would have had GM plantings in this country, was there any sign that farmers in any parts of England and Wales that you represent had begun discussions with other farmers and growers and others to say was there an advantage in defining the area in which they operated as non-GM?

Mr Raymond: There were no doubt discussions or debate that did take place in given areas. The majority of the farming industry, all farming industry, is commercially minded and they would look at the advantages and disadvantages of growing a particular crop. If they see it as an

advantage they would be keen to look at those opportunities. If farmers in a given area believe that there are commercial advantages in staying as a GM-free zone then there is no doubt that they would go down that route. To actually move at this stage to a statutory GM-free zone I do not think would be beneficial to the industry in the longer term.

Chairman: Can we go on to responsibility and liability and Patrick Hall will lead off.

Q53 Patrick Hall: I was looking at the evidence that you supplied the Committee with at page four, paragraph five.⁵⁰ I am not quite clear where you are getting to here. As I understand it, you are saying that the best way to deal with the issue of liability should be for GM varieties to undergo, and presumably pass, a formal risk assessment, I take it as a statutory requirement to go through this on the grounds of safety before release into the environment. That deals with safety on a number of levels. Even if something is declared safe by scientists and the industry, that does not actually address the point of customers wanting the choice to eat or not eat a particular type of product. If that product is mixed or contaminated, depending on your point of view, who is liable? Should there be a question of liability? You have noted that with regard to compensation for financial loss that might take place in such circumstances the Government so far, although consulting, is indicating that any compensation scheme should be entirely funded by the GM sector. Can you explain to me the distinction, if any, between this formal risk assessment which declares something safe or not, and whether or not you actually believe there should be a compensation scheme and that there is a concept of liability?

Ms Hogben: Maybe it is worth talking about this in terms of the context of the different types of damage. For example, there would be damage to health. Those sorts of risk assessments are designed to first of all make sure that a crop would not be released on to the market if there is that sort of risk. Then there is damage to the environment and, again, there is environmental risk assessment which GM crops have to pass through. It is our understanding that those sorts of damages would be covered by product liability rules. The third type of damage would be economic damage and this is the one that would result if there is GM admixture in a non-GM production stream, for example, and if, following on from that, the business was not able to sell that product into the market that they were hoping to sell it into. There may be some sort of financial loss there if, for example, an organic farmer is contaminated with GM and can no longer market the product as organic. In terms of a liability framework for this, we are concerned that the current framework of liability is perhaps a little unclear as to what would happen to farmers in those sorts of situations if there are economic damages or a problem with GM admixture which causes them not to be able to market the crop as they wish to. It is the NFU's

⁵⁰ NFU policy statement on biotechnology and GM crops (Not printed).

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position that we would like to see more clarity in terms of the current framework of liability. That said, we are not suggesting that there should necessarily be a new framework for liability given that there are perhaps comparisons that you can draw with GM admixture with other types of impurities which the industry is already managing effectively under the current liability rules. I guess the main point is that we would like to see more clarity in the situation with GM crops as to how the current rules would apply exactly. You also mentioned compensation schemes. In terms of setting up a compensation scheme, I think the Secretary of State suggested that she would be looking into this but then she also suggested that the only parties that she could see paying for the scheme would be the biotechnology industry and, as we have heard already, I think they have indicated that they would not be prepared to pay. It is difficult to see how much further the dialogue can go on those sorts of schemes if the restricted parties that the Secretary of State has indicated have already indicated that they are not willing to participate.

Q54 Patrick Hall: You have answered the next question, which was what the GM sector actually is in your understanding. I am not sure that the Secretary of State actually made it as crystal clear as you just have. I thought the reference was to the GM sector, that the GM sector should fund such a compensation scheme, and the question would be is that the biotech companies and farmers. You are indicating that it is not farmers, it is the biotech industry which says it is not going to do that anyway.

Ms Hogben: At the moment there are no GM crops being grown commercially so there are no GM sector farmers who would be paying into such a scheme.

Q55 Patrick Hall: No, but we are looking ahead, are we not, that is why we are looking into these things. Anyway, that is your position on that. Can I just ask—

Mr Raymond: All I would say is we would welcome dialogue with Government on protocols on this issue. Obviously if the time comes when we will be allowed to grow GM crops then before he grows a crop a farmer will have to take out product liability insurance, so there may be a possibility there, but again a commercial decision will have to be taken by the grower whether he wishes to go down this route or not. We would be keen to have dialogue, have discussions, with Government in the months ahead on this particular issue. We are not totally clear what the views of Government are at this stage.

Q56 Patrick Hall: Can I look at the issue of responsibility to keep GM and non-GM products separate. In your evidence you indicate that each business should be responsible. I presume that includes each farmer if we had a commercial situation develop. Is that really a call for voluntary policing?

Mr Raymond: In any system the supply chain would have to sit down, we would have to work out protocols, as we do at the present time in the farming industry. We heard earlier about Farm Assurance where farmers producing crops have to abide by certain protocols. These are audited by inspectors who do come round and check that those protocols are carried out correctly. If the industry has the opportunity to grow these crops, there is no reason why protocols could not be put in place and then it would be up to all of the supply chain to actually follow those through and, yes, they may well need to be audited by Government.

Ms Hogben: It is also worth remembering that the industry has already worked together through the SCIMAC initiative to develop protocols for growers of GM crops. The Secretary of State has already indicated that she would like to see in place that sort of system continuing where the grower of the GM crop is putting in place a management system for managing the crop and farm. In terms of other systems, maybe it is worth bearing in mind from an individual business point of view that farmers strive to meet the demands of their customers and the market requirements whether, looking into the future, that is a grower of a GM crop who wishes to maintain the purity of that GM crop and make sure that the traits that are present in a GM crop and desired by their customer are kept as pure as possible as well as, on the other hand, the cases we have already talked about where the farmer is supplying a non-GM product.

Q57 Mr Jack: When the field-scale trials were on, did any legal action result from those as far as contamination was concerned that might give us a clue about some of the real world issues that we have been discussing?

Mr Raymond: I do not believe there was any legal action. I think they were all carried out in abidance with the protocols at the time. I do not know if Elizabeth wants to comment on that.

Ms Hogben: None that I know of.

Mr Raymond: The opportunity is there and farmers do abide by their contractual agreements.

Q58 Mr Jack: I have another thought which has been triggered by what you just said. What was the regime in the field-scale trials had there been a contamination issue? Was any kind of mechanism put in place to safeguard the interests of triallists in case something went wrong?

Mr Raymond: I am not certain, to be honest.

Ms Hogben: I am afraid I am not certain either. Perhaps one of our colleagues who is following on from us involved in the farm-scale trials could answer.

Chairman: Perhaps if you could send us a note. We will ask SCIMAC but, if you have any views on that, a note would be very helpful. Alan, could you talk about insurance.

Q59 Alan Simpson: I am very keen to stop us going down a path that talks about some sort of fairytale world of what future biotech crops might be able to

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do for us, whether they can brush our teeth when we eat them and polish our shoes in the morning before we have got up. I want to know how we deal with identified issues of contamination. I get the feeling from what both of you have said that really you would just like maximum latitude and minimum liability yourselves. When you said, Mr Raymond, that farmers are commercially minded, would it help to clarify their commercial judgments if they knew that they were also going to be legally liable?

Mr Raymond: Obviously it would be part of a decision that a farmer would make depending on what his liability would be, yes.

Q60 Alan Simpson: So that question about “am I likely to be sued” would certainly sharpen the focus of decisions they would make about growing?

Mr Raymond: It has to do. As an industry, we are facing CAP reform, we are facing market forces, so the commercial aspect of agriculture is going to come very much to the fore. I would suggest to you that the majority of farmers will make a commercial decision at the time depending on the marketplace, on the competitive advantages that may arise from growing or using biotechnology.

Q61 Alan Simpson: And the likelihood of being sued. Can I just ask you what your commercial insurers are currently saying to you about insurance over GM liability?

Mr Raymond: Because there are no written down protocols I do not believe that you would find an insurance company at this stage prepared to pick up that liability until they know what the rules are and they have a clear indication of what may be possible should there be a problem.

Ms Hogben: Of the insurance companies that we have spoken to, there is no-one in the UK that we know of that is prepared to offer insurance against GM admixture at this moment in time.

Q62 Alan Simpson: When you say “admixture”, is that what we call contamination?

Ms Hogben: Admixture, contamination, impurity, yes. The fact that there is no insurance available at the moment in the UK is not surprising because there are not any GM crops being grown commercially in the UK so there is no market for that kind of insurance. It may be insurers will see an opportunity, if GM crops were introduced, for them to sell their products to farmers if farmers want to take up insurance against that sort of eventuality.

Q63 Alan Simpson: Can I push that on in terms of this notion of liability. The biotech industry have talked, understandably, about a desire to have shared responsibility. The NFU, I take it, have talked about the biotech industry but without being clear about whether farmers are included in that remit or not. I know Patrick raised this with you before, but can you just clarify this for us. If a scheme was set up, would you see it as having to be financed by the producers of the seeds and including

the farmers who chose to grow and made their commercial decisions accordingly, or would it exclude farmers from any liability in that process?

Ms Hogben: In talking about liability generally, it is perhaps worth bearing in mind that in each individual case, if one does arise, of a non-GM production stream being contaminated by GM material there may be a unique aspect to that case. Heaven forbid it is the result of an action by a farmer, but if it is the direct result of a farmer doing something wrong, being negligent, for example, then you would expect there to be some sort of system in place that means that the negligent party has to suffer the consequences of the action that they have taken and there is some form of redress there against them. Whether or not farmers are included in the biotech industry, I would not say so at the moment because GM crops are not being grown commercially in the UK, as I said. I think the important point here is to try to prevent such instances of contamination occurring in the first place, to have some sort of framework for prevention, and protocols for responsible management of the technology in particular rather than emphasis on compensation schemes or financial systems in that way. I feel that in terms of the emphasis it should really be on helping the technology to be managed properly if it does get introduced into the UK if, indeed, there is a market for it.

Q64 Alan Simpson: I am sure there are unique characteristics of every road accident but that does not preclude anyone from having the right to drive without insurance. The aspects of liability in terms of dangerous driving are a distinction between liability and criminal responsibility. I am not sure whether you are willing to be included in the responsibility for having to have the comparable insurance cover before you get out on the road.

Ms Hogben: Can I just ask for clarification in terms of the question. Are you asking about insurance for growers of GM crops against them contaminating a non-GM grower?

Q65 Alan Simpson: Yes.

Ms Hogben: So you are not asking about insurance for non-GM growers, you want to make sure that they are insured in the event that they are contaminated by another grower?

Q66 Alan Simpson: No, it is the producer liability I am talking about.

Ms Hogben: In terms of liability, I am not sure how the current rules would operate if a farmer was following the protocols that were drawn up and used during the farm-scale trials and whether or not you could actually point the finger at a particular producer and say they are the source of the contamination, particularly as—

Q67 Alan Simpson: My question was just should you be required, as farmers, to have that product liability insurance before you grow?

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Mr Raymond: I would suggest that the farming industry is a responsible industry and I would see no problems in farmers taking out product liability. In fact, I would not suggest any farmer prepares to go down this road unless he has product liability. The farmers at present who are producing livestock and crops will not take out product liability, so they would have to sit down, study the protocols and act accordingly. It is early days. Insurance companies have stood back, they have listened to the debate, they are waiting for decisions to be made. If industry goes ahead with the commercial growing of these crops then I am fairly confident that that insurance will be in place. I have to turn back to the farm-scale trials and to the industrial cropping of oilseed rape that has taken place over the years. I do not believe there has been any issue where there have been other growers suing a grower of GM or industrial cropping. I would be fairly confident that the industry could sit down and come to a useful conclusion and the insurance company would be there to offer that service. I would just pick up one point. You asked about “our” insurance company. The NFU is not an insurance company. Are you confusing the NFU the organisation with the NFU Mutual Insurance Company?

Q68 Alan Simpson: No, I was just asking you what responses you had had from your insurance companies to approaches to offer cover for contamination caused by growing of GM crops.

Mr Raymond: At present, as Elizabeth has said, the industry has not gone down this route. Until we know what the protocols are, what the decisions are, whether the industry actually picks up this new technology, I believe the insurance companies will wait to see what does happen.

Q69 Alan Simpson: I think the answer is at the moment there is no insurance available to you.

Mr Raymond: At the moment they are suspicious, yes.

Q70 Mr Jack: Are you aware if any of these risks are insurable as far as American farmers growing GM are concerned?

Mr Raymond: I do not. Possibly the people following us will be able to supply you with that answer.

Q71 Mr Jack: Given your close links with farming organisations I thought you might just ask the question because America is a very litigious society and I guess if there was a contamination issue somebody would have said “how do I deal with it?”. The second question is probably one of the most serious contamination acts which a farmer can do is to contaminate a watercourse in a valuable fishing area in this country. If he does that by accident, is it an insurable risk?

Mr Raymond: Yes, there is insurance available for that.

Q72 Joan Ruddock: I just wanted to clarify because I thought you said you were not aware of contamination problems, the implication being where people had to sue or were suing each other. I think a lot of us are aware of that happening in North America to a considerable degree. Have you not taken any evidence from North America as to contamination incidents and how farmers are responding to those contamination incidents?

Mr Raymond: I do not believe we have studied the systems in the United States. I am new to this position.

Ms Hogben: It is something that we have asked about. In terms of using our contacts with farming organisations in the States, we have not received any information about farmer suing farmer over a GM contamination incident, it is not something that we are aware of.

Q73 Joan Ruddock: Have you looked at the wiping out of the organic canola industry in Canada as a consequence of GM contamination?

Mr Raymond: I had not realised that the organic canola industry had been destroyed in Canada. I presume that is factual but I had not heard of that. We do represent, as I said earlier, 130,000 members and when I look to the future there will obviously be organic farmers, and we represent organic farmers and those growing conventional crops, and maybe there will be an opportunity for people to grow GM crops. We are there as a representative body of the industry and we consult widely as and when these issues are discussed.

Chairman: We will be picking this up with the last set of witnesses. Can I thank you both for giving evidence. You will have heard what I said before, that what is said cannot be unsaid. If you want to amplify or certainly clarify anything you have said, please provide a note. Thank you.

Supplementary memorandum submitted by National Farmers' Union

FURTHER EVIDENCE TO THE EFRA COMMITTEE INQUIRY INTO THE COMMERCIAL CULTIVATION OF GM CROPS, SPECIFICALLY FOCUSED ON COEXISTENCE AND LIABILITY

1. TOLERANCE LEVELS

Tolerances that apply at farm level must take into account what is practical and deliverable by the farmers. The ability of a grower to meet a tolerance level in their own production depends on a number of factors including the availability of seed at a suitable purity level, the biology of the specific crop, the farm structure and pattern of production, particularly whether a GM variety of the species is being grown in the surrounding area.

The cost of sampling and testing should also be considered when considering what is reasonable for the grower to be required to carry out. In particular, the frequency of testing and the point in the production chain at which samples must be taken have an influence on cost. Generally speaking, the more sensitive the test required to establish the tolerance level has not been exceeded, the more expensive it is likely to be.

Bearing these issues in mind, we expect the level of 0.9% to be achievable under current conditions.

2. SHOULD TOLERANCE LEVEL BE LOWER FOR ORGANIC CROPS?

We suggest the legal threshold should be based on what is reasonably deliverable by the farmer, no matter what production system they are using. This does not preclude an organic certification body from setting lower tolerance if their members feel they are able to deliver this and the extra costs associated with this can be compensated in the marketplace.

The EU organic farming regulation establishes that no GMO shall be used in production, but is not specific concerning the question of gene flow from GM crops into organic crops. The regulation does allow for the setting of a threshold for the adventitious presence of GMOs in organic products, but no threshold has been set yet.

3. MEASURES TO PREVENT CROSS-CONTAMINATION, IN ADDITION TO SEPARATION DISTANCES

In addition to crop-specific separation distances, the SCIMAC guidelines list practices such as bolter control, cleaning of machinery, appropriate storage and labelling, record-keeping relating to crop management. The Commission has suggested further measures that Member States might want to take into consideration⁵¹. Some involve on-farm measures but other suggested measures include encouraging cooperation between farms in the neighbourhood, sharing information about sowing plans or more formally setting up registers of production. Advice for growers is also advocated.

British growers have been successfully delivering segregation of distinct production streams for decades. One example of this is High Erucic Oilseed Rape (HEAR), used for industrial processing is toxic to humans in large doses. Production of HEAR is segregated from food-grade oilseed rape (also known as double zero rape) and the grower's IACS payment depends on following a proscribed management practice:

- High erucic acid rapeseed (HEAR), with a minimum erucic acid content of 40%, must be grown under a contract and a copy must be sent with the grower's application for Arable Area Payment .
- Growers must keep a minimum separation distance of 50 metres between HEAR and double-zero rapeseed crops sown in the same season, whether on their own land or a neighbour's land.
- Growers don't have to keep a minimum separation distance between spring-sown and winter-sown crops (that is, spring double-zero or winter HEAR, or winter double-zero or spring HEAR).
- If the minimum separation distance is not put in place, both crops will be considered not to be eligible for the Arable Area Payment.

⁵¹ Section 3, Commission Recommendation of 23 July 2003 on guidelines for the development of national strategies and best practices to ensure the co-existence of genetically modified crops with conventional and organic farming: http://europa.eu.int/comm/agriculture/publi/reports/coexistence2/index_en.htm

4. “GM-FREE ZONES” AND REGISTERS OF NON-GM PRODUCTION

The NFU supports a voluntary approach to establishing zones of non-GM production. For example, growers in a particular area may wish to co-operate to form a non-GM production zone for a particular crop to take advantage of market opportunities.

However, there may be additional questions that arise from the formation of such zones—should zones be registered? Would the zones for non-GM production of a particular crop species or for all production in the area? Can voluntary zones receive some kind of statutory protection? What happens if a grower within the zone changes his mind in the future and wishes to plant GM crops? The Committee may wish to consider the following current initiatives in this context:

- The Essex Zoning Scheme is a voluntary register of seed and commercial crops of brassica, beet and onions. The main function is to separate seed crops but recently the majority of entries have been to facilitate the separation of HEAR from other compatible crops. Once a crop is registered (at a cost of £22/farm), it is protected by statute. Protection is offered on a first-come first-served basis. There has never been a case of compulsory plough-in but the threat appears to be a good incentive to ensure compatible cropping.
- We understand that Oxfordshire County Council has taken steps to compile a register of farmers interested in maintaining non-GM production.

5. ADVISORY SYSTEMS FOR FARMERS

To clarify our oral evidence on the Government’s role in advisory schemes, we note that the European Commission has recommended that Member States should encourage training courses for farmers, on a voluntary or a mandatory basis, and extension programmes in order to raise awareness among farmers and other interested parties and provide technical knowledge for the implementation of co-existence measures. The NFU urges that if GM crops are introduced then technical support should be made available to both GM and non-GM crop growers. We suggest this will be particularly important for those growers who are concerned about meeting non-GM purity standards. We suggest that growers of non-GM crops could participate in such a scheme on a voluntary basis.

There are already a number of industry schemes in place through which manufacturers source non-GM ingredients, based on the principle that the producer must demonstrate a management system is in place to preserve non-GM status during production. Regulations on traceability and labeling of GMOs and products derived from them recently came into force requiring businesses wishing to avoid labelling their products as containing GM material be in a position to demonstrate to the competent authority they have taken appropriate steps to avoid accidental presence of GM material.

6. DOES THE GM SECTOR INCLUDE FARMERS?

As GM crops are not grown in the country farmers can’t be considered members of the GM sector. If there was a market demand for GM crops are permitted to be grown and there is a market demand for them then the farmers growing them would be considered to be part of the GM production chain.

7. INCIDENTS OF CONTAMINATION AND MECHANISMS TO INVESTIGATE

The GM Inspectorate at the Central Science Laboratory in York inspected the farm scale evaluations (FSE) programme to ensure compliance with the legislation on deliberate release of GMOs. They also undertake audits of seed importers, producers and merchants to ensure that non-GM seed stocks are free from adventitious presence of GM seed.

An independent audit of grower compliance with the SCIMAC protocols during the FSEs was undertaken by ADAS Consulting Ltd. They concluded that, over the three year reporting period, there was a high level of compliance with the SCIMAC Code of Practice and Guidelines and no major non-conformances were found. The full report is available from the SCIMAC website⁵².

The Committee asked whether there was any legal action during the farm-scale evaluations as a result of contamination. Although there was one incident of contamination associated with the FSEs and this did not result in legal action. Further details are appended.

Under the regulations on GM traceability and labelling, all businesses in the production chain are required to be able to demonstrate to the competent authority that they have taken appropriate steps to ensure their product meets the requirements to avoid labelling as containing GM material.

⁵² www.scimac.org.uk

APPENDIX

EXAMPLES OF ACCIDENTAL PRESENCE OF GM MATERIAL

(a) *Hyola oilseed rape*

In Spring 2000, the seed company, Advanta, reported that some conventional oilseed rape seed stocks sold to farmers in several EU member states (UK, France, Germany and Sweden) for spring sowing in 1999 and 2000 had contained the adventitious presence of low levels of GM rape seeds. The 1998 seeds appear to contain some seeds having herbicide-tolerant genes, most probably a line called RT73.

The affected seed was supplied to some 500 farms in the UK. An area of up to 9,000 hectares was sown with the affected seed stocks in 1999 and about 4,700 hectares were sown in the UK in 2000 from the 1998 seed stocks. About 500,000 hectares of oilseed rape are grown annually in the UK.

Some of the crop is likely to have entered the food chain as refined rape seed oil. The refined oil from RT73 is approved for human food use in the EU under the Novel Foods Regulation. The crop variety is not approved for commercial growing in the EU, but has approval for experimental field trials in the UK.

Pollen transfer in Canada is thought to have been responsible for the contamination rather than inadvertent mixing of seed. Advanta reported that the seed crops were derived from Canada and grown in accordance with Canadian regulations, which require a separation distance. The company compensated the farmers affected, without accepting liability. There were no direct implications for organic farmers as no organic oilseed rape was grown in the UK at the time and the variety of GM oilseed rape was male sterile.

(b) Oilseed rape used in the farm-scale evaluations (FSEs)

In August 2002, it was reported that impurities had been detected in the GM oilseed rape seed used in the Farm Scale Evaluation crop trials, supplied by Aventis. All of the GM seed was resistant to the herbicide glufosinate ammonium, but up to 2.8% of the seed contained an additional gene that confers resistance to the antibiotics neomycin and kanamycin. The seeds in question were sown in 1999 at three sites, in 2000 at six sites, and in 2002 at 14 sites. The additional risk to human health was considered minimal as the antibiotic resistance gene occurs naturally in bacteria, and so the antibiotics have few medical uses. The crop was harvested and destroyed, as in all previous farm scale evaluation trials. The release of the additional GM seed is not covered by the consent covering the farm scale evaluations and this is a potential breach of the regulations covering the release of GM crops. The audit trail to trace the seed lot was completed—the seed was multiplied as basic seed in Belgium in 1997 to produce the hybrid variety, PH96S452 (which was also found to be contaminated at the same ratio as the seed planted in the UK). The parent seed was produced in Canada.

Background documents on both these incidents are available from Defra: <http://www.defra.gov.uk/plant/pvs/gmlist.htm>
<http://www.defra.gov.uk/news/latest/2002/gmpure.htm>

National Farmers' Union

May 2004

Memorandum submitted by the Agricultural Biotechnology Council (abc)

GM MAIZE DECISION

1. BACKGROUND

1.1 The Agricultural Biotechnology Council (abc) was set up in 2002 to provide a forum for debate and education surrounding GM technology in the United Kingdom. The members of abc are BASF, Bayer CropScience, Dow AgroSciences, DuPont, Monsanto and Syngenta. These companies are working together to promote a fair debate surrounding the production of GM crops and also to provide education about GM in the UK.

1.2 In light of the recent extensive reviews, consultation process and decision by the UK Government, we welcome the Committee's inquiry and wish to submit the following evidence.

1.3 The industry fully recognises and supports the need for a regulatory environment to work within, but believes that, where legislation is required, that this should be enabling and not disabling such that it becomes an unjustified barrier to entry or fair competition.

2. CO-EXISTENCE AND SEPARATION DISTANCES

2.1 abc represents the companies which sell products for all types of farming, be it GM, non-GM or organic. It is therefore extremely important to the industry that all forms of farming are able to co-exist.

2.2 abc welcomed the recent Government decision that, in principle, allowed the growing of GM crops in the UK, once sensible and proportionate co-existence measures are developed and put in place. abc looks forward to consulting with government and other stakeholders to develop such measures to ensure the UK and UK farmers can choose to benefit from the full range of agricultural practises that eight million farmers from around the world are already able to.

2.3 In agriculture, a zero percent tolerance is not measurable, not achievable and is therefore not a requirement in non-GM and organic farming. This is true, regarding genetic purity standards just as it is for natural or man-made toxicants. Many types of agriculture have thresholds set that are readily achievable through standard agricultural stewardship.

2.4 For example, the durum wheat used for pasta must contain less than 3% of other cereals. Likewise, organic food must be more than 95% organic to be labelled as such. Certified cereal seed production works to standards of up to 99.7% purity.

2.5 The agricultural biotechnology industry and the Supply Chain Initiative on Modified Agricultural Crops (SCIMAC), recognise the importance of managing cross-pollination between GM and non-GM crops in a practical way, to achieve within reason standards requested by consumers.

2.6 The co-existence guidelines, which include separation distances and other measures, proposed by SCIMAC, have evolved over many years and aim to reduce cross-pollination to below 0.9% in a worst-case scenario. In practice, if GM crops are grown in accordance with these SCIMAC guidelines, an independent review by the National Institute of Botany (NIAB) demonstrates that the actual level of cross-pollination between GM crops and nearby non-GM crops would be well below the 0.9% threshold. These guidelines are currently undergoing further consultation and we believe that this approach will offer a proportionate solution.

2.7 Clearly, no measure can entirely prevent cross-pollination. It is important to remember that zero tolerance cannot be achieved in any agricultural situation, including non-GM and organic, hence the need for appropriate and sensible thresholds. It is not acceptable for one form of farming to have a veto on another; nor is it reasonable to impose the marketing wishes of a small sector of the agricultural community on others. To allow this would be to allow anti-competitive practice and market protectionism. Industry has, and will continue to work with farmers to deliver practices that reduce potential cross-pollination to an absolute minimum within the farming situation. And we have many years of experience in developing and implementing management practices to produce certified seed crops, within strict purity standards.

2.8 Finally, it is worth noting that despite extensive open-air trials of GM crops in the UK since 1989, the SCIMAC guidelines employed have meant that no organic farmer has lost their accreditation. This shows that the guidelines are effective and allow genuine co-existence.

3. LIABILITY

3.1 “Contamination” is an emotive word and one that industry does not support. The term implies some harmful effect, which is not supported by the rigour of the regulatory process for those crops approved for cultivation and use. The question posed implies liability if cross-pollination should occur even at minimal levels, well below legal thresholds. It must be remembered that approved GM crops have been demonstrated to be safe to both human health and the environment and therefore do not pose a risk or cost on either of these grounds if they are present at any level. The safety pre-requisite of each GM crop is ensured because they are the tested extensively prior to being brought to market and are no more likely to pose a risk to human health or the environment than non-GM food.

3.2 However, like all industries, the biotechnology industry is responsible for all its products, including GM products.

3.3 On the subject of co-existence, we maintain that there is nothing unique about GM and the requirement for it to co-exist with other agricultural practices that require specific legal arrangements. Current laws are more than adequate to adjudicate on issues of agricultural liability, whether that liability may result from non-GM, organic or GM practices.

3.4 abc will enter into dialogue with the Government on this issue in due course as part of their consultation process and look forward to establishing practical, equitable and proportionate rules for co-existence, allowing all forms of agriculture to co-exist.

4. GM-FREE ZONES

4.1 The above discussions have shown that GM crops can co-exist within the patchwork of farming that makes up UK agriculture and for this reason we do not feel they should be excluded as a choice for any UK farmer, should he or she decide to grow them, regardless of where in the UK they farm.

4.2 Given that co-existence has been shown to work, we do not feel that GM-free zones are required. All farmers should be free to choose the agricultural practice they wish to use, especially as their choice does not and will not impact the agricultural choice of neighbouring farms. It will be for government to decide how best to handle the pressure being generated by some minorities to exclude GM agriculture from certain "zones".

5. WHAT CHANGES TO LEGISLATION WILL BE REQUIRED TO ALLOW GM CROPS TO BE GROWN?

5.1 This will be determined in the next year, with the participation of industry and many other stakeholders. abc looks forward to that process and reasonable practical and proportionate requirements being introduced to ensure all forms of agriculture are available for UK farmers to choose and benefit from.

6. SCOPE AND SCALE OF THE 2006 RE-LICENSING PROCEDURES

6.1 Under EU directives and UK regulations governing the licensing of GM crops and food, approvals are time limited. This is a normal regulatory requirement that industry is happy to work within. Products, especially agricultural crops and varieties have natural, and limited life spans. With this in mind, the consent holders of some products may not seek re-licensing in future years, but instead prefer to bring new and improved versions of their products to the market. Again there is nothing new or distinct to GM crops in this regard.

7. CONCLUSIONS

7.1 It is essential that government strikes an appropriate balance between regulation and innovation. abc looks forward to future consultations with government to ensure this occurs in reference to GM crops.

7.2 abc believes that GM crops have been shown to be a safe, reliable and environmentally responsible form of agriculture. 67.7 million hectares are now grown globally by eight million farmers in 18 countries. Cost savings, more targeted pesticide use, water and soil conservation, reduced fuel use and increased profit for farmers are the principal benefits that have been realised as a result of using GM crops around the world in the last nine years.

7.3 At the same time, this increased use of GM crops offers no sign of environmental damage, human health risk or safety concerns. We feel it is time that the UK joined the rest of the world, including several of our EU neighbours, in promoting the choice of using GM crops, rather than allowing excessive restrictions, at the request of a vocal minority, to limit the choices and economically disadvantage UK farmers.

The Agricultural Biotechnology Council (abc)

April 2004

Memorandum submitted by Supply Chain Initiative on Modified Agricultural Crops (SCIMAC)

GM MAIZE DECISION

INTRODUCTION

SCIMAC welcomes the opportunity to contribute to the Environment, Food and Rural Affairs Committee's inquiry into the UK Farm-Scale Evaluations (FSEs).

Established in June 1998, SCIMAC (Supply Chain Initiative on Modified Agricultural Crops) is a grouping of industry organisations along the UK farm supply chain. Member organisations are:

- National Farmers Union
- British Society of Plant Breeders
- Crop Protection Association
- Agricultural Industries Confederation

The focus of SCIMAC's activity is to ensure appropriate arrangements are in place to support the open and responsible development of GM crop technology in the UK. Member organisations fully support sound, science-based regulation of the technology, and share a commitment to ensuring UK adoption of GM crops is carefully managed and delivers a meaningful choice for farmers, the food industry and

consumers. SCIMAC's overriding objective is to protect choice and access to both current and new technologies, by establishing arrangements which will allow GM crops to be integrated effectively alongside other crop production systems.

To this end, SCIMAC has developed practical guidelines for the on-farm management of GM crops, designed to ensure best practice in the way the crops are grown, while providing choice for farmers via co-existence between GM and neighbouring non-GM crops. The SCIMAC guidelines were formally endorsed by the UK Government in May 1999 (see Cabinet Office press notice CAB 109/99 of 21 May 1999) and have provided the basis for management of the GM crops involved in the Government's four-year programme of Farm-Scale Evaluations (FSEs) from 1999–2003.

This unique opportunity to apply and evaluate the performance of the SCIMAC guidelines at more than 280 field-scale sites across the UK has confirmed that the protocols and requirements involved are broadly compatible with the kind of management practices and systems already widespread within UK agriculture. On three levels, the FSE experience has provided compelling evidence that, as a basis for practical, on-farm co-existence between GM and non-GM crops, the SCIMAC guidelines are workable in practice, robust in safeguarding the integrity of GM and neighbouring non-GM crops, and capable of being audited:

- Independent audits conducted by both the GM Inspectorate and ADAS Consulting Ltd confirmed very high levels of compliance with the SCIMAC guidelines across all sites throughout the FSE programme.
- There was no loss of non-GM or organic status throughout the FSE process.
- When surveyed on the effectiveness of the SCIMAC guidelines, farmers who have grown GM crops in the UK overwhelmingly felt that the guidelines could form the basis of practice co-existence between GM and non-GM crops, both on the same farm and between neighbouring farms.

Taken together, this information indicates that co-existence guidelines can be managed at the practical farm level, and need not represent a major departure from current best practice within the industry. This is an achievement on which SCIMAC is determined to build, working closely with other stakeholders.

The SCIMAC guidelines are based on existing principles of good agricultural practice, and closely mirror the proven system operated for more than 30 years to control the production of certified seed crops. All aspects of on-farm operations are covered, from seed storage and planting procedures to crop separation distances, harvesting procedures, post-harvest management and record-keeping.

In developing this approach, SCIMAC has identified four key principles for co-existence between GM and non-GM crops:

- Farmers, consumers & environment must not be denied access and choice to approved new technologies.
- No legitimate sector of agriculture can veto another—access and choice work both ways.
- Reality is that farming takes place in the open air—zero is impossible but co-existence is achieved (eg industrial vs food grade oilseed rape, certified seed production).
- Arrangements must be proportionate, non-discriminatory, and determined by legal, practical & scientific realities, not particular commercial or campaign objectives.

This is the context in which SCIMAC offers the following responses to the specific questions raised in the Committee's terms of reference.

1. In relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against cross-contamination?

1.1 The implication behind this first question is that the total prevention of cross-pollination is both achievable and necessary. It is important to emphasise that no separation distance, however large, could provide an absolute guarantee of zero cross-pollination when crops are grown in the open air. The concept of legally defined thresholds, applied throughout the agriculture and food industry and in no way exclusive to the presence of GM material, acknowledges this fact.

1.2 According to current EU law, the threshold above which the adventitious presence of GM material must be labelled in non-GM products is 0.9%. Provision does exist within EU organic regulations for organic producers to establish a separate (lower) labelling threshold for unavoidable GM presence, although this provision has not as yet been invoked. In this situation, the European Commission has confirmed that the 0.9% threshold applies.

1.3 Furthermore, experience of producing seed crops to high levels of genetic purity suggests that it would be inappropriate to rely on separation distances alone to safeguard the integrity of particular crops. Careful attention needs to be paid to the status and provenance of the original seed stock, the handling of seed during storage and transport, the cleaning and operation of both drilling and harvesting machinery, and the subsequent handling, storage and transport of harvested crops. Such procedures are addressed in detail within the on-farm guidelines developed by SCIMAC.

1.4 Additional methods are available to supplement any requirements for physical separation between GM and non-GM crops. The use of barrier or buffer crops is well established in seed production as an effective means of minimising pollen flow. In maize, for example, each buffer row of non-GM plants established around the perimeter of a block of GM plants is estimated to have the same impact on reducing gene flow as a separation distance of 10–12 metres.

1.5 Equally, the planting and flowering dates of different cultivars can influence the likelihood of gene flow occurring. Flowering and pollen release in maize generally lasts for a period of around 14 days, while the recommended planting dates for early- and late-maturing maize varieties grown in the UK can be some four to six weeks apart.

1.6 The GM herbicide tolerant maize crop recently approved in principle for commercial cultivation in the UK has already undergone a comprehensive safety assessment by the Advisory Committee on Releases to the Environment (ACRE). In ACRE's view, this crop can be grown safely *without any separation distances*.

1.7 However, the separation distances specified in the SCIMAC guidelines aim to deliver the integrity of GM and neighbouring non-GM crops in line with EU labelling thresholds. The distances are based on well-established scientific knowledge of the characteristics of each crop species in terms of pollen distribution and cross-pollination, reinforced by practical experience over many years of growing certified seed crops to specified levels of genetic purity and identity. SCIMAC therefore stand by these rigorously-developed proposals. In respect of forage maize, the separation distance specified in the SCIMAC guidelines, and applied to crops grown within the FSE programme, is 80 metres.

1.8 According to a comprehensive review of scientific literature commissioned by the former MAFF in 2000, the SCIMAC separation distance of 80 metres between a GM and non-GM maize crop will reduce any potential cross-pollination to below 0.9% under *worst case conditions* (ie those most favourable to cross-pollination). In practice, the actual level of cross-pollination likely to occur within a normal farming situation will be significantly lower. This was borne out by the results of DEFRA-sponsored gene flow studies conducted at maize sites over the course of the FSEs, which found that the distance required to ensure cross-pollination between GM maize and neighbouring non-GM crops was reduced to below 0.9% was in fact 24.5 metres:

“The report concludes that a separation distance of only 24.5m would be required to meet the 0.9% threshold recommended by the EU, and that the 80m separation distance recommended by SCIMAC would be sufficient to ensure that cross-pollination levels were below 0.3%. These findings are in-line with expectations based on previous work.” (DEFRA, October 2003)

1.9 Against this background, the current SCIMAC separation distance of 80 metres for maize must be viewed as extremely precautionary, especially when factors such as the synchrony of flowering dates and the potential use of barrier crops are taken into account.

2. *If cross-contamination occurs, how liability will be established and responded to, who should be legally responsible and what the limits of that responsibility should be—and what role Government should play in determining these matters.*

2.1 SCIMAC has consistently maintained that the liability issues associated with the products of GM crop technology are no different from those arising from the use of any other agricultural products. Once regulated and approved, GM crops introduce no new considerations in relation to liability which are not or could not be addressed through existing legal provisions.

2.2 In SCIMAC members' view, the attention devoted to the issues of liability, compensation and insurance where the commercial cultivation of GM crops in the UK is concerned has been grossly overstated and disproportionate. In responding to this question, it is vital that these issues are viewed in their proper context.

2.3 From the UK's own experience with the FSEs, there has been no loss of non-GM or organic status as a result of the trials. Indeed the only way in which some trial growers were indemnified by consent holders is for damage arising as a result of hosting the trial (ie caused by protesters) which would not otherwise have been covered by their own insurance.

2.4 Similarly, we understand that during the past five years of commercial cultivation of Bt maize in Spain, there have been just two claims that growing GM crops led to loss of organic status. Both claims failed to result in any form of action or compensation paid to the growers affected, primarily because they failed to produce any samples of the allegedly “contaminated” material when the matter was referred to the relevant authorities.

2.5 Indeed in the preparation of this submission we have been unable to track down a single incident worldwide in which a GM crop grower has been required to compensate a third party for damage caused by a GM crop to the status or value of neighbouring crops. Considering the majority of GM crops are currently grown in the USA, arguably the world's most litigious society, that would appear to speak volumes.

2.6 Another obvious parallel to draw would be the production of High Erucic Acid Rape (HEAR) alongside food grade oilseed rape. In this case the HEAR crop really does have the potential to affect the safety, quality and therefore marketability of neighbouring food grade oilseed rape crops, yet the question of liability or compensation simply has not been an issue.

2.7 We would question speculation that significant new value differentials will emerge or be sustained between GM and non-GM value chains. Farmers will only choose to grow GM crops if they have a market for their produce, and if it makes economic sense for them to do so. Our understanding of the Spanish experience is that there has been no price differential between GM and non-GM maize, other than on regular quality parameters. A recent report from Australia also came to a similar conclusion in respect of the commodity trade in canola. Clearly there is currently an increased cost associated with certain Hard IP non-GM systems, but it would be dangerous to make a long-term assumption that GM crops will always and inevitably trade at a discount—the reverse could be true if premium quality traits are involved. Commercial and market-driven would certainly be an inappropriate basis for any form of Government intervention.

2.8 A further consideration is the burden of proof. Can it be proved beyond reasonable doubt that a particular GM crop was responsible for any GM presence? What about the status of the seed stock? What about co-mingling in transport or storage? What about deliberate sabotage or fraudulent claims?

2.9 Most importantly, we strongly reject the notion that the developers or producers of GM crops should be expected to subsidise a purely marketing position taken by another sector which goes beyond any safety approval or labelling criteria under UK or EU regulation. Such an approach would be in direct conflict with the principles we stated at the outset of this submission, particularly that arrangements should be proportionate and non-discriminatory.

2.10 All of these issues raise genuine questions about the need for, and viability of, any unique liability or compensation arrangements in respect of GM crops.

2.11 What is needed, SCIMAC members believe, is a sensible, agreed definition of good practice. Such an approach would begin to define the boundaries of reasonable and unreasonable behaviour, negligence and due diligence in respect of GM and non-GM crop production. Existing legal processes are capable of resolving disputes where incidents of pesticide spray drift are concerned, and where best practice is clearly defined. The same can apply to the cultivation of GM crops once they have been approved on a case-by-case basis and any conditions attached to their use have been identified.

3. *What processes will be involved in determining how GM-free zones will be established at both a regional and local level and what role Government should play in this development?*

3.1 If all growers in a given area agree voluntarily to establish such GM-free zones then they are entirely within their rights to do so. However, the rights and freedom of choice for any farmers wishing to grow approved GM crops must command equal legitimacy and respect.

3.2 The role of Government should be to safeguard that freedom of choice and to uphold the regulations on which individual consents for the commercial cultivation of GM crops are based. As detailed below, DEFRA has clearly indicated that since such approvals are granted on an EU-wide basis, any legislative attempts to establish GM-free zones in particular areas of the European Union would effectively be successful only by providing sound scientific evidence that all approved GM crops should not be grown anywhere in the EU:

“It has been suggested that Article 19 could also be used to attach conditions to all Part C consents in order to ban their marketing and use in the UK as a whole or in localised ‘GM free areas’ (eg boroughs or counties). Specifically, the suggestion seems to be based on a misinterpretation of Article 19.3(c) of the Directive, which requires the authorities to specify conditions of consent including, ‘...conditions for the protection of particular ecosystems/environments and/or geographical areas’.

“To be consistent with the Directive any such request could only be considered if *sound scientific evidence* was put forward to demonstrate that the GM product in question posed a particular risk to the area in question. In practice, the close environmental/ecological proximity of different parts of the UK and Northern Europe makes it likely that a risk posed in one territory would be a risk posed to the other areas too—and this would make it very unlikely that EU members would agree to a Part C consent being granted at all.

“It would be contrary to the single market objective, the scientific basis, and the case-by-case approach of the Directive to adopt a blanket policy of seeking to impose conditions that could not be justified in terms of protection of human health and the environment, in order to make the UK or any particular part of it ‘GM-free’.” (DEFRA, February 2003)

4. *What changes to legislation will be required to allow GM crops to be grown?*

4.1 It is difficult to conceive of any further legislative hurdles which could, within the governing regulatory principles of proportionality and non-discrimination, be justified in relation to the commercial cultivation of GM crops. The revised and strengthened EU regulatory system now includes additional requirements in relation to environmental impact, traceability, labelling and post-market monitoring, and is without doubt among the most stringent legislative frameworks of its kind in the world.

4.2 It is worth noting that continuing regulatory burden, delays and uncertainty were among the reasons cited by Bayer CropScience for the company's recent decision not to proceed with the commercialisation of its forage maize variety Chardon LL.

4.3 There are, however, changes in the law which could be made to support and enable the development of GM crop technology in the UK. One such change would be the introduction of more effective legal deterrents for those intent on intimidating GM crop growers and their families, on destroying crops or vandalising farm property and machinery. This is particularly critical in the process of regulatory field trials, which have become increasingly difficult to conduct when the disruption of such work has been allowed to continue largely unaddressed.

4.4 The lack of any meaningful deterrent for such activities, and the implications this may have for future scientific research or investment in the UK, is of serious concern. The current, depressing reality is that both police and prosecution services are operating within a legal framework which appears more inclined to promote and legitimise the actions of GM crop vandals than it does to deter or punish.

4.5 Several cases have seen defendants (who readily admit to trashing research trials) acquitted of charges of criminal damage (cf *R v Lord Melchett et al*, 1999) or of aggravated trespass (cf *R v Tilley*, 2001). The bizarre culmination of this process was an Appeal Court ruling in 2001 that destroying a growing crop is not considered, in the eyes of the law, to be disruption of an "ongoing activity".

4.6 In May 2002, the Prime Minister delivered a speech to the Royal Society in which he pledged "*to defend science, to make clear that the Government is not going to allow misguided protests against science to get in the way of confronting the challenges of making the most of our opportunities.*" Clearly an urgent change in the law is required if the Government's commitment to safeguarding legitimate scientific research is to be upheld in the case of GM crop trials.

5. *What will be the scope and scale of the 2006 re-licensing procedures?*

5.1 The re-licensing or re-registration of products is a routine process which SCIMAC fully supports, designed to ensure products continue to meet current regulatory requirements. The precise scope and scale of the re-licensing requirements for individual GM crops is a matter for the regulatory authorities and consent holders involved.

Supply Chain Initiative on Modified Agricultural Crops (SCIMAC)

April 2004

Witnesses: **Dr Colin Merritt**, Biotechnology Development Manager, Monsanto, Agricultural Biotechnology Council, **Dr Julian Little**, Public and Government Affairs, Bayer CropScience, Agricultural Biotechnology Council; **Mr Bob Fiddaman**, Chairman, and **Mr Daniel Pearsall**, Secretary, Supply Chain Initiative on Modified Agricultural Crops, examined.

Q74 Chairman: It would be very useful to just have a very quick run through of who you are and your representative role and then we will crack on. You know the format, I have seen you sitting there, so we will not spend very long on the niceties of introductions.

Mr Pearsall: My name is Daniel Pearsall. I am Secretary to SCIMAC, the Supply Chain Initiative on Modified Agricultural Crops, which is a grouping of industry organisations stretching along the primary supply chain. We have been involved in the farm-scale evaluations and particularly establishing the guidelines of the management protocols for the GM component of the trials within the farm-scale evaluations.

Mr Fiddaman: I am Bob Fiddaman. I am the current Chairman of SCIMAC. I am also a farmer and an NFU member. I was the NFU member on SCIMAC and have been since its inception. I have also been

one of the farm-scale evaluation triallists in the case of the winter oilseed rape for four years of trials because I was in the protocol year as well. I am involved with the SCIMAC side to see that there is farmer input into the protocols and debates that we are taking forward.

Dr Merritt: Colin Merritt. I am Biotechnology Development Manager for Monsanto UK. I have been involved in the development of our GM crop programme since 1993. I am here representing the Agricultural Biotechnology Council, the industry body for the biotechnology industry. I also sit on the SCIMAC board as their representative.

Dr Little: Julian Little. I am the Public and Government Affairs Manager for Bayer CropScience. I am here representing the Agricultural Biotechnology Council.

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Q75 Chairman: It will not surprise you that we will have a discourse with yourselves on a similar basis to the previous two sessions. If I can start as I started with the two previous groups of witnesses on this issue of the threshold. I suppose that you would like the threshold to be higher, or are you very happy with the 0.9% level?

Mr Pearsall: As SCIMAC, I think we would not take a position in terms of whether the threshold is right or not, it is the product of technical and political discussion. It is a level which has been established within the EU and other countries in the world have set different labelling thresholds. We would see it as our role within that process to establish protocols which allow those thresholds to be observed.

Q76 Chairman: What problems does the 0.9% cause you?

Mr Fiddaman: According to the protocols that we developed, the distances that we put in place for the farm-scale evaluations were in excess of those. It has been shown with the maize pollen results, which we have already got, and we are still waiting for the oilseed pollen results, that the distance could be as low as 24.5 metres and still deliver 0.9% whereas, as you are well aware, in the maize trials it was 80 metres. The distances that we were recommending were far in excess of what were needed to deliver that 0.9%.

Dr Merritt: From our point of view as the biotechnology industry, thresholds are an essential thing to lay the ground rules about provision of choice. That is what they are there for. It is very important to make the point that they are not there as a measure of safety. This is taking the preconceived notion that the crops have been approved after a thorough risk assessment and, therefore, are not judged as a safety concern. The concern that we would have, as the NFU representative said, is that any threshold established to back up a labelling policy would be workable, would be practical, and ideally there would not be imbalances between different world areas. We see some of that problem, that lack of harmony, at the moment.

Q77 Chairman: Is there any aspect of consensus building between yourselves and those opposed to GM specifically around this area of contamination and an agreement on what is a level of contamination through which you can then say if it is below it, it is non-GM and if it is above it, it is a GM crop? Is that going on?

Dr Merritt: In a way that was really the whole point behind the SCIMAC initiative in the first place, which probably means that my two colleagues to my right would like to pick up on that. To try to make some progress here, as a country we did go ahead of many other areas in doing that, as has been identified.

Mr Fiddaman: Yes, we have endeavoured to have discussions with the organic sector and they have chosen a particular line and do not want to seem to look at the practicalities of any deliverance. If these

products are seen to be safe to release with the consent forms so made, with recognised separation distances which have been driven as much by the experience of the seed industry, which has had some 40-odd years of delivery of standards as required by the seed regulations, therefore in practice farmers can and do both discuss with neighbours and deliver the required standards that, for example, a seed contract might require. Mention was made by the previous group of the situation so far as industrial rape. HEAR rape (High Erucic Acid Rape) is something which is known to be poisonous, known to be harmful, both to animals and to humans, and that is why it is for industrial use, it is a brilliant oil for industrial use, and yet the distances as laid down in the current legislation rules of IACS, which is European driven, is that if the crops are grown in the same season, in other words the winter season or the spring season then, yes, you must have a 50 metre barrier, but if you happen to be growing a dissimilar crop, in other words a food crop against a winter crop, then there is no distance required because the flowering times are sufficiently different to prevent contamination through pollination. That is already in a Government backed requirement and farmers are at penalty if they do not go through the procedures that will deliver the protocol that is required.

Dr Little: I think it is worthwhile noting that industry as a whole welcomes that legislation, welcomes regulation, because that allows industry to see how you can come into the market and work a product into the market. The problem comes when regulations change on an almost daily basis to the point where industry does not have the confidence to understand exactly where their product is going to go in the future. In terms of things like thresholds, if a 0.9% threshold is a workable threshold, industry then goes away and looks at how you achieve that 0.9% threshold within a country.

Q78 Joan Ruddock: Achieving that as an end product is one thing, and we might return to why not at a lower level. How much admixture do you believe can occur during transportation and processing, ways other than straight contamination by movement of pollen where the separation distances are key? What else can happen and how serious is it?

Mr Fiddaman: In the practical experience that I have had, and I have grown the crop for four years so I could have been considered to be at significant risk if you think there is one, I did not find it particularly difficult to clean out the machinery and, therefore, it is not particularly difficult to make sure that you are not passing that down the chain. Already when we have lorries come to load on the farm, you have to make sure they are clean and have no previous crop inside. That does not mean there cannot be bits tucked in the sheeting on the roof or whatever, but at those sorts of levels you would still be well below the 0.9% should there be any material trapped in the bodywork of a lorry. You can clean things out. You can clean your drills out. You can stop things moving beyond normal minimal levels but it will not be zero, that is a fact. I happen to be a seed grower

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of other crops and birds are very good at picking up seed, flying it across the countryside and dropping it in. Only the other day I was picking spring beans out of a pea seed crop because that was exactly what happened but it would still have been well below 0.9%. They were there; I could see them, therefore I could remove them.

Q79 Joan Ruddock: As a group, or any of you, have you looked at the contamination of seed stocks in Canada? How serious do you think that is? How much of a risk is that? How has that occurred? Is there anything to be learned from that?

Dr Merritt: As a seed industry, seed purity is the criterion on which our product is based and, therefore, we have had many decades of experience within that industry of how to deliver the levels that are required in the seed industry. Clearly the lower that threshold is for impurity then the higher the costs and the mechanisms involved. That is where important decisions need to be made on how thresholds of this kind are set. Conceptually it is very easy to set an extremely demanding threshold but you will add cost in the process. The seed industry traditionally works to levels set by seed regulations in the order of 99.5, 99.7 and above, and that is achievable with seed production processes. Obviously, as an industry we have to test all the time to make sure that we are delivering what we say. The Union of Concerned Scientists recently published a study. This is a group opposed to GM to some extent, you would say, in the US. There was some variation in the data, so we need to look at it a bit, but the general trend in that data was that something like 50% of soya seed which was in the non-GM sector contained detectable GM. Remember, this is a country where 80% of the country's soya is GM and I think the fact that 50% of the non-GM was actually zero, could not even be detected, is significant and the range of those in the detectable were extremely low, 0.05 to 0.1%. I believe the levels are likely to be very much below the thresholds that we are talking about. This is the principle that we believe on thresholds will be operated in practice.

Q80 Joan Ruddock: This sounds like quite a significant change in terms of seed purity that would be acceptable or would be inevitable, perhaps, if we had GM crops growing in this country under the regimes proposed.

Dr Merritt: I am not sure I understand the question.

Q81 Joan Ruddock: I am suggesting that the levels of seed purity could not be maintained in the way that they are today.

Dr Merritt: I see no reason why they could not. The levels I have just talked about in the US for seed production are higher levels of purity than our standards for collection of seeds. Remember, the thresholds that I talked about for seed production, 99.5/99.7, are the thresholds, they are not what the industry is normally operating at. What you are measuring in a test like that is what is the norm. When we talk about the guidelines and the management advice that we have discussed that has

been developed over a number of years, they are working on a level in the worst case scenario and, in fact, most of the time, by definition 99-point-something per cent of the time, that you will be at vastly lower levels of admixture than the threshold.

Q82 Joan Ruddock: Can I turn to organic production because I think you will have heard from other evidence that where the consumer does want to avoid GM, organic is the guarantee. Do you believe that there should be a different threshold of contamination for organic crops and products as opposed to conventional non-GM?

Mr Fiddaman: Personally, I do not see why there should be any different level from that applied to non-GM conventional growers, which is 0.9%. You have just heard from the professional end of the seed industry in the sense that they are delivering much higher levels than that as a natural basis and on that basis I feel that the organic sector could provide 99.9%, which is their 0.1% detectable that they are saying they are prepared to work to. Nought per cent does not exist because you cannot stop things happening. It should be deliverable if they want to set the system up. If they do not believe the separation distances that science has shown can deliver what we have just heard in relation to the seed purity standards then obviously they are at liberty to extend them, but it has got to be shown to be of benefit if they think they can derive that from it.

Q83 Joan Ruddock: If regimes are set up in the way that I think you are suggesting, how will the organic farmer be able to protect him or herself and get down to the lower levels?

Mr Fiddaman: Why are you assuming that the organic seed would be contaminated in the first place? If it has been grown on organic farms in organic conditions you are not going to get that scenario.

Q84 Joan Ruddock: I misled you in that sense. I had diverted to talk about seed because I thought that was interesting and we had not heard about it, but I am talking now about normal growing of organic crops in organic conditions producing an organic product. There the separation distances will be key in some parts.

Mr Fiddaman: We have heard oilseed rape is one of the crops but so far the evidence we have had is that 50 metres would deliver a separation distance and that would be within the GM growers' responsibility because that is already part of the system and would apply, as it does now, to the rape growers, his responsibility is to deliver that 50 metres minimum. If the organic grower was at that barrier level I would say if they were growing organic rape they should not be in a position where they would be above the agreed minimum level.

Joan Ruddock: Liability is a key issue.

Chairman: We are coming on to liability. Before we do that could we move on to Patrick.

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Q85 Patrick Hall: Can I just follow up on some points that we have just been looking at. Looking at the evidence supplied to this Committee by abc at paragraph 2.7⁵³ and the comment that was made earlier on by Mr Pearsall, I think I heard him say that the industry had no view on the issue of thresholds, if I can paraphrase.

Mr Pearsall: No view on whether they were correct or not. The point was that these are arbitrary levels that are reached as a result of technical and political consultation and there are different levels.

Q86 Patrick Hall: Marketing considerations, in fact, as well. Let us accept the fact that it is not possible to have absolute perfection and levels of detection at a minimum anyway, 0.1% or whatever it is that has been mentioned, and that is the level that supermarkets seem to require for certain products from certain producers. I get the impression from paragraph 2.7 that the idea of a threshold is, in a sense, anticompetitive and market protectionism is the phrase used here, that having levels of tolerance imposed by one part of the industry on the other is not the right way to go about it. Is it not the case—if I get this wrong please tell me—that certainly the United States has opposed labelling so that people can make the choice and, indeed, Monsanto has been one of the leading companies in the world opposing labelling? How does that square with the paragraph here that talks about anticompetitive practice as if it were a bad thing?

Dr Merritt: I am sure that may be the way it is described in the press very often but the reality, as I understand it, in the USA is that they have a labelling policy and it is different from ours. They adopted a policy in which there was no requirement to specifically label positively GM content. They do not preclude non-GM labelling but you have to demonstrate that what you are claiming on your label is true. There is no requirement to label positively for GM if there is no difference in the status of the end product, it is a case-by-case basis. If there were some substantive difference in the end product, such as we heard about with the higher Omega 3 fatty acid level, and it would change the food status of the end product then that would require labelling. That is the situation. In a way, I always think you can liken it to the way we deal with pesticides and organic labels here. We do not require pesticides in foods to be labelled, we allow a negative labelling in the sense of an organic label means that they were not produced using certain pesticides. That is a different approach to labelling than the one we have now adopted in Europe. The fact is we have a labelling system in Europe now which requires GM content or even origin to be labelled and, therefore, we have to set a threshold as we do in any other system. Again, you can take parallels with the organic sector which has thresholds set in some of their standards for things like lead and arsenic contamination. You have to set thresholds because natural levels would preclude you from setting zero. Thresholds then become either a matter of safety

level or in this case of GM, assuming they are approved through the regulatory system, one which is determined on political and market criteria.

Q87 Patrick Hall: Would it be fair to say that the biotech industry could actually live with a 0.1% threshold since that is technically deliverable?

Dr Merritt: You cannot generalise on these things but I believe that for most of the commodities 0.1 would be an extremely expensive or impossible level to work at. In most of the commodity crops, we were hearing of levels—this is really a question for the whole supply chain to resolve all the different stages as we heard—between 1 and 5%. Japan has set a threshold level for its labelling at five%; others have talked between those levels and we, of course, started at 1% for the European proposal which after firm negotiation reduced to 0.9%. Whether that is the limit or whether you could push lower, in some cases it would not be difficult but in other cases either it would be impossible or very expensive. As I said before, the final point is, if you are working to a threshold you are not working to be just below that threshold because the risk factor from a commercial point of view is if you are having a proportion that exceeds that level, that is where the cost is. So in practice you have to work much lower, probably to a factor of 10 anyway, even then you are working to a 0.9% threshold.

Q88 Chairman: If I can move us on to distances and GM-free zones. Have you got any misgivings at all about the distances? I am really looking to SCIMAC for an answer to this. Do you have any misgivings at all about the distances you set in both the field and farm-scale trials? Does that have any impact at all on the movement towards some form of commercial growing?

Mr Pearsall: I think our first point would be that the precautionary approach that we took in terms of taking worst case scientific evidence—I say worst case, in other words conditions that are ideally suited to cross-pollination occurring—certainly has been borne out by the gene flow studies that were carried out on the maize trials. As Bob mentioned earlier, we are awaiting further gene flow studies that were carried out at the oilseed rape sites. We would remain confident that the scientific evidence of gene flow as opposed to pollen dispersal is compelling and mounting with each study that is conducted.

Q89 Chairman: Is there any more need for research in this area or are you absolutely confident that when we look at product liability your buffer zones, the distances that you would want to see in place, are sufficient really to be able to nail the lie that the distances are actually greater than were previously presumed?

Mr Pearsall: We have always made clear the position that the SCIMAC guidelines are subject to continuing review and are an evolving set of protocols which will continue to be based on the best available scientific evidence. I do not see any reason to depart from that position. I simply reiterate the point that the evidence that has come to light during

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the process of the farm-scale evaluations and from other sources has reinforced the precautionary nature of the separation distances that we specified.

Q90 Chairman: Do you define between low risk and no risk?

Mr Pearsall: Sorry, could you just repeat that.

Q91 Chairman: Do you define the difference between low risk and no risk as much as given in the evidence we have been hearing that it is impossible, in a sense, to see the elimination of risk completely? That has come up already in the previous sessions. Does that cause you any concern at all?

Mr Pearsall: I think it depends what you understand by risk. We take the view that the crops involved have been through a rigorous process of scrutiny in terms of their safety to environment, to human and animal health. The SCIMAC guidelines are based on that premise. The regulation is in place to address issues of safety. What we attempted to do in developing the SCIMAC protocols was to minimise the potential for cross-pollination within a practical farming situation drawing on experience of seed production and other farming situations where crops are grown to particular market specifications. There is not an issue of risk in terms of safety involved.

Q92 Chairman: This is perception.

Mr Pearsall: It is about choice, as Colin mentioned earlier. SCIMAC very much comes from a position that says choice and access work in both directions and the initiative supports farmers' ability to pursue a range of different approaches to crop production, and that may well include GM crop production in the future.

Q93 Chairman: If I could move on to the notion of GM-free zones. Do you welcome what the Government has talked about in terms of voluntary GM-free zones, certainly in preference to statutory underpinning?

Dr Little: It is clear that we are in a situation where GM crops have been very successful when grown elsewhere. This afternoon we heard the NFU saying that their members want to be able to access this technology in this country. There may well be groups of farmers who do not want to access this technology or actually see an advantage from not doing so. That is their choice. Their choice to not grow GM is equally as valid as a choice to grow GM. If there is a group within a particular area that takes this view then a GM-free zone is clearly possible. I think the only place where this has been looked at in any detail to date was on the borders of Scotland where the Scottish Executive did look at this as a possibility, having a GM-free area for their dairy farmers regarding GM maize. In this case the majority of farmers who were questioned on this particular issue actually said that they wanted to access this technology and did not see any advantage whatsoever of going for a GM-free zone. As a way of going forward, if farmers want to club together and form a GM-free zone then we do not see any huge

issues associated with that except where individual farmers within an area do not want to be part of a GM-free zone.

Q94 Chairman: What would happen if the EU changed its stance and said to make any sense of this it has got to be given some statutory backing? Have you got an off-the-shelf response that you would give?

Dr Little: You are in a situation where you are making a decision for farmers as to what they can or cannot grow or what technologies they can and cannot access within a particular area.

Q95 Chairman: That happens in all walks of life.

Dr Little: Okay. If you are in that situation and you want to say "all the farmers in this area do not have access to this technology", is there going to be some compensation for those farmers who see themselves at an economic disadvantage compared to their neighbours? If farmers are growing GM crops, are choosing to grow GM crops, it must be because they are offering them an advantage, presumably economic. If you are putting in a statutory GM-free zone you may well be in a situation where there are compensation issues as well.

Q96 Chairman: I would like to think through the logic of that. I am sure there are examples where people have to make sacrifices because of the situations in which they find themselves. On the logic of saying that there will be reverse compensation, maybe we will pick that up in terms of responsibility and liability in a minute. I am not sure if I got an answer but I was asking if there was a move towards statutory underpinning of GM-free zones, how abc or SCIMAC would respond to that. Would you try to oppose that in the courts? Certainly you would lobby against it, would you not?

Dr Little: It is difficult to see how the industry would be prepared to back such a proposal, although you would have to look at the proposal. Any situation where somehow Europe has allowed the growing of GM crops and then suddenly takes that right away seems rather perverse. We would have to have a look at the actual proposals.

Q97 Chairman: So you are not involving yourself in any discussion with those who would want this to be the way forward if there is going to be any commercial growing of GM?

Dr Merritt: Certainly not at an industry level. We have been involved in monitoring the UK farmers' opinions through the National Farm Research Unit which has done a farmer survey on a monthly basis for four years. It has now touched on 22,000 farmers' opinions, 65% or thereabouts on average are of the opinion that they would like to be able to grow these crops. It seems to be that the majority will. The words of Franz Fischler, which was that no one sector should deny another, seem to underpin the whole principle at the EU level on co-existence at the moment. Under the current thinking, that does not preclude voluntary local groups attempting to do that but probably we would be opposed to

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anything statutory because, by definition, it would be denying those within that area that is likely to exist the option that they require. Also, it would be very difficult to maintain that in a flexible way as things change.

Chairman: Finally, could we go on to product liability and the responsibility of whoever it is to take the lead.

Q98 Patrick Hall: Let us leave aside the safety issue, because that is another big debate, and accept there is not a safety issue just for the sake of the debate, although obviously lots of people are not convinced about that yet, certainly amongst the public. Leaving aside the risk to human and environmental health, I think you have acknowledged that there is a marketing issue *vis à vis* the rights of people to purchase something that is defined as organic, non-organic, GM or non-GM. If there should be a mixing, and these things do happen, that could clearly destroy the economic value of a product that claims to be non-GM and, therefore, the question of liability and responsibility for that situation arises. The biotech industry not just gives the impression but openly says that it could not be liable and cannot follow in detail what happens to its seed; therefore it is down to the producer. The Government here seems to be saying something a little different inasmuch as the consultation on compensation, although taking place, has been attached to a statement that any compensation scheme would have to be funded by the GM sector. That certainly includes the biotech industry, it may include farmers who use GM products, although I think the NFU does not think it is the latter. What is your position, if there is a collective position on this?

Dr Little: Can I start off by saying we heard earlier various statements saying that industry has said under no circumstances would there ever be a compensation scheme. I think any comments along those lines were taken out of context. The industry has never said that it would never under any circumstances look at liability issues. It is clearly something that we recognise some people have concerns about and, as such, we welcomed Mrs Beckett's statement on 9 March when she gave provisional approval, and I think a symbolic approval, for GM crop commercialisation in the UK and said that she wanted to sit down with stakeholders and look at issues surrounding co-existence and liability. As an industry, we very much look forward to those discussions taking place and we will participate fully in those.

Q99 Chairman: Is that the view of SCIMAC given that you have a role to play?

Mr Pearsall: It is the case that we have not yet seen the consultation from Government. I would reiterate the point that we have made in our written submission that the issues of liability need to be set in their proper context. We have cited a number of parallel examples in which crops are grown for particular market demands and the potential for farmer suing farmer exists in the same theoretical way as it is being presented in the GM context, and

it has not proven to be an issue. I think it is with that caveat that it needs to be set in its proper context and taken into proportion.

Q100 Patrick Hall: Are you saying that it has not thus far proved to be an issue anywhere in the world?

Dr Merritt: I am not aware of anywhere in the world where we have had issues relating to liability of the kind that we are talking about here. Obviously there are different questions when marketing issues relate, for example, to the StarLink thing that was mentioned earlier. That was a different situation. Your introduction said it all in that we heard some statements earlier that industry does not accept its responsibility but I would utterly reject that. As you said, industry is liable under product liability for health or environmental liability, as we understand it. The issue then boils down to one of inter-sector economic impact. Whilst the Government has given an approval on safety grounds and, therefore, an access to market and also has set certain criteria, in this case the European-wide labelling threshold, whilst the biotechnology industry, I am sure, would not wish to deny or take part in any decision by another sector to set its own standards, whether that be related to a threshold or any other kind of standards, we would not see that it falls on to us to take responsibility for that marketing position. I think that is where the question and the statements about protectionism come in. It is quite clear that it would not be beyond the wit of mankind to set a specific threshold or criterion that would preclude another sector from a marketplace. That is a very important thing. I think the second point, which we did touch on earlier, is that there are two sides to the liability question. I am aware of a report in Australia where the economics of the canola industry were looked at recently and whilst it was acknowledged in that study that some small economic impact could be had on the non-GM sector from the access to the marketplace of the GM canola, there was a much larger negative impact on those in that sector who wished to use the GM canola if it were denied. We can provide many examples of the economic benefits that would be denied to farmers through a continuation of lack of access. Who is liable for that? It does have two sides.

Q101 Joan Ruddock: The economic study in this country found that there was not any economic advantage in our circumstances, as we speak now, to farmers producing GM crops. You cannot use the case that you have just made in the situation which we find ourselves today. In the UK today there is no demand for GM products from consumers.

Dr Merritt: I beg to differ on that interpretation of the economic study. I think the headline result from the economic study that the Cabinet Office Strategy Unit did said that there was no major impact on the overall economy in the short-term. We are talking about an economy in which the agricultural sector as a whole accounts for 0.9% of the GDP. They did acknowledge that there were some components within that where there was a significant effect. We can take one example, which was the GM sugar beet,

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which was shown to be a value of about £150 per hectare, or total value to the sugar beet sector, farmer sector, of £80 million. That is much larger, I can assure you, than the effect on the other side of organic sector of sugar beet, even if it were entirely wiped out.

Q102 Joan Ruddock: We are talking, are we not, in a situation where we acknowledge that the organic sector is a small but largely growing sector. The vast majority of UK consumers do not wish to eat GM products and, therefore, it is the protection of the non-GM conventional sector which is the significant issue here as we speak today. I think the case that you have made does not apply to the current position in British food and farming.

Dr Little: I think it is an area that sometimes you can go round in circles on when it comes to this side of it. When it comes down to it, if consumers do not buy GM products, farmers will not grow GM crops and the industry will not be here selling GM seed. When we are talking about co-existence, we are making a clear assumption that there is a market because if there is not a market, Bob is not going to be growing a crop of oilseed rape if he cannot sell it. When we are talking about co-existence and liability it is with the assumption that there is a market. We can have an argument as to whether there is going to be a market or not, but the conversations that we are having here about co-existence assume that there is. Clearly where GM crops have been introduced

elsewhere in the world there has been a very clear market. You have to discuss these issues on the assumption that there is a market.

Q103 Joan Ruddock: I am happy to do that but I was dealing with a very specific issue that had been raised. On the question of liability that we have been talking about in the context of farmer suing farmer, what has been the experience of any or all of you in terms of North America where there are, of course, significant numbers of court cases, some of which are against the companies themselves?

Dr Merritt: I would not know what the word “significant” implies here.

Q104 Joan Ruddock: Some.

Dr Merritt: There are some tens out of tens of thousands of farmers who are involved in cases, and often not related to the kinds of questions we are talking about here. The very well publicised farmer case in Canada relates not, in fact, as the court judged, to an accidental contamination but to a knowing and deliberate cultivation of the crop. That is what the court proceedings actually state contrary to a lot of the press reporting of that case. We have to look very carefully at the scale and the actual facts of some of those reported cases in North America.

Chairman: Can I thank you, gentlemen. You have heard what I said previously, that you cannot unsay what you have said, but if there is further evidence that either did not get coverage or you wish to clarify then please send us a note. Thank you for staying with us.

Supplementary memorandum submitted by the Agricultural Biotechnology Council (abc)

GM GOVERNMENT DECISION

1. In addition to our oral evidence session of 17 May 2004 there were a few matters on which the committee had requested we provide further evidence and one or two areas that we felt supplementary data was required to clarify points we had made. In this regard please find abc’s supplementary evidence below.

REGARDING ADVENTITIOUS PRESENCE

2. As mentioned by Dr Colin Merritt, abc feel that the current legal threshold of 0.9% for adventitious presence of GM will prove workable in most situations, based on scientific evidence, and observed adventitious presence levels seen around. Additionally, the SCIMAC code adhered to during the FSEs ensured that adventitious presence was not a problem during the FSEs, and a similar code will prove equally effective once GM crops are commercial in the UK.

3. We would also reiterate that this threshold is about choice and not about safety. Some sectors of the industry have hijacked this threshold and seek to exploit it or a self-imposed “lower level” predominantly for marketing reasons not supported by science.

4. Dr Merritt referred to a report by the Union of Concerned Scientists that indicates that even in the USA, where levels of GM crops are considerable and activity to avoid adventitious presence is less robust than what is proposed for the UK levels of adventitious presence are zero in many cases and generally well below EU thresholds on those occasions when adventitious level can be detected.

5. To substantiate this data we submit the following data available at http://www.ucsusa.org/food_and_environment/biotechnology/page.cfm?pageID=1315

Table 2-2 shows the results from various tests done by Genescan, one of the most experienced GM testing companies, where they looked for adventitious presence of GM seeds in non-GM seed in the USA. It indicates that 50% of non-GM maize samples tested were GM-free and that the 50% that showed a GM level were less than 0.1%. Similarly the soybean tests indicated 50% of samples to be GM-free while the remaining 50% were below 0.05%, almost 20 fold below the legal threshold imposed by the EU.

6. However, as we pointed out there are discrepancies, with other tests within the report, that show slightly higher levels, further emphasising the essential need for standardised methods of GM detection. Luckily the EU has anticipated this concern and developed a ring of labs under the Joint Research Council that will be responsible for providing standardised testing for levels of GM presence within the EU.

REGARDING ACCEPTANCE OF GM AMONGST UK FARMERS

7. The National Farm Research Unit has been surveying farmers regarding their attitudes toward growing GM crops in the UK every month since October 2000. While naturally there has been a little variation in attitudes in any given month, often reflecting the news of the moment, the accumulated figures from over 22,000 farmer responses spanning four years indicate;

- 45% of UK farmers are unequivocally in favor of growing GM crops in the UK;
- 21% are in favor of growing GM crops but have some understandable qualifications such as waiting for more market acceptance;
- 27% don't know;
- 8% are opposed.

8. It is interesting to note that while figures naturally fluctuate the percentage of farmers opposed to growing GM crops in the UK has never risen beyond 13% and when considering the emotion this debate has raised on occasion, such a low figure of opposition really becomes an overwhelming endorsement.

The full results of these surveys including the latest figures can be found at <http://www.monsanto.co.uk>

REGARDING THE WIDER ECONOMIC IMPACT OF GM CROPS AND THEREFORE LOSS (OPPORTUNITY COST) IF NOT ALLOWED IN THE UK MARKET

9. While the committee was aware of the Strategy Unit broad findings that recognised that, although economic benefits to the UK are likely to be limited in the short term, this was largely due to the relatively minor status in the UK of the crops currently being considered and would increase considerably once traits and crops more specifically suited for the UK were available. It is worth noting the "limitation" of benefit they identified was due to potential lack of market and public perception, not that the intrinsic economic benefit of the crop was low.

10. The Strategy Unit recognized that the current GM crops being considered for the UK would contribute £50 million per annum to the UK as a whole. This represents a critical and significant financial benefit to individuals and groups of farmers at a time when rural incomes have been at a historical low and provide the supporting data for their conclusion that existing GM crops offer "cost and convenience advantages" to UK farmers.

11. In other world areas the economic impact is truly vast, but this is not surprising. Currently 8 million businessmen and women (who happen to be farmers) have voluntarily decide to adopt GM crops and grow them on a collective area of 67.7 million hectares in 2003 representing a 15% increase on 2002, with a similar increase expected in 2004. abc believe that 8 million people voluntarily choosing this technology is the most graphic evidence that this technology offers those individuals significant direct and indirect economic benefits.

12. Several studies have looked at quantifying the economic benefit to farmers, many of which such as more targeted chemical use, has secondary environmental benefits that are difficult to place a pound value on. Some of these reports and their main conclusion follow.

- The National Center for Food and Agricultural Policy (NCFAP) studied nine crops currently in development for the EU market and concluded that crops developed through biotechnology could help European farmers reap an additional 8.5 billion kilograms of food and improve farm income over €1.6 billion while using 14.4 million fewer kilograms of pesticide. <http://www.ncfap.org>
- The introduction genetically modified herbicide tolerant (GMHT) sugar beet will provide average economic benefits of £154 per hectare to UK beet producing farmers (May 2003)
- 10% of UK GDP and 1.75 million people are employed by industrial sectors, which rely on biotechnology applications. Nawaz 2003.
- Biotechnology is extremely important to the EU, its own estimates place its value at €100 billion for the EU by 2005, (European Commission, 2002).
- Economic modeling forecasts predict that the worldwide adoption of genetically modified crops could boost the overall income of all regions by \$316 billion by 2015. (Australian Bureau of Agricultural Resource Economics (ABARE) Foster, 2003).
- The introduction of GM-oilseed rape to Canada has increased farmer and the supply chain earning of up to \$250 million and \$215 million a year, respectively. The Canadian Canola Council estimates that GM oilseed rape farmers spray 6000 tonnes less herbicide and use 31 million litres less diesel a year (Canola Council of Canada, 2001).

- The eight-biotech crops grown commercially in the US increased saved growers \$1.5 billion in 2001. Extrapolated analysis of 32 biotech crops under development but approaching commercialization indicated that, if adopted, they would contribute an additional \$400 million per year to grower savings (Gianessi *et al*, 2002).

13. We must consider the opportunity impact in the UK if the rest of the world moves forward with more environmentally friendly and also more economically viable agriculture and UK farmers are denied this option.

14. A recent report from Australia, referred to by Dr Merritt in his evidence session concluded, “Some stakeholders who represent groups that might be adversely affected by the release of GM canola for commercial production argued before me that the existence of these negative effects on other stakeholders alone implies that the release should not be permitted. This argument is inadequate, as it takes no account of potential benefits and ways of reducing risks. A denial of a commercial release would impose costs on those seeking to grow GM canola in just the same way, as the release would impose costs on other stakeholders.”

<http://www.vic.gov.au/VictoriaOnline?action=content&id=328&pageName=Latest&pageTitle=Latest>

REGARDING “LEGAL PROSECUTION” OF FARMERS

15. Concerns were raised in our evidence session about high profile cases where the industry was involved in legal disputes with farmers. It is a NGO provoked misconception that the industry is suing farmers that accidentally receive or grow any GM crops at all and that the industry pursues any individual that is found to have “one GM plant within his farm borders”. This is simply not true. No legal prosecution by the industry has been initiated against a farmer that had adventitiously grown GM seed. It is not Industry’s intention to ever prosecute farmers that have adventitious of GM crops on their farms.

16. The few high profile cases that have occurred have been initiated against farmers that have grown entire fields of very high purity GM crops. In these rare cases industry needs help create a level playing field for all farmers. It would be unfair for 99% of farmers actively growing a GM crop to be paying companies a technology fee for the cost and time benefit of growing a GM crop, only to be out competed by their neighbor that is receiving the same costs and time benefit, without paying a technology fee to the company that spent decades and tens of millions of dollars developing the technology.

17. These rare cases are not about controlling farmers or patenting life. They are about protection of legal property. In the most high profile of these cases between Monsanto and Schmeiser. Mr Schmeiser lost the initial action, as well as two further appeals that culminated in defeat again last week, in the Canadian Supreme Court.

The Agricultural Biotechnology Council (abc)

May 2004

Supplementary memorandum submitted by Supply Chain Initiative on Modified Agricultural Crops (SCIMAC)

INQUIRY INTO THE GM PLANTING REGIME

SCIMAC would like to submit the following additional information in response to questions raised by Committee members regarding the efforts made by SCIMAC to establish dialogue and consensus on co-existence issues.

SCIMAC—WORKING WITH OTHERS

Members of the Committee are reminded that SCIMAC is not a campaigning body. SCIMAC membership is broadly-based, comprising organisations and individuals already active in conventional non-GM and organic agriculture. SCIMAC is concerned above all with the availability of choice and access to a range of approved crop production systems, not with the promotion of one option to the exclusion or detriment of others.

SCIMAC has made considerable efforts to establish a dialogue with the organic sector, both through meetings with the UK Register of Organic Food Standards (now the Advisory Committee on Organic Standards) and through direct contact with representatives of organic sector bodies. To date these discussions have failed to result in any meaningful progress towards practical accommodation on co-existence issues, largely because they have been dominated by the views of the Soil Association, which is actively campaigning against the use of GM technology. However, the Guardian newspaper recently published the following letter from rival accreditation body Organic Farmers & Growers in response to an

article by Lord Taverne criticising the Soil Association. This would appear to give renewed grounds for optimism that the extreme views articulated by the Soil Association cannot be taken to represent all organic producers, and that there may be common cause in the pursuit of “better food and improved sustainability”:

Organic approach to better food and environment

The Guardian, Friday 7 May 2004

Dick Taverne (The costly fraud which is organic food, May 6) tars all in organics with the same brush. There are extremes, as in every field. But the majority lie in the middle, happy to coexist.

Indeed, on a large estate, organic production can exist alongside non-organic. Many organic farmers believe in doing the best they can to support the environment and producing food as healthy and natural as is possible.

In doing so they increase choice for consumers—who are entitled to their own beliefs about the quality of the food they eat. Sensible exponents of organics do not make claims they cannot substantiate. Perhaps, in the not too distant future, science will provide us with more data on which consumers and producers alike can decide. Until then, why don't we all simply keep working towards better food and improved sustainability, instead of trying to undo the good work that has been done to reassure the public about the excellent quality of all British food.

Richard Thompson

Organic Farmers & Growers

In addition, SCIMAC has held meetings with representatives of UK beekeeping organisations, and has sought to work with the members of those organisations throughout the FSE process by providing early details of the locations of GM trial sites at each successive round of planting.

SCIMAC also maintains an active dialogue with representatives of food processors and manufacturers, notably through liaison with the Food and Drink Federation and the Institute of Grocery Distribution.

Indeed the SCIMAC initiative has become widely acknowledged within the UK and internationally as a sound and effective framework on which to build in delivering practical co-existence between GM and non-GM agriculture, as evidenced in the following 10 key achievements:

1. FORUM FOR CROSS-INDUSTRY CONSENSUS

The development of the SCIMAC initiative since June 1998 has provided a forum for consensus between all major farm supply chain bodies in the UK on a cross-industry approach to GM crop stewardship and introduction;

“The NFU was a founder member of SCIMAC and continues to actively support it. The NFU’s role as a member of SCIMAC ensures that the views and requirements of its farmer members, whatever their chosen production method, can be represented.”

NFU policy statement, April 2003

2. GUIDELINES FOR BEST PRACTICE

SCIMAC has developed on-farm guidelines to support best practice management of GM crops within UK agriculture;

“The SCIMAC guidelines will ensure that producers growing GM crops will follow agricultural practices. This is an essential component of our plan to ensure that commercial cultivation of GM crops is carefully managed.”

Jeff Rooker, Minister of State, May 1999

3. FRAMEWORK FOR CO-EXISTENCE

The SCIMAC guidelines have been independently acknowledged as a sound basis on which to build in delivering successful co-existence of GM and non-GM crops;

“We conclude that the SCIMAC guidelines are a practical approach to crop-handling procedures on a particular farm. We believe the SCIMAC guidelines offer a firm basis on which to build in order to segregate GM and non-GM crops in the UK countryside.”

House of Commons Agriculture Committee, July 2000

4. BLUEPRINT FOR TECHNOLOGY INTRODUCTION

The SCIMAC initiative has been independently recognised as a potential blueprint for the managed commercial introduction of other GM technologies within agriculture:

“We welcome the role already being played by UK farmers and their representatives (as well as others in the agricultural/food supply industry) in the SCIMAC initiative to determine best practice for the introduction of GM crops. We recommend that the SCIMAC approach to best practice for the introduction of herbicide

tolerant crops be extended to the broader issues of transitions in agronomic practice raised by GM plant varieties which have significant potential environmental impact."

Nuffield Council on Bioethics, May 1999

5. SUCCESS IN DELIVERING FSE TRIAL SITES

As the industry partner within the UK Government's Farm-Scale Evaluations, SCIMAC ensured the successful delivery of more than 280 field-scale trials of GM herbicide tolerant crops in the UK, meeting the independent scientific criteria of this pioneering biodiversity research programme;

"The consortium informed the SSC that all field work on spring oil seed rape, beet and maize is now complete and that enough experimental fields had been studied to address the null hypothesis. The SSC congratulated all members of the research consortium, the farmers and the industry group SCIMAC on this achievement."

FSE Scientific Steering Committee, November 2002

6. DEMONSTRATING THAT CO-EXISTENCE CAN WORK

The SCIMAC guidelines have been applied and independently audited at all field-scale sites, with no loss of organic / non-GM status, and very high levels of grower compliance;

"Over the three year reporting period there has been a high level of compliance with the SCIMAC Code of Practice and Guidelines. No major non-conformances have been found in the eight Critical Control Points identified by SCIMAC."

ADAS Summary Report, May 2003

7. A KEY OPINION FORMER IN EUROPE

SCIMAC has worked closely with EU Commission officials on the co-existence issue, and was invited to participate in EU Commission Stakeholder Roundtable on Co-existence, where the UK's initiative was specifically welcomed by Commissioner Franz Fischler;

"An encouraging trend is that an increasing number of initiatives are being taken by the Member States. In the UK, a code of good practice for herbicide-resistant crops is currently being tested under field conditions."

EU Commission Communication on Co-existence, March 2003

8. POSITIVE CONTRIBUTION TO EU POLICY

EU Commission Recommendations on Co-existence, published in July 2003, reflected the guiding principles set out in the SCIMAC approach.

"The Commission has followed the SCIMAC project with great interest. It has provided valuable input to the Commission's considerations concerning the co-existence issue."

Kim Madsen, DG Sanco, July 2003

9. INTERNATIONAL RECOGNITION

SCIMAC has worked hard to establish dialogue and co-operation with similar initiatives in other world areas;

"Management systems such as SCIMAC (UK) have a great deal to offer all farmers, whether they be non-GM, organic or GM producers."

"SCIMAC has developed a valuable package of practices for the introduction and growing of genetically modified crops."

RIRDC, Department of Agriculture Food and Fisheries, Australia, 2001

10. A WHOLE CHAIN APPROACH

SCIMAC has maintained strong relationships with other key stakeholders along the UK supply chain. These links will become increasingly significant as the conditions for managing co-existence, traceability and labelling at a UK and EU level are developed.

"FDF welcomes the SCIMAC initiative which will greatly facilitate the managed introduction of GM crops to UK agriculture and the provision of associated information along the food chain to food manufacturers and their customers."

Food and Drink Federation, UK

As can be seen from these examples, SCIMAC has a demonstrable track record of working closely with others to address the central issues of co-existence. Our overriding objective is to safeguard choice and access

to all approved forms of crop production. We strive to be pragmatic, inclusive and equitable in our approach, and we remain committed to building on what has already been achieved in the UK, in collaboration with all other interested parties.

Supply Chain Initiative on Modified Agricultural Crops (SCIMAC)

June 2004

Monday 24 May 2004

Members present

Mr David Drew, in the Chair

Ms Candy Atherton
Patrick Hall
Joan Ruddock

Paddy Tipping
Mr Bill Wiggin

Memorandum submitted by the Agriculture and Environment Biotechnology Commission

GM MAIZE DECISION

EXECUTIVE SUMMARY

1. The Government's recent announcement on GM policy, representing the first agreement in principle to commercial cultivation of a GM crop in the United Kingdom, will have significant implications for the future of agriculture in the UK. After the unprecedented consultative and analytical exercise of the GM dialogue, it will also have implications for future policy making on controversial science-based issues.

2. We welcome the Government's agreement to our recommendation to require GM-farmers to comply with a statutory code of practice to achieve the statutory (0.9%) labelling threshold for non-GM products, and to monitor the effectiveness of these measures during a carefully managed introductory period. However, the Government's statement leaves open several important questions, particularly on co-existence and liability. It is important that these issues are resolved, and a satisfactory co-existence and liability regime is implemented, before any commercial cultivation of GM crops goes ahead. In particular: the Government must take a view on the difficult question of whether coexistence arrangements will be put in place to deliver a threshold of GM content lower than the legally defined figure of 0.9%; it must put in place a compensation system for farmers who lose financially through their non-GM crops exceeding statutory thresholds; and it must implement a satisfactory liability regime to deal with possible unforeseen environmental effects of GM crop cultivation. If voluntary GM-free zones are to be encouraged, the practical difficulties of establishing these must be resolved.

INTRODUCTION

3. The Agriculture and Environment Biotechnology Commission (AEBC) was launched by the Government in June 2000 with a remit to provide independent, strategic advice on developments in biotechnology and their implications for agriculture and the environment. Our origin was a review in 1999 by the Cabinet Office and the Office of Science and Technology of the Advisory and Regulatory Framework for Biotechnology, which concluded that a broader approach was needed for strategic issues. Government appointed our 20 members from a diverse range of backgrounds, with a wide range of skills and expertise. We work in an open and transparent way, looking at the broad picture and taking ethical and social issues into account as well as the science.

4. The Biotechnology Commission played a key role in the process leading to the Government's statement on genetic modification on 9 March 2004. The first of the Commission's reports, *Crops on Trial*, in September 2001 called for a "wider public debate . . . to consider what role GM crops might have in UK agriculture in the future". This recommendation was accepted by Government, and after more detailed advice from the Commission in April 2002, eventually became the *GM Nation?* public debate (Summer 2003). The debate was one strand of the GM dialogue, alongside the GM Science Review and the Prime Minister's Strategy Unit's Costs and Benefits study. Professor Malcolm Grant, the AEBC Chairman, was asked to appoint and chair an independent steering board to run the debate at arm's length from Government. Seven of those he appointed to the board were AEBC members. At the same time as the debate was being conceived and managed, the Commission was developing its thoughts on the issue of whether and how GM agriculture could co-exist with conventional and organic farming, and on the issue of potential environmental liability, if commercial cultivation were to go ahead. Its report on *GM Crops? Coexistence and Liability* was published in November 2003. The Government responded to some of the recommendations in this report as part of its recent statement on GM crops and has indicated that it will respond to the others in due course.

5. This Memorandum should be seen as an addition to the existing body of advice and other material that the Biotechnology Commission has already published since its inception in 2000, much of which is of relevance to this inquiry. It should not be considered to supersede or comment on any previous AEBC advice, which still stands in its entirety. Neither should it be seen as comprehensively addressing the terms

of reference of the Efra Committee's enquiry. While all Members have agreed to the content of this memorandum, there are some issues on which the Commission is not in a position to take a unanimous position, given the wide range of points of view of its Members.

BROAD IMPLICATIONS

6. The Government's recent announcement on GM policy was undeniably a watershed, and its implications will be significant. It represented the first agreement in principle to commercial cultivation of a GM crop in the United Kingdom, on grounds of a case-by-case, precautionary and evidence-based approach. Government proposes that future decisions on other GM crops will be made on a similar basis. However, the policy announcement leaves significant questions still to be resolved, particularly on co-existence and liability.

7. As the Government states, some concerns often raised about GM crops do not apply in the case of GM maize, as it has no wild relatives in the UK and is unlikely to survive a winter in this country, and little organic maize is grown here. Moreover, it appears that the crop will not actually be grown in the UK, after reports that Bayer CropScience has withdrawn the *Chardon LL* herbicide-tolerant maize variety from the UK market. However, these facts simply highlight the uncertainty about how concerns not applicable to GM maize will be addressed when making decisions on future applications for approval of other GM crops.

8. The Government's statement also has significant implications for the future of policy-making on controversial scientific issues. The statement is informed and accompanied by the Government's response to the GM dialogue. It takes into account a diverse body of evidence arising from a unique consultative and analytical exercise, including, in addition to the three strands of the dialogue, the farm-scale evaluation (FSE) results and our report on co-existence.

9. The Innogen conference in Edinburgh in November 2003 (co-sponsored by the AEBC) asked "to what extent has the UK GM Crops Dialogue set a pattern for future decision making on new science and technology" and suggested that "the Government's response would determine whether people thought it worthwhile to get engaged in any public issue". While Commission members hold different views on whether the Government's decision to allow commercial cultivation of maize was the right one, it is clear that the GM dialogue process has engendered a more considered approach to the issues than we might otherwise have seen. The Government deserves congratulation for sponsoring the public dialogue on GM. It must now make clear how it will build on and learn lessons from the process before embarking on future, similar exercises.

COEXISTENCE

10. Resolving the issue of coexistence of GM and other crops, and associated questions of liability, is a challenging task for Government, as the Commission is well aware after deliberating on these subjects at some length in preparing our report on *GM Crops? Coexistence and Liability* (published in November 2003). But a resolution is absolutely necessary if GM crops are to be grown commercially in the UK. In our report, we predicted that a *laissez faire* approach, with no measures put in place to facilitate co-existence, would make successful co-existence impossible in some cases and more difficult in others, thereby restricting choice for both consumers and farmers. Our first recommendation was that the main aim of Government policy on co-existence of GM and other crops must be to facilitate consumer choice as far as possible, while allowing UK farmers to respond to market demand. The Government has agreed that coexistence arrangements should facilitate consumer and farmer choice.

11. Annex A summarise our recommendations on Coexistence and Liability and the Government's response so far to each of these. We are comforted that the Government has accepted several of the Commission's key recommendations on coexistence, including that farmers who grow GM crops should be required to comply with a code of practice with statutory backing to achieve the statutory labelling threshold (maximum 0.9% GM content) for non-GM products, and that the initial introductory period should be carefully managed to monitor the effectiveness of these measures. We also recommended that codes of practice (or protocols) should be straightforward to amend if this monitoring showed that co-existence was not being achieved as intended and that, if necessary, the Government should be able to suspend GM crop production until arrangements had been made to resolve co-existence problems. It is not clear whether the Government envisages this contingency in its plans for a statutory code of practice.

12. There were some issues where it proved impossible to resolve differences of opinion in our deliberations on co-existence and liability—in which case our report set out clearly and fairly the different choices facing Government, and analysed the implications of each. This included the question of whether co-existence arrangements should be put in place to deliver a threshold of GM content lower than the legally defined figure of 0.9%, which comes about because organic farmers, and possibly other non-GM farmers, may wish to work to a non-statutory threshold of 0.1%. The Government has stated that it will "explore further with stakeholders whether a threshold lower than 0.9% could be reliably delivered at a reasonable cost on a crop-by-crop basis."

13. We were uncertain what thresholds would be achievable in practice if GM crop cultivation went ahead, and recommended that the initial post-commercialisation monitoring period should be designed to assess what was realistically possible. However, Commission members' views on what the implications of the results of this monitoring should be for UK policy on cultivation of GM crops varied considerably. Some saw the 0.1% threshold as a realistic and reasonable response to consumer demand and believed that GM cultivation should be constrained as required to achieve it, while others felt that any non-GM growers who wished to produce to a threshold lower than the statutory one should take sole responsibility for achieving this, without unfairly constraining GM farmers. The Government has not made its view clear and will need to do so before any commercial GM cropping takes place.

COMPENSATION

14. The Commission agreed unanimously that farmers suffering financial loss as a result of their produce exceeding statutory thresholds through no fault of their own should have access to compensation. In principle, insurance would be the best means of financial redress, but cover was not yet available and it would probably take some time for a market to develop. In addition, it was not clear whether the cover provided by the insurance system would be first-party (farmer insured against losses due to his own crops exceeding a statutory threshold), or third-party (GM-farmer insured against claims from others). A first-party system would be simpler but it would mean that the cost of providing compensation would be borne by organic or non-GM farmers themselves; whereas the cost of third-party insurance would be borne by those cultivating GM crops, which would be a better reflection of the compensation arrangements we proposed. We recommended that, until a satisfactory insurance market developed, special arrangements should be put in place to compensate financial loss. We suggested the possibility of establishing a fund or indemnity to cover compensation claims, and set out several options for financing this, including: Government, the agricultural biotechnology industry or farmers through a levy on the sale of GM-seed or on all harvested crops.

15. The Government said in its response to the GM dialogue that it will “consult stakeholders on options for providing compensation to non-GM farmers”. It has stipulated that the GM crops industry would need to fund any compensation scheme (and has ruled out the possibility of funding by non-GM farmers or by Government itself)—saying that this would be a further incentive to biotechnology companies to ensure that co-existence arrangements are effective and complied with. The Government has failed to guarantee that any system for compensation will be secured prior to its allowing the commercial cultivation of GM crops to proceed.

16. The Commission's report on co-existence looked at several issues that Government will need to resolve if it is to set up a compensation scheme. It discussed how a compensation fund might operate, including what conditions would apply to claims and how they would be judged. It also looked at whether contributions to a compensation fund should be mandatory or voluntary; if mandatory, the scheme would need to be statutory, but it was unclear whether this would be considered a proportionate approach to the development of co-existence measures and therefore acceptable under EU law. There is also the issue of whether there should be compensation for exceeding thresholds lower than the statutory one, as discussed above for co-existence measures more generally.

TIMING OF CO-EXISTENCE MEASURES

17. In announcing the Government decision to allow in principle the commercial cultivation of GM herbicide-tolerant maize, Margaret Beckett said she anticipated “that co-existence measures will be in place before any GM crops are grown commercially”. The Commission believes that a satisfactory co-existence and liability regime must be implemented before any commercial planting of GM proceeds.

CO-EXISTENCE PROTOCOLS AND SEPARATION DISTANCES

18. Separation distances would be only one element of the statutory crop management protocols required to minimise adventitious presence of GM in non-GM crops. Other possible measures (discussed in more detail in our report) include:

- strict control of GM “volunteers”—unwanted plants growing spontaneously outside the intended place and and/or time;
- high degree of seed purity and careful monitoring of seed spillage;
- cleaning of all farm machinery used to sow or harvest the crop;
- separate handling and storage of GM and non-GM crop varieties, and cleaning of GM storage areas after use;
- specification of minimum cropping intervals; and
- planting of barriers to minimise cross-pollination.

19. The different measures required and the relative significance of each will vary for different crops, and protocols should be designed on a crop-by-crop basis. They should build on existing practice and should aim to be precautionary, while remaining as practicable as possible for GM farmers to follow. Separation distances should be set initially using the best available data from existing published research on gene flow. Nevertheless, whether or not protocols will work as intended depends on a number of factors, including seed purity, the extent of take-up of GM cropping and the behaviour of farmers. There are uncertainties about the way in which the different factors will interact at commercial scales, as acknowledged in the GM Science Review¹. This is why the initial post-commercialisation period of intensive monitoring and auditing of co-existence arrangements is crucial. It seems almost inevitable that co-existence protocols, or codes of practice, would be subject to some modification after this period.

ENVIRONMENTAL LIABILITY

20. Just as important as the issue of liability for economic loss is the question of environmental liability. Any impacts of growing GM crops need to be assessed in the general context of modern agriculture, including the impact of existing and other novel agronomic practices. Much adverse environmental change has been brought about by past agricultural practices without any thought of recourse to liability. Some Commission members believe that it would therefore be wrong to single out GM for special treatment. But others feel that, in the light of past experiences where things have gone wrong unexpectedly (for example BSE) a rigorous liability regime must be put in place from the outset to reassure the public that legal responsibility will be accepted if unforeseen impacts become apparent in the future.

21. Commission members had a range of views on the likelihood of significant environmental impacts arising from the commercial cultivation of GM crops, once assessed as safe for release into the environment. Given the uncertainties about what if any impacts might arise, our advice focused on the hypothetical question of what would happen if regulatory safeguards were to fail and a significant impact was detected, including the issues of:

- whether the impact could be, or needed to be, mitigated;
- who should have the power to require remedial action to be taken; and
- who should be liable to undertake and/or pay for remedial action.

22. Considering what might constitute “harm” to the environment raises difficult questions. Any adverse environmental impacts of growing GM crops, if they should occur, are likely to be long-term, cumulative and diverse rather than short-term and easily identifiable, making liability difficult to attribute. Furthermore, if any environmental harm were to be irreversible, a liability regime would be of limited value.

23. There are therefore inherent limits to a system of liability and it will never be possible to cover risk completely. Where liability fails, the responsibility rests, by default, with the state. Notwithstanding this important caveat, we recommended that an amended liability regime should be put in place to improve the response to possible environmental impacts from GM crops. We proposed a model of administrative liability that imposed primary responsibility on the state, with a right of recovery of costs against operators responsible for causing the damage concerned.

24. The new EU Environmental Liability Directive was formally adopted at the end of March 2002. Member States must transpose it into national law by 2007. The new Directive will cover environmental damage from GMOs, but its scope is limited to European protected species and protected natural habitats (as designated under other EU legislation). We believe that the Directive, which was in draft form when our report was published, provides a platform on which the Government should build a separate UK liability regime for environmental damage caused by GMOs. Our report recommended that the general approach of the Directive should be used to develop this new liability regime.

25. The UK Environmental Protection Act 1990 gives the competent authorities the power to undertake remedial work for harm caused by the release of GMOs, but costs can only be recovered from those responsible if they have been convicted of a criminal offence under the Act. To bring a UK liability regime in line with the approach of the Environmental Liability Directive we recommended two amendments to the 1990 Act:

26. First, the Act should be amended to remove the requirement for a criminal conviction, which is wrong in principle and out of line with other existing administrative liability regimes as well as with the Directive.

27. Second, the Act should be further amended to make dealing with environmental effects from the release of GMOs, including diffuse effects, the responsibility of the competent regulatory authority. The competent authority should have a number of options at its disposal for doing this; these will include requiring remediation, and compensating the competent authority for its own expenses in remedying damage. The appropriate action to take will depend on the nature of the effects: broad-ranging powers will need to be conferred upon the competent authority.

¹ GM Science Review Panel, First Report p 25 (Executive Summary).

28. In its response to the GM dialogue the Government said, “we are currently considering the AEBC’s recommendations on environmental liability and will respond in due course”. We look forward to this response. We believe that Government must put in place a satisfactory regime along the lines we have recommended before any commercial cultivation of GM crops takes place in the UK.

29. In thinking about potential environmental impacts of cultivation of GM crops we considered the fact, clearly demonstrated by the Farm Scale Evaluations, that effects can be caused by the way in which a particular crop is used in the field, rather than the crop itself. Any conditions imposed on management of GM crops—such as co-existence protocols or codes of practice—would therefore have implications on the potential environmental effects. Environmental effects could be positive as well as negative, and if commercial cultivation of GM crops were to proceed, we agreed that every effort must be made to ensure that any potential environmental benefits could be realised. We recommended that both Government and industry should consider the possibility of developing protocols for the positive environmental management of the cultivation of GM and other crops, to go alongside measures designed to achieve co-existence.

GM-FREE ZONES

30. In its statement on GM policy, the Government said that it would “provide guidance to farmers interested in establishing voluntary GM-free zones in their areas, consistent with EU legislation”. It is clear that compulsory GM-free zones would be contrary to EU law, unless a particular environmental risk to the area in question could be shown. However, the possibility of encouraging the development of voluntary GM-free zones was recognised in the European Commission’s guidelines on co-existence². When we considered these issues, we were concerned that compulsory zones would significantly limit some farmers’ freedom of choice and could therefore be justified only on the grounds of environmental risk. Some of us were in favour of encouraging voluntary zones. Others felt that such decisions should be left to the market and individual farmers.

31. There are practical difficulties with establishing GM-free zones, whether voluntary or compulsory. Much depends on the strictness of interpretation of the term “GM-free”. With a strict interpretation, buffers between zones might need to be established because of the uncertainties around gene flow from crops cultivated at commercial scale, and both transport of GM material into or through the zone and unauthorised growing within it would need to be monitored carefully by the participants. Without these and other measures in place, the suspicion arises that the establishment of GM-free zones would be a largely superficial exercise. We await the promised Government guidance with interest.

Agriculture and Environment Biotechnology Commission (AEBC)

April 2004

Annex A

SUMMARY OF AEBC RECOMMENDATIONS ON CO-EXISTENCE AND LIABILITY AND GOVERNMENT RESPONSE TO DATE (AS DRAWN FROM THE GM DIALOGUE: GOVERNMENT RESPONSE, 9 MARCH 2004). NOTE THAT GOVERNMENT HAS INDICATED THAT IT WILL RESPOND FURTHER IN DUE COURSE

<i>Recommendation 1</i>	<i>Government Response</i>
The main aim of Government policy on co-existence of GM and other crops must be to facilitate consumer choice to the greatest possible extent, while allowing UK farmers to respond to present and future national and international market demand.	We fully accept that arrangements do need to be put in place to facilitate the co-existence of GM and non-GM crops. These arrangements should: <ul style="list-style-type: none"> — facilitate consumer choice, while recognising that all farmers are free to choose their method of production (conventional, organic or GM); — be determined on a crop-by-crop basis; — be practical, proportionate, effective and equitable; and — build on existing experience or arrangements as far as possible.
<i>Recommendation 2</i>	<i>Government Response</i>
If GM crops were to be grown commercially, farmers growing them should be required to follow legally enforceable crop	We believe it is reasonable to expect GM farmers to bear the main responsibility for implementing measures to minimise GM presence in non-GM crops. We envisage that these measures should have statutory backing, and are likely to include a requirement to notify

² European Commission Recommendation 2003/556/EC of 23 July 2003 on guidelines for the development of national strategies and best practices to ensure the co-existence of genetically modified crops with conventional and organic farming.

management protocols designed to achieve at least the 0.9% threshold.

Recommendation 3

If GM crops are commercialised, there should be an initial introductory period where there would be intensive monitoring and auditing of co-existence arrangements to determine whether and how far co-existence was actually being achieved.

Recommendation 4

The powers to impose co-existence protocols should allow for their ready amendment if data gathered in the introductory period showed that co-existence and the delivery of consumer choice was not being achieved and Government should be able, if necessary, to suspend production of a GM crop unless and until arrangements were made to overcome co-existence problems.

Recommendation 5

There should be special arrangements for compensation for farmers suffering financial loss as a result of their produce exceeding statutory thresholds through no fault of their own, with a view to an insurance market developing in due course.

Recommendation 6

Government should use the general approach of the draft EU Environmental Liability Directive to develop the UK's liability regime for any damage caused by the release of GMOs to the environment.

Recommendation 7

The Environment Protection Act 1990 should be amended to allow the competent regulatory authority to require environmental remediation where reasonable and appropriate in respect of environmental harm caused by the release of GMOs, irrespective of criminal liability.

neighbouring farmers, separation distances between crops, the control of crop weeds and the cleaning of farm machinery. It should be designed to ensure that non-GM farmers do not have to label their produce as "GM" under EU labelling rules, which require food and feed with an unavoidable GM content above 0.9% to be labelled. We will explore further with stakeholders whether a threshold lower than 0.9% could be reliably delivered at reasonable cost on a crop-by-crop basis.

Government Response

We agree with the AEBC's recommendation that there should be a carefully managed introductory period. This will enable us to monitor the effectiveness of co-existence measures and amend them as necessary to achieve the required threshold(s). It will also allow us to assess what levels of GM adventitious presence are achievable in practice on a crop-by-crop basis in a commercial farming context.

Government Response

[The introductory period] will enable us to monitor the effectiveness of co-existence measures and amend them as necessary to achieve the required threshold(s).

Government Response

We will consult stakeholders on options for providing compensation to non-GM farmers who suffer financial loss through no fault of their own as a result of their produce having a GM presence exceeding statutory thresholds. Any compensation scheme would need to be funded by the GM crops industry, rather than by Government or producers of non-GM crops. This would provide a further incentive for the biotech companies to ensure that co-existence arrangements are effective and that farmers comply with them.

Government Response

We are currently considering the AEBC's recommendations on environmental liability and will respond in due course.

Government Response

We are currently considering the AEBC's recommendations on environmental liability and will respond in due course.

Recommendation 8

The Environment Protection Act 1990 should be further amended, reflecting the regime envisaged by the draft Directive. The means of dealing with any environmental effects from the release of GMOs, including diffuse effects, should be the responsibility of the competent authority, who will have a number of options at their disposal, including requiring remediation.

Government Response

We are currently considering the AEBC's recommendations on environmental liability and will respond in due course.

Recommendation 9

Active consideration should be given to the development of protocols for positive environmental management of the cultivation of GM and other crops, to operate alongside co-existence protocols.

Government Response

No response to date.

Agriculture and Environment Biotechnology Commission (AEBC)

April 2004

Witness: **Professor Malcolm Grant**, Chair, Agriculture and Environment Biotechnology Commission, examined.

Q105 Chairman: Professor Grant, welcome. You are a regular recidivist for both the MAFF Select Committee and the Defra Select Committee. You know what we are trying to ascertain and we will obviously call upon your expert knowledge to help us do so and, as is usually the case, you are the precursor to the Minister, who I am sure will be very keen to read, if not to hear in person, what you have to say. Not everybody is completely au fait with what AEBC does and stands for, so could you tell us in a few sentences where the body is at and who is represented on it?

Professor Grant: By all means, Chairman, and thank you for the invitation to appear before the Committee this afternoon. The Agriculture and Environment Biotechnology Commission was set up four years ago with a wide range of members in an attempt to provide the Government with an expert commission who could give it strategic advice on the potential implications of biotechnology for agriculture and the environment. It is a twenty strong commission; it has membership from a group of different communities who have interest and experience in biotechnology matters including from NGOs, from the farming community, consumer representation, and from the industry, but the critical thing about it is that its members are not there to represent foregone conclusions but to participate in an intellectual argument, such as you will see in the coexistence and liability report that I know the Committee has read, to try to bring the Government some profound, or at least, worthwhile advice.

Q106 Chairman: That is very succinct and helpful. If we could start then with the issue of tolerance, or

dare I say thresholds, there is at least from the evidence we received last week some criticism of these thresholds. One could advance the case that there is considerable confusion even amongst the aficionados on both sides of the argument; I suppose there is also a possibility that people could advance a view that there is a bit of a fudge going on; that we really want to talk about GM free, for those who wish to be assured that that is the case of what they are eating but in reality no such thing exists, or the industry says no such thing exists, so we start with this 0.1% threshold, and that really is a very difficult figure to make sense of so we get to this 0.9% threshold over which a label which you cannot guarantee is GM free will so be ascribed. Can you give us some clarity on what is going on with these thresholds?

Professor Grant: I can come at it from two different angles. This is an issue that exercised the Commission for quite a long time. If you come at it from a general public policy perspective, the arguments that tended to divide our members related to the use to which the thresholds were being put, because in our conversations that use was around the prospect that compensation might be paid by one party to another if the threshold were exceeded as a result of growing a GM crop nearby, and the economic framing of the question therefore resolved around on which party it was most equitable to impose that burden. Was it on the party who wished to maintain an entirely GM free output, whether that be organic or other agriculture, or should it be on the party who was introducing a GM type of agriculture into the area which was having an impact on the other, and

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according to those arguments one could find a range of potential thresholds from nought or, as it is commonly interpreted in practice 0.1%, through to a higher threshold. The second line of approach that we adopted, however, started to emerge from the threshold of 0.9% that had been adopted in the food and feed regulation last September, and it is around that area that I think there is some confusion. The regulation, in Article 12 and Article 24, talks about “adventitious or unavoidable presence”, and I know that an argument has been raised with this Committee that that means that, if the presence is avoidable, then the true threshold should be zero, in other words there should be an obligation on the part of those seeking to market the produce to ensure that there is zero threshold, or else (I assume) that the product is labelled accordingly. I have not had the advantage of seeing the legal advice on which that view is based. I would, though, I think draw to the attention of the Committee a couple of other provisions of the regulation. One is in the recitals at the beginning, Recital 24, which stresses that “a threshold should be established for the adventitious or technically unavoidable presence of GM material in foods and feeds both when the marketing of a material is authorised in the Community and when the presence is tolerated by virtue of this regulation”. The recital seems to be saying that such material may be present in minute traces in conventional food and feed as a result of adventitious or technically unavoidable presence during seed production, cultivation, harvest, transport and processing, and it may be possible to read into that that the 0.9 threshold is intended to be a tolerance. Where the presence of the material is avoidable, in other words it is under the control of the producer, then there is an obligation to take reasonable or appropriate steps to avoid it, but where it is adventitious, which may mean that it is as a result of cross-pollination or as a result of contamination through the production process due to the acts of others, then it seems to me that it is at least arguable that the 0.9% becomes a threshold. I would just add to that a brief reference in Article 43 to an amendment that the food and feed regulation makes to the main Directive No 18/2001 on deliberate release to the environment, when it puts an obligation on Member States to take appropriate measures to avoid the unintended presence of GMOs in other products and requires the Commission to gather and coordinate information and to develop guidelines on co-existence. If that line of argument is correct, it suggests (certainly to my mind) that 0.9% is a level of tolerance for adventitious presence, but should it be a presence that is due to the acts of the person bringing the product to market then appropriate steps should be taken to reduce the GM content. I do not know that I can help the Committee further than that.

Q107 Chairman: That is very useful. We will have to look at that in contextual analysis because some of us will want to unpick it, but what you are

saying at least gives me some fear that the only people who really will ever gain from this are the lawyers, because there is always going to be a tendency for someone to talk about an accident adventitious escape of the GM materials and the real difficulty is tracing this back. If I could link this to something which has not had due attention paid to it, which is the non farm likelihood of the transfer of GM materials—whether in the form of transport material, the use of equipment—this is really going to open up a bit of a can of worms. I know it may be that this is already the case because an organic farmer could be facing this threat at the moment from conventional crops, but there does not seem to be the same sensitivity as you in your four years lying on this bed of nails will realise is likely to be opened. How do you see this potentially going?

Professor Grant: I should start by declaring an interest as a lawyer—

Q108 Chairman: We did not want to remind you of your previous incarnation!

Professor Grant:—but I do not think it is the only profession that is likely to benefit. One of the complexities, as we set out in one of the annexes to the report, is that of testing, and the inherent unreliability of some of the methods of testing, and the expense of the PCR method which is probably the least unreliable of all of them. What we have been anxious to do in our thinking about this is to find a common sense approach, one which will not pit farmer against farmer in the courts and one which will allow, so far as is possible, a co-existence regime to be introduced, to be monitored, and to be enforced without constant recourse to litigation. That, of course, depends on goodwill on all sides, and it also depends to a significant extent on, first of all, the labelling regime around 0.9% and, secondly, the attitude and responses likely to be taken by the Soil Association and the other certifying authorities. On their current approach to GM they would be entitled, I think, applying the present GM regulation to decertify a crop or a farm even where GMOs were used in the course of agriculture. Where GMOs have been deliberately used it would not be possible for the crop to be sold as organic because that would be contrary to the law. However, so far as thresholds are concerned, for organic agriculture, there is a stance which is taken by the Soil Association and the other certifiers but it has no statutory base as a threshold. There is an ability to introduce a statutory base under European legislation of which advantage has not yet been taken, so there is an inherent area of uncertainty at least between 0% and 0.9% which, if it is to continue, could itself cause some of the confusion and practical difficulty to which you have referred.

Chairman: Let me take up the organic issue and ask Joan Ruddock to look specifically at the problems that that boundary may cause.

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Q109 Joan Ruddock: You have just said, Professor Grant, that there is a provision in EU law that could be taken up and has not been. Is it your expectation that it will be? If so, how do you expect that to go?

Professor Grant: It has been my optimistic expectation that it might be for some years now but it would, of course, require agreement across a range of States who are not presently in agreement and between a range of certifying authorities who are not necessarily in agreement with their Member States. I understand that there is such a threshold established in other countries outside Europe but it has not yet found a basis within Europe.

Q110 Joan Ruddock: Is it not very clear to you, as it was to us, that as far as the Soil Association is concerned their understanding is that there should be no GMO presence, and that means detectable at 0.1% so all that can be guaranteed is 0.1%, but there is no rationale if one is an organic producer to moving to 0.9%, so how could agreement ever be reached?

Professor Grant: But if you turn that round and ask then whether there should be a statutory threshold, I do not really mind where it is as long as there is one because if you have a statutory threshold you have an underpinning in law that then allows you to design liability provisions around it which will make sense. At the moment we have this grey area that the Commission struggled with for years, frankly, of between 0.1 and 0.9%. The issue though, if you put it in liability terms, then resolves itself into a question of whose rights prevail. This is not an uncommon question but it is fundamental to this issue.

Q111 Joan Ruddock: Let's leave that aside for the moment. Would it be correct to say that you could envisage a statutory basis for 0.1%?

Professor Grant: Oh, yes. If that were to be resolved under the European law, that would be a statutory basis.

Q112 Joan Ruddock: And therefore everything else would become clear, because if I were to take you up on the distinction that I thought you were making between adventitious and other forms of contamination, you were saying that you thought it was possible to accept where it was unavoidable that that was a responsibility which would then translate into a threshold that was acceptable across the board but, if it were adventitious, then the separation distances which would be deliberate and determined by the national states, would clearly influence the level of adventitious contamination, would they not?

Professor Grant: Yes, they would. There would be a relationship.

Q113 Joan Ruddock: Precisely, and therefore it is arguable, surely, that that level of contamination that occurred because of the separation distances was an avoidable form of contamination?

Professor Grant: Avoidable depends upon who is charged with the avoidance.

Q114 Joan Ruddock: I am suggesting the GM producer would be, or the Government that set the threshold that enabled the GM producer to contaminate?

Professor Grant: But going back to the argument I was trying to put before, I would have argued that adventitious presence and avoidability in the eyes of an organic farmer, were a GM crop to be introduced in the neighbourhood, would not necessarily impose obligations on the organic farmer to avoid it but on the GM farmer to establish, or to work to appropriate separation distances to achieve it. That is subject to one very important qualification, I think, which we stress throughout our report, which is that we expect reasonable behaviour on both sides. We would not expect an organic farmer to have a right of action if they deliberately went and planted an organic crop right alongside a GM crop.

Q115 Joan Ruddock: But the advice that is given by bodies such as your own or anybody else's and the Government that takes the decisions clearly is about setting up with separation distances a factor in the level of contamination that could occur in certain crops, so I do not see it as an equal situation in the way in which you imply.

Professor Grant: But nor would I draw it as an exact equivalence. Contamination is not a precise consequence of separation distances. Separation distances, the greater they are, may have a greater impact on the reduction of potential contamination, but it depends on the type of the crop, its cross-pollination, the viability of the seed that comes about as a result of the crossing and, also, on a wide variety of post-cultivation factors in the handling of the product from harvesting through to the farm gate and beyond.

Q116 Joan Ruddock: What I am suggesting is that it is one factor which potentially could be deemed avoidable in the case of certain crops where the separation distance would be very significant.

Professor Grant: Let me just qualify that. The language is "adventitious or technically unavoidable", and I think there is quite a scope for argument about that and where the burden of avoidability rests.

Q117 Joan Ruddock: Is it your belief that it is the organic farmer that should be responsible for the level of contamination, or the avoidance of contamination?

Professor Grant: This is at the heart of all of this. Our Commission took the view that, at a threshold of 0.9%, the responsibility should rest with the GM farmer and, indeed, that that should be underpinned by a compensation scheme. We could not come to an agreement about where responsibility should rest between 0.1 and 0.9%. There are quite strong arguments on both sides, and we have recorded them, I hope fairly, in the report.

Q118 Joan Ruddock: But if, for example, consumers, which is the situation I believe that prevails, believe that organic produce should be free of GM, which

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equates to 0.1%, is it then your view that the organic farmer must be responsible for ensuring that his or her crop is not at 0.9% but, if he wants to take a lower level, that farmer bears the sole responsibility for getting down to the 0.1%?

Professor Grant: I think that must remain the default position under the recommendations that we were able to agree on, in other words not being able to agree on 0.1-0.9 in effect embeds 0.9, but with two qualifications. Firstly, around 0.1 there are real problems of detectability and the tests which have been devised are not cheap and create operational problems. The second question is that, in order to be able to comply with a 0.9 threshold, it is going to be incumbent on the industry and particularly on the GM industry to work to much lower thresholds in practice in order to have an appropriate margin of risk. We were not convinced that 0.1% was a practically achievable threshold in the event of cultivation of GM crops, particularly if cultivation started to become more widespread, hence a measure of unwillingness on many of our members to go for a 0.1% threshold.

Q119 Joan Ruddock: There is a difference there between 0.1% being difficult to measure and 0.1% being difficult to achieve if you had a lot of GM in the country. Is it your view that at the moment, when the supermarkets say that in their own brands they only have 0.1% maximum GM, that that is correct, or are you suggesting that may not be correct at the present time?

Professor Grant: I am not competent to comment on that but we are, as a Commission, aware of the growing difficulty of sourcing non GM foodstock for animals for supermarket use. It is not going to get any easier.

Chairman: We have already trespassed partly into the area of separation distances but I want Patrick to look at this in a bit more detail now.

Q120 Patrick Hall: The SCIMAC guidelines on separation distances presumably assume the 0.9% threshold that has been agreed by the EU.

Professor Grant: Well, the SCIMAC guidelines were set up before the EU adopted that regulation, but previously the labelling regulation had a threshold of 1% as opposed to 0.9.

Q121 Patrick Hall: So the separation distances are based on 1%?

Professor Grant: I assume so. I am sorry I am not an expert on that.

Q122 Patrick Hall: Let's for the purposes of this discussion say it is going to be something along those lines. There are separation distances that have been recommended in order to achieve a set threshold, and your Commission has argued strongly that there should be a statutory threshold, and it may be 0.9% because that is what the EU has said, although we had evidence last week to suggest that in practice, as the Chairman has said, the supermarkets are certainly claiming that they want lower levels—zero in effect, certainly as far as the consumer is

concerned. If farmers are to be able to achieve a lower threshold than 0.9%, are those farmers not going to have to introduce a wider separation of distances? Your colleagues have looked at these questions in some detail, I guess. Amongst your colleagues, was there support for wider separation distances set down under certain circumstances according to either the wishes of the grower or to meet the needs of the consumer, or at least the supermarkets, and having that set down in some sort of way, rather than just an average statutory base which would satisfy some but not all?

Professor Grant: We did not get into the specifics of separation distances. We noted a lot of the literature on separation distances which is helpful, which distinguishes, for example, between different crops and even between the same crop and different sowing seasons, spring and winter, so rape, for example, might not require a separation distance at all because of the capacity for cross-pollination being minimised. But we did insist that the Government should, before it allowed commercial growing to proceed, have established a proper coexistence regime that would include appropriate separation distances, and by that we mean appropriate to particular crops, but which may be also appropriate to different micro environments on the understanding that no single set of separation distances would necessarily obtain under all conditions. We also looked at evidence of coexistence in other countries, including I think Denmark and Spain where there is now a growing body of literature, and we suggested to the Government that there should be a period of very close monitoring of crops so that we could learn from experience rather than necessarily regarding that statutory separation distances were binding for all time.

Q123 Patrick Hall: Indeed. Did you come up with ideas about who should be carrying out that presumably independent monitoring and auditing of separation distances as well as, I think you recommended in your evidence to this group,³ that if and when a new crop is commercialised there should be an intensive monitoring and auditing of the coexistence arrangements. Did you come up with suggestions as to who would be best placed to do that? You say the Government has accepted that recommendation in principle but I am not sure if there are details as to who is competent and able to do that.

Professor Grant: If the separation distances are statutory then the responsibility rests with the Government. It may, of course, lay that off on expert advisory committees but, ultimately, the conversion of risk into separation distances is a political choice that the Government itself must make. I should emphasise that this is not the sort of monitoring that we would expect to be undertaken by the ACRE, the Advisory Committee on Releases to the Environment, because their interests are constrained by the legislation they work under as being related to

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the environment and to human health. We are talking here about economic relationships which is the underpinning construct of what coexistence really is.

Q124 Patrick Hall: But would the Commission be capable and able to carry out this auditing and monitoring?

Professor Grant: Do you mean the AEBC or the European Commission?

Q125 Patrick Hall: I mean the Commission that you chair.

Professor Grant: No, we think not. We do not think we have the expertise on the Commission at the moment. It is not set up to undertake what is I think largely scientific and technical study.

Q126 Patrick Hall: But could you be persuaded? After all, Government is responsible but nonetheless it has to be seen to be independent and objective and Government is not always seen in that light for all sorts of reasons, rightly or wrongly, and therefore as you are carrying out a great deal of work that seems independent on this I just wondered if it is something that maybe you could just leave on the table. If it did happen you would obviously need to expand a bit?

Professor Grant: Yes.

Q127 Patrick Hall: Has the Government asked you at all?

Professor Grant: We are not short of challenges! I will certainly accept this on the table but I would not earn enormous popularity with my colleagues on the Commission were I to go further than that today.

Chairman: Moving on to another interesting idea the Government has come up with, which is this idea of the voluntary GM free zone, this is a concept that we had some difficulty in obtaining any real sensible answer on from last week's contributors because there was not a lot of confidence that this was deliverable.

Q128 Ms Atherton: I have the pleasure of representing a Cornish constituency and the County Council of Cornwall has declared Cornwall a GM free zone. To be perfectly honest I do not think all the farmers are signed up to this concept, but the County Council has declared that Cornwall is a GM free zone. How useful do you think this is as a concept?

Professor Grant: The Committee will have noted that the Government in their response to our report has said that they will be coming up with their further thoughts on voluntary GM free zones, and I have to say we await this with enormous interest.

Q129 Ms Atherton: Methinks you did not answer that!

Professor Grant: Let me just put it this way. There is no difficulty with compulsory GM free zones, under Article 19, if there is good scientific reason for having a compulsory zone, but that has not yet prevailed in any European state. If you have not got the force of regulatory law, and you cannot use law

otherwise for fear of interfering with free market principles, then the only thing that can give you any force at all would be some sort of multiparty contractual relationship which people might be able to sign into, but that would carry with it no wider mandatory element, so a voluntary GM free zone is only as good as the volunteers who sign up to it and are willing to abide by it.

Q130 Ms Atherton: I accept that, but let's talk a little bit about European law. As I understand it, we would need changes to European law for mandatory GM zones. Do you think there will be any merit in seeking that?

Professor Grant: The problem with mandatory zones is that the whole regulation of GM within Europe is based upon *laissez faire* market principles and if it cannot be shown that a GMO release is likely to be harmful to human health or the environment then it should not receive a Part C consent, and there would be great difficulty within European law to dilute that along the lines you are suggesting, in other words to allow local communities the choice not to have GM crops grown in their area, because it would defend against the fundamental principles of freedom of trade.

Q131 Ms Atherton: Talking perhaps more on the voluntary side, was the Commission approached by the Government and consulted for advice that is going out to farmers seeking a voluntary GM free zone?

Professor Grant: We did discuss it briefly and there is a paragraph in our report which is not strongly encouraging of the concept.

Q132 Ms Atherton: I do not really feel you are signed up to this process at all!

Professor Grant: I think that there is simply a fundamental conceptual concern about it because for it to work it would not merely be a matter of farmers agreeing to separation distances, which they may do, and, indeed, there are one or two instances of voluntary interdependence in the countryside for producing high uracic oil seed rape, for example. What is not so readily conceivable is there could be any sort of restraint upon others transporting GM produce through the zone, and that would be potentially a source of contamination for non GM crops through the zone. It is not just to my mind pinned to land use; it is tied to a number of other activities.

Q133 Chairman: So what was the Government up to, then, when it came up with this wonderful concept of a voluntary GM free zone? That was from the Secretary of State herself; it was a key part of the statement in March,⁴ that if such a thing was brought forward by people, the Government were minded to think this was a jolly good idea. Now, it would appear if they had taken the advice from the Commission, and whilst we

⁴ HC Deb, 9 March 2004, col 1381.

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had no clarity whatsoever of what this concept really meant, surely the Government would be forced to think again.

Professor Grant: I think that question has to be for your next witness!

Chairman: I think we will leave that topic to the Minister to come and defend. Moving on then to almost the most crucial issue of liability, both in terms of environmental implications but also the economic liability where people's business potential on one side or the other is going to be affected by these changes, and I will ask Joan to lead on this.

Q134 Joan Ruddock: Firstly, obviously, what is your reaction to the Government's decision that it should be the GM industry that has to have the responsibility for contamination and the liability?

Professor Grant: "They would, wouldn't they". This is not an easy question. We were very clear from the evidence we took that nobody wanted to foot this bill, and you will see that we were not clear in who we thought should foot it because we could not get clear agreement around our table. Getting agreement to the effect that there should be a liability regime was difficult enough, and to try to cast the entire cost on to the industry or the farmer on the Government proved a challenge too far for us. We ultimately would wish in the case of economic liability to see this become a matter for insurance. It makes perfectly good sense that the insurance industry, once it can see a market developing and once it can quantify the risk and its exposure, should start to write cover. At this stage the insurance industry is not willing to do that. It is standing well away from the problem because it is impossible for it to assess the level of cover and the premiums. So our view was that there should be an interim period and, during that period, experience would develop on not only the number of claims but also the extent of exposure of the fund which would help the insurance scheme to develop. Now, there is still one outstanding question which is who pays the premium? Should it be a first party scheme such as a crop assurance scheme in which the farmer buys the cover, in which case you would be in effect putting on to the shoulders of the non GM farming industry the cost of the risk, or should it be third party in which case the industry or the GM farmer would buy the cover to lay off claims from a non GM farmer. We have rehearsed those arguments in our report; it would seem to us on balance that the second model was more consonant with the notion of the risk being introduced by a particular form of agriculture and the industry, if you like, standing behind its product and standing behind its assurances that, with proper handling, contamination could be avoided.

Q135 Joan Ruddock: So is the GM sector to you the company plus the farmer? Is that what you regard as the GM sector? When the Government says that the GM sector should bear it, some interpretation has been made that that is just the companies.

Professor Grant: It is more complex than that, I think, because you have got between the company and the farmer a legal relationship, a contractual relationship. Ultimately you have the licence holder who then license the seed companies who supply the seed to the farmers, so there is a chain, and my personal view is that you are best to take the sector as a whole and then allow offsetting liabilities to be arranged through that chain rather than trying to ascribe liability perhaps simply to the farmer. Let's just take the sector as a whole.

Q136 Joan Ruddock: The Soil Association, I think, and others have made the case that, if there is a victim in this, if there is a farmer who has suffered economic damage, then that farmer should not have to identify who is the GM farmer who has caused that damage. If there were a number of such farmers in that area it would be impossible for the person who suffered the damage to say which of them had caused that damage, and therefore there is a logic in saying it should go further back, to the company, whose product ultimately caused the damage. Is that something you accept as a logical scenario?

Professor Grant: I think there are two issues. One is the convenience of the line of causation and being able to prove that the company has this particular construct, which can be identified in a laboratory and ascribed back to them, but the other is that in causing the damage it may well have been the negligence of the farmer that brought about the cross-contamination or the spillage or whatever else it was, and nothing at all to do with the company, so it is necessary to have some way of laying off the responsibility between the two of them. From the point of view of the farmer who is suing, one can see the convenience of what we would call a plaintiff's rule which identifies one simple defendant who you sue, but from the point of view of the company there is a real risk in exposing themselves to liability which is wholly the fault of the farmer's negligence.

Q137 Joan Ruddock: So is it at all likely that a system could be set where the person aggrieved would be able to go directly back to the company? Is that unlikely because of the things you have just suggested?

Professor Grant: It is not uncommon in some other areas of law, in product liability for example, to be able to ascribe faults back to a manufacturer rather than having to involve the retailer.

Q138 Joan Ruddock: You mentioned that you thought that in time the insurance companies would be able to make an assessment. How true is that given the North American experience where, from what we can tell, the situation is worsening with time, because there is more contamination and it is becoming incremental, it appears, in some circumstances with certain crops. So you obviously see a situation where it is possible to have an interim and then the insurance company can pick it all up, but North American experience to me, anyway, as a

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lay person, suggests that that might not work because they might not see an advantage in having insurance policies in this field?

Professor Grant: There is a risk of confusing quantity with quantification. I have never known an insurance company back away from a growing volume of business. Their real worry is about quantifying their risk, so experience might assist in quantifying the risk and then being able to assess the policy and the premium, even whilst the business is growing.

Q139 Joan Ruddock: GeneWatch has suggested there should be a GM liability tribunal. Do you think there is any merit in that?

Professor Grant: It is something we flirt with in our report and the reason is quite simple; that what we wanted to avoid is to have farmers suing farmers. The rules of litigation anyway about common law liability are so complex, particularly in this area. We have done full analysis of it in the report. To suggest to a farmer who may have suffered, let's say, a loss of premium of £200 on a particular crop that they need to go to the County Court in order to recover damage is ludicrous, so what we wanted was alternative dispute resolution. I think we are relatively open as to whether this should be a form of mediation or an informal tribunal, but something which kept down the transaction costs and provided real brevity would be a sensible proposition for the Government to review.

Q140 Joan Ruddock: Finally, could we have your thoughts on environmental liability, because that has not been discussed much elsewhere, apart from in your own report.

Professor Grant: I have to say we spent a long time on environmental liability over a period of two or more years, and at one time we were reviewing the possibility of having quite a complex scheme, one that, for example, would allow certain types of plaintiffs, individuals even, to bring actions for compensation in the form of remediation, and which struggled with different definitions of environmental damage. But as we were going along in that direction so the European Union's draft Directive on Environmental Liability was coming in a different direction, and at one point we changed horses and decided it would make much more sense for us to follow that model, given the growing likelihood that it was going to be adopted, and indeed was formally adopted last month. It provides a basis of administrative liability and puts a competent authority in the frame, so it much diminishes the role of the courts by allowing a competent authority, perhaps the Environment Agency, to determine what is environmental damage caused by GMs, what were the priorities and against whom action should be taken. But there are some major gaps in the Environmental Liability Directive, as you know. It is focused on protected species and habitats under other EU legislation, so it is not, as it stands, wholly appropriate for potential environmental damage to agricultural areas that are not specially

protected. We have, however, in our report suggested to the Government that they use the directive as their starting point and that they design liability rules on those foundations.

Q141 Chairman: Just quickly, have AEBC discussed at all the setting up of this indemnity fund and whether you, as a body, would maybe underwrite that and see that as an on-going role?

Professor Grant: Do you mean an indemnity fund for environmental liability?

Q142 Chairman: And possibly economic as well. In other words to kickstart the insurance industry because at moment, if there is going to be any real way in which GM can be introduced, there may have to be some form of quasi state involvement and one presumes a form of indemnification underwritten by a body like AEBC. Have you discussed that, and is that something you could see yourselves doing?

Professor Grant: I would distinguish between the two cases. I think for economic liability it is entirely a case of setting up a fund into which contributions are made, whether by the industry or by Government or even by both, and that is not so much an indemnity fund as a compensation fund. For environmental liability you have to ask who is the insurer of the last resort, and ultimately it is the state. If there were some unforeseen and unforeseeable environmental damage caused by the growing of GM crops, and nobody has yet suggested to us what that might be, because we are here trying to look with foresight at what arrangements could be put into place for something which we cannot properly foresee, but if that were to occur and if action were to be brought against a company which was no longer solvent, it will be the state that ultimately bears the cost. So we did consider whether this should be an indemnity fund set up with contributions from the industry or elsewhere, but we were not able to come out with a unanimous view about that. You suggested, Chairman, that the AEBC itself might stand behind it. I have to say that we have robust members but fragile finances.

Q143 Paddy Tipping: I think Professor Grant has covered most of the principles of the insurance market, but can I just ask you directly whether you have talked to any insurance companies? What are they saying to you about the possibility of providing economic cover?

Professor Grant: We have spoken quite extensively to insurance companies, including the NFU Mutual who are probably the most experienced insurers in this area. They felt that there was an opportunity for a market to develop and they were interested in seeing how it might develop, but that it was premature yet to speculate on what might occur. As in all other markets, and contaminated land is another very good example, they really need some practical experience before they can start to quantify their risk and exposure.

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Q144 Paddy Tipping: And the length of time of that practical experience will depend entirely on how far GM planting goes on, so there is no point in me saying to you, "How long is the market going to take to develop?" We have no idea.

Professor Grant: We do not know, and there is another great uncertainty which is the regulatory environment. If liability is tied to regulation and regulation changes over time then it is extremely difficult for a market to develop. It would have to be on claims made rather than on an occurrence basis anyway to minimise longer term exposure, but against that some of the major insurance and reinsurance companies are relatively optimistic that a market could develop in due course. This is a very immature industry.

Q145 Paddy Tipping: What about the interim period? Presumably interim arrangements have to be made. Is that where Government steps in?

Professor Grant: Yes. In terms of economic loss our recommendations were that there should be an interim compensation fund, and that would be, I think, of value only unless and until an insurance market matured.

Q146 Chairman: Can I thank you? As always, Malcolm, it has been a treat. I do not know how many more times you will wish to come back and visit your views upon us, but we thank you. It has been very concise and clear to understand where you are coming from. I am afraid even your asides will be printed so you will have to answer for them some time, but we have enjoyed the session and you have given us a very good run into the ministry.

Professor Grant: Thank you very much for the opportunity to appear before you this afternoon.

Memorandum submitted by the Department for Environment, Food and Rural Affairs

GM GOVERNMENT DECISION

EXECUTIVE SUMMARY

1. The Government set out its approach to GM technology, including its use in crops, in a policy statement on 9 March 2004. Each application will be considered on a case-by-case basis, including an assessment of any potential risks to human health and the environment. Applying this approach to the GM crops in our Farm-Scale Evaluations (FSEs), we concluded that the UK should oppose the commercial cultivation of the relevant varieties of GM beet and oilseed rape using the management regime tested in the FSEs, but that we should agree in principle to the commercial cultivation of GM herbicide-tolerant maize, subject to certain conditions. Bayer CropScience has since announced that it no longer intends to market the relevant GM maize for commercial cultivation in the EU. Nevertheless we intend to press ahead with developing measures to facilitate the coexistence of GM and non-GM crops and to address related liability issues. We plan to consult stakeholders shortly with a view to having coexistence measures in place by spring 2005. We look forward to the results of the EFRA Committee's inquiry as a contribution to this work.

BACKGROUND

2. The Government's recent policy statement on GM was the culmination of a long and painstaking process. In response to concerns which had been raised about GM crops, we commissioned the biggest programme of farm-scale trials anywhere in the world, as well as a GM "dialogue" comprising a public debate, science review and a costs and benefits study. We also received a report on coexistence and liability from our strategic advisory body, the Agriculture and Environment Biotechnology Commission (AEBC). In deciding our policy we gave full consideration to all the available evidence.

3. We concluded that case-by-case regulation of GM crops remains the right approach. We continue to take public concern very seriously and we recognise the need to address people's legitimate anxieties about GM crops. We have published a detailed written response to the GM dialogue⁵ which explains how we are seeking to address the concerns which have been raised. Our top priority is to protect human health and the environment, and GM crops will continue to be strictly regulated in accordance with the precautionary principle. We are also committed to providing choice for consumers through mandatory labelling, and for farmers by putting in place measures to facilitate the coexistence of GM and non-GM crops.

4. The results of the Farm-Scale Evaluations of three spring-sown GM herbicide-tolerant (GMHT) crops underline the importance of a case-by-case approach. Broadly speaking, the results suggested that growing GMHT beet and oilseed rape would be worse for biodiversity than growing conventional beet and oilseed rape, whereas growing GMHT maize was better for biodiversity than conventional maize.

5. On the basis of the FSE results we concluded that:

- the UK should oppose the commercial cultivation of the relevant varieties of GM beet and oilseed rape in the European Union using the management regime tested in the Farm-Scale Evaluations;

⁵ Available at <http://www.defra.gov.uk/environment/gm/debate/pdf/gmdialogue-response.pdf>

- we should agree in principle to the commercial cultivation of GM herbicide-tolerant maize, but only subject to two further important conditions:
 - first, that restrictions should be imposed on the existing EU marketing consent, which expires in October 2006, so that this maize could only be grown and managed as in the trials, or under such conditions as would not result in adverse effect on the environment.
 - and second, in response to concerns which have been raised about the phase-out of atrazine in the European Union, that the consent holders should be required to carry out further scientific analysis to monitor changes in herbicide use on conventional maize and to submit new evidence if they sought to renew the existing EU marketing consent in 2006.

6. We made it clear that before commercial cultivation of GM maize could proceed, separate approval would also be required under seeds legislation, and also under pesticides legislation for the associated herbicide use. Furthermore the relevant variety, Chardon LL, would not be added to the UK National List of seeds until the necessary amendments to the EU marketing consent were in place. At the time of the statement we anticipated that Chardon LL would not secure all the approvals required for commercial cultivation to take place before spring 2005 at the earliest.

7. On 31 March Bayer CropScience, the company which holds the existing EU marketing consent for the GM maize tested in the FSEs, announced that it had decided to withdraw its application to add Chardon LL to the UK National List of seeds. Notwithstanding Bayer's decision, we plan to press ahead with measures to facilitate the coexistence of GM and non-GM crops and to address related liability issues, to ensure that a coexistence framework is in place in the event that any GM crops are approved for commercial cultivation in future.

8. We have indicated that we are minded to proceed on the basis that:

- there should be a closely monitored introductory period, following which we will review the effectiveness of any arrangements;
- that GM farmers should bear the main responsibility for implementing measures to minimise GM presence in neighbouring non-GM crops;
- that these measures should be based on the EU's 0.9% labelling threshold and should have statutory backing;
- we will explore further with stakeholders whether a lower threshold might be feasible for organic crops;
- we will consult stakeholders on options for providing compensation to non-GM farmers who suffer financial loss through no fault of their own as a result of GM presence in their crops;
- that any compensation scheme would need to be funded by the GM sector itself, rather than by Government or producers of non-GM crops;
- we will provide guidance to those farmers wishing to establish voluntary GM-free zones.

9. We are currently drafting a consultation document which we plan to publish shortly. Our aim remains to have measures in place by spring 2005, even though we do not now anticipate that there will be any commercial cultivation of GM crops in the UK in the immediate future.

10. The following sections address the specific issues which the Committee has indicated that it intends to consider.

SEPARATION DISTANCES

11. We envisage that farmers growing GM crops will be required to apply separation distances to minimise cross-pollination with neighbouring non-GM crops. We agree with the AEBC's recommendation that GM farmers should bear the main responsibility for implementing measures designed to keep GM presence in non-GM crops below the EU's 0.9% labelling threshold. We will consult on whether a lower threshold might be applied in the case of organic crops, and if so whether the GM farmer or the organic farmer should be responsible for applying the separation distance.

12. Separation distances will need to be determined on a crop-by-crop basis. For the purpose of the Farm Scale Evaluation (FSE) trials, separation distances allied to a notification requirement were applied under the terms of a code of practice drawn up by the farming and industry group SCIMAC (Supply Chain Initiative on Modified Agricultural Crops). Under the SCIMAC guidelines the FSE growers were expected to notify their neighbours of their intention to sow a GM crop if their neighbours' land fell within a specified distance, the idea being that the farmers should then discuss their respective cropping plans as necessary.

The separation distances which were applied under the SCIMAC code are shown in the table below. (Note: A nominal distance was included for beet crops because special factors apply which mean that cross-pollination should not be a serious issue. See further comments on beet in paragraph 14 below.)

SEPARATION DISTANCES IN SCIMAC CODE

<i>Crop</i>	<i>Seed crops (same species)</i>	<i>Organic crops (same species)</i>	<i>Other non-GM crops (same species)</i>
Oilseed rape	200m	200m	Conventional varieties and restored hybrids: 50m Varietal associations and partially restored hybrids: 100m
Sugar and fodder beet	600m	600m	6m
Maize	200m	200m	Sweetcorn: 200m Forage maize: 80m

13. In 2000 the National Institute of Agricultural Botany (NIAB) completed a Defra-commissioned review of the separation distances required to limit cross-pollination between maize and oilseed rape crops to 0.1%, 0.5% and 1% on a whole-field basis. This recommended the following distances:

RECOMMENDED SEPARATION DISTANCES FROM NIAB REVIEW

	<i>Distances needed for specified cross-pollination threshold:</i>		
	<i>1.0%</i>	<i>0.5%</i>	<i>0.1%</i>
<i>Oilseed rape</i>			
Conventional varieties	1.5m	10m	100m
Varietal associations	100m	(insufficient data)	(insufficient data)
<i>Maize</i>			
Grain (sweetcorn)	130m	200m	420m
Forage maize	80m	130m	290m

14. The NIAB review did not make recommendations in relation to beet crops because cross-pollination does not affect the composition of the utilised plant tissues (only vegetative parts of the plant are harvested rather than seeds or fruits). This means that if a GM beet cross-pollinates a non-GM beet plant the root of the latter will not have any GM content (DNA or protein). Moreover, beet crops are normally harvested before they flower and farmers usually control any “bolting” plants that flower prematurely.

15. A Defra-funded research report⁶ on gene flow from the GM maize crops in the FSEs has provided further data relevant to the consideration of separation distances. A parallel report on gene flow from the FSE oilseed rape crops is in preparation and will be published in due course. We have asked NIAB to review the separation distances in their 2000 report in the light of the new data provided by the FSE gene flow studies and any other available data.

LIABILITY ISSUES

16. When considering liability issues it is important to distinguish between liability for any economic loss which might be suffered by non-GM farmers as a result of GM presence in their crops, and liability for any environmental damage which may be caused by GM crops and other genetically modified organisms (GMOs). Both issues are discussed below.

LIABILITY FOR ECONOMIC LOSS

17. If broadly effective measures are in place to manage the co-existence of GM and non-GM crops, then in principle the instances where non-GM growers might suffer an economic loss should be relatively infrequent. However we recognise that there may still be cases where non-GM farmers could suffer a loss through no fault of their own because GM presence in their produce exceeds statutory thresholds. There may be an economic loss if the value of produce labelled as containing GM is less than the value of produce which does not contain GM.

18. Non-GM farmers could seek to recover any loss through the civil courts under the common law of negligence or nuisance. There is no direct precedent for such a claim, although there are analogous cases that may be relied upon. As a result it cannot be said with any certainty whether a common law claim for economic loss would succeed. In any event we agree with the AEBC that it would be preferable to avoid a situation where farmers are forced to seek redress through the courts.

⁶ Available at www.defra.gov.uk/environment/gm/research/epg-1-5-138.htm

19. We have therefore accepted the AEBC's recommendation that there should be special arrangements for compensating farmers who suffer a financial loss through no fault of their own. We have said that we will consult stakeholders on options for providing compensation, while making clear that any compensation scheme would need to be funded by the GM industry itself, rather than by Government or producers of non-GM crops.

20. There are a number of issues which still need to be resolved and on which we plan to consult stakeholders. These include:

- How to ensure that any compensation scheme is fair and is not open to abuse.
- How liability should be established ie whether liability should be fault-based or whether strict liability should apply.
- Whether any compensation scheme should be voluntary or compulsory.
- Whether compensation should be payable only in relation to the 0.9% threshold or also in relation to a lower threshold for organic produce.

ENVIRONMENTAL LIABILITY

21. The AEBC also made a number of recommendations in respect of liability for any environmental damage which may be caused by GM crops or other GMOs. The Secretary of State already has powers under the Environmental Protection Act 1990 to require companies to take remedial action if they have committed a criminal offence. The EU has recently adopted a Directive on Environmental Liability, which covers the release and contained use of GMOs. However the scope of the Directive is limited, including to serious damage to European protected species and natural habitats. Under the Directive the relevant biotechnology company may be held liable for damage caused by one of its products.

22. The AEBC recommended that the Government should use the general approach of the EC Environmental Liability Directive in developing the UK's liability regime for any damage caused by the release of GMOs into the environment. In addition it recommended that the Environmental Protection Act 1990 should be amended to allow environmental remediation to be ordered by the regulatory authority without the need to first secure a conviction for an offence.

23. We have not yet reached any firm conclusions with regard to the AEBC's recommendations on environmental liability, though we accept that the issue needs to be addressed in advance of any commercial cultivation of GM crops. We will continue to give consideration to the AEBC's recommendations and will set out our conclusions in due course.

VOLUNTARY GM-FREE ZONES

24. Under current EU legislation once a GM crop has been approved it can be grown commercially anywhere in the EU. Directive 2001/18/EC on the deliberate release of GMOs into the environment provides that member states may not prohibit, restrict or impede the placing on the market of GMOs that comply with the requirements of the Directive. However, conditions imposed with respect to risks to the environment or human health as part of the marketing consent under the Directive could deal with certain geographic areas differently. If such conditions were to be imposed, this could have the effect of limiting the marketing of a GMO in some geographic areas. In practice if a GM crop were considered to pose a risk to a particular geographical area of the UK then it would probably pose a similar risk to other areas in the EU, and this would make it very unlikely that EU member states would approve the crop for marketing at all.

25. The European Commission has made it clear that mandatory "GM-free" zones would not be consistent with the Directive, if the effect was to deprive individual farmers of the opportunity to grow GM crops which have been approved for commercial cultivation in the EU. However the Commission has indicated that voluntary GM-free zones are permissible, whereby farmers in a particular area might enter into a voluntary agreement not to grow GM crops. The Government is therefore proposing to provide guidance to farmers wishing to establish such voluntary GM-free zones. We envisage that guidance will set out the legal framework and address practical issues which farmers may wish to consider. The final content of any guidance will be determined in the light of consultation with stakeholders.

26. In offering to provide guidance the Government's aim is purely to assist those farmers who might be interested in establishing voluntary "GM-free" zones. The Government is not advocating the establishment of such zones, nor does it regard them as necessary. The coexistence measures which we plan to put in place are intended to provide a reasonable balance between the economic interests of GM and non-GM farmers. Nevertheless we accept that some farmers may still want to explore the option of setting up voluntary "GM-free" zones.

What Changes in legislation will be required to allow GM crops to be grown?

27. Directive 2001/18/EC already provides for GM crops to be considered for commercial cultivation on a case-by-case basis and, once they have the necessary approval, to be marketed anywhere in the EU. The EU's new GM Food and Feed Regulation (1829/2003/EC), which came fully into effect on 18 April this year, provides a single approvals procedure for GM food and feed products to the same standards as Directive 2001/18/EC. Before any crop can be grown commercially separate approvals will still be required under seeds legislation and, if appropriate, under pesticides legislation for any associated herbicide use.

28. Directive 2001/18/EC was amended in 2003 to include a provision which allows member states to implement national coexistence measures. The UK Government and the Devolved Administrations have made it clear that we intend to make use of this provision to put in place coexistence measures in the UK. We currently envisage that regulations will be made under section 2(2) of the European Communities Act 1972 to deliver coexistence measures, subject to final decisions on the detailed measures in the light of consultation with stakeholders. We will continue to work closely with the Devolved Administrations with a view to maintaining a co-ordinated approach, though it is possible that the DAs may decide to put in place their own national arrangements.

What will be the scope and scale of the 2006 re-licensing procedures?

29. At the time of writing no GMOs have been approved under Directive 2001/18/EC, though a number of consents issued under the predecessor Directive 90/220/EC will remain valid until 2006. The procedures for renewal of these existing consents are set out in Article 17 of Directive 2001/18/EC.

30. Applications for renewal must be submitted before 17 October 2006 to the member state which issued the consent. The consent holder must submit:

- a report on the results of any monitoring carried out in line with the consent conditions;
- any other new information which has become available with regard to risks to human health and/or the environment; and
- as appropriate, a proposal for amending the consent, including any future monitoring.

31. Member states must then reach a collective decision on whether to renew the consent, on the basis of an assessment by the lead member state, within the timescales laid down in the Directive.

Department for Environment, Food and Rural Affairs

April 2004

Witnesses: Mr Elliot Morley, a Member of the House, Minister for Environment and Agri-Environment, and Dr Linda Smith, Head, GM Team, Department for Environment, Food and Rural Affairs, examined.

Q147 Chairman: Minister, welcome. I am sure you are well aware of who we are given that you were here last week!

Mr Morley: It is always a pleasure.

Q148 Chairman: It is a good job next week is Whitsun otherwise you would be back again! I think it would be very useful if, Dr Linda Smith, you could introduce yourself and tell us what you do?

Dr Smith: Within Defra I am head of the GM team dealing with policy science and regulation of all sorts of GMs that fall within the remit of Defra.

Q149 Chairman: You know what we are looking at; we have done a very short inquiry and you are the concluding part, as always, to that short inquiry. I hope it is not going to put you in the stocks too much, but we have had some interesting evidence last week and as always, as I said to Professor Grant, he is a treat because he says it as it is and we got some real clarity there. If I could start with the issue of tolerance and indeed the threshold levels, I think it is fair to say that we will have a difficult report to write because there is not a great deal of agreement; there is certainly quite a lot of confusion; and there is the likelihood that the courts could be asked to arbitrate

on some of these issues. Could you just give me some idea of the rationale behind the point where the Government is at now, this notion of GM free, which is somewhere below 0.1%, and the now accepted European level, which in a sense follows on from what SCIMAC took to be an acceptable level following some element of adventitious contamination of 0.9%?

Mr Morley: Sure. As you rightly say, Chairman, the EU have come to an agreement that the threshold rates shall be 0.9%. Now there was a lot of argument about that, as you can imagine, and I am sure that Professor Grant went through with you some of the discussions with the AEBC. I might just say for the record that I think Professor Grant has done an excellent job, and the AEBC has been a very helpful forum in terms of advising the Government and shaping policy, but that is now an EU Directive and it might be useful for the Committee just to understand that this is the framework that we have to operate within in terms of what has now been agreed. The EU Commission's guidance says that, "Coexistence measures shall not go beyond what is necessary in order to ensure that adventitious traces of GMOs stay below the tolerance thresholds set out in Community legislation, and indicates that it would be disproportionate if statutory co-existence

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measures went beyond those needed to meet the EU labelling threshold". That is a very clear legal framework and we are obliged to work within that, and it therefore forms the basis of the work that we are doing in relation to such things as separation distances and also monitoring that will deliver a framework that will operate with that 0.9% threshold. Now, it is the case, Chairman, that we can choose to set a lower threshold for organic farming and that will be part of the consultation we will have. It may well be the case that we could ask the Commission to look again at the thresholds for the organic sector, for example, because there will be an issue of enforceability within that threshold going back to the actual framework as agreed by the EU. So that is the basis on which we are working, and the legal framework we have to operate within.

Q150 Chairman: Joan is going to ask you about organic in a minute but just looking at what we were given by one of the NGOs as a likely scenario last week, this is going to be tested in as much as somebody somewhere is going to say, "I was supplying my food on the basis that it was GM free, or which the consumer takes to be GM free, not at a level of 0.9%". If the Government gets called into this, without pretending to give the Government its own legal advice, what is going to be the Government's defence?

Mr Morley: It is a legal definition now in relation to 0.9% in that, under the EU regulations we are obliged to work within, if foods are below 0.9% they are not classed as GM foods. Now, in terms of being GM free it is, of course, up to the organic sector, who in relation to their own rules can set their thresholds in relation to their own members, but in terms of the legal and statutory position and the potential liability, the 0.9 is the threshold and the baseline figure because that is now established within EU law and within this country.

Q151 Chairman: Finally from me, there has been a lot of concentration on the issue of cross-pollination, and we are talking about distances between crops, but I do not think there has been much understanding of the potential of adventitious contamination through other means like transport and shared use of equipment. How is this going to be understood by those on both sides of the argument, but more particularly who is going to monitor this?

Mr Morley: It will certainly be part of the regulations in that it is irrelevant if the threshold has been breached, whether it is because of mixing up seeds or the inadvertent addition of GM material, or whether it has come from contamination on farm equipment or for any other failure in relation to the management that crosses the threshold, once that threshold is crossed then the food is classed as GM. This cuts both ways. Once you go over the 0.9 it is classed as a GM product. It can be enforced in the sense that we already have the SCIMAC code of conduct that applies to farmers who are using GM products. In terms of the package of measures that we will be consulting on, it will include controls on such things as volunteers, cross-contamination, the

cleaning of farm machinery. Our proposal is that the basis of what is currently a code of practice should become a statutory code of practice to deal with all these aspects, so it will be enforceable so they can be addressed and they can be enforced. How they are enforced at the present time is that there is testing and monitoring which is done by the seed companies themselves. There is a quality control check which is done by our GM Inspectorate, and that quality control check involves both taking samples of seeds but also, more importantly perhaps, checking the paper trail, checking the traceability of the actual products. The tests are carried out by our Central Science Laboratory in York and if there are transgressions then at the moment we insist on the product being recalled, whether it is a crop or whether it is seeds. That can have severe financial consequences for the producers. They do not want that to happen. Of course, it can also damage the reputation of the companies concerned and they do not want that to happen either. There are some fairly effective sanctions in relation to control.

Q152 Chairman: Just on that, can you give us a feel for how often this is happening?

Mr Morley: I can give you some examples. You are probably well aware of the very well known Advanta example. That was a GM seed that was mixed up with, was that GM or non-GM, the wrong kind of GM?

Dr Smith: It was conventional seed.

Mr Morley: It was conventional seed. That was mixed up from the source, which was Canada, and in that respect the crops had to be destroyed, the seeds were all withdrawn, and the financial consequences must have been huge for the company concerned. There have been one or two other smaller examples as well, I am sure we can give you details on that, Chairman.

Chairman: That would be very useful. Joan, you want to talk about organic.

Q153 Joan Ruddock: In a moment. How many quality control inspectors do you have?

Mr Morley: Have we got the figures for that, Linda, the number of the GM Inspectorate?

Dr Smith: I think it is five but I can confirm that.

Chairman: Again, if we could have a note on that, that would be very useful.

Q154 Joan Ruddock: Do you envisage any increase given that things are changing now?

Mr Morley: That is not impossible. Obviously you have to look at the level of inspectors depending on the amount of product which has approval and which is being sold. Five does sound low at the present time but you have to bear in mind that this is a quality control check. The companies are obliged to do their own testing, and they do their own testing. This is a quality control to make sure that the testing meets the standard and the paper trail is relevant. It is a belt and braces approach, it is not the frontline of quality control; the frontline of quality control is through the companies.

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Q155 Joan Ruddock: I just want to go back over what you were saying about the 0.9% threshold. You were telling us in your opening remarks about what the EU has said. Do I take it from that that you are very, very clear that allowing 0.9% contamination meets requirements, that there is nothing in the argument that has been mounted by the Soil Association that adventitious and unavoidable contamination has a legal definition that is not the same as an acceptance of a 0.9% threshold?

Mr Morley: We will certainly look at the arguments. I would not want to dismiss any arguments. This might be one where we may have to refer to our legal advisers. Our current legal advice on this is very clear. Basically the action on co-existence rules will be consistent with Article 26a(1) of Directive 2001/18, which is the Directive they are talking about. The regulations will be made under section 2(2) of the European Communities Act, which is the normal way of doing it. We think it is a misinterpretation of the actual wording within the text, which I have to say in terms of European legislation is not unusual and sometimes people find all sorts of different interpretations. I come back to the point that I opened with, that the Council of Ministers and the Commission have approved the thresholds, which are very clear. It is very clear about this: under 0.9 it is not a GM product; over 0.9 it is. It is very straightforward.

Q156 Joan Ruddock: Is not a consequence of this that if separation distances were set such that there was a clear acceptance that 0.9% contamination of non-GM crops would occur, that the separation distances were set to allow for contamination up to 0.9%, that would then wipe out a non-GM farmer who had a farm next to a GM farm? If it were a crop, of course, where there was a GM and organic equivalent—I accept there is not in all cases—and in that scenario 0.9% contamination was allowed for in the separation distance, the GM farmer cannot meet what is understood in this country, what is certified in this country, 0.1%.

Mr Morley: This raises some really quite complex arguments which are not just for the Government but also for the organic certifying bodies themselves and their umbrella group, which is currently discussing this particular issue. The problem is it is true that if you have a certifying body, and there are a number of certifying bodies in this country and they do not all have the same standards on the same things, as you understand, and it does set a threshold for the sake of argument at 0.1 then, of course, if that threshold is exceeded they could argue it does not meet the standards they have set, that is true, but the dilemma for the sector is that at the moment the bulk of organic produce in this country is imported, and we would like to see that changing, and that imported produce is already working on the basis of 0.9. I also understand in the draft consultations in the same things that we are doing, which is happening in other European countries, major producers like Denmark, Germany and France are already talking about 0.9 for their organic producers. There is a difficult issue here. I do

understand the dilemma for organic sectors that have set those particular standards and they are free to do so. Of course, they may have a standard but legally if an organic crop does not go over the 0.9 it can still claim to be organic.

Q157 Joan Ruddock: That is arguable, is it not? Organic means something other than conventional non-GM because there is certification. If I just might go on. It is a fact that the supermarkets are saying, rightly or wrongly, that in their own source products they are GM-free, ie 0.1%. Are you suggesting that imported organics at the moment are not meeting that standard?

Mr Morley: I would very much doubt whether all organic food is meeting the standard of 0.1, I would seriously doubt that at the present time wherever it is coming from. To come back to this point about what is organic and what is not organic. The organic sectors already allow such things as spray drift, for example, in relation to pesticides and herbicides because it is a fact of life and you cannot guarantee that it will not happen. You have got a similar issue in relation to GMs should they become established in this country in that you cannot guarantee that there will be no GM presence. You can argue whether you can keep that down, you can argue whether 0.9 is the right amount, it is the level that has been set at the present time. I repeat, we are willing to look at a lower threshold for the organic sector. We are also willing to argue within the EU that that should be an enforceable EU standard as well. We are willing to do that, but if you come at this on the basis that you are absolutely against GM, you do not want any GM, then of course you will argue for a zero threshold, I understand that, but we do not have that luxury in relation to the position we have to take as a Government within EU law. What we are trying to do is put in place a workable co-existence regime with the minimum levels of measurable GM in non-GM crops. That is what we are trying to do within the threshold that has been set legally.

Q158 Chairman: Can I just make one point. Certainly I talk to farmers and the analogy with the implications of pesticide spraying is quite good here because for want of my own innocence I put forward an EDM looking at the idea of buffer zones and farmers, understandably, got very, very nervous about that and basically said to me that co-existence cannot work if you are really taking that to mean that what is next door will be free from whatever you want it to be free from. We are going to look at co-existence a bit more in a moment but this is one of the crunch points, that the consumer will think one thing and in reality the practicalities are saying something different. How do we overcome this dilemma?

Mr Morley: You have to have a recognition, as I think you said, Chairman, that if you have conventional crops and organic crops there will be detectable levels of pesticides, for example, and if you have GM crops then you will have detectable levels of GM material in some cases. We have the

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legal maximum and what we are trying to do is see how we can make that work taking into account the concerns of various sectors and, of course, the responses that we will get in on consultation. That is what we are trying to do at the present time.

Q159 Joan Ruddock: You said a moment ago that the Government would be willing to argue within the EU for a statutory threshold for organic. What level might that threshold be at?

Mr Morley: The level would be what is enforceable and obviously what is detectable.

Q160 Joan Ruddock: It is not below 0.1%, is it?

Mr Morley: You can detect there is 0.1.

Q161 Joan Ruddock: I know you can.

Mr Morley: But it is whether it is really practical.

Q162 Joan Ruddock: Where between 0.1 and 0.9?

Mr Morley: That is right. You have to examine what is feasible, I think.

Q163 Joan Ruddock: But where is that?

Mr Morley: That will be part of the consultation in terms of we will obviously receive different representations, I am quite sure. All I can say to you, and I know it is not a great answer, is I would like to see that set at the lowest practical level.

Q164 Joan Ruddock: Have any other Member States expressed a view on this?

Mr Morley: Austria have approached it on the basis that they would like to take the GM-free route and they would like to make it statutory GM-free areas, but it has been made clear by the Commission that that is not acceptable and will not be allowed. All the other figures for organic have been 0.9. Denmark, France and Germany have said 0.9.

Q165 Joan Ruddock: If it were to be placed lower than 0.9, who do you think should then be responsible for seeing that the lower standard is met? Is it the organic farmer?

Mr Morley: If you had a lower threshold there would be some responsibilities on the organic farmer, but also you would have to gear your thresholds in relation to the GM farmer to deliver 0.5. At the moment we are gearing to 0.9. We may have a lower figure for the organic sector but we would have to do that on a voluntary basis in relation to the thresholds that we would set. The difference would be that it would be enforceable if it was an EU standard.

Chairman: We will come back to GM-free zones in a minute because we did take some time with Professor Grant. If we could now move on with Patrick to look at the separation distances and some of the implications of whether these distances are going to be easy to determine and introduce. Patrick?

Q166 Patrick Hall: Could I look at what I think has happened but also looking at the Department's evidence to this Committee.⁷ I may have got some of this wrong, so can I clarify this first. The SCIMAC guidelines came out before the NIAB work. That is correct, is it not?

Mr Morley: And before the FSEs, yes.

Q167 Patrick Hall: So the SCIMAC guidelines predate the year 2000 and that was looking at the separation distances required to achieve a one% labelling threshold. Defra asked NIAB to carry out some work on some different threshold levels and what separation distances would need to be attached to those levels. I think just recently—it says in your evidence—that body has been asked to review the work that was done a few years ago in the light of the farm-scale evaluations.

Mr Morley: That is right.

Q168 Patrick Hall: When is that current review likely to be available?

Mr Morley: I think the work on maize has been produced. The work on oilseeds is due this summer, is it, Linda?

Dr Smith: Yes.

Mr Morley: We would expect that work to be reviewed, possibly by ACRE in terms of a peer review.

Q169 Patrick Hall: Is it the NIAB guidelines that are likely to be those the Government proposes to adopt rather than the SCIMAC one which is older and also not based on 0.9?

Mr Morley: It is true that SCIMAC produced separation distances. Those separation distances were based really on established agronomy in relation to different strains of the same plant, for example. They were using figures like that for separation. The work that has been done by the National Institute of Agricultural Botany is more up-to-date in the sense it is actually doing some gene flow studies from the field-scale evaluations. It is very useful data. When we have all that data together, when we have an opportunity for giving it a thorough scientific review, it will form the basis of the separation distances that we will put forward as a recommendation in the consultation. That will be open for consultation and it will be open for comment and discussion.

Q170 Patrick Hall: With the aim of that being the statutory basis of how we achieve the EU threshold?

Mr Morley: That is right. The aim will be to deliver the minimum of that 0.9, that will be the aim of it. That will be the scientific basis of the judgment.

Q171 Patrick Hall: How and who will monitor and enforce practice on the ground *vis a vis* those separation distances?

Mr Morley: There are a number of ways that this can be approached and, again, we will consult on this because there are different options. It could be that

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we would have a role for our GM Inspectorate, for example. It could be done in relation to standards applied of Crop Assurance. It could be done in relation to contractual standards applied to GM farmers in terms of the contract for the growing of the actual crop. It could be done in whole-farm assessments which are coming as part of the changes within agriculture. There are a number of options by which we can do that. Do you want to answer that, Linda?

Dr Smith: I think that covers the range. May I add something about the SCIMAC code because the SCIMAC code, as you said, was published before the start of the farm-scale evaluations and as a result of the review that NIAB did of separation distances, SCIMAC then amended their code and used figures that were recommended in NIAB.

Q172 Patrick Hall: That was part of the FSEs, was it?

Dr Smith: For the farm-scale evaluations, yes. As the Minister has said, there are several ways of ensuring compliance with the code. SCIMAC themselves put forward a system of assurance through the sale of the seeds which was the basis of their code, which would be one of the things that could be looked at as part of the consultation. There were sanctions through the contract in selling seeds, that the farmer had to comply with the code and if he did not apply with the code then sanctions could be applied. That is one of the options but there are others.

Mr Morley: That was a voluntary code that people voluntarily entered into. What it meant was that if farmers transgressed the code then the company would no longer sell them the product.

Q173 Patrick Hall: Can I just anticipate a few years hence when the whole structure of regulation, law and licensing is focused around, and flows from, the 0.9% labelling threshold. You said, Minister, that one could, and you are in favour of I gather, look at lower limits for organic.

Mr Morley: Yes.

Q174 Patrick Hall: That was the example. That would have to be negotiated with the EU Commission, would it?

Mr Morley: No. We could set our own standard in the EU and we could build that into the statutory code.

Q175 Patrick Hall: Would that not be challengeable?

Mr Morley: Yes, it would be challengeable because at the moment the standard that we would agree would be a voluntary standard and we could not apply it as a statutory standard because of the current 0.9 threshold.

Q176 Patrick Hall: So the position of producers who want to achieve a more challenging threshold, such as organic producers, and indeed the supermarkets say they want to be able to sell GM-free, or at least at a lower threshold, that could only be achieved on a voluntary basis but there are bound to be instances

where neighbours do not agree and challenge. Before we enter all that, is this not the time to try to avoid it by having some legal flexibility by negotiating with the EU Commission about circumstances under which 0.9% could actually be lowered? Is this not the time to do that?

Mr Morley: Under the present rules and the present Directive, Member States are free to set a lower threshold for organics. We are taking up that option, it will be part of our consultation. You are right about the enforceability, potentially this looks to be a very difficult area because of what is, what is not a factor. As I mentioned to you, you can legally sell imported organic food using the 0.9% threshold. It does not mean that we cannot explore this. It does not mean that if there is support for this approach that we cannot build this into the guidelines in the way that we structure the co-existence rules to deliver that as an objective in relation to the organic sector. Clearly it would be preferable to remove any doubt or any potential for legal challenge to have the force of EU law. We are prepared to argue for that. I do not know the views of other countries, we would need support for that, but it is something that we are prepared to look at.

Q177 Chairman: Can I be clear about a couple of points. The AEBC have talked about this idea of an introductory period and in a sense that follows on from what Patrick has been saying, that now is the time to do things. Have you actually taken the AEBC's advice to look at how you would put that in place or is this still something being discussed by Government?

Mr Morley: We are following the advice that the AEBC has given us and that will influence the shape of the consultation document. We will build their advice into that.

Q178 Chairman: In terms of the monitoring of this—again Patrick was trying to get this from you—who is going to do this monitoring?

Mr Morley: There are a number of ways it can be done and what we will have to do as part of the consultation is decide what is the most effective way forward on that.

Q179 Chairman: You have not got a notion at least of whether it is going to be self-policing or an independent body?

Mr Morley: I have given you a range of examples of what could be done. You could do that as part of the statutory code.

Chairman: Let us go on to GM-free zones. I think it is fair to say that this has not got a terribly good press so far from the people we have been cross-examining. If we go over to Bill on GM-free zones.

Q180 Mr Wiggin: How useful in practice do you think is the concept of GM-free zones?

Mr Morley: The concept of GM-free zones has really come from pressure groups. I think some people may have got a bit over-excited about what can and cannot be done with GM-free zones. Our view is that it is a matter for individuals and areas

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who may want to come together. There may well be some discrete areas, some National Parks, for example. All the farmers within some National Parks may want to be a GM-free zone. They may market some foods with a regional identity, for example, and they may not want that to be connected with GMs. That is fine with us if people want to do that, as far as Defra is concerned. We are very happy to give people advice about what can and cannot be done in relation to what the law states on this. It is really an issue of co-operation, and where people are prepared to co-operate I think that is to be encouraged myself. I think there is a risk of overplaying it. I know a number of councils have declared themselves GM-free zones. Those of us who go back some years will remember the nuclear-free zone declarations which did not necessarily stop nuclear activities. It was a movement and it was a way of raising awareness of the issue and a way of discussing the issue and it had some merit, if only that alone.

Q181 Mr Wiggin: I am slightly critical of that approach because what you have said is essentially people are not going to be forced to grow genetically modified crops and if they choose not to, all well and good. I do not think there were any farmers who were proposing to grow nuclear weapons or have bases on their land either. Whilst your example is charming it is not very relevant. I think the important thing is if you wish to be part of that, one farmer can change that desire.

Mr Morley: I cannot deny that.

Q182 Mr Wiggin: Therefore, it is going to be very interesting to know what sort of advice you are going to be giving to farmers who need to set up a voluntary GM-free zone.

Mr Morley: The main advice will be what the law is on this. Again, the EU Directive makes it clear that people have every right to choose whether they want to grow organic, conventional or GM, that is part of the Directive, so individual farmers have that legal right, there is no two ways about that. On that basis you are right, if you get one farmer, and in my experience there is always the odd one awkward farmer—

Q183 Paddy Tipping: Just one!

Mr Morley: Just one, that is right. That is their individual right if they so choose. I come back to the point I was making. I am all for co-operation and I think there is scope for a lot more co-operation in British agriculture and one way of co-operating is if people feel it is to their advantage or that is what they want to do then they can come together voluntarily to declare themselves a GM-free zone. We can tell them what the law is and what they can and cannot do.

Q184 Mr Wiggin: Unfortunately, that does not tell us very much. Obviously every farmer can grow whatever he likes, that is a given, I think.

Mr Morley: Some things they cannot grow.

Paddy Tipping: They could get arrested.

Q185 Mr Wiggin: They can grow hemp but certain drugs they could not grow. I think the important thing was what you said earlier about Austria, and I think it is true in Wales as well, where there is definitely political will to have GM-free zones.

Mr Morley: Maybe.

Q186 Mr Wiggin: To some extent we look to the Government really to negotiate in Europe on our behalf if that is what people want. The fact that the Austrians have already indicated that is what they would like, what is our Government doing to push this?

Mr Morley: Certainly we have no objection to the concept of GM-free zones. The point you made earlier on is while we do not want to see people being forced to grow GM, we think it is a matter of choice for growers, there are some very difficult legal issues in also denying people the right who may want to as well. There are some human rights issues here as well. It is quite a complex legal issue in terms of how you deal with it. We have an open mind on this. If there was a consensus within the EU for this approach then we would not object to exploring these options. I do not believe there is consensus at the moment, it is only Austria who are being very serious about this.

Q187 Mr Wiggin: Probably you are right that there is not complete consensus across Europe but there are certainly rumblings of discontent at this stage. Given that we are supposed to be a part of Europe, we seem reticent.

Mr Morley: These are choices and in the end if people want to have that GM-free status they can voluntarily come together for it. There is a lot to be said for that voluntary approach because it is a co-operative approach. I think there is everything to be encouraged in terms of a co-operative approach within agriculture and that is why we are very happy to give advice to people. The main advice we will give is the legal advice and what can and cannot be done.

Q188 Chairman: The Secretary of State did make a big play in her March statement on the idea of GM-free zones. That was certainly what got the headlines, that the Government were actively encouraging this as a way forward. You seem rather more dismissive of this as tokenism. It is a very relevant time, councils are going around one after another passing these wonderful motions. I know the analogy with nuclear-free zones is there but that was after nuclear power was introduced. I think their view is if they pass these motions now they will stop it coming.

Mr Morley: I think that is a bit misleading in relation to what people thought they could and could not do in relation to passing a council resolution. I am not dismissive about voluntary GM-free zones. I do not think that when she announced the policy Margaret Beckett gave it undue emphasis, it was a statement of fact. The heart of this approach is that there must be choices for people to make—consumers, growers, processors—and that is why it is important to have the labelling and the traceability so people can make

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those choices. Part of that choice is if people want to come together and declare themselves a GM-free zone, that is fine, we do not have a problem with that from the Government, and we will provide advice to people about what they can and cannot do to assist them if that is what they want to do. It has to be put into perspective that it is not legally enforceable, it would have to be a voluntary co-operation.

Chairman: If we can go on to liability. Joan will want to ask you about both environmental and economic liability.

Q189 Joan Ruddock: Let us start with economic liability. Obviously the Government has made it very clear that it should be the GM sector itself that deals with any compensation. What do you mean by the GM sector? Is it the companies plus the GM farmers?

Mr Morley: Again, as part of the consultation there are a number of approaches to this. For example, you could have liability on the farmers who are growing GM produce, which I think is a route that Denmark is planning to take. You could have liability on the GM companies. You could have some form of joint liability. You could have a liability fund that is managed by the GM companies who could theoretically, just for the sake of argument, recover some of that money if it was due to a failure or a breaking of the regulations by a particular GM farmer. There are issues, of course, of proving that and all the things that go with that, which is why there is an argument for a fund of this kind. There are a number of choices to be taken on this, a number of options, and that will be part of the consultation. We will not make a final decision until we have heard what people have to say about this and what their views are. We do believe that the principal liability should come from the GM sector because I think it is a bit hard to put it on non-GM farmers and I think it is a bit hard to put it on the general taxpayer as well.

Q190 Joan Ruddock: Taking the case, which is the case the Soil Association has envisaged, which says there are several GM farmers and then there is an organic farmer who suffers contamination but is unable to say which of his or her neighbours caused this contamination, in those circumstances making the company directly liable is obviously a much easier legal route, is it not?

Mr Morley: That may well be the case and, indeed, that may well be the favoured option but we are very happy to listen to people's views on this.

Q191 Joan Ruddock: You might agree with the Soil Association that it would not be necessary in such a circumstance for the complainant to have to identify the individual farmer?

Mr Morley: I acknowledge that in circumstances where you may have widespread GM use it may be very difficult to identify an individual farmer as responsible and in that case you would have to have a more general approach in terms of a general compensation fund. I thought that was the Soil Association jumping in adulation at my comments!

Q192 Joan Ruddock: Because of the noise I was distracted for a second. I am trying to see if the Government already has a position on this or is this part of the consultation and the Government has not got a fixed view as yet?

Mr Morley: We have not got a detailed position apart from our belief that the compensation fund should come from the GM sector. How you construct it and how you operate it, of course, is open for discussion in the consultation.

Q193 Joan Ruddock: Another thing that the Soil Association has said is that if there are actual economic losses it should be possible for the farmer who has suffered the economic losses to claim compensation even if the regulations had been adhered to because the actual contamination still produces a loss and, therefore, you could argue it is back to the regulations being imperfect. What do you imagine in that kind of scenario?

Mr Morley: It depends on what kind of loss—

Q194 Joan Ruddock: A loss arising from contamination.

Mr Morley: It depends on the threshold in that the thresholds will be designed at a minimum not to go above 0.9%. Realistically, if you set 0.9 then to be on the safe side you are going to have to set your threshold lower than that and the various biotech companies know that very well. That should not arise. If that arises there may be some other kind of failure. I am afraid you would have to look at the legal details on a case by case basis. I think you are getting into some very difficult legal areas there.

Q195 Joan Ruddock: It sounds as though you are acknowledging wherever thresholds might be set there could be error and, therefore, you are suggesting that has got to be built in.

Mr Morley: Yes. In my experience, if you have rules and regulations there are all sorts of errors, and we have seen all sorts of examples of that. You do have to build that in. To be on the safe side, just listening to the discussion within the GM sector and outside the GM sector, I think most people are gearing up for designing their structures to deliver at a level below the minimum, so if it is 0.9 they will be aiming for a lower level to give them a little bit of leeway.

Q196 Joan Ruddock: There is an argument about how adequate existing laws are to deal with compensation claims. Is it the view of the Department that existing legislation is sufficient to deal with compensation claims?

Mr Morley: Again, you are into some really quite complex legal areas and perhaps you ought to have the Lord Chancellor before you to answer some of these questions.

Q197 Joan Ruddock: I would be surprised if he knew, would you not?

Mr Morley: There is a view, and we have taken legal advice on this, that there is the existing law and you can pursue damages under the existing law. Where this becomes difficult is that if you can identify who

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is responsible then you can pursue damages. You can also have contractual arrangements as well and you can pursue that if something goes wrong within the contractual arrangements. The situation which is difficult, and where I agree with what the Soil Association has had to say, is if you had an organic farmer surrounded by a lot of GM farmers it would be very difficult to prove who was responsible so, therefore, there is an argument for some level of compensation provision.

Q198 Joan Ruddock: I think they suggest that current case law is just not adequate to deal with the kinds of cases that might occur in the future.

Mr Morley: We will have a look at that as part of the consultation. Of course, there is the EU Directive on Environmental Liability which is new as well.

Q199 Joan Ruddock: We are not talking about environmental liability at the moment, we are talking about economic liability on individual farmers.

Mr Morley: I understand that, but it could be the basis of a structure.

Dr Smith: The EU law on environmental liability is being implemented by Member States. The Department will be going out to first consultation on that in the autumn. GMs are covered but only in relation to damage to sites that are already protected, nationally protected habitats of some sort. Of course, if the GM operation is permitted by a permit then it will not be covered necessarily because the potential damage to the environment will already have been assessed and judged that there will not be adverse effects.

Q200 Joan Ruddock: I am conscious of the time otherwise I would like to pursue environmental liability with you.

Mr Morley: That is a much wider issue.

Q201 Joan Ruddock: It is a much wider issue. From what has just been said by your adviser it is clear that on the European Directive there will be Government consultation and it is likely to begin in the autumn.

Mr Morley: That is right.

Q202 Joan Ruddock: So we will all look out for that with interest. Just to return to the economic liability and individual farmers, do you think there is any merit in the suggestion that has been put forward by GeneWatch to have a tribunal to deal with these matters?

Mr Morley: I think GeneWatch is right, if you set up a fund it is inevitable that you would have to have some form of tribunal both in terms of dealing with disputes and possibly dealing with appeals as well. I think that would be inevitable, yes.

Q203 Joan Ruddock: Finally, just to link all of this liability to insurance. We have heard evidence and we know that the insurance bodies have said at the moment they are not prepared to issue policies to cover GM liabilities, so what steps do you intend to take to encourage the insurance market to develop?

Mr Morley: I think much depends on the shape of the liability fund. If we go down the route of the GM sector being responsible then, of course, primarily our concern is to make sure that there is a level of compensation and liability should it be needed. If that is in place, that is our principal concern. It may well be that the GM sector will wish to involve the insurance companies in how they operate. They may wish to make insurance part of the contract in relation to the product. There are price implications, of course, and they would have to look at those in relation to the competitiveness of the product, but it might be something that they may want to do. That is an issue for the market to decide rather than us as a Government.

Q204 Joan Ruddock: So you are just accepting if the insurance companies do not move on this issue, and it appears they will not at the moment, there has to be some other solution and the Government does not take any steps to look at insurance?

Mr Morley: As we are approaching it at the moment we are looking at the concept of a liability fund or provision. Our stated view is that should come from the sector basically.

Q205 Joan Ruddock: The corollary is you do not envisage non-GM and organic farmers as having to take out insurance against GM cultivation in this country?

Mr Morley: Not as a general rule. I do think there is an issue of insurance generally for agriculture and horticulture and livestock, but that is a much, much wider issue which I do not think we want to go into today.

Chairman: You have mentioned consultation on at least two occasions, I am going to ask Paddy to conclude your evidence.

Paddy Tipping: I do not think it was two occasions, I think it was every other sentence.

Q206 Chairman: I was being polite.

Mr Morley: We are a very open Government.

Q207 Paddy Tipping: Just tell me what is going to be in this consultation, the scope of it?

Mr Morley: Just very briefly, the scope of it is we will have to operate within the legal framework, which I have to keep coming back to. The consultation in terms of co-existence will be based on the legal framework and how we can deliver that, the ways that we can do that, issues of enforceability, all the points that you have raised, separation distances, the issue of science and how the distances have been come to, issues of gene flow. It will all be in the consultation. As part of the liability regime, we have explored some of the models and issues that will be there, they will be part of the consultation. In the consultation we will give options that people can consider basically. Part of that consultation is the kind of response that we will get to those options.

Q208 Paddy Tipping: When is this consultation going to kick off because it has to be in place for planting next year, has it not?

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Mr Morley: We do not envisage any planting next year, so therefore there is a bit of pressure off. We envisage that the consultation document will be available before recess. You do appreciate that there is always pressure and slippage and I do not wish to—

Q209 Paddy Tipping: Which recess? The summer recess?

Mr Morley: Yes, the summer recess.

Q210 Joan Ruddock: I thought you meant the Whitsun recess.

Mr Morley: Whitsun is a bit overambitious. Poor old Linda and her team were going white there at the idea of that.

Q211 Paddy Tipping: Cancel your holidays quick! So the kick-off may be before the summer recess.

Mr Morley: I hope so.

Q212 Paddy Tipping: What is the closing date? Three months?

Mr Morley: It will be a three month consultation, yes.

Q213 Paddy Tipping: You said as an aside “we hope to have it ready for spring planting season 2005 but we do not think there is going to be any planting”.

Mr Morley: That is still very much in line with the kind of timescale. There is no reason why we should not have this ready for spring 2005 but we are sure that there will be no GM applications for the planting season 2005 and realistically not in 2005 at all.

Q214 Paddy Tipping: When can we expect some planting?

Mr Morley: I guess the very earliest is 2006 and I would be doubtful about that. Do you have any idea?

Dr Smith: Bayer were talking about 2008 before they would be ready with their next crop that they wish to bring forward. Certainly there are not any crops that are suitable to be grown in Britain that would necessarily have varieties that were approved that would be suitable for growing in Britain on the very near horizon. Although there are a couple of maize GM events that are approved for cultivation, the varieties that are approved are only suitable for growing in the Mediterranean, the varieties are not suitable for growing in Britain.

Q215 Paddy Tipping: Just wrap this up for me. In effect we have had a five year freeze, have we not?

Mr Morley: Yes.

Q216 Paddy Tipping: We are now in 2004.

Mr Morley: Yes.

Q217 Paddy Tipping: We are speculating into the future and it looks as though we are going to have another four year freeze at least.

Mr Morley: Definitely not in 2005 in my view, doubtful in 2006, probably realistically in 2007.

Q218 Paddy Tipping: I thought Linda had mentioned 2008.

Dr Smith: I said Bayer said that they were not proceeding until 2008.

Mr Morley: We just cannot really say post-2005 for sure. In the regulatory pipeline you can see what is coming down the pipeline and there is nothing coming that will get here for some years. As Linda has said, there will be some GM crops approved in Europe, in fact there are GM crops approved in Europe now, and once you get approval within Europe then it is legal to sell it in other countries, but the crops which have approval are designed to resist pests for maize that you do not get in this country, so it is not really suitable for growing in this country and we are not going to see them.

Q219 Paddy Tipping: Just going back to the consultation. It is going to go out and responses will come back to the Department. Are you going to involve scientific groups and advisory groups in looking at this, or is it a consultation that you are doing yourselves?

Mr Morley: All the various groups who have had an interest in GMs will be part of the consultation and we will encourage them to give us their views.

Dr Smith: May I say something about the devolved administrations who will be doing their own consultations.

Q220 Paddy Tipping: Will that be over the same timescale?

Mr Morley: Roughly, yes.

Dr Smith: The Department has been working with colleagues in the devolved administrations talking about whether there are common interests.

Q221 Paddy Tipping: Will it be the same structure, the same questions being asked?

Mr Morley: Broadly, although they are free, of course, to take a slightly different position in relation to these rules, it is a devolved issue. Basically we are approaching it on the same basic concept.

Q222 Chairman: You promised us at least one note, maybe two. One was in terms of the way in which you currently monitor products.

Mr Morley: Yes, that is right. You wanted some examples of where we have picked up failures and we can give you that.

Q223 Chairman: Apart from that, what you have said will have to remain said on the record although there is always the possibility of sending us a note to clarify what you have said. Thank you for your evidence, I am sure it will not be too long before we meet again.

Mr Morley: I look forward to it, Chairman.

Chairman: Thank you for your time.

Written evidence

Memorandum submitted by Friends of the Earth (Swindon)

GM MAIZE DECISION

1. *These are our main recommendations that focus on GM maize*

(a) Separation distances of at least 2km should be required to control cross-fertilisation and to secure an element of real choice for GM-free maize/sweetcorn. However, organic maize/sweetcorn may require separation distances of 5km. We provide evidence on this particular point.

(b) Organic maize and sweetcorn should be 100% GM-free.

(c) The public should be informed about the location of any proposed planting of GM maize by 1 March at the latest for spring sown crops.

(d) GM free areas could mimic no-smoking policy/control areas.

(e) The owner of the GMO should be liable for any harm or loss of market resulting from releasing the GMO into the environment.

(f) Farmers growing GM maize should be insured to cover third party damage and provide basic genetic testing kits to neighbours who request them.

(g) Voluntary labelling of produce [eggs, meat, dairy products] where livestock has been reared on a GM-free diet should be encouraged.

(h) There should be a debate in Parliament that would allow MPs to vote for/against the growing of GM crops in the UK.

(i) National List trials for GM seed varieties crops that assess the value for cultivation and use should include a separate evaluation of the transgenic characteristic. For example, in the case of Chardon LL maize, the VCU should have included an assessment of the linked herbicide, glufosinate ammonium, not just that for general maize herbicides.

(j) Herbicide approval should follow the usage in the farmscale trials. In the case of T25 maize, that is 3.5 litres of glufosinate ammonium [GA] per hectare at a concentration of 200gm of GA/litre.

(k) Relicensing of the GMO for release at a European level should include any new monitoring data of farmland wildlife as a result of managing the GMO compared with its conventional counterpart.

2. *In relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against cross-contamination?*

Bearing in mind that, in the case of GM maize, separation distances of 80m for forage maize and 200m for sweetcorn have been advocated and used in the UK crop trials, evidence continues to gather that pollen movement and cross-fertilisation takes place at greater distances than previously reported.

3. We believe that separation distances for GM maize should be in the order of at least 2km although 5km is not unrealistic.

4. We quote two examples where conventional maize varieties that have distinctive purple/blue kernels were grown and where cross-pollination can be readily identified in normal yellow cob kernels. The first involved a trial conducted by Iowa State University that revealed evidence of gene flow nearly 500m away—the limit of the study. The second was a report from a farmer who grew blue corn and received complaints from farming neighbours three miles [nearly 5 km] away who found blue kernels in their cobs.

5. “Corn pollen drifts further than thought 29 Sep 2003 11:59 a.m.CDT http://www.agriculture.com/default.sph/AgNews.class?FNC=goDetail_ANewsindex_html_50672_1.

Results of an Iowa State University project examining the distance corn pollen travels to breed neighboring corn surprised researchers. Yellow corn planted near purple popcorn developed a large number of purple kernels, but purple kernels were found in neighboring corn as far as 1,600 feet away [488 metres].

Researchers planted a strip of purple popcorn within a 15-acre field of standard yellow corn. Separation distances of 30 to 150 feet were cut out of the yellow corn to represent the range of buffer strips recommended by the industry. As expected, the yellow corn near the popcorn developed the largest number of purple kernels. However, researchers were surprised to find purple kernels developed in the entire test plot.

The popcorn pollen also infiltrated a nearby field of a standard yellow corn that was planted 19 days earlier. Purple kernels developed in that field every 100 feet up to 1,600 feet from the popcorn plants. Weather was monitored during pollination to investigate the relationship of pollen drift and prevailing winds . . .”

6. The second incident was reported to Gill Rowlands and Eva Novotny by a United States farmer, Mr Shrock, whose “blue maize” had cross fertilised yellow maize grown three miles from his holding. As a rare variety to grow, it was established that the nearest farm growing blue maize was 150 miles away. Victor

Schrock farms 1,600 acres organically. In 2003 he grew an open pollinated blue maize for the first time that produces blue kernels. He received calls from farmers with holdings three miles from his crop complaining that their corn had been cross pollinated by the blue corn. They were concerned that the blue kernels were so abundant and noticeable that they would get dockage at the elevator from the buyer. Mr Schrock does not share machinery, have livestock or use silage. He only uses his own green manure (clover) and there is no import/export of other manure. There is no way that the seed delivered to the other farms could have been contaminated by the blue corn.

7. At a farm that is south and slightly east of Mr Schrock's farm (where the blue maize was grown), the contamination was estimated to be not more than 1%, a figure that probably applies to the overall field. However, the distribution was uneven: trees on the west (and south) border of the field apparently shielded the maize grown on the west side of the field, and no blue kernels were noticed there. On the north side of the field, which is the near side to Mr Schrock's farm, blue kernels were "quite noticeable". Other farmers to the north and south had also complained about contamination, but no further information has been given. Another farm borders Mr Schrock's farm to the south. It is separated by a road with ditches on either side, with a distance of perhaps 100 ft between the borders of the two fields. On this maize farm, there were "quite a few" blue kernels. About weather conditions, Mr Schrock said there had been nothing unusual at the time of pollination of his maize. Prevailing winds are from the southwest, but the affected farms are to the south and north. He estimates that winds of about 10 miles/hour sometimes occur during the time of pollination, with higher winds sometimes occurring, as well.

8. A final point of interest mentioned by Mr Schrock is that the seed company for which one of his neighbours is growing maize requires a separation distance of at least five miles from any farm growing GM maize.

9. It is important to remember that many allotment holders and gardeners grow sweetcorn for their own consumption—there is no suggested process that these growers will be contacted by potential GM maize growers. Gene flow from large fields to small crops is greater.

10. GM growers should provide conventional maize/sweetcorn growers with basic genetic testing kits.

Friends of the Earth (Swindon)

March 2004

Memorandum submitted by the National Farmers' Union (Scotland)

GM MAIZE DECISION

SUMMARY

1. Thank you for the opportunity to contribute to the inquiry of the Environment, Food and Rural Affairs Committee into the implications of the Government's recent decision to agree to the limited cultivation of GM maize in the UK. The decision by Bayer CropScience not to commercialise its Chardon LL variety in the UK will delay commercial production of GM crops in the UK but the inquiry raises important issues. The following are the views of NFU Scotland on the first three issues to be considered by the Committee:

- Imposition of statutory separation distances on GM growers, to try to ensure that other growers can meet contract specifications would represent a fundamental change from current practice.
- The Government should consider alternatives to statutory separation distances such as those suggested by the EU Joint Research Centre.
- If mandatory GM separation distances are applied these should not be set at a width intended to keep admixture below the level of detection.
- Where farmers have planted GM crops in accordance with all legal requirements and codes of practice no liability for admixture in neighbouring crops should be applied to them.
- Retention of sealed samples by farmers would be needed to establish liability for admixture caused by excessive levels of GM in purchased or processed farm saved seed.
- Liability should be limited to real losses and should be reduced if good practice to avoid admixture was not applied by non-GM growers.
- We do not accept the principle of "strict liability".
- Owners of GM varieties should be liable, with Government, for any losses due to damage to the environment, animal health or human health that should have been tested for prior to approval for commercial production.
- The Government's role in determining liability would be through enforcement of regulations on GM production and provision of independent testing of seed/grain samples.
- We do not oppose the concept of voluntary GM-free zones, we believe that compulsory GM-free zones would be illegal.
- The meaning of GM-free zones must be defined.

- A tolerance should be applied to allow GM-free zone status to be maintained without 100% compliance.
- Government could play a role in establishing GM-free zones through provision of grants to encourage participation. It would also have a role to substantiate GM-free claims.

BACKGROUND

Maize

2. In Scotland maize is primarily grown in the Southwest by dairy producers. Maize is therefore grown as an alternative to grass and is fed on-farm to cattle. Little or no Scottish grown maize is marketed.

Terminology

3. Although commonly used, the phrases contamination and cross-contamination are inappropriate in relation to the question of co-existence between approved GM and non-GM crops. Where a crop is found to contain grain of another variety this is more correctly called “admixture”. This is the term used by EU Commissioner Franz Fischler.

Current Practice

4. Ensuring the co-existence of cropping between farmers is not a new issue. Farmers who grow particular varieties, eg barley for malting, are required to achieve a specified varietal purity. Seed producers are required to achieve even higher purity levels. Neighbouring oilseed growers may be producing varieties for food use or varieties only suitable for industrial purposes. In maize growing regions “waxy maize”, used in processed foods as a stabiliser and thickener can be grown as well as non-waxy varieties. In each case contracts specify maximum admixture levels.

5. Each crop variety or variety type is grown to meet market requirements and currently no grower is given priority over another. In other words it is the responsibility of each grower to take the necessary measures to avoid admixture. If admixture in excess of contract specifications takes place there will still be other markets for the grain.

6. As each grower is deemed to have an equal right to grow for his market of choice there is no liability for losses due to admixture in a neighbouring crop.

GM Production

7. The production of authorised GM crops adds a new facet to crop production but there are clear parallels with the situation that exists today. Today it is seed and organic crops which command a premium, reflecting higher production costs, including those associated with avoiding admixture. In the future another category of grower, the GM grower will be added. While Scottish maize is likely to be consumed on farm, in other areas the grain could be sold into markets which do not require non-GM assurances. It is likely that non-GM grain will initially be a premium product in a mixed GM/non-GM environment, similar to the relative market positions of conventional and organic grain today.

Co-existence

- In relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against GM admixture.

8. Physical separation is not the only method of keeping admixture below required specifications. The European Commission’s Joint Research Centre’s (JRC) May 2002 report “Scenarios for co-existence of genetically modified, conventional and organic crops in European agriculture” considered other methods including use of higher purity seed, staging of flowering, and careful handling of grain post harvest. In its modelling of five different farm types growing maize it found that use of isolation distances was the best method for farms growing both GM and conventional maize varieties. For organic farms current methods were sufficient to avoid admixture over 1% and post-harvest management was sufficient on farms where maize made up a small (20%) proportion of the farm area. This could well equate to Scottish farms where much of the land on maize producing farms would likely be in grass.

9. The appropriate distances for separation are crop specific due to the differences in potential for admixture. The JRC report also indicates that admixture potential depends on other factors such as the intensity of local production. Several studies have examined cross-pollination in maize. Some of these have indicated that to achieve cross-pollination levels of below 0.9% (the threshold for labelling of food products as GM) separation distances of more than 200 million could be necessary.

10. It has always been the responsibility of the seller of the grain to achieve admixture levels required by contracts, not his neighbour. To impose statutory separation distances on GM growers, to try to ensure that other growers can meet their contract specifications would represent a fundamental change. Traditional liaison between farmers could negate the requirement for mandatory separation distances in most cases.

11. It has been argued that GM growers should be responsible because they are the ones who will benefit from production of the GM crops but this is also true of the growers of the (higher priced?) non-GM or organic crops. All these crops will have been declared safe by Government. In the case of Chardon LL farmers would have been growing a crop found to be better for the environment than conventional maize crops. It is unreasonable to restrict the choice of growers as to where they should plant GM varieties when the issue is not food safety but contract specifications.

12. In contemplating the principle of compulsory separation distances the Government should consider alternatives (as suggested by the JRC report) and future scenarios involving other crops or when GM cropping may predominate.

13. If compulsory GM separation distances were to be applied then these should not be set at an unreasonable level. For example, distances should not be set at a level attempting to keep admixture below the level of detection. Neither should confidence levels be set so high that GM crop production would be non-viable. This would not be consistent with EU or UK policy.

Liability

- If GM admixture occurs, how will liability be established and responded to, who should be legally responsible, what should the limits of that responsibility be and what role should Government play in determining these matters

14. In the case of admixture of legally approved GM crops any suggestion that the “polluter pays” principle should apply must be disregarded. The question to be addressed is liability for economic losses due to the inability to meet contract specifications.

15. Where farmers have planted GM crops in accordance with all legal requirements and relevant codes of practice then no liability for admixture in neighbouring crops should be applied to them. This does not mean that the source of the cross-pollination is unidentified but there will always be a statistical probability of higher than expected rates of cross-pollination due to unusual local or weather conditions.

16. Conversely, liability could be applied if a GM farmer was found to have breached legal conditions. This would of course have to be proved.

17. If mandatory separation distances are not applied then the primary responsibility to avoid GM admixture will rest with the non-GM grower; liability would not arise due to cross-pollination. There are however other potential routes for admixture including seed and post harvest handling.

18. Seed purchased by the grower could have levels of GM admixture outside tolerances or farm saved seed, processed by a seed dresser, could have come into contact with GM seed. In these cases liability could be established by farmer retained samples of the seed. Similarly, admixture could take place during shipment to the first buyer of the crop although current protocols should minimise this risk. Retention of sealed samples by farmers would be needed to establish liability.

19. Liability should be limited to real losses and should be reduced if good practice to avoid admixture was not applied by the non-GM grower. Losses would relate to costs associated with rejection plus the loss of value if the crop had to be sold as GM or the cost to reduce the admixture level to that required by the contract.

20. We do not accept the principle of “strict liability”. It does not seem reasonable that the biotech company holding the rights to a variety should be held responsible for economic losses resulting from admixture. The owners of the GM varieties should however be liable, with Government, for any losses due to damage to the environment, animal health or human health that should have been tested for prior to approval for commercial production.

21. The Government’s role in determining liability would be through enforcement of regulations on GM production and provision of independent testing of seed/grain samples.

GM Free-Zones

- What processes will be involved in determining how GM-free zones will be established at both a regional and local level and what role should Government play in this development.

22. NFU Scotland does not oppose the concept of voluntary GM-free zones. We believe that compulsory GM-free zones would be illegal. Zones should not be constrained by size; individual farm businesses should be able to establish themselves as GM-free zones.

23. The meaning of GM-free zones must be defined. It would not be logical to allow GM crops authorised for UK production to be fed to livestock within a GM-free zone if local farmers were denied the ability to grow those crops. Constraining both production and use of GM crops would however make such zones less attractive to farmers.

24. Another issue which would need to be addressed is uniformity of zones. Would the presence of a single GM grower negate the status of the whole zone? Would the boundaries need to be redrawn or could a tolerance be applied. Note that food stuffs which are below 0.9% GM do not have to be labelled GM but they are not considered “GM-free”. We suggest that that a tolerance should be applied.

25. Government could play a role in establishing GM-free zones through provision of grants to encourage growers to participate. It would also have a role, via trading standards, to ensure that GM-free claims were substantiated.

National Farmers’ Union (Scotland)

April 2004

Memorandum submitted by PG Economics

GM MAIZE DECISION

EXECUTIVE SUMMARY

The following key points should be noted:

1. Context. Possible economic problems of co-existence arising are likely to be very limited, even if there is a significant development of commercial GM crops and increased plantings of organic crops because:

- There is limited real demand for non GM material in the three relevant crops of oilseed rape, sugar beet and forage maize.
- The organic areas of the three key crops account for only 0.24% of the area planted to these crops in the UK and is unlikely to expand significantly.
- The possibility of gene transfer to related wild and other crop species from any of the GM crops is extremely low.
- UK arable farmers have been successfully growing specialist crops, without compromising the high purity levels required.
- Some changes to farming practices on some farms may be required once GM crops are commercialised. This will however, only apply where GM crops are located near non GM or organic crops for which the non GM status of the crop is important (eg, where buyers do not wish to label products as being GM or derived from GM according to EU labelling regulations).

2. Consistency. Sectors (eg, organic) that wish to apply a policy of zero tolerance to the presence of GM material should apply the same testing principles and thresholds currently applied to GMOs to other impurities (eg, introduce a *de minimis* threshold on pesticide residues and apply a 0.1% threshold on the limit for acceptance of all unwanted materials and impurities). If they also wish to retain policies towards GMOs that advocate farming practices that go beyond those recommended for meeting the requirements of EU labelling regulations, then the onus for implementation of such measures (and associated cost) should fall on the (organic) certification bodies and their members.

3. Proportionality (and equity). If highly onerous GM crop stewardship conditions are applied to all farms that might wish to grow GM crops, even though the vast majority of such crops would not be located near to organic-equivalent crops or conventional crops for which the non GM status is important, this would be disproportionate and inequitable.

4. Equity. If legislation is introduced that places a possible liability on GM using farmers for possible economic/marketing impact on non GM farmers, then it can reasonably be argued that, on equity grounds, the same principles should apply to non GM (including organic) farmers, whose activities might have an adverse impact on GM and other conventional crop producers.

Other points of relevance are:

- In respect of liability, origin of adventitious presence will be very difficult to prove and farmers growing a GM crop should not be liable for adventitious presence of his/crop in other crops if he/she has adhered to GM crop stewardship guidelines or conditions.
- In respect of GM free zones, the principles of equity are important and any designation should be on a voluntary basis.
- We do not consider that any additional legislation is required to allow GM crops to be grown in the UK.

MAIN EVIDENCE

1. We perceive that all safety and environmental impact issues associated with the approval (or otherwise) for the planting of GM crops in the UK are issues dealt with by the regulatory approval process. Given that herbicide tolerant forage maize has successfully passed through such a process, all residual co-existence and liability issues (including what some parties incorrectly call environmental liability) relate to economic and marketing issues only—see below.

2. We consider that the list of specific questions listed in the terms of reference, whilst relevant for providing responses to (see the latter part of this submission), fail to address or take account of several important points of relevance. These are discussed below.

3. Four key words summarise the co-existence and economic/marketing liability topic—context, proportionality, consistency and equity.

4. Context. The GM trial crops, including the Farm Scale Evaluations (FSEs) have co-existed with conventional and organic crops without economic and commercial problems—no conventional or organic crops near to GM crops have found any adventitious presence of GMOs. For the future, the likelihood of economic and commercial problems of co-existence arising remains very limited, even if there is a significant development of commercial GM crops and increased plantings of organic crops because:

- The GM traits being commercialised in the next few years are in crops for which there is limited demand for non GM material (with the possible exception of sugar beet).
- The organic areas of the three key crops (oilseed rape, sugar beet and forage maize) are extremely small (only 0.24% of the area planted to these crops in the UK).
- The organic area of these crops (and other combinable crops) is likely to continue to be a very small part of the total arable crop areas (even if there was a tenfold increase in plantings), with a very limited economic contribution relative to the rest of the UK arable crops. The likelihood of these (organic) areas expanding is limited due to a combination of adverse agronomic factors (eg, a need for sites with few weed problems and the nutrient demanding nature of crops like oilseed rape), limited demand, and market preference for competing (imported) produce (eg, cane sugar).
- The possibility of gene transfer to related wild and other crop species from any of the GM crops is extremely low¹—this is also an issue examined before regulatory approval is given.
- UK arable farmers have been successfully growing specialist crops (eg, seed production, high erucic acid oilseed rape) for many years, near to other crops of the same species, without compromising the high purity levels required.
- Some changes to farming practices on some farms may be required once GM crops are commercialised. This will however, only apply where GM crops are located near non GM or organic crops for which the non GM status of the crop is important (eg, where buyers do not wish to label products as being GM or derived from GM according to EU labelling regulations). These changes are likely to focus on the use of separation distances and buffer crops (of non GM crops) between the GM crops and the “vulnerable” non GM/organic crop and the application of good husbandry (weed control) practices. GM crop planting farmers in the FSEs already adopt these practices as part of applying the SCIMAC guidelines for growing GM crops in the UK and would be provided with “GM crop stewardship programmes” by seed suppliers, post commercialisation². Few GM planting farmers are however, likely to find themselves located near to “vulnerable” non GM/organic crops and hence the need to apply all of these guidelines rigorously may not be necessary. For example, if a farmer planted GM forage maize next to a non GM forage maize crop and the non GM forage maize was fed to dairy cows whose milk produce was sold into markets where the buyers were indifferent to the GM or non GM status of the feeding regimes used.

5. Consistency. The organic sector currently applies inconsistencies to GMOs and other “unwanted” materials in organic products. It should apply the same testing principles and thresholds currently applied to GMOs to impurities (eg, introduce a *de minimis* threshold on pesticide residues and apply a 0.1% threshold on the limit for acceptance of all unwanted materials and impurities). It should also accept that if it/they wish to retain policies towards GMOs that advocate farming practices that go beyond those recommended for GMO crop stewardship (eg, buffer crops and separation distances that are more stringent than those considered to be reasonable to meet the EU labelling and traceability regulations), then the onus for implementation of such measures (and associated cost) should fall on the organic certification bodies and their members in the same way as current organic farmers incur costs associated with adhering to organic principles and are rewarded through the receipt of organic price premia.

6. Proportionality (and equity). If highly onerous GM crop stewardship conditions are applied to all farms³ that might wish to grow GM crops, even though the vast majority of such crops would not be located near to organic-equivalent crops or conventional crops for which the non GM status is important, this would be disproportionate and inequitable. In effect, conventional farmers, who account for 99.76% of the current, relevant UK arable crop farming area could be discouraged from adopting a new technology, that is likely to deliver farm level benefits (yield gains, cost savings) and provide wider environmental gains (reduced pesticide use, switches to more environmentally benign herbicides, reduced levels of greenhouse gas emissions)⁴.

¹ For example, the FSEs found no evidence for the transfer of the herbicide tolerance gene from GM oilseed rape to common wild relatives.

² 60% of farmers in the FSEs indicated that the SCIMAC audit procedures were in line with requirements in other farm assurance schemes (Pearsall 2003).

³ For example the setting of substantial separation distances between GM crops and any conventionally grown equivalent.

⁴ PG Economics (2003) Consultancy support for the analysis of the impact of GM crops on UK farm profitability, report for the Strategy Unit of the Cabinet Office. See appendix 5 www.pgeconomics.co.uk

7. Equity. It is important to recognise that if legislation was to be introduced that placed a possible liability on GM using farmers for possible economic/marketing impact on non GM farmers, then it can reasonably be argued that, on equity grounds, the same principles should apply to non GM (including organic) farmers, whose activities might have an adverse impact on GM crop producers. For example, the hypothetical scenario of a farmer growing a crop with a GM quality trait that loses its (quality trait) price premia because of adventitious presence of non GM material above an agreed threshold. Alternatively the possible example of an organic potato farmer who suffers a blight attack (mainly because of the much higher risks of infection in an organic system compared to a conventional production system) and this spreads to adjacent conventional farms, causing yield losses and/or the need to apply additional sprays to curb the disease. Ultimately where do you “draw a line” on the liability issue?—for example it might be reasonably argued that if you apply this to GM crops then why not extend it to the example of a person carrying a contagious disease or a cold being sued for breathing near another person who then catches the disease or cold and has to take time off work (and hence loses income).

8. In most markets for agricultural produce, the burden of costs associated with maintaining the integrity of a product or “preserving its identity” falls on the sector that produces that product and which is seeking to benefit from its production. For example, producers of quality assured or regional produce, organic produce, quality trait crops (eg, high erucic acid oilseed rape, high oil maize, malting barley, bread-making quality wheat, basmati rice). In all these cases, the respective products tend to trade at a premium to the majority of produce traded and this premia provides the incentive to initiate actions to preserve integrity and identity. This potential allocation of the burden of costs is referred to in the Commission’s Communication on co-existence of GM, conventional and organic crops (2003).

9. There is currently no legally enforceable *de minimis* threshold for the adventitious presence of GMOs in organic products, below the “generally applicable” 0.9% threshold introduced in recent EU labelling legislation. EU organic regulations allow for the setting of such a *de minimis* threshold but one has never been set or proposed.

10. The “Canadian experience” is often cited as an example of why additional “co-existence” controls are required in the UK. In relation to the Canadian experience, the Committee should take into consideration the following factual points of reference:

- All Canadian farmers growing GM (herbicide tolerant) oilseed rape/canola crops are provided with advice on managing volunteers. This covers aspects of an integrated weed management system, the majority of which is equally applicable to non GM varieties and other herbicide tolerant (non GM) canola crops.
- Some analysts (eg, Van Acker) suggest that there is a widespread problem of herbicide resistant volunteers in Canada. However, the Canola Council’s 2001 research amongst both GM and non GM growers of canola did not find the issue to be problematic for farmers. Furthermore several research papers exist that demonstrate that volunteer GM herbicide tolerant oilseed rape is not a significant problem and can be relatively easily controlled (eg, Downy 2000, Pekrun *et al* 1998). Lastly Monsanto even offers a free volunteer removal service to farmers but reports few calls and requests for the service.
- In Canada two types of GM herbicide tolerant oilseed rape exist—tolerance to glufosinate and tolerance to glyphosate. On the basis of current applications for approval to plant in the EU, only glufosinate tolerant oilseed rape will be commercially planted (if granted approval). Glyphosate tolerant oilseed rape has not and is not expected to be bought forward for regulatory approval for planting in the EU.
- Despite claims stating otherwise, organic canola is still grown in Canada. This area is extremely small (about 2,000 hectares or 0.04% of total canola plantings in Canada) but its insignificance as a crop largely reflects a lack of demand for domestically grown organic canola, and difficulties in growing the crop within an organic rotation (eg, is high nutrient requirement relative to other break crops and the difficulty in controlling weeds). It is also possible for organic and GM canola to co-exist satisfactorily provided both GM and non GM growers adopt good husbandry practices and make sensible use of measures to minimise co-existence problems arising (eg, organic farmers using only organic seed (or testing conventional seed used prior to planting) and/or planting *brassica rapa* varieties that flower slightly earlier than the more commonly planted *brassica juncea* varieties.

11. The issue of physical separation between GM and non GM crops. To reiterate, any requirement to operate physical separation distances is only of relevance if the crop wishing to avoid adventitious presence is being sold into a market where freedom from GM adventitious presence is an important criterion for purchase and failure to meet these criteria may result in economic loss. In the case of non GM crops wishing to avoid adventitious presence of GM crops, this is only of relevance in a very small, minority of cases (eg, organic crops). It is therefore not necessary to apply minimum separation distances on all farms growing GM crops—it is only of relevance in a few cases; see paragraph 5 above. Practical examples of separation distances used between crops of the same species (relating to oilseed rape, sugar beet and maize) include the following:

- Oilseed rape. A 50 metre isolation distance is considered suitable to protect against the risk of high erucic oilseed rape pollen being transferred to neighbouring crops⁵. Other UK-based research identified included Simpson (2000) who found that levels of cross pollination were 0.86% at 5 metres, 0.68% at 11.5 metres, 0.23% at 41 metres and 0.12% at 81 metres (this does, however not equate to these levels of cross pollination being found on a whole field basis, where the levels are lower). Lastly Ingram (2000) estimated the separation distances required to maintain cross pollination of whole fields at below threshold levels of 1% and 0.5% to be 1.5 metres and 10 metres respectively for conventional varieties and restored hybrids (the most commonly grown types of oilseed rape in the UK)⁶. Ramsey *et al* (2003) also indicated that even though minute levels of cross pollination can occur at significant distances (up to 26 kms), this can be kept below 0.1% with relatively small separation distances. It is also interesting to note that in Australia, where the technology providers of herbicide tolerant oilseed rape are proposing that growers should operate a 5 metre separation distance between GM and non GM oilseed rape, the Australian Gene Technology Grains Committee has proposed that GM and non GM oilseed rape production systems can co-exist without causing problems of adventitious presence of GM material in non GM seed at this level of separation distance (GTGC 2002).
- Maize. The level of possible cross pollination occurring depends on plot sizes and isolation distances, with a rapid decline in the level of cross pollination occurring as the distance between a GMO and non GMO maize field increases. Maize pollen is also heavy and does not travel far. Roughly half of all pollen travels no further than 4 metres and between 99% and 99.5% travels no further than 50 metres⁷. Viability of pollen to cross pollinate also falls rapidly with distance. This suggests that provided vulnerable non GM or organic crops have a non GM buffer crop between themselves and the GM crop, there is unlikely to be any significant incidence of adventitious presence of GMO material. If separation distances of over 50 metres are applied the chances of adventitious presence of GMOs being found are very low and, if found, would probably be below 0.5%⁸, well below the new EU labelling threshold of 0.9%. Henry C *et al* (2003) suggest that an isolation distance of 24.4 metres would be sufficient to meet a 0.9% threshold.
- Sugar beet. As the crop is normally biennial (produces seed only in the second year) but is harvested at the end of the first growing season, plants rarely flower. This means that cross pollination tends to be a minor medium for adventitious presence of GMOs occurring. The only scope of cross pollination occurring comes from bolters⁹. In sugar beet crops the potential problem of volunteers or weed beet occurs mainly because weed beet produces seed every year, unlike true beet seed which would only produce seed every other year (if allowed). Once weed beet becomes established it tends to be self-perpetuating and can produce an average of 2,000 seeds/year (of which about 50% survive). The main origin of weed beet is bolters. Control of weed beet and bolters are, therefore important activities on sugar beet growing farms and considered to be good agricultural practice. Control of bolters is also key to seed production of sugar beet.

12. Establishment of liability. See paragraphs 5-10 above. Additional points to take into consideration include:

- Origin of adventitious presence will be very difficult to prove—this opens up possibilities of fraudulent claims being made (eg, deliberate mixing of GM crops with non GM or organic crops in order to make claims for loss of non GM or organic status/premia).
- What is reasonable behaviour? Any farmer growing a GM crop should not be liable for adventitious presence of his/crop in other crops if he/she has adhered to GM crop stewardship guidelines or conditions.
- Farmers growing crops for which they derive a market price premia should be expected to take reasonable actions to ensure the integrity or purity of their own crops. Such behaviour is already standard practice in agriculture (eg, seed production, specialist crop production, organic production).

13. GM Free zones. The principles of equity outlined above are important to this issue. Any decision to make a region or locality a GM free zone should be voluntary and based on consensus. It is not acceptable for a minority of farmers who might not wish to use GM technology to deny access to the technology, which has passed through a regulatory approval process, to others on the basis that they perceive the technology

⁵ Bearing in mind here that HEAR is poisonous if found at too high a level in oilseed rape consumed by animals or humans. This contrasts with commercially available GM oilseed rape which has been approved as safe for human and animal consumption.

⁶ The separation distance for achieving a 1% threshold for varietal associations was 100 metres. No recommendation was made for achieving a 0.5% threshold, due to insufficient information being available.

⁷ The furthest recorded (isolated) instances of cross pollination occurring identified are 305 metres (Colorado State University (2003)) and 800 metres (cited in JRC 2001, based on Salamov (1940)). The distance at which pollination is zero is however impossible to determine with accuracy (Defra 2003).

⁸ Research into pollen flow from GM maize is also currently being undertaken in Spain by the Department of Agriculture, Fisheries and Livestock of the Catalonian government.

⁹ Bolters are growth on a plant that leads to flowering if not prevented. Bolter incidence varies according to when a crop is sown, weather conditions and the varieties of beet used. If bolters are allowed to flower, both sugar beet and fodder beet can cross by wind pollination with other flowering beet varieties or with their close relative sea beet.

to be undesirable. It should be noted that any desire to declare a region/locality a GM free zone is founded on a perception that this delivers marketing advantage. Product safety and integrity are not relevant to this issue. If regions are permitted to operate GM free zone status it is important that relevant agricultural products sold from this zone which use its GM free status as a marketing tool do so based on fact and are not allowed to mislead consumers on matters of product safety.

14. We do not consider that any additional legislation is required to allow GM crops to be grown in the UK.

15. Scope and scale of any re-licensing procedures. This issue is no longer relevant given that the technology provider (Bayer CropScience) has withdrawn from commercialising the GM forage maize.

For further reading on relevant issues, the committee is recommended to read the following papers by PG Economics:

- GM and non GM crop co-existence case study: maize in Spain (2003): published paper.
- GM and non GM crop co-existence case study: the UK (2003): published paper.

All references cited in this submission can also be found in these papers. Both are available on www.pgeconomics.co.uk

PG Economics

April 2004

Memorandum submitted by Munloch GM Vigil

GM MAIZE DECISION

GM LIABILITY AND CONTAMINATION

1. We predicate this submission on the basis that contamination of the environment and agricultural produce from Genetically Modified Organisms should be avoided.

2. Our position is that there is still insufficient evidence to prove that GM crops and foods are safe in terms of the environment and human health, and should not be released into the open environment and food chain until the many outstanding safety issues have been fully addressed.

3. However we are aware that commercial agendas are pushing the process of commercialisation of GM crops, and as such see the need for pre-emptive legislative action to protect the present food production system in the UK, and the UK environment. This means statutory co-existence and liability legislation that aims to avoid contamination, and provides adequate redress for any contamination that does occur. This is also the position of the Governments Advisors, the AEBC.

4. The European Commission also allude to this position in their latest recommendation on GM co-existence (23 July 2003), when they state (2.1.7) that “during the phase of introduction of a new production type, operators who introduce the new production type should bear the responsibility of implementing the farm measures necessary to restrict gene flow” and “farmers should be able to choose the production type they prefer, without imposing the necessity to change already established production patterns”.

5. The emphasis is clearly on the continuation and protection of existing methods of agriculture.

6. Supermarkets across the UK and EU, in response to widespread consumer concerns about the safety of GM produce, have removed GM from their product lines. They operate at the minimum detectable level of GM contamination: 0.1%. Co-existence measures must be sufficient to maintain the integrity of conventional and organic produce at or below this level. The importance of this is increased when contamination from GM can also occur in seed lots. (The latest EU proposals would allow adventitious presence of GM in conventional seeds at 0.3% for oilseed rape and 0.5% for sugar beet and maize—already above the 0.1% operating level, and a long way towards the statutory 0.9% level). Further contamination can occur during transportation and in mixing, and from “volunteers” in future rotations.

7. Contamination from all these areas also needs to be kept to an absolute minimum and the legislation must incorporate measures to achieve this.

8. If it is seen from long term practice and experience that initial co-existence measures are unnecessarily tight, then it may be argued that they can be relaxed. If these measures are initiated at an insufficient level, the long term contamination of agricultural produce, the environment and the UK’s reputation would be extremely difficult, if not impossible to reverse.

9. To avoid the latter position strict statutory measures need to be put in place to avoid GM contamination at the minimum detectable level, and an effective regulatory framework is needed to enforce these measures.

10. If contamination of agricultural produce or the environment does still occur there needs to be statutory liability to compensate any loss and repair any damage. This must be strict liability and similarly should cover any harm to human health and livestock.

11. Liability needs to fall on the patent/consent holder as they are the protagonists who declare that their testing methods are sufficient and their products are safe, and are also the beneficiaries of any commercial gain. This approach also brings the added benefit of ease of traceability, as the GM construct responsible for the contamination can simply be traced back to the patent/consent holder.

12. As no insurance company is prepared to insure against the risks of GM crops it is necessary that the patent/consent holder can show that they have sufficient resources to meet any claim made against them. To this end they must be required to set up a liability fund to cover the conceivable costs that they may have to incur. Otherwise, the public, who clearly do not even want the commercialisation of GM crops, would be left to cover the costs through general taxation.

13. This liability fund would also need a statutory basis and adequate and effective regulation.

14. The same co-existence and liability measures must also be in place and in operation before any further “open air” trials of GM crops are allowed in the UK.

15. The European Parliament has stated that GM-free zones should be allowed and have statutory backing. There should be no restriction on the size of GM-free zones.

16. Our proposals are the minimum necessary to protect the reputation and viability of existing UK agricultural practices, the UK environment and consumer choice.

Munloch GM Vigil

April 2004

Memorandum submitted by Consumers' Association

GM GOVERNMENT DECISION

INTRODUCTION

1. Consumers' Association welcomes the Committee's inquiry into the implications of the government's recent decision to agree to limited cultivation of genetically modified (GM) maize in the UK. We would like to draw the Committee's attention to the implications of this decision for consumers and highlight some of the findings from our consumer research into attitudes towards GM foods which we consider need to continue to be borne in mind.

2. In general we consider that the government has given the go-ahead to cultivation of a GM crop prematurely. We also consider that in doing so it failed to take account of the results of its public dialogue and in particular the GM Nation public debate. Its position also stands in stark contrast to its rhetoric about reconnecting farmers with consumer demand. Fortunately the decision by Bayer CropScience not to go ahead with commercialisation of the crop concerned, Chardon LL maize, provides an opportunity for the government to re-assess its position and the measures that need to be taken before commercialisation should go ahead.

CONSUMER ATTITUDES AND CONCERNS

3. We have monitored consumer attitudes towards GM foods over the last 10 years. There is no doubt that the use of genetic modification in food raises concerns for many consumers. While proponents of the technology often dismiss such reservations as media-fuelled and misinformed, our research highlights that consumer attitudes to the technology have remained fairly consistent over the years. Rather than being irrational, they reflect the fact that many people still feel that not enough is known about the implications of the technology and as they also currently see no benefits offered by the technology they consider it premature to go ahead with growing of GM crops. Our most recent survey in 2002 found that less than a third (32%) of respondents were in favour of growing GM crops at the current time¹⁰. The main reasons given were concerns that there was a lack of information, concerns about food safety, environmental impact and long-term consequences for health. However people acknowledged that it was possible that the technology could offer consumer benefits in the future.

4. The results of the Public Debate clearly highlighted public unease about the technology. As the report of the Debate makes clear: “They were uneasy not only about issues directly related to GM technology but about a range of broader social and political issues. The mood ranged from caution and doubt, through suspicion and scepticism, to hostility and rejection.” The Debate also made clear that the more people engage with GM issues and discover more about them, their attitudes harden. Although these people are more willing to accept some potential benefits from GM, they become more doubtful about the others and express more concern about all of the risks most frequently associated with GM.

¹⁰ GM Dilemmas, Consumers' Association policy report 2002—998 in-home interviews were carried out with a nationally representative sample aged 15 plus across Great Britain between 16 to 22 May 2002.

5. The results of the GM Citizens' Jury¹¹ that we jointly funded with Greenpeace, Unilever and the Co-op and which was organised by Newcastle University also concluded, after six weeks of hearing evidence from a wide selection of expert witnesses, that there should continue to be a moratorium on growing of GM crops at the current time. Similarly, the Citizens' Jury organised by the Food Standards Agency last year also unanimously agreed that more time is needed to understand the long-term environmental implications of GM crops before farmers start to grow them in the UK and that "growing crops in the UK would be irreversible and might eventually reduce choice."

6. The government has stressed that under Directive 2001/18, which deals with the deliberate release of GMOs, it can only prevent cultivation on environmental or public health grounds. It is also clear that the government sees clear benefits from the use of GM technology and has concerns that failure to go ahead with commercialisation may be damaging to the technology overall. However, we are concerned that a decision to go ahead before consumer concerns have been adequately addressed by more fully investigating the environmental, health and consumer choice implications, will be far more damaging in the long-term. As the Strategy Unit's report into the costs and benefits of GM crops which formed one of the strands of the government's public dialogue acknowledged, there are unlikely to be any short term benefits from growing of GM crops and any benefits will depend on consumer acceptability.

PRESERVING CHOICE

7. While ultimately it should be a question of choice whether or not consumers choose to eat GM foods, we are concerned that that choice would not be a meaningful one. The new GM food and feed regulations establish a threshold for adventitious contamination by GM material of up to 0.9% in the case of non-GM identity preserved supplies. Up until now, issues around consumer choice have focused on dealing with the nature of the global commodity crop market and potential for contamination of crops grown in North America and Brazil. The 0.9% threshold was established on this basis. At the moment, there is no consumer demand for GM products. This is reflected by the policies of the main retailers, manufacturers and caterers. A survey that we carried out at the end of 2002¹² highlighted that they all had non-GM policies and in most cases these extended to GM derived ingredients. It is clear that they have no plans to sell GM products for the foreseeable future.

8. Co-existence rules are therefore crucial if consumer choice is to be maintained if GM crops are grown in the UK. In her statement to the House of Commons outlining the government's policy on GM commercialisation, the Secretary of State Margaret Beckett stated that farmers who wish to grow GM crops should be required to comply with a code of practice based on the EU's 0.9% threshold and that this Code should have statutory backing.

9. We consider that the approach outlined by the UK government, as well as by the European Commission which has failed to take a lead in this area, to be inadequate. If consumer choice is to be effectively maintained, we consider that clear and binding rules are needed if it is to be ensured that farmers comply. It is also essential that these rules are adopted at European level, while allowing some flexibility for the specific circumstances that apply in Member States in order to ensure that consumers are adequately protected. If different rules and measures are adopted within different Member states it is impossible to see how a meaningful choice could be maintained within the common market. We do not consider that a code of practice with statutory backing would go far enough. Once GM crops are grown there will be no going back if non-GM and organic products are contaminated. It is also vital that careful consideration is given as to how choice will be maintained along the supply chain to prevent accidental mixing and contamination. We are disappointed that the Food Standards Agency has not represented consumer interests in this respect.

10. Consumers expect contamination to be kept to an absolute minimum. We are therefore concerned that 0.9% will be used as a threshold. The aim should be to work to the lowest level of contamination that is possible. The government acknowledges that specific concerns apply to organic crops and has stated that it will explore further whether a lower threshold should be applied to organic crops on a case by case basis. We agree that this should be the case. We agree with the conclusions of some members of the Agriculture and Environment Biotechnology Commission (AEBEC) that it is appropriate to work to a zero threshold which in practice would mean a 0.1% threshold based on the practical limit of detection.

LIABILITY

11. It is also essential that clear rules dealing with liability are in place before commercialisation of any GM crop should go ahead. Clear rules are needed to deal with environmental damage (currently being considered at EU level based on the "polluter pays" principle) and also in the event of contamination. Margaret Beckett in her statement on the government's policy announced that there will be a consultation on options for providing compensation to non-GM farmers in such an event and that such a compensation scheme would have to be funded by the GM sector. We welcome such a consultation and believe it is essential that such rules are clarified before any commercialisation is given the go-ahead.

¹¹ www.gmjury.org.uk

¹² GM Dilemmas, Consumers' Association policy report 2002.

MEETING DEMAND

12. If commercialisation of the GM maize had gone ahead, as the government has permitted, the maize would be used for animal feed. Under the GM food and feed regulations the animal feed would have to be labelled to indicate the presence of any GM ingredients or derivatives although the final meat or dairy product would not have to be labelled. We have welcomed efforts by some retailers and manufacturers to provide consumers a choice of meat and dairy products that are reared on non-GM feed. Given that at the moment the majority of consumers have no desire to consume products of genetic modification, it is again very unfortunate that supply chain issues did not appear to have been thought through. Provision of non-GM supplies to the consumer have been a challenge that the food industry has had to meet in response to consumer demand. It is incredible that the government could put this at risk by authorising the growing of a crop which offers no consumer benefits and for which there is currently no demand.

13. Typical of the whole handling of the introduction of this new technology, there has been a total failure to recognise consumer attitudes and demands. Unlike any other food, the introduction of new products has not been dependant on consumer demand, but rather decisions about what is or is not acceptable for us to consume has been made by those further down the food supply chain. We welcomed the fact that the government finally agreed to organise a public debate. However this was given limited resources both in terms of financial support and time. Despite this, many people participated and came forward with their views. It is very unfortunate that the government has decided to dismiss the concerns that were raised and which clearly reflect the views of the vast majority of the population. We have still to see an official response to the conclusions of the Debate.

INTEGRATING CONSUMER CONCERNS

14. This highlights a broader need to have more effective mechanisms for integrating public opinion into policy decisions. The issues around genetic modification and the extent of public concern are highly complex bringing together issues around consumer safety, but also concerns about social, ethical and environmental impacts of the technology. Despite this, decisions about whether or not to grow GM crops are narrowly based on a scientific assessment of risks to public health and the environment. The extent to which the public perceives the risks associated with GM and find them acceptable will be depended on these broader factors—for example while the technology is perceived as offering no consumer benefits, people are unlikely to be willing to accept any risk. Within the recently agreed GM food and feed regulations, there is the scope under Article 7 for “other legitimate factors relevant to the matter under consideration” to be taken into account when authorising products. As explained in recital 32 of the regulation: “It is recognised that, in some cases, scientific risk assessment alone cannot provide all of the information on which a risk management decision should be based, and that other legitimate factors relevant to the matter under consideration may be taken into account.” No similar provision exists within Directive 2001/18 dealing with the deliberate release of GMOs and this should be addressed.

Consumers’ Association

April 2004

Memorandum submitted by Scientists for Global Responsibility (SGR)

GM GOVERNMENT DECISION

1. Scientists for Global Responsibility (SGR) is an organisation of about 500 British scientists who believe that the applications of science and technology should be environmentally sustainable and socially just.

2. The first item for discussion by the Committee, as listed on your website, is the separation distance required between maize crops in order to prevent hybridisation above a given level. We have done original research on precisely this question and submitted the results to the GM Science Review Panel. In their second report, the Panel commented that this research should be published. It may be found on our website, www.sgr.org.uk, on the “Genetic Modification” page under the title SGR Response and Annexe to the GM Science Review—First Report (October/November 2003), where the Annexe presents our method for calculating separation distances and some results, including comparison with results from a previous paper commissioned by MAFF. The results are mostly similar. This fact confirms the statement made in the “SGR Response”, that several highly influential factors have been ignored hitherto when separation distances are estimated, and that these distances may therefore be grossly underestimated.

3. Our conclusion that the results of predictions are unreliable and excessively small has recently been confirmed by a dramatic demonstration in the United States of how maize hybridisation can occur over large distances. A farmer in Illinois grew a rare variety of blue maize last year; and three neighbouring maize farmers complained that the blue maize had contaminated their crops. Even at a distance of two and a half to three miles, the contamination was “quite noticeable”, perhaps as much as 1%. This incident is described

on our website, in the “Letter to Mrs Beckett MP—New Evidence of Long-Range Pollination by Maize (6 February 2004)”. It is worth noting that the seed company for which one of the neighbouring farmers grows maize requires a separation distance of at least five miles from any farm growing GM maize.

4. The “SGR Response” mentioned above also points out that irregularities in pollen density as carried by the wind may cause some cobs of maize to be much more highly hybridised than others. It may therefore happen that some ears of “corn on the cob” may be much in excess of the legal limit for contamination by a GM variety even if, over the field as a whole, the maize conforms to the legal limit. That such irregularities in pollen density exist was found in another research project we have undertaken, which was summarised for the Chardon LL Hearing and appears on our web site as “Report III: A Model for Pollen Transport by Wind”.

Experiments, such as those of Jones and Brooks (see the Annexe cited above), confirm that pollen deposit in highly uneven.

5. Summaries of the research described above will be found in each of those studies as posted on our website.

Scientists for Global Responsibility (SGR)

April 2004

Memorandum submitted by Food and Drink Federation

GM GOVERNMENT DECISION

EXECUTIVE SUMMARY

The Food and Drink Federation (FDF) is the leading representative of the UK food and drink manufacturing industry. Our members are downstream users of UK agricultural produce. Our industry aims to offer choice to its customers, and in so doing has established supply chains to provide non-GM food and food ingredients.

Any decision to allow the growing in the UK of GM crops would need to provide for the co-existence of all agricultural sectors, whether GM, organic or conventional (intensive). We believe the food manufacturing industry has appropriate systems in place to manage separate supply streams, provided upstream separation is achievable.

1. Introduction

1.1 The Food and Drink Federation (FDF) is the leading representative of the UK food and drink manufacturing industry. As such we are downstream users of primary produce of both vegetable and animal origin, which is the basis of most of our raw materials. We believe that genetic modification (GM) could offer benefits throughout the food chain, from primary producers to final consumers. However, as food manufacturers operating in a highly competitive market, we have to meet the needs and demands of our customers, whether part of the food processing chain, or retailers, or end consumers. The majority of our customers currently chooses not to purchase products of GM origin. Hence complex supply chains have evolved since the introduction of GM soya and GM maize in the commodity supply chain from the USA in 1996, to ensure consumer choice of non-GM soya and maize where these are used as ingredients, or products have been reformulated to remove soya and maize and their derivatives as ingredients.

2. Assessment of potential impact of HMG's decision

2.1 Experience with identity preserved (IP) supply chains, coupled with the new traceability and labelling requirements which apply from 18 April 2004¹³ suggests that any GM maize grown in the UK as a result of the Government's decision, can be managed in such a way as to provide choice to those purchasing maize as a fodder crop, or to the purchasers of the products of the animals fed on the maize. Whilst the separation of supply chains inevitably adds costs along the chain, the situation is no different from that at present. We do not anticipate large scale planting of GM maize in the UK, where climatic conditions do not favour this crop. Indeed the company responsible for developing the GM maize variety in question announced on 31 March 2004 that it would not proceed with the commercial planting of this variety.

¹³ Regulation (EC) 1830/2003—Traceability and Labelling of GMOs and Regulation (EC) 1829/2003 on Genetically Modified (GM) Food and Feed.

3. *In relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against cross-contamination?*

3.1 FDF, representing processors rather than primary producers, has no specific expertise in this area. We are aware of the recommendations of the Agriculture and Environment Biotechnology Commission's (AEBC) Report "Crops on trial"¹⁴ and its subsequent report on co-existence and liability.¹⁵ In addition, the European Commission last year published recommendations to ensure co-existence of GM and non-GM crops.¹⁶ These appear to us to provide a sensible framework for detailed consideration at national level.

4. *If cross-contamination occurs, how will liability be established and responded to, who should be legally responsible and what should the limits of that responsibility be—and what role should Government play in determining these matters?*

4.1 The question implies that cross-contamination would be deleterious and invoke a chain of liability and fault. "Liability" is a complex legal concept which, we understand, involves proving that harm has been caused or a loss suffered. The issue is generally associated with organic farming, though in a system which operates to a self imposed "zero tolerance" threshold for GM, it is difficult to see how a legal liability regime could be imposed. In the event of any harm being caused to the environment in general, it would appear evident that an assessment of the damage and its consequences would need to be carried out and legal procedures invoked in a manner similar to any other environmental pollution. The AEBC has explored these issues in detail and recommended that "Government should use the general approach of the draft EU Environmental Liability Directive to develop the UK's liability regime for any damage caused by the release of GMOs to the environment".¹⁷ The AEBC further recommends amendments to the Environmental Protection Act 1990 in respect of environmental remediation if environmental harm were to be caused by the release of GMOs, and placing responsibility for dealing with any environmental effects with the competent regulatory authority. This appears to us to be a logical and reasonable approach.

4.2 Other matters are likely to relate to consumer choice and are best dealt with under protocols for positive environmental management of the cultivation of GM and other crops¹⁸ and by reference to the Commission's recommendation of 23 July 2003.

5. *What processes will be involved in determining how GM free zones will be established at both a regional and local level and what role should Government play in this development?*

5.1 The Government will need to consider carefully the rights and choices, both of those who wish to grow GM crops, as well as those who wish to avoid them. We refer again to the establishment of protocols and the Commission's guidance, noting that "GM free" may be difficult to achieve, depending on how "GM free" is defined and what powers are vested at either national or local level to designate specific zones as "GM free".

6. *What changes to legislation will be required to allow GM crops to be grown?*

6.1 We understand that, following approval at EU level under the Deliberate Release Directive, 2001/18, HMG may impose specific restrictions on the marketing consent, as in the case of Chardon LL maize, and that commercial cultivation cannot proceed until the variety has been added to the UK National List of Seeds.

7. *What will be the scope and scale of the 2006 relicensing procedures?*

7.1 This is a matter outside our competence. We understand that, in the case of Chardon LL maize, the company responsible for the development of this variety does not propose to proceed with the 2006 relicensing procedures for economic reasons.

Food and Drink Federation

April 2004

¹⁴ Crops on Trial AEBC, September 2001.

¹⁵ GM Crops? Co-existence and Liability, AEBC, November 2003.

¹⁶ Commission Recommendation of 23 July 2003 on guidelines for the development of national strategies and best practices to ensure the co-existence of genetically modified crops with conventional and organic farming—Brussels, 23 July 2003, C (2003).

¹⁷ Recommendation 6, GM Crops? Co-existence and Liability, AEBC, November 2003.

¹⁸ Recommendation 9, *ibid*.

THE UK FOOD AND DRINK MANUFACTURING INDUSTRY

The Food and Drink Federation (FDF) represents the food and drink manufacturing industry, the largest manufacturing sector in the UK, employing over 500,000 people. The industry's annual turnover is over £66 billion. It purchases some £11 billion worth (about two thirds) of UK agricultural produce and imports a further £7 billion worth of produce for processing. UK food and drink exports in 2002 were nearly £9 billion. About two fifths, £3.3 billion, of these exports went to non-EU countries.

The following organisations are members of the Food and Drink Federation:

abim	Association of Bakery Ingredient Manufacturers
ACFM	Association of Cereal Food Manufacturers
AMPM	Association of Malt Product Manufacturers
BCA	British Coffee Association
BCCCA	Biscuit, Cake, Chocolate and Confectionery Association
BOBMA	British Oats & Barley Millers Association
CFA	Chilled Food Association
CIMA	Cereal Ingredient Manufacturers'
FA	Food Association
FOB	Federation of Bakers
FPA	Food Processors' Association
GPA	General Products Association
IDFA	Infant and Dietetic Foods Association
MSA	Margarine and Spreads Association
MG	Meat Group
NABIM	National Association of British and Irish Millers
NACM	National Association of Cider Makers
OHG	Out of Home Group
OFDMLG	Organic Food and Drink Manufacturers Liaison Group
PFMA	Pet Food Manufacturers' Association
SB	Sugar Bureau
SG	Seafood Group
SIBA	Society of Independent Brewers
SMA	Salt Manufacturers' Association
SNACMA	Snack, Nut and Crisp Manufacturers' Association
SPA	Soya Protein Association
SSA	Seasoning and Spice Association
UKAFFP	UK Association of Frozen Food Producers
UKAMBY	UK Association of Manufacturers of Bakers' Yeast
UKTA	UK Tea Association
VG	Vegetarian (Meat Free) Group

Memorandum submitted by Biosciences Federation

GM GOVERNMENT DECISION

INTRODUCTION

1. The Biosciences Federation (BSF) was founded in December 2002 in order to create a single authority within the life sciences that decision-makers can consult for opinion and information to assist the formulation of public policy. It brings together the strengths of 31 member organisations, including the Institute of Biology, which represents 46 additional affiliated societies (see Annex I). The organisations that have already joined the Biosciences Federation represent a cumulative membership of some 60,000 bioscientists and cover the whole spectrum from physiology and neuroscience, biochemistry and microbiology to ecology and agriculture.

SUMMARY

2. This response's principal points include:

(i) No harvested crop can avoid containing some level of foreign material. Most modern crops (but not maize) have close wild relatives with which hybrids can be formed and all can breed with their organic counterparts (paragraph 5).

(ii) The physical separation required between GM and non-GM crops will depend on the level of end-product contamination that is deemed acceptable: currently set at 0.9% for non-GM crops and 0.1% for organic crops (paragraph 6).

(iii) Separation distances that result in acceptable contamination levels should be determined on a crop-by-crop basis with a stated level of probability (paragraph 7).

(iv) The principal aim of regulators and farmers should be to promote coexistence of GM and non-GM crops in the UK. They should endeavor to prevent cross-contamination above acceptable levels occurring through the introduction of separation distances and other farming practices (paragraph 8).

(v) Clear protocols and legislation for addressing economic and environmental liability should be put in place. Existing legal precedents should be relied upon to resolve disputes (paragraph 9).

(vi) Liability regimes should not be excessively punitive so as to inhibit the development of environmentally positive practices involving GM crops (paragraph 10).

GENERAL POINTS

3. The BSF welcomes the Environment, Food and Rural Affairs Committee decision to undertake an inquiry into the implications of the Government's recent decision to agree to the limited cultivation of GM maize in the UK. As such, we will concentrate on the implications of the decision and not the reasons.

4. Due to the short time scale of this consultation (one month), this response largely refers the Committee to evidence and research that has already been conducted elsewhere.

SPECIFIC QUESTIONS

In relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against cross-contamination?

5. No harvested crop can avoid containing some level of foreign material, such as other crops, insects and weed seeds.¹⁹ Cross-pollination can lead to cross-fertilization, when hybrids are produced if conditions allow. Maize has no close relatives in the UK so cannot breed with wild plant species. However, most modern crops have close wild relatives belonging to different species but with which hybrids can be formed.²⁰ All can breed with their organic counterparts. Short-range, wind-borne transport is responsible for most pollination. Long-range pollination takes place via insects, convection currents, turbulent conditions or weather fronts.

6. The physical separation required between GM and non-GM crops will depend on the level of end-product contamination that is deemed acceptable. GM thresholds are specified in law or in organic or other commercial standards. Currently, if a product contains more than 0.9% GM material it must be labelled as containing GM. The Soil Association, the largest organic certification body in the UK, states that crops cannot contain more than 0.1% GM material if they are to be awarded organic status.

7. Separation distances that result in acceptable contamination levels should be determined on a crop-by-crop basis with a stated level of probability. The BSF would like to refer the Committee to evidence previously produced by the Institute of Biology on separation distances for GM crops (see Annex II). In addition, please see:

Perry JN. Sensitive dependencies and separation distances for genetically modified herbicide-tolerant crops. *Proc. R. Soc. Lond. B* 2002; 269: 1173–1176

Rieger MA, Lamond M, Preston C, Powles SB & Roush RT. Pollen-mediated movement of herbicide resistance between commercial canola fields. *Science* 2002; 296: 2386–2388.

If cross-contamination occurs, how will liability be established and responded to, who should be legally responsible and what should be the limits of that responsibility, and what role should Government play in determining these matters?

8. The wish of a farmer to grow assessed and approved GM crops is as valid as that of a farmer wishing to grow organic or non-GM crops. However, as the direction of economic “harm” is from GM crops to non-GM crops, the responsibility for achieving coexistence should fall primarily with the GM farmer. The principal aim of regulators and farmers should be to promote coexistence of GM and non-GM crops in the UK. They should endeavor to prevent cross-contamination above acceptable levels occurring in the first place through the introduction of separation distances and other farming practices.

¹⁹ Agriculture and Environment Biotechnology Commission. *GM Crops? Coexistence and Liability*. November 2003. Available at: http://www.aebc.gov.uk/aebc/reports/coexistence_and_liability_aebc_1.pdf

²⁰ Wilkinson M. *Detecting gene flow from GM crops to wild relatives*. Proceedings of The Royal Society of Edinburgh Discussion Forum : Monday 27 January 2003. Available at: http://www.ma.hw.ac.uk/RSE/enquiries/gm_debate/gm_wilkinson.pdf

9. With regards to economic liability, should a problem with cross-contamination arise, clear protocols for addressing liability (for example, through compensation) should be in place to avoid litigation between farmers as far as possible. Existing legal precedents should be relied upon to resolve disputes. The impacts of growing GM crops on farmland habitats and biodiversity should also be considered, and remediation legislation put in place. The issues surrounding economic and environmental liability for growing GM crops are discussed in detail in the following report:

Agriculture and Environment Biotechnology Commission. GM Crops? Coexistence and Liability. November 2003. Available at:
http://www.aebc.gov.uk/aebc/reports/coexistence__and__liability__aebc__1.pdf

10. Any measures imposed to minimise cross-contamination should be proportionate. If liability regimes are perceived as being excessively punitive for farmers or industry, then this could inhibit any development of environmentally positive practices involving GM crops.

OPENNESS

11. The Biosciences Federation is pleased for this response to be publicly available and, with permission, will be shortly placing a version on www.bsf.ac.uk. Should the Select Committee have any queries regarding this response then they should in the first instance address them to Science Policy Advisor, Institute of Biology, 20 Queensberry Place, London, SW7 2DZ.

Biosciences Federation

April 2004

Annex I

MEMBER SOCIETIES OF THE BIOSCIENCES FEDERATION

Biochemical Society
British Association for Psychopharmacology
British Ecological Society
British Lichen Society
British Mycological Society
British Neuroscience Association
British Pharmacological Society
British Society for Cell Biology
British Society for Developmental Biology
British Society for Immunology
British Society for Medical Mycology
British Society for Neuroendocrinology
British Society for Proteome Research
British Toxicological Society
Experimental Psychology Society
Heads of University Biological Sciences
Heads of University Centres for Biomedical Science
Genetics Society
Institute of Biology
Institute of Horticulture
Laboratory Animal Science Association
Linnean Society
Nutrition Society
Physiological Society
Royal Microscopical Society
Society for Applied Microbiology
Society for Endocrinology
Society for Experimental Biology

Society for General Microbiology
Society for Reproduction and Fertility
UK Environmental Mutagen Society

Additional Affiliated Societies of the Institute of Biology

Anatomical Society of Great Britain & Ireland
Association for Radiation Research
Association for the Study of Animal Behaviour
Association of Applied Biologists
Association of Clinical Embryologists
Association of Clinical Microbiologists
Association of Veterinary Teachers and Research Workers
British Association for Cancer Research
British Association for Lung Research
British Association for Tissue Banking
British Biophysical Society
British Crop Protection Council
British Grassland Society
British Inflammation Research Association
British Marine Life Study Society
British Microcirculation Society
British Phycological Society
British Society for Allergy Environmental and Nutritional Medicine
British Society for Medical Mycology
British Society for Parasitology
British Society for Plant Pathology
British Society for Research on Ageing
British Society of Animal Science
British Society of Soil Science
Fisheries Society of the British Isles
Freshwater Biological Association
Galton Institute
Institute of Trichologists
International Association for Plant Tissue Culture & Biotechnology
International Biodeterioration and Biodegradation Society
International Biometric Society
International Society for Applied Ethology
Marine Biological Association of the UK
Primate Society of Great Britain
PSI—Statisticians in the Pharmaceutical Industry
Royal Entomological Society
Royal Zoological Society of Scotland
Scottish Association for Marine Science
Society for Anaerobic Microbiology
Society for Low Temperature Biology
Society for the Study of Human Biology
Society of Academic & Research Surgery
Society of Pharmaceutical Medicine
UK Registry of Canine Behaviourists
Universities Federation for Animal Welfare

REVIEW OF SEPARATION DISTANCES FOR GM CROPS

A response to the MAFF consultation from the Institute of Biology

July 2000

1. SUMMARY

(a) The Institute's membership contains both environmental biologists (concerned with ecological and conservation issues) as well as agricultural biologists (concerned with food supply and farming issues). As an independent and charitable Institute, it is well placed to produce a balanced response.

(b) While part of this consultation relates to biology, as much relates to intangibles such as "the [acceptable] level of varietal purity", "farmer concern" and "farmer notification procedures". These issues are political and societal.

(c) Doubling the distance does not result in halving the risk of contamination; indeed the low risk at the distances discussed is barely changed.

(d) It is impossible to achieve zero risk. Even organically grown crops are not 100% free from contamination at a biochemical or toxicological level nor is there complete (100%) genetic homogeneity of organically grown crop cultivars.

(e) The seed industry has already developed protocols for preserving the genetic purity of cultivars. These protocols work to arbitrarily defined levels of purity: the protocols are born of practical pragmatism.

(f) If there is currently such farmer and public concern over the question of "crop purity", that stringent protection measures are politically deemed necessary, then one option would be to employ the guidelines for "Basic Seed" just for the short-term, during the GM (Genetic Modification) safety research phase.

(g) The distances for "basic seed" are greater than for certified seed so that following monitoring and research, once safety has been demonstrated, more appropriate levels with shorter distances should be employed. The proposed SCIMAC annual reviews are therefore most welcome. MAFF might make its own appraisals.

(h) There is concern over the short timescale allowed respondents to this consultation and we do urge that this is taken into account when interpreting the responses and forming an overall balanced set of conclusions. Our concern is based on the Cabinet Office guidelines for written consultations. Short timescales do not increase a perception of openness, engender public confidence, nor facilitate the provision of best scientific advice to underpin policy.

Representing both environmental and agricultural biological interests, the IoB can provide a balanced response.

2. Separation distances for GM crops are an issue that is publicly sensitive. Because the Institute's membership contains both environmental biologists (concerned with ecological and conservation issues) as well as agricultural biologists (concerned with food supply and farming issues), the independent and charitable Institute of Biology has access to the necessary range of expertise to provide a balanced response.

Part of this consultation relates to non-biological dimensions

3. While part of this consultation relates to biology, as much of it relates to intangibles such as "the level of [acceptable] varietal purity", "farmer concern" and "farmer notification procedures". These issues are political and societal, though science may illuminate the debate. As such this response is submitted with the concerns in mind that some members of the public have for GM technology. However, it is hoped that ultimately the case for properly managed GM technology will enable the public to recognise the benefits it offers.

Crop separation distances are just one factor determining gene flow.

4. Varietal purity is an issue of public and political acceptability. So far the GM debate has been driven largely by commercial interests on one hand, and the belief-systems of (an undefined) part of the public on the other. There cannot be any one UK distance for any anemophilous (wind pollinated) crop species given the number of variables present. Similar arguments apply to entomophilous (insect pollinated) plants. Such variables include: regional climatic differences, topography, the acreage of crops planted, farm management practices, etc. Indeed local variation in these is not considered in the current guideline distances. The distance between crops is therefore just one factor determining (potential) gene flow.

The SCIMAC figures do confer some protection of varietal purity. However doubling the distance will hardly affect risk.

5. The SCIMAC (Supply Chain Initiative on Modified Agricultural Crops) figures do confer a measure of protection of varietal purity. The question is whether this degree of safety is publicly and politically acceptable? However, given that these figures are based on the longstanding experience of conventional (non-GM) seed production, there is a logic to them. Furthermore, increasing these distances will not proportionally increase safety. For example, doubling the distance does not result in halving the risk of contamination. Indeed the low risk at the distances discussed is barely changed.

It is impossible to achieve zero risk

6. It is impossible to achieve zero risk, and it should be noted that even organically grown crops are not 100% free from contamination in terms of biochemical micro-organisms (including mycotoxins), nor is there complete (100%) genetic homogeneity of organically grown crop cultivars. Consequently, given the existing procedures for approving novel foods, it is difficult to see what additional risks GM crop contamination poses humans above those already posed by conventional food crops. Indeed, that there have been no mass human toxicity events with GM crops to date is exactly as expected given existing controls and protocols.

Despite the existing level of safety, employing the precautionary principle would provide further assurance while research provides clarification

7. Despite the evidence for safety, it is understandable that some of the public may have doubts until research can further assure protection. This Institute, together with a number of its Affiliated Societies, with either agricultural and/or environmental expertise, has already suggested the use of the precautionary principle as the way forward and to engender evidence-based confidence in the technology's application (Institute of Biology *et al*, 1998). The move towards gradual unrestricted outdoor release should only take place once previous (more restricted) trials have proven satisfactory.

The current separation guidelines are pragmatic, but does MAFF consider them satisfactory?

8. Given MAFF's concern over the recent incident (involving seed accidentally containing a small proportion of GM seed) is sufficiently great as to prompt this review of the separation of GM crops from non-GM crops, it is presumably concerned as to whether or not the minimum separation distances are great enough? The current SCIMAC (Supply Chain Initiative on Modified Agricultural Crops) Guidelines are provided by industry and (being based on Certified Seed Distances used for conventional crops to maintain purity) are a pragmatic way forward. The question MAFF needs to answer is whether these are satisfactory or not?

If there is socio-political concern over crop purity then separation based on Basic Seed criteria would provide added protection

9. If there is currently such farmer and public concern over the question of "crop purity" that further protection measures are deemed necessary, then one option would be to employ the more stringent of the commercial protocols proven over the years with conventional crops. This is in line with the precautionary principle and need only be in place while research ascertains gene flow and other GM safety matters with greater precision (to public and political satisfaction). As MAFF points out "current standards are based on existing knowledge and the longstanding experience in the production of Certified Seed". More stringent standards (with regard to crop separation only) are used for Basic Seed. Being the seed that generates Certified Seed, Basic Seed standards are higher and the resulting crop purity is greater. Basing the separation distances on the requirements for Basic Seed should also provide some additional assurance with regard to the possible contamination of hybrid rape. Conventional hybrid rape contains a high proportion of sterile males, so leaving it open to external pollination. With regard to beet, though it is biennial, producing flowering heads in the second year, there is the question of rogue bolters during the first year. SCIMAC guidelines call for farmers to remove flowering heads. Here MAFF needs to assess the level of public trust that flower head removal will always happen, though it should be noted the part of the plant used for food is not a product of pollination. Again increasing the distance to that for Basic Seed would provide added safety and reassurance while research continues into gene flow and GM safety issues.

Increasing separation might increase research costs, but this represents a fraction of the R&D budget MAFF has been asked to restore by Parliamentary Select Committee and academia

10. The distances for "Basic Seed" are greater than for Certified Seed and so, if used, will reduce the number of sites available for research, as well as marginally increase research costs. The Institute of Biology and a number of its Affiliated Societies (Institute of Biology *et al*, 1999) have already expressed their concerns over the one and a half decade decline in Government Departmental R&D budgets; a concern

recently shared by the House of Commons Select Committee for Science & Technology (2000). Indeed MAFF's R&D budget has been one of those most severely cut despite increasing concerns. The extra costs from increasing the separation distances discussed above would represent a fraction of the decline in MAFF's R&D budget and so could easily be affordable should the decision be made to restore its research funding to its mid-1980s real-term level.

If research confirms safety, so shorter distances should be employed. The annual review of distances is welcomed.

11. Following monitoring and research, if safety has been demonstrated more appropriate levels, with shorter distances, can and should be employed. The proposed SCIMAC annual reviews on behalf of industry are therefore most welcome and MAFF should be encouraged to make its own appraisals.

If distance is increased and research fails to find gene flow of concern, then the onus must be on those who do not believe in this aspect of GM safety to prove their case.

12. Meanwhile, if the crop separation distances are increased and research fails to find any gene flow that would threaten the non-GM status of neighbouring crops, then the onus must be on those who do not believe in this safety aspect to GM technology to prove their case.

Specific consultation questions (in bold)

A What, if any, amendments do you think are necessary to the separation distances set out in the SCIMAC guideline? Indicate why you think the changes are needed and bear in mind that the larger the separation distances, the more onerous the safeguards would be for GM and non-GM producers

If there is sufficient concern then separation might be based on Basic Seed distances.

13. If there is sufficient concern, as suggested there might by this consultation, then it would be prudent to base the separation distances on those used for Basic Seed as opposed to Certified Seed at present. The reasoning is given in the preceding paragraphs, but we suggest that any increase in distance need only be employed while research into gene flow and related GM safety matters is undertaken. If, as it currently appears, research shows the non-GM status of neighbouring conventional crops is not threatened then distances should be decreased appropriately. Hence, regular reviews of separation distances in the light of research are welcome.

B Given the link between separation distances and crop purity, what thresholds for GM content in non-GM crops can realistically be aimed for?

0.5% and 1% threshold levels are in most instances likely to be realistic. 0% is not.

14. 0.5% and 1% threshold levels are in most instances likely to be realistic. Lower levels can be detected but the point comes where the nature of the genetic modification determines the level of detection possible. A 0% threshold level can never be achieved, no matter the ability to detect the presence of genetic modification, as this would require 100% sampling.

C What procedures are needed for farmers growing GM crops to notify their neighbours and others about their intention?

The Institute has no view.

15. The Institute of Biology has no view on this.

D. Other suggestions for the practical safeguards on the growing of GM crops

Temporal separation should be noted. Apiary practice needs examination.

16. Due regard to the separation of crops in time as well as spatial distances is required. Volunteers from self-sown seeds can subsequently rise. Secondly, an examination of apiary practice and movement is required in case advice for the bee-keeping community is needed.

OPENNESS AND TRANSPARENCY

The short time scale allowed this consultation does mean less time for considered thought.

17. The short time scale allowed respondents for this consultation is of concern, particularly given the importance and sensitivity of the subject. The time scale was half that recommended by the Cabinet Office guidelines *How To Conduct Written Consultation Exercises* (1998). There is a concern as to whether respondents will have had sufficient time to give full thought to the issues/implications and, as importantly, to have consulted sufficiently widely. While we do understand the need for a rapid decision, we do urge that this reduction in time scale is taken into consideration when interpreting the responses.

REFERENCES

Cabinet Office (1998) *How to Conduct Written Consultation Exercises: An Introduction for Central Government*. EX30 1988–89. Stationery Office: London and Norwich.

Institute of Biology, Association of Applied Biologists, British Crop Protection Council, British Ecological Society, British Electrophoresis Society, British Grassland Society and the Institute of Horticulture (1998) *Genetically Modified Crops: The Social and Ethical Issues* (A response to the Nuffield Council on Bioethics Consultation). Institute of Biology: London.

Institute of Biology, Association of Applied Biologists, Association of Clinical Cytogeneticists, Association of Clinical Microbiologists, British Association for Cancer Research, British Association for Lung Research, British Association for Psychopharmacology, British Association for Tissue Banking, British Ecological Society, British Electrophoresis Society, British Grassland Society, British Phycological Society, British Society for Animal Science, British Society for Immunology, Freshwater Biological Association, Institute of Horticulture, Institute of Trichologists, Marine Biological Association, Nutrition Society, Scottish Association for Marine Science, and the Society for the Study of Fertility (1999) *Government's Expenditure on Research and Development: Forward Look 1999* (A consultation response to the House of Commons Select Committee for Science & Technology). Institute of Biology: London.

House of Commons Select Committee on Science and Technology (2000) *Government Expenditure on Research and Development: The Forward Look*. Stationery Office: London and Norwich.

Memorandum submitted by United Kingdom Environmental Law Association (UKELA)

GM GOVERNMENT DECISION

INTRODUCTION

The UK Environmental Law Association (UKELA) is the UK forum which aims to make the law work for a better environment and to improve understanding and awareness of environmental law.

UKELA's members are involved in the practice, study or formulation of Environmental Law in the UK and the European Union. It attracts both lawyers and non-lawyers and has a broad and growing membership. UKELA is the network for those interested in environmental law in the UK and key issues including GMOs/biotechnology, insurance and liability, climate change, IPPC, environmental impact assessment, waste, contaminated land, water and planning. It includes a working party on Environmental Law in Scotland and is particularly concerned that all countries within the UK have the best quality environmental legislation and adequate resources for implementation. UKELA was formed in 1987 and has around 1,000 members. They include both corporate and individual members, based mainly in the UK but also overseas.

This submission has been prepared on behalf of UKELA by Daniel Lawrence and Martha Grekos, Joint Convenors of the UKELA Biotechnology Working Group.

SUBMISSIONS

The Committee's Terms of Reference and our submissions in response thereto are set out below:

1. *In relation to co-existence, what physical separation will be required between GM and non-GM crops in order to guard against cross-contamination?*

1.1 The EC Commission Recommendation of 23 July 2003, on guidelines for the development of national strategies and best practices to ensure the coexistence of genetically modified crops with conventional and organic farming (the July 2003 Recommendation), recognises that farmers should be able to cultivate the types of agricultural crops they choose—be it GM crops, conventional or organic crops—and that none of these crops should be excluded in the EU. It further recognises that, in order to be cultivated in the EU,

GMOs must first have been authorised for cultivation under Directive 2001/18/EC; the authorisation procedures under Directive 2001/18/EC involve a comprehensive health and environmental risk assessment²¹ and, to the extent needed, specific co-existence measures to protect the environment and human health are included in the final authorisation given under Directive 2001/18/EC. The July 2003 Recommendation emphasises that, since only authorised GMOs can be cultivated in the EU, “the pending issues still to be addressed in the context of co-existence concern the economic aspects associated with the admixture of GM and non-GM crops” and, in particular, “the most appropriate management measures that can be taken to minimise the admixture”.²²

1.2 According to the July 2003 Recommendation the issue of physical separation distances needs to be assessed on a crop-specific basis depending on a range of factors, including:

- the outcrossing potential of specific crops (for example, larger distances may be needed for crops and plants which are open-pollinating, such as oilseed rape, than for those which are self-pollinating or where the harvested product is not a seed, such as beet and potatoes);
- crop-specific forms of cross-pollination;
- crop-specific potential to form volunteers, and the time seeds remain viable in the ground;
- the species- and variety-specific cross-pollination potential with close relatives, whether farmed or wild;
- the flowering time of the pollen source and the receiving population, and the degree of overlap of the respective flowering periods;
- the duration of pollen viability, which depends on the plant species, the variety, and on environmental conditions (such as humidity);
- the competition among pollen, which is influenced by the production of pollen in the receiving population and the pollen pressure generated by the pollen source;
- differences between farming systems and the relative lengths of the cultivation process; and
- the degree to which genetic exchange through pollen flow influences the admixture rate in the harvested crop.

1.3 The July 2003 Recommendation states that:

“The conditions under which European farmers work are extremely diverse. Farm and field sizes, production systems, crop rotations and cropping patterns, as well as natural conditions, vary enormously across Europe. This variability needs to be taken into account when devising, implementing, monitoring and coordinating co-existence measures. The measures that are applied must be specific to the farm structures, farming systems, cropping patterns and natural conditions in a region.”

1.4 It follows that the only sensible approach to determining appropriate separation distances for GM and non-GM crops is for management measures for co-existence to be considered in the context of the particular specific circumstances which pertain to the immediate locality where the relevant crops are to be grown.

1.5 The principles outlined under section 2.1 of the July 2003 Recommendation should serve as a base for formulating a set of best practice guidelines for co-existence. In particular, guidelines for co-existence management measures should:

- reflect the best available scientific evidence on the probability and sources of admixture between GM and non-GM crops;
- take into account the additivity of measures including as a result of already existing segregation practices/methods and agricultural experience about handling of identity preserved crops and seed production practices;
- be efficient, cost-effective and proportionate (not going beyond what is necessary to keep adventitious presence of GMOs below the tolerance thresholds set out in Community legislation, and not imposing unnecessary burdens for farmers, seed producers, cooperatives, etc);
- take account of regional and local situation and the specific nature of the crop concerned; and
- ensure an equitable balance between the interests of farmers of all production types and encourage cooperation between farmers.

²¹ The methodology of the risk assessment includes: identification of any characteristics of the GMO(s) which may cause adverse effects; evaluation of the potential consequences of each adverse effect; evaluation of the likelihood of the occurrence of each identified potential adverse effect; estimation of the risk posed by each identified characteristic of the GMO(s); application of management strategies for risks from the deliberate release or placing on the market of GMO(s); and determination of the overall risk of the GMO(s).

²² It is submitted that the term “admixture” is preferable to “contamination” as the latter term connotes rendering the crop with which the undesirable element is mixed unwholesome, which is inappropriate given that the GM crop (by virtue of having been authorised under Directive 2001/18/EC) will already have been determined to be safe for consumption and the environment.

1.6 In keeping with the objective of ensuring an equitable balance between the interests of farmers of all production types, the best practice guidelines should operate so as not to discriminate against GM farmers. That is to say that the guidelines should apply not only to GM growers but also growers of non-GM crops (eg to prevent the adventitious presence of non-GM crops in GM crops where such presence is economically undesirable to the GM grower).

1.7 The Advisory Committee on Releases to the Environment (ACRE) should be required to establish scientifically-sound “best practice guidelines on co-existence” for the UK, based on the principles outlined under section 2.1 of the July 2003 Recommendation. As discussed below, in response to the second question in the Committee’s Terms of Reference, a failure to comply with the (ACRE established) best practice guidelines on co-existence might result in a grower incurring civil liability as a result of not being able to rely on the suggested best practice defence of compliance with an authorisation under Directive 2001/18/EC and the (ACRE established) best practice guidelines for the specific crop in question.

1.8 An alternative would be for the commercial growing of GM crops to be required to take place in accordance with binding codes of practice. Such a system would involve legally enforceable crop management protocols (designed to achieve at least the 0.9% threshold). These would require authority in primary legislation to establish the regulatory framework, although the scheme would need to be flexible enough to ensure that the detailed measures in protocols could be varied not only as a result of voluntary agreement among farmers²³ (for example taking account of local conditions) but also in the light of new evidence without having to revise the law.

1.9 We would agree with the Agriculture and Environment Biotechnology Commission’s (AEBC) recommendation that “the main aim of Government policy on coexistence of GM and other crops must be to facilitate consumer choice to the greatest possible extent, while allowing UK farmers to respond to present and future national and international market demand.”²⁴

2. If cross-contamination occurs, how liability will be established and responded to, who should be legally responsible and what the limits of that responsibility should be and what role Government should play in determining these matters?

2.1 The issue of how liability should be established in the case of adventitious admixture of GM and non-GM crops should be left for the UK courts to determine on a case-by-case basis with reference to relevant civil, criminal and administrative law.²⁵ Also, international and European obligations need to be borne in mind eg the EU Proposals for a Directive on Liability for Environmental Damage and the Cartagena Protocol on Biosafety.

2.2 Bearing in mind that any GMOs commercially cultivated in the UK must first have been authorised for cultivation under Directive 2001/18/EC, responsibility should rest with farmers to ensure they cultivate only authorised GMOs and that cultivation is carried out in accordance with any specific co-existence measures to protect the environment and human health that are included in the final authorisation given under Directive 2001/18/EC.²⁶ Compliance with such specific co-existence measures would be a defence in terms of determining whether or not the authorisation has been complied with.

2.3 Compliance with the (ACRE established) best practice guidelines on co-existence (to the extent these go beyond the co-existence measures contained in an authorisation under Directive 2001/18/EC) should not be mandatory but could be relevant in determining the extent of a person’s liability under civil law. For example, legislation could provide for a best practice defence to the effect that a farmer had complied with the authorisation under Directive 2001/18/EC and the (ACRE established) best practice guidelines for the specific crop in question.

2.4 No liability should arise for economic losses arising from admixture of GM and non-GM crops to the extent the loss was due to any fault on the part of the party suffering the loss or would have been avoidable had the party suffering the loss complied with the (ACRE established) best practice guidelines.

2.5 No liability should be allowed for economic losses where the loss was attributable to adventitious presence of GMOs within the tolerance thresholds set out in Community legislation.

2.6 Cultivators of GM crops should be entitled to economic losses where they incur loss as a result of the undesired adventitious presence of non-GM crops in their GM crops.

²³ The July 2003 Recommendation advised Member States “to set up mechanisms to favour coordination and voluntary arrangements between neighbouring farmers, and to specify procedures and rules in cases of disagreements between farmers on the implementation of the measures in question.”

²⁴ “GM Crops? Coexistence and Liability”, report by the Agriculture and Environment Biotechnology Commission, November 2003, page 36.

²⁵ For an analysis of the various heads of civil, criminal and administrative liability see Annex D to “GM Crops? Coexistence and Liability”, report by the Agriculture and Environment Biotechnology Commission, November 2003.

²⁶ Thus, for example, a farmer who cultivated a particular “authorised” GMO variety but not in compliance with any specific coexistence measures contained in the relevant authorisation would commit an offence under section 111(1) of the Environmental Protection Act 1990.

2.7 Special arrangements might be devised for allowing compensation to farmers suffering financial loss as a result of their produce exceeding statutory thresholds through no fault of their own, with a view to an insurance market developing in due course. Another option would be to establish an indemnity or a fund to cover the types of economic loss for which insurance would later become available.²⁷

2.8 Further, there is the question of redress for damage to the environment more generally. Government should use the general approach of the Draft EU Liability Directive to develop the UK's liability regime for any damage caused by the release of GMOs to the environment. In addition, it needs to be borne in mind that there are inherent limits to any system of liability, which need to be understood from the start. Even a heavily modified regime will fail to cover risk completely. Where liability fails, environmental damage either goes unremedied, or responsibility rests, by default, with the state.

3. *What processes will be involved in determining how GM-free zones will be established at both a regional and local level and what role Government should play in this development?*

3.1 The Advisory Committee on Releases to the Environment (ACRE) should be required to address this issue, in the context of establishing scientifically-sound best practice guidelines on co-existence for the UK, based on the principles outlined under section 2.2.6 of the July 2003 Recommendation. These include: the crop-specific GMO share in the region; the number and type of crop varieties (GM and non-GM) that have to co-exist in a particular region; the shape and size of the fields in a region; the fragmentation and geographical dispersion of fields belonging to individual farms; regional farm management practices; crop rotation systems and cropping patterns in a region; the likely activity, behaviour and population size of pollinators; climatic conditions; topography; and surrounding structures, such as the prevalence of hedges, forests, uncultivated areas, and the spatial arrangement of fields.

3.2 It should not be open for a particular region or locality to declare itself "GM free" where to do so would not be consistent with the (ACRE established) best practice guidelines.

3.3 In addition, compulsory regional zoning of GM crops would be contrary to EU law (except on grounds of a particular environmental risk to the area in question). Compulsory zoning would significantly limit some farmers' freedom of choice, and it would not be straightforward to operate (requiring the establishment of buffers between zones, and the monitoring of volunteers from long-distance transport of seed and of unauthorised growing within the non-GM zone). There is the possibility of encouraging voluntary zoning agreements, and this is something that needs to be explored further.²⁸

4. *What changes to legislation will be required to allow GM crops to be grown?*

4.1 The existing authorisation procedures that exist under Directive 2001/18/EC are sufficient to allow GM crops to be grown in the UK.

4.2 Measures on co-existence may be dealt with without changes to the legislation by means of (ACRE established) best practice guidelines on co-existence. However, if binding codes of practice are established as well as legally enforceable crop management protocols (see the responses in section 2 above), these would require authority in primary legislation to establish the regulatory framework.

4.3 Changes to UK legislation would be needed to ensure that a best practice defence were available for growers of GM and non-GM crops (see the responses in section 2 above).

4.4 The Environmental Protection Act 1990 should be amended to allow the competent regulatory authority to require environmental remediation in respect of environmental harm caused by the release of GMOs where failure to require such remediation would be inconsistent with the EU Directive on Environmental Liability, irrespective of criminal liability.

5. *What will be the scope and scale of the 2006 re-licensing procedures?*

5.1 These should follow the procedure referred to in Article 17 of Directive 2001/18/EC.

UKELA Biotechnology Working Group

April 2004

²⁷ See further "GM Crops? Coexistence and Liability", report by the Agriculture and Environment Biotechnology Commission, November 2003, pages 89-93.

²⁸ See further "GM Crops? Coexistence and Liability", report by the Agriculture and Environment Biotechnology Commission, November 2003, page 46, and the European Commission's coexistence guidelines.

Memorandum submitted by the Scientific Alliance

GM GOVERNMENT DECISION

EXECUTIVE SUMMARY

The Scientific Alliance, a non-profit membership-based organisation which brings together both scientists and others committed to rational discussion and debate on the challenges facing the environment today, welcomes the Government's decision to permit commercial cultivation of GM maize.

However, it also understands and sympathises with the subsequent decision made by Bayer CropScience, producers of Chardon LL, not to pursue cultivation. Once a GM crop has been adequately assessed the Alliance believes it is essential that sufficient opportunity is offered for commercial cultivation to proceed.

The Scientific Evaluation of Chardon LL

After extensive and rigorous scientific evaluation, in the UK and elsewhere, it has been consistently concluded by the relevant experts that Chardon LL poses, at the very least, no greater risk to human health or to the environment than non-GM commercial maize.

Co-Existence

There is considerable scope to ensure adequate physical separation between GM, conventional and organic crops of forage maize and between forage maize and organic sweetcorn crops such that the possibility of cross pollination is minimised.

Cross-contamination and liability

In the absence of any evidence of harm from the genes in Chardon LL, the onus to protect from "contamination" should be placed on producers who impose a quality standard that precludes it.

GM-free zones

As there is no scientific evidence that the GM trait in Chardon LL poses any risk to human health or the environment, the Scientific Alliance does not believe it necessary or desirable to establish "GM-free zones".

Legislation

The Scientific Alliance believes that the current legislation for the regulation of commercial cultivation of GM crops is more than adequate, although it is concerned, in light of recent events, that it may already pose a barrier to the sensible adoption of such crops.

Re-licensing Procedures

The Scientific Alliance has full confidence in ACRE and endorses its key role in this regard.

1. THE SCIENTIFIC ALLIANCE

1.1 The Scientific Alliance is a non-profit membership-based organisation which brings together both scientists and others committed to rational discussion and debate on the challenges facing the environment today.

1.2 Members of the Scientific Alliance are concerned about the many ways in which science is often misinterpreted, and at times misrepresented, within both policy circles and in the media. The Alliance thus works to overcome this misunderstanding by aiming to:

- promote sound science in the environmental debate;
- ensure that scientific arguments remain prominent throughout the policy making process; and
- facilitate an informed dialogue between all stakeholders involved in the environmental debate through events and publications.

1.3 The Scientific Alliance is led by a Scientific Advisory Forum comprised of respected scientists and experts from many different fields. They guide the Scientific Alliance's general policies and together with other members of the Scientific Alliance, act as spokespeople for the organisation.

1.4 In producing this submission the Scientific Alliance has drawn on the advice of two relevant experts in particular:

Professor Michael Wilson, who has a research background in the molecular biology, pathology and genetics of plant RNA viruses. He was Chief Executive of the Horticulture Research Institute (HRI) from 1999–2004 and previously Deputy Director of the Scottish Crop Research Institute (SCRI). He was a member of the GM Science Review panel lead by Sir David King and has participated widely in the public debate on GM. He is currently a Professor at the University of Warwick.

Dr Mike Bayliss, who has a research background in plant genetics and cell biology. He has worked on a wide variety of research and development projects in the plant biotechnology and seeds industry, both in Europe and USA since the 1970s. He is now an independent consultant in Plant Biotechnology.

2. INTRODUCTION—THE SCIENTIFIC ALLIANCE’S VIEW ON THE GOVERNMENT’S DECISION TO PERMIT CULTIVATION OF GM

2.1 The Scientific Alliance has particular concerns that the whole debate on the future of GM crops in the UK has been clouded by misrepresentation of the scientific basis of GM technology and assertions based on little or no scientific evidence by a variety of pressure groups. Evidence of this is provided by the repeated but imprecise and pejorative use of the term “cross-contamination” when the context actually refers to cross-pollination or adventitious presence of seeds containing a GM trait.

2.2 The Scientific Alliance welcomes the recent announcement by the Secretary of State that commercial cultivation of GM herbicide tolerant maize will be permitted in the UK²⁹. This crop would have improved the weed control options available to farmers and can have a beneficial effect on farmland biodiversity when used in systems such as those evaluated in the UK Farm-Scale Evaluations³⁰.

2.3 The Scientific Alliance wishes to express its disappointment that this decision has not, as hoped, lead to the cultivation of Chardon LL, marketed as “Liberty”. It understands and sympathises with the position of Bayer CropScience³¹ in making its commercial decision not to pursue cultivation, as permitted by the Government, due to undefined conditions attached to the decision which would result in further and apparently unnecessary delay.

2.4 It is essential having reached a stage whereby a GM crop has been adequately assessed against all the appropriate criteria that sufficient opportunity is granted for the commercial cultivation to proceed. The Scientific Alliance is happy to discuss with the committee any further improvements that can be made to the regulatory regime and what we see as lessons for the future, above and beyond the points made within this submission as dictated by the terms of reference of the inquiry.

2.5 Despite the events subsequent to the announcement of this inquiry, this submission will focus on the approval of the single hybrid maize cultivar, Chardon LL, although it should be minded that many of the central arguments outlined apply to any GM crop that has been tested and approved in accordance with agreed procedures.

2.6 It is worth noting that hybrid maize cultivars containing the Liberty resistance gene have been grown commercially in the United States since 1997 and occupied approximately 1.8 million hectares (Ha) in the United States in 2003³². In the UK, field crops of maize are grown for production of silage for animal feed as the UK growing season is too short for the production of maize grain. A completely different type of maize, sweetcorn, is also grown in the UK on a very small scale as a horticultural crop.

3. THE SCIENTIFIC EVALUATION OF CHARDON LL

3.1 Chardon LL and the constituent “T25” transformation event have undergone extensive and rigorous scientific evaluation, which has been carried out by the UK Advisory Committee on Releases to the Environment (ACRE), by the equivalent group in France, and by all relevant agencies in the United States. In all cases, the conclusion by these expert scientific committees has been that the T25 transformation event, and its constituent Liberty resistant gene, poses no greater risk to human health or to the environment than non-GM commercial maize varieties³³.

3.2 More recently, the well publicised “Farm-Scale Evaluations” have similarly shown that the alternative herbicide treatment regime possible with Chardon LL had a neutral or beneficial effect on the diversity of invertebrates and weed plant species, specifically because a switch from pre-emergence

²⁹ Statement to Parliament by Margaret Becket Secretary of State for Environment, Food and Rural Affairs, March 2004. See: <http://www.defra.gov.uk/news/2004/040309a.htm>

³⁰ Squire *et al.* *Phil. Trans. R. Soc. Lond. B* (2003) 358, 1779–1799

³¹ Bayer CropScience Press Release, 31 March 2004. See: <http://www.press.bayer.com/News/News.nsf/id/AD3947F5E4DB42BCC1256E670063C0B9?Open&ccm=010005000&l=EN>

³² Unpublished industry estimates by Context Consulting. See <http://www.contextnet.com/online/>

³³ Advisory Committee on Releases to the Environment. See: <http://www.defra.gov.uk/environment/acre/pubs.htm>

herbicides allowed later weed-control treatments. Although the results have been criticised because the control herbicide, atrazine, is to be withdrawn from agricultural use, re-evaluation of the FSE results supports the original conclusion³⁴.

3.3 Based on the evidence provided by the FSE results, ACRE has advised the Government that if GMHT maize were to be grown and managed as in the FSEs this would not result in adverse environmental effects, compared with conventionally managed maize³⁵. This advice is endorsed by the Scientific Alliance.

4. CO-EXISTENCE

4.1 Against this background of the proven safety and environmentally beneficial nature of Chardon LL maize compared with conventionally bred maize, it is worth considering exactly why co-existence, in particular with organic production, has become such a contentious issue in the UK.

4.2 Organic production takes place on less than 4% of the total agricultural land of the UK³⁶. Furthermore, the vast majority (87%) of organic land is devoted to permanent or temporary grass pastures. This already dramatically reduces the possibilities for any incidence of cross-pollination.

4.3 Chardon LL would only be grown as forage maize, a silage crop, in the UK. DEFRA statistics indicate that a total of 100,000–120,000 Ha of forage maize are grown in the UK, amounting to approximately 3.2% of the total arable area in the UK³⁷. There do not appear to be any data to indicate the extent of organic forage maize production, but extrapolation from DEFRA organic farming statistics suggests that organic forage maize probably occupies considerably less than 20,000 Ha or 0.08% of total UK agricultural land³⁸. There appears to be no information whatsoever on the extent of field sweetcorn³⁹ production, either conventional or organic in the UK, although it is believed to be minimal.

4.4 Our conclusion is that there must be considerable scope to ensure adequate physical separation between GM, conventional and organic crops of forage maize and between forage maize and organic sweetcorn crops such that the possibility of cross-pollination is minimised. Though maize is exclusively wind-pollinated the pollen is particularly “heavy”, and the vast majority travels no more than a few metres within or outwith the field⁴⁰.

4.5 As pointed out by NIAB (National Institute of Agricultural Botany) and ACRE⁴¹, the plant breeding and seeds industry has long been accustomed to using physical separation of different crop varieties and genotypes to ensure acceptable genetic purity, and these standards can be readily adopted by organic producers to ensure compliance with their own purity standards for organic production, much as they do currently to minimise the risk of contamination by spray drift or fertiliser run-off when organic and conventional production co-exist on the same farm.

5. CROSS-CONTAMINATION AND LIABILITY

5.1 Organic farming systems have a single statutory definition which excludes the intentional use of any genetically modified organism. In all other respects “organic” is defining a process not a product. However, it is apparent that the decision to exclude GM traits from the range of permitted techniques is largely driven by the industries’ view of consumer preferences. For example at a recent meeting of the Advisory Committee on Organic Standards (ACOS)⁴², the Committee specifically concluded that “on what the consumer expected from organic food, the overall view of the Committee was that Organic means no GM material”. It was also the view of the Committee “that consumers recognised that organic products may not be completely free of contaminants but that consumers wanted to be assured that the organic industry did its best to exclude GM material in the production of organic food systems”.

³⁴ J N Perry, L G Firbank, G T Champion, S J Clark, M S Heard, M J May, C Hawes, G R Squire, P Rothery, I P Woiwod & J D Pidgeon. Ban on triazine herbicides likely to reduce but not negate relative benefits of GMHT maize cropping. *Nature* 428, 313-316 (2004)

³⁵ January 2004. ACRE’s advice on the implications of the farm-scale evaluations of genetically modified herbicide-tolerant crops. See: <http://www.defra.gov.uk/news/2004/040113c.htm>

³⁶ EFRA Organic statistics, March 2003. See: <http://www.defra.gov.uk/farm/organic/introduction/index.htm>

³⁷ DEFRA agricultural census data, June 2002. See: http://www.defra.gov.uk/esg/work_html/publications/cs/farmstats_web/Publications/nuts/nuts_excel_2002.zip

³⁸ DEFRA organic statistics do not list forage maize, but the total of “other crops” in 2003 was 20,000Ha or 2% of organic production. This will include forage maize, which in consequence occupies an absolute maximum of 2% x 4% or 0.08% of UK agricultural land.

³⁹ Sweet-corn is a mutant form of maize which accumulates sugar, rather than starch in its seeds. It is harvested in an immature condition for sale as fresh produce.

⁴⁰ “Bt Corn and Monarch Butterflies”, US Department of Agriculture—Agricultural Research Service. See: <http://www.ars.usda.gov/is/br/btcorn/>

⁴¹ ACRE: Advice on separation distances for the cultivation of T25 maize, 24 April 2003. See: http://www.defra.gov.uk/environment/acre/advice/pdf/acre_advice28.pdf

⁴² Advisory Committee on Organic Standards; Special meeting on GMs—15 January 2004. See: <http://www.defra.gov.uk/farm/organic/acos/meetings/20040115.pdf>

5.2 It should be pointed out that organic status is determined wholly by inspection of procedures used for production⁴³ and does not relate to any analytical determination of nutrient composition or freedom from chemical residues. So for example it is possible for organic crop production to be inadvertently contaminated by pesticide spray-drift from neighbouring conventional production or ground water contamination by chemical fertilisers, but there is currently no specific requirement for minimum separation distances to guard against this eventuality or any published tolerance standard for contamination by pesticides or non-organic fertilisers.

5.3 In a similar fashion, although the organic rules require farmers and growers to use organically produced seed, there appears to be no consideration of the fact that organic grain crops will often be cross-pollinated by compatible conventionally grown crops. We would argue that the drift of pollen from a GM crop falls into the same category as these other possible sources of “contamination” and that the agreed standard of 0.9%⁴⁴ as the maximum permitted level of GM material, though an arbitrary figure, in fact represents a considerable advance in the scientific definition of what constitutes organic produce. It is certainly a realistic and adequate measure to ensure consumer choice between GM and non-GM food is maintained.

5.4 The procedures for farmers and growers to convert to organic production are pragmatically-based and permit the co-existence of conventional and organic areas within the same farm. It is recognised that sometimes processors will need to use a non-organic agricultural ingredient which is not listed in Annex VI.C. Moreover, Article 3 of Commission Regulation (EEC) 207/93 allows Member States to issue “derogations” to use non-organic ingredients in organic products⁴⁵.

5.5 The Scientific Alliance recommends that though the needs of organic growers should be given due consideration, in the absence of any evidence of harm from the genes in Chardon LL, and as it is organic certification bodies who have adopted and profit from their own arbitrary stringent quality standard, the onus should be on organic producers to take measures to safeguard their standards, as with their current procedures, rather than transfer this obligation to conventional farmers and growers.

5.6 The Scientific Alliance is not qualified to comment specifically on the legal issues of liability or the political or administrative procedures which might be required to establish GM-free zones. However, as there is no scientific evidence of harm from Chardon LL and as no GM crop would be approved if there were, we believe that liabilities which arise (for example, loss of the premium attached to organic produce) will be the consequence of unilateral actions taken by organic certification bodies. It would seem sensible for the bodies concerned to use rational, evidence-based procedures to keep organic produce within agreed tolerance limits for GM material.

6. GM-FREE ZONES

6.1 The Scientific Alliance does not believe that it is necessary or desirable to establish “GM-free zones”. There is no scientific evidence that the GM trait in Chardon LL poses any risk to human health or the environment. Local or regional authorities contemplating such procedures should take into account that the majority of growers will be using conventional farming techniques and that their ability to use the best available agricultural techniques could be undermined by arbitrary and unscientific “GM-free” decisions.

7. LEGISLATION

7.1 The Scientific Alliance believes that the current legislation for the regulation of commercial cultivation of GM crops is more than adequate, although the Alliance is concerned, in light of recent events, that it may already pose a barrier to the sensible adoption of such crops. In fact, the Committee may wish to consider whether there is a need to do more to protect the rights of farmers to use techniques that they see as appropriate for their conditions and not to have GM-free rules imposed upon them.

8. RE-LICENSING PROCEDURES

8.1 The Scientific Alliance has full confidence in the methods and procedures adopted by ACRE and fully support the conclusions reached by this body on the variety of GM crops and traits they have reviewed. As such, ACRE will be well placed to advise the Government on the re-licensing of Chardon LL and any subsequently approved GM crops.

The Scientific Alliance

April 2004

⁴³ Final version of the UKROFS standard. See: <http://www.defra.gov.uk/farm/organic/legislation-standards/standard.pdf>

⁴⁴ The new EU traceability and labelling regulations ((EC) 1830/2003 on the Traceability and Labelling of GMOs (the “Traceability and Labelling Regulation”) will set thresholds for labelling and tracing products which unintentionally contain authorised GMOs. Any crop or grain must be labelled if it contains 0.9% or more of GMOs which are authorised for marketing in the EU. Source: Defra

⁴⁵ Derogations for using non-organic ingredients of agricultural origin in organic products. See: <http://www.defra.gov.uk/farm/organic/legislation-standards/derogations.htm>

Memorandum submitted by the Federal Ministry of Consumer Protection, Food and Agriculture, Germany
GM GOVERNMENT DECISION
I. INTRODUCTION

Under Article 26a of Directive 2001/18/EC on the deliberate release of genetically modified organisms into the environment, Member States are entitled to take appropriate measures to avoid the unintended presence of genetically modified organisms in other products. The proposed amendment to the Genetic Modification Act (the Amendment) implements Directive 2001/18/EC and aims to ensure GM-free production and the co-existence of GM crops and non-GM crops.

The Amendment now has to pass through the normal parliamentary procedure, which is likely to be completed by autumn 2004.

Its key provisions are set out below.

II. PROVISIONS TO ENSURE THE PROTECTION OF GM-FREE FARMING (COEXISTENCE PROVISIONS)

To protect GM-free farming, the Amendment provides three instruments:

- an obligation to take precautionary action to prevent “material negative effects” of GMOs, in particular compliance with “good farming practice” in the cultivation of GM crops;
- a site register providing farmers with precise information about the cultivation of GM crops in their neighbourhood;
- a compensation scheme which compensates conventional and organic farmers if cross-contamination through GMOs occurs with material negative effects.

A “material negative effect” arises in the following three cases:

- If products cannot be placed on the market because of cross-contamination with GMOs. This situation may arise, in particular, where owing to cross-contamination with GMOs released, for example, in a field trial a neighbouring farmer can no longer market his products because they contain traces of GMOs that have not been authorised to be placed on the market.
- If owing to cross-contamination with GMOs a neighbouring farmer is obliged to label his produce as “genetically modified”.⁴⁶
- If owing to the presence of GMOs a neighbouring farmer is no longer able to label his produce as “organic” within the meaning of Regulation (EEC) No 2092/91 or as produced “without genetic modification” within the meaning of the relevant German legislation⁴⁷.

(a) *Obligation to take precautionary action and comply with “good farming practice”, Section 16c*

- Under the Amendment, material negative effects must be avoided especially in the cultivation of GM crops, but also in other specific ways of handling GMOs such as processing.

In order to achieve this objective, the Amendment lays down various fundamental obligations, such as observance of minimum distances between fields. In addition, persons who handle GMOs commercially must be able to prove that they possess the appropriate reliability, knowledge, skills and equipment. Persons placing GMOs on the market must supply accompanying information with the product. This information must show how material negative effects can be avoided in the handling of the relevant GMO, for example through precise details of the GMO’s cultivation design. Rules of “good farming practice” will be issued to specify these obligations in greater detail. To enable the authorities to modify these rules in the light of future experience with the cultivation of GM crops, those marketing or handling GMOs must notify the authorities of new findings relevant to risk.

(b) *Site register, Section 16a*

The public register foreseen in Article 31(3) of Directive 2001/18/EC will also be designed with the aim of ensuring co-existence. Anyone able to prove a legitimate interest will be entitled to detailed information. Therefore a person who might be affected by a neighbouring GMO field can obtain information about a parcel of land where GMOs are intended to be released.

⁴⁶ In future, under EC legislation, all food and feed containing, consisting of or produced from GMOs must be labelled “genetically modified”. If the content of genetically modified material amounts to less than 0.9% of the relevant ingredient, labelling is not mandatory if the presence of the material is adventitious or technically unavoidable.

⁴⁷ In Germany, the label “without genetic engineering” can be used on a voluntary basis and subject to specific requirements laid down in national law.

(c) *Defensive and compensatory claims under civil law, Section 36a*

Cross-contamination or other GMO inputs depend on a variety of factors, such as climate or specific geographical features. Material negative effects cannot therefore be ruled out in the cultivation of GM crops even if the obligations of precautionary action and good farming practice are met.

Until now such risk has not been sufficiently covered under German civil law. The Civil Code has defensive and compensatory provisions for material negative effects arising between adjacent properties, but these contain many undefined legal terms, giving rise to considerable legal uncertainty.

The Amendment aims to define these terms more clearly, thus creating clarity and legal certainty. This includes defining the term “material negative effects” (see above) and also clarifying the rules for burden of proof of causation, since if several neighbouring farmers cultivate GMOs it cannot always be determined after the event which one has been responsible for damage in a specific case. Under the Amendment, in principle joint and several liability of all neighbouring farmers which might have caused the cross-contamination will apply, so that a farmer who has sustained damage will be free to decide which neighbour to claim compensation from.

Thus farmers cultivating GMOs will be liable to pay compensation if they are responsible for material negative effects.

III. OTHER KEY PROVISIONS

(a) *Precautionary principle, Section 1*

According to the Amendment, the Genetic Modification Act will include an explicit reference to the precautionary principle. This is important for the interpretation of all the provisions of the Act concerned with safety, in particular the provisions for the authorisation of deliberate releases and products. Under the precautionary principle, the authorities may take preliminary protective measures even if there are uncertainties over the presence or extent of risks to the environment and human health without having to wait for formal confirmation of the existence and severity of these risks.

(b) *Monitoring, Section 16d*

Under Directive 2001/18/EC, an applicant must submit a monitoring plan with any request for authorisation to market GMOs at Community level. The monitoring procedure is intended to ensure that any unforeseen effects of the GMO on human health or the environment can be traced and identified.

(c) *Time limit for consents, Section 16e*

In accordance with Directive 2001/18/EC, consent for marketing of GMOs will be given for a maximum period of ten years. When renewing consents, the results of monitoring will be taken into account.

(d) *Protection of ecologically sensitive areas, Section 16b*

The Amendment contains special provisions for the protection of ecologically especially sensitive areas which form part of the “Natura 2000” network. The use and handling of GMOs in such areas will in future only be allowed after notification to the local nature conservation authority two months prior to the beginning of use. The nature conservation authority can prohibit such use if a material negative effect on the area is deemed likely.

The Federal Nature Conservation Act will also be amended so that field trials have to be assessed for their impact on “Natura 2000” areas.

(e) *Cross-contamination from field trials, Section 3 (6)*

Cases of GMO cross-contamination from field trials to a neighbouring field have hitherto been a controversial issue between the supervisory authorities of the Länder (federal states) and between various courts. Under the Amendment, cross-contaminated products cannot be placed on the market. A neighbouring farmer who as a result is no longer able to market his products can therefore claim compensation from the person conducting the field trial.

(f) *Authorisation authorities and bodies, Sections 4 ff, Section 16 (4)*

The Amendment also provides for a stronger focus on environmental conservation in decisions by German authorities involved in the EU approval procedure. Henceforth the Federal Agency for Nature Conservation will have power of veto for the purpose of the German opinion, including the German position with respect to product notifications filed in other Member States.

A new Committee which will only submit expert opinions on authorisation of field trials and marketing will be established at the existing Central Commission for Biosafety. This Commission is a body of experts made up of natural scientists and representatives of the social groups concerned.

(g) *Contained use of genetically modified micro-organisms*

Hitherto the contained use of GMMs of risk class 1 and 2 has had to be notified to the competent authority 30 and 45 days in advance respectively. Under the Amendment and in accordance with Directive 90/219/EEC on the contained use of genetically modified micro-organisms, there will henceforth be no prior period in respect of risk class 1 and, in certain cases, risk class 2. The competent authority can therefore be notified at the time when the contained use begins.

IV. SUMMARY

To ensure the coexistence of cultivation of GM and non-GM crops and to review the legislation on genetic modification in Germany, the Federal Government has submitted a draft Amendment to Germany's Genetic Modification Act. This is currently being debated in Parliament. In addition to protecting the environment and human health, its main aim is to protect conventional GM-free and organic agriculture from cross-contamination by genetically modified organisms. To this end, the Amendment includes several new provisions to protect GM-free farming. These include an obligation to take precautionary action in order to avoid material negative effects caused by GMOs (in particular by complying with "good farming practice" in the cultivation of GMOs), a site register providing farmers with information on the cultivation of GMOs in their neighbourhood and provision for compensation claims against a GM farmer in the event of material negative effects through cross-contamination.

Federal Ministry of Consumer Protection, Food and Agriculture, Germany

April 2004

Memorandum submitted by Friends of the Earth

GM GOVERNMENT DECISION

Friends of the Earth inspires solutions to environmental problems, which make life better for people

Friends of the Earth is:

- the UK's most influential national environmental campaigning organisation;
- the most extensive environmental network in the world, with almost one million supporters across five continents and over 60 national organisations worldwide;
- a unique network of campaigning local groups, working in over 200 communities throughout England, Wales and Northern Ireland; and
- dependent on individuals for over 90% of its income.

1. INTRODUCTION

1.1 The Government GM policy announcement on 9 March 2004⁴⁸ made by Margaret Beckett opened the door to the commercial cultivation of GM crops in the UK. The crop in question was the GM fodder maize tested in the Farm Scale Evaluations 2000–2003. This maize contains the GM trait T25 which confers tolerance to Bayer CropScience's herbicide glufosinate ammonium (trade name Liberty). At the time of the announcement, one variety of T25 maize, known as ChardonLL, was awaiting addition to the UK's National List of Varieties (The Seed List). On 31 March 2004, Bayer crop Science withdrew their application for ChardonLL. This means no UK varieties of the GM fodder maize could be approved for the market until the statutory two years of National List Trials have been completed and the data arising from them assessed. As no new applications for T25 varieties were received by DEFRA in 2004, the earliest date a new variety could be added to the National List would be 2007, but it is highly likely that interested parties will use the right to object to such a listing⁴⁹ which would delay listing until 2008 at the earliest. Under the EU GMO Deliberate Release Directive 2001/18/EC all marketing consents issued before 1998 expire in 2006 and new applications submitted follow the more demanding risk assessment of the 2001/18 Directive. Thus before any further T25 varieties could be grown, a new marketing consent would have to be approved for T25 maize under Directive 2001/18/EC.

⁴⁸ Statement by Margaret Beckett to the House of Commons Tuesday 9 March 2004.

⁴⁹ Under the National List of Varieties Regulation 2002 allows any one with an interest can object to the listing of any seed varieties on grounds of distinctiveness uniformity and stability (DUS) and value for cultivation and use (VCU). In 2000 over 220 individuals and organisations objected to the listing of ChardonLL including Friends of the Earth.

1.2 Following the Bayer announcement to withdraw the application for ChardonLL, attention will focus on the proposals, also announced by Mrs Beckett on 9 March 2004, that the Government intends to consult the public and stakeholders about coexistence of GM and non GM crops. This consultation is likely to cover all the crops likely to be subject to genetic modification over the next few years.

1.3 Additional large scale trials may be required for some GM traits in some crops before marketing consents could be approved. Friends of the Earth believes that prevention of GM contamination and liability must be governed by law in the UK before further releases of GM crops take place for whatever reason.

1.4 Friends of the Earth welcomes the DEFRA Committee Inquiry into the commercialisation of GM maize and crop contamination. We hope that the Committee will have time to examine this issue further following the government consultation promised for summer 2004, and to investigate these issues in relation to other GM crops such as oilseed rape and sugar and fodder beet.

2. PREVENTING CONTAMINATION

2.1 Friends of the Earth believes that legislation should be introduced that seeks to ensure that levels of GM contamination in non GM crops is not detectable at the current level of detection for GM presence (0.1%). Furthermore legislation should also be introduced to make the consent holders for GM traits (Bayer CropScience in the case of T25 maize) strictly liable for any economic, environmental and health harm caused by the release of their products.

2.2 To this end Friends of the Earth drafted a Private Members Bill which set out the measures we believe are the minimum required to achieve the objective of keeping GM contamination below the limit of detection from field to plate (Annex I).⁵⁰ This Bill included minimum separation distances and times which would be required to meet this standard of purity. It also included measures to minimise the possibility of admixture of GM and non GM crops along the supply chain, post harvest. The Bill was adopted by Greg Barker MP following the members' ballot in December 2003. In a meeting between DEFRA ministers, Greg Barker and ourselves it was clear that the Government was not prepared to support the Bill and might block its passage. In the event Greg Barker decided to table a shorter bill⁵¹ which would have required that Coexistence and Liability Legislation should be approved by a full vote of the House of Commons before any further planting of GM crops, commercially or in trials, could occur. At the second reading on 26 March 2004, a procedural vote prevented a proper debate of the issues and a vote. However, the Bill may receive debating time on 14 May 2004.

2.3 Friends of the Earth is very concerned that the Government will seek to limit the scope of the domestic rules on the coexistence and liability provision to meet the current EU threshold for the labelling of food and feed⁵² of 0.9% for any ingredients, including those derived from GM crops (eg vegetable oils, lecithin and starch). The 0.9% threshold was a pragmatic decision of the EC and European Parliament and is not based on criteria designed to safeguard the environment or health of people or animals. We are also concerned about the proposals from the EC to set thresholds for GM presence in seeds higher than the limit of detection. A revised proposal from the EC is expected in the next few weeks following widespread criticism of the original threshold put forward in 2000 which ranged from 0.3% to 0.7% depending on the species of crop. English Nature's position is that seed thresholds should be set to protect the environment rather than to meet the 0.9% threshold and that the lowest possible threshold should be aimed for.⁵³ Contaminated seed would mean that consumer and farmer choice of a GM-free option would be lost. The contamination of basic seeds could also reduce choice for future generations.

2.4 Friends of the Earth believes that statutory rules for the prevention of contamination should extend to the handling and storage of seeds and harvested crops and products derived from them. We believe that this is necessary to ensure that farmers and consumers can continue to choose GM-free crops and food in the future and to protect the environment and human health from potential long term impacts.

2.5 Key to deciding what measures will be needed is a precise definition of what the EC and UK government understands by "adventitious and technically unavoidable" presence. It is not at all clear that there is a common understanding of the meaning of these words. The EC Regulations 1829/2003 on genetically modified food and feed Article 12.3 are clear that the 0.9% threshold below which no labelling is required is to cover adventitious presence and not planned presence:

2.5.1 In order to establish that the presence is adventitious or technically avoidable, operators must be in a position to supply evidence to satisfy the competent authorities that they have taken appropriate steps to avoid the presence of such materials.

⁵⁰ Not printed.

⁵¹ <http://www.publications.parliament.uk/pa/cm200304/cmbills/031/04031.1-i.html>

⁵² EC Regulation No 1899/2003.

⁵³ http://www.english-nature.org.uk/citation/citation__photo/COMMISSIONPROPOSALSONADVENTITIOUSPRESENCE02-03-165.PDF

2.6 Although these regulations do not apply to crop growing the meaning of adventitious and technically unavoidable must also logically apply to coexistence schemes. Therefore, coexistence laws must also aim to “avoid the presence” of GM materials and should not be designed to allow a GM presence up to 0.9%.

3. What physical separation will be required between GM and non-GM crops in order to guard against cross-contamination?

3.1 The separation distance required for maize seed production set by the OECD, EU and UK is 200m. This is designed to limit contamination to between 0.1 and 1.0%, depending on the approach used in breeding the variety. For open pollinated varieties, which would be the situation if commercial maize was grown in the UK, the threshold is 0.5 to 1.0%. Two hundred metres is the SCIMAC code separation distance for seed production, sweet corn and organic production. The distance for fodder maize growing currently being used is a mere 80 metres (the original SCIMAC distance was 50 metres) remembering that this is based on the whole crop not just cobs.

3.2 Maize produces distinct male and female flowers, known as “tassels” and “silks” respectively. Most pollination events are due to airborne and windborne pollen from other plants⁵⁴ and only one in 20 are self pollination. Maize produces large amounts of pollen. Honey bees and other insects do not generally assist with cross pollination in maize but bees will utilise maize pollen as a source of food, so the potential exists for honey to be contaminated with GM maize pollen.⁵⁵

3.3 The UK does not produce maize seed because of our climate. Maize growing is mainly for fodder which is made into silage and fed to cattle. Some sweet corn is produced commercially, and it is a common amateur crop on vegetable plots and allotments. Most maize is grown in the south and west of the UK as the crop requires milder weather to reach maturity.

3.4 Scientific papers indicate that there is good evidence to suggest that maize pollen cross-pollinates over much greater distances than 200 metres. Despite rapid deposition of pollen close to the source plant, the huge amounts produced (up to 25 million pollen grains per plant) result in significant amounts being airborne (125,000 grains) even when concentrations have dropped by 99.5% at 500 metres.⁵⁶

3.5 Contamination of maize seed lots with GM traits has already occurred in France where levels are reported to be over 1%.⁵⁷

3.6 Maize pollen is heavy compared with that of other wind pollinated species. However, scientific research is limited to distances of 800 metres from the crop and to a height of 4.6 metres above the ground.⁵⁸ The percentage of hybrid kernels in maize cobs at various distances from the source of pollen has been looked at by several researchers. This is relatively easy to do in maize because there are varieties that produce distinctively shaped or coloured kernels (black, blue and yellow for instance). Outcrossing of 0.21% at a distance of 800 metres has detected.⁵⁹ At 200 metres, these studies found average cross pollination rates of 1.6% and 0.5% with a maximum of 2.47% recorded in an individual sample. The same study found a rate of 6.1% at 75 metres.⁶⁰

3.7. Recent research findings published by Defra⁶¹ confirm that cross pollination can occur at levels above 0.1% beyond 200 metres from the source of the pollen. A level of 0.14% was detected at 650 metres. This is entirely consistent with the previous research findings and with anecdotal reports from the USA.⁶² From published research Professor Jean Emberlin of the National Pollen Research Unit stated in her evidence to the ChardonLL hearing in 2000 that: “The available data indicates that 200m is unlikely to be a satisfactory separation distance if 0.1%, or even 1%, are the maximum levels of acceptable contamination.”⁶³

3.8. As maize does not survive the winter in the UK there are no issues relating to contamination via volunteers. This also applies to wild relatives because there are none in the UK.

3.9. Based on the available evidence the SCIMAC separation distance for maize will not prevent contamination above 0.1%. The evidence suggests that a minimum separation distance of 2,000 metres between maize crops would be required to ensure that no GM presence could be detected in the non-GM crop.

⁵⁴ Treu R and Emberlin J 2000, *Pollen Dispersal in crop Maize (Zea Maize), Oilseed rape (Brassica napus ssp oleifera), Potatoes (Solanum tuberosum), Sugar beet (Beta vulgaris spp. vulgaris) and Wheat (Triticum aestivum) Evidence from Publications*. Soil Association Bristol.

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Friends of the Earth Europe, 2000. GM Contaminated maize confirmed in France. *FOEE Biotech Mail Out* Vol 6, Issue 4, 15 June 2000.

⁵⁸ Ibid.

⁵⁹ Reported in Treu and Emberlin op cit.

⁶⁰ http://www.foe.co.uk/resource/evidence/assessment_outcrossing_maize.pdf

⁶¹ http://www.defra.gov.uk/environment/gm/research/pdf/epg_1-5-138.pdf

⁶² Soil Association, 2002. *Seeds of Doubt. North American farmers' experiences of GM crops*. Soil Association Bristol.

⁶³ http://www.foe.co.uk/resource/evidence/assessment_outcrossing_maize.pdf

4. *If cross-contamination occurs, how will liability be established and responded to, who should be legally responsible and what should the limits of that responsibility be—and what role should Government play in determining these matters?*

4.1 The GM Contamination Bill makes it very clear that the liability for GM contamination of non GM food and crops (including organic) should lie strictly with the consent holders of the GM trait(s). This provision is designed to make it easy for parties affected by GM contamination to receive compensation for losses caused by GM contamination. It would then be up to the GM consent holder to seek damages from parties that they thought had caused the harm by failing to following the rules of growing and handling GM crops.

5. *What processes will be involved in determining how GM-free zones will be established at both a regional and local level and what role should Government play in this development?*

5.1 The EC has amended the GMO Deliberate Release Directive to allow member states to “take appropriate measures to avoid the unintended presence of GMO products in other products” (Article 26a of Directive 2001/18/EC).

5.2 This is not compulsory and leaves it open to Members States to take no action to prevent contamination or to adopt a voluntary approach. Friends of the Earth believes that the EC decision to allow many coexistence regimes to exist will inevitably mean that the EC will have to introduce legislation at a later date to harmonise the coexistence rules across the EU. We believe that the approach adopted by the EC may have been motivated by a desire to avoid a long and difficult legislative process to introduce coexistence regimes for the whole of the EU when faced with a complaint to the World Trade Organisation by the USA and its allies on the continued de facto moratorium on GM commercial applications in the EU.

5.3 Friends of the Earth rejects the voluntary approach to preventing GM contamination because of the very poor track record of voluntary approaches in agriculture (eg the voluntary NFU code to control straw burning which operated in the mid 1980s). We believe that the rules on contamination and liability should be debated by the full house of Commons and result in an Act of Parliament. To try and introduce such measures via a Statutory Instrument would ignore the importance of this issue and the deep concerns amongst the public about the “creeping contamination” by GM crops.

5.4 Under current EU legislation member states and regions cannot introduce blanket bans on GM crops. However Article 19(3)(c) of the GMO Deliberate Release Directive allows for conditions to be placed on marketing consents for GMOs preventing them being grown in particular geographical or ecological zones. This case by case approach has to be backed by evidence that the release of the particular GMO will be harmful. As part of Friends of the Earth’s GM free Britain campaign, 28 local authorities have voted to use Article 19 to try and ensure that their area remains free of GM (see Annex II for a list of councils with GM free policies)

5.5 In her statement of 9th March Mrs Beckett introduced the voluntary approach to setting up GM free zones.

5.5.1 The Government will also provide guidance to farmers interested in establishing voluntary GM-free zones in their areas, consistent with EU legislation.⁶⁴

5.6 The concept of a voluntary approach to establishing GM free zones emerged from an EC consultation process.

5.6.1 Voluntary agreements among farmers on zones of a single production type: Groups of farmers in a neighbourhood may achieve a significant reduction in the costs related to the segregation of GM and non-GM production types if they coordinate their production on the basis of voluntary agreements.⁶⁵

5.7 Thus the UK government and the EC have recognised that people do want to protect their crops and food from GM contamination. What they don’t seem to have done is to analyse how a voluntary approach delivers the outcome that most EU citizens support—a GM free environment and food. This suggests that the creation of voluntary GM-free zones will fail to provide the level of protection from GM contamination that is required to protect the environment, agricultural seeds and crops and meet public demand for GM-free food.

5.8 Friends of the Earth believes that a voluntary approach to setting up GM free zones is fraught with difficulties. In our recent contact with DEFRA officials it appeared to us that the concept of voluntary GM free zones has not been thought through by officials.

5.9 Some of the questions that require answers that seem not to have been addressed include:

⁶⁴ Statement by Margaret Beckett to the House of Commons Tuesday 8 March 2004.

⁶⁵ European Commission, 2003. COMMISSION RECOMMENDATION of 23 July 2003 on guidelines for the development of national strategies and best practices to ensure the coexistence of genetically modified crops with conventional and organic farming (notified under document number C(2003) 2624) (2003/556/EC).

5.9.1 Farmers would need to be able to buy seeds free of GM contamination to ensure that a voluntary zone was GM free. The latest EC proposals for seed purity would allow seeds contaminated between 0.3 and 0.7% to be sold as GM.⁶⁶ This proposal was drafted for all agriculture, not for farmers within voluntary GM-free zones. GM free zone farmers would have to pay for seed lots to be checked prior to sowing and would be unable to get a refund if they contained GM at or below the legal thresholds. The sowing of GM contaminated seed would mean the voluntary zone would fail as soon as the first crop was sown. Who would pay for seeds to be checked? What happens if one farmer cannot obtain GM free seed?

5.9.2 Setting boundaries for voluntary GM free zones would be crucial. How will boundaries be decided? Who will decide? What happens along national and regional borders if the neighbouring areas are not establishing GM-free zones? Will there be buffer zones? How will these be enforced in the absence of legislation?

5.9.3 What democratic process would be followed to decide on whether to establish a voluntary GM-free zone? What happens if nine farmers say “yes” and the tenth refuses to join and insists on growing GM crops?

5.9.4 To give such a scheme a fighting chance of success would farmers joining a voluntary GM-free zone have to sign a contract binding on all participants? Who will pay for individual contracts to be drawn up? Who will pay for the registration of the body establishing the GM-free zone? Most voluntary organisations have a legal constitution. Would voluntary GM free zones have a legal constitution? Will all the costs of establishing zones fall on GM free farmers?

5.9.5 How long will GM free zones be in operation? Who will decide on the length? What happens along boundaries if a neighbouring GM-free zone agreement is terminated before the agreed term expires?

5.9.6 What happens if a farm within a GM free zone is sold because of retirement, death of the owner or any other reason and the new owner refuses to join? If a new owner or tenant is refused permission to grow GM crops by the existing GM free contracts could they take legal action under the Human Rights Act or on the grounds of restraint of trade?

5.9.7 How will zones accommodate tenants and owner-occupiers? Will agreements be tied to the farmer (who plants the crops) or to the land?

5.9.8 If tenants want to join but the landlord refuses who will take precedence? And vice versa?

5.9.9 Does the GM free zone apply to imported animal feed as well as crops—bearing in mind that feed could be spilt and germinate to produce pollen which could pollinate crops in the zone?

5.9.10 What happens if a crop in a GM free zone is contaminated by pollen from outside the zone or feral GM populations are found- will the scheme continue? How will GM volunteer and feral plant control within the zone be carried out and paid for?

5.9.11 What happens if a member of the GM-free zone deliberately grows a GM crop? How will other members seek redress? Will the GMO consent holder be liable or the farmer? Will the biotech companies have to be party to GM voluntary agreements so they know who not to sell GM seed to around the country? Will there be a public register of GM free zones to assist with establishing buffer zones?

5.9.12 If a zone is established including farmers who have previously grown a GM crop (either experimentally or commercially) and contamination arises from volunteer or feral plants, who will be responsible for compensating losses that other members incur? Oilseed rape seed can be dormant in the soil for 7–10 years and beet seed for longer.

5.9.13 Will members of the zone be legally able to use that fact in labelling or advertising their products? How will GM free status be verified and by whom? Who will pay for verification and inspection?

5.9.14 Will there be a limit on the size of voluntary zones? Could they cover entire regions of countries? As they may be tacitly sanctioned by the UK government and EC will they be challengeable under WTO rules?

5.10 Friends of the Earth believes that the right to introduce GM free zones based on local economic, social, cultural and scientific conditions should be enshrined in EU law.

6. *What changes to legislation will be required to allow GM crops to be grown?*

6.1 No GM crops should be grown experimentally or commercially until the UK has introduced measures the same as those contained in the GM Contamination Bill drafted by Friends of the Earth and Greg Barker MP. Anything short of these minimum measures and procedures would be a threat to the livelihoods of farmers, the environment and health, and consumer and farmer choice.

⁶⁶ EC SCIENTIFIC COMMITTEE ON PLANTS SCP/GMO-SEED-CONT/002-FINAL 13 March 2001 Opinion of the Scientific Committee on Plants concerning the adventitious presence of GM seeds in conventional seeds. (Opinion adopted by the Committee on 7 March 2001).

7. *What will be the scope and scale of the 2006 re-licensing procedures?*

7.1 The GMO Deliberate Release Directive 2001/18 requires that marketing consents issued before 1998 will expire in 2006. This requirement would cover T25 maize. Under 2001/18 there is a tougher and extended risk assessment which requires evidence on the indirect and long term impacts of GMOs. The FSE for maize provided some evidence in respect of biodiversity but as the conventional herbicide regime using atrazine, simazine and cyanazine will be banned after 2005, new biodiversity data comparing GM weed control with the impact on wildlife of the herbicides which replace atrazine in conventional maize will be required.

7.2 All the requirements set out in annex 2 will have to be met before a further Marketing Consent is granted.

Friends of the Earth

April 2004

Annex II

GM-FREE COUNCILS LIST

Last updated: 30/04/2004

Those with * have included the Article 19 point in their resolutions ie are the strongest

ENGLAND

County councils:

Cornwall*	Lancashire
Cumbria*	Shropshire*
Dorset	Oxfordshire*
Devon	Staffordshire
Somerset	Gloucestershire*
Herefordshire	Hampshire*
Warwickshire*	Wiltshire

Unitary authorities:

Bath and North East Somerset	Bournemouth
Brighton and Hove City Council*	East Riding of Yorkshire *
Bristol City Council*	Wokingham*
South Gloucestershire*	Isle of Wight*
York City Council*	

Metropolitan districts

Newcastle	Dudley Metropolitan Borough council*
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London boroughs:

London Borough of Southwark*	London Borough of Havering*
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District councils:

South Hams (Devon)*	Penwith (SW)
South Somerset*	Ryedale*
Chesterfield	Colchester*
Wealden (E Sussex)	Gravesham*
Mid Devon*	West Dorset
Weymouth	Lewes*
West Lindsey	North Dorset*

National Parks Authorities

Lake District National Parks Authority*	North York Moors
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Town/Parish councils:

Bridport (Dorset)	Edenthorpe Parish Council
Norton Radstock (within Bath & NE Somerset)	Corscombe, Halstock & District (Cornwall)
Goole (East Yorkshire)	

SCOTLAND

Highland Council

West Lothian*

WALES

County Councils

Caerphilly
Carmarthenshire
Ceredigion
Conwy
Denbighshire*

Flintshire
Pembrokeshire
Powys
Swansea

Community Councils

The following have adopted or are supporting GM free policies:

Blaenhonddan
Brecon Town Council
Coedffranc Community Council
Glyn Ceiriog Community Council
Felinfach Community Council
Gorslas Community Council
Halkyn Community Council
Haverfordwest Town Council
Llanarthne Community Council
Llanbedrog Community Council
Llanddaniel-Fab Community Council
Llandegla Community Council
Llandyfaelog Community Council

Llangattock Vibon Avel Community Council
Llangernyw Community Council
Llangynwyd Middle Community Council
Llanefydd Community Council
Machynlleth Community Council
Magor with Undy Community Council
Milford Haven Town Council
Neyland Town Council
Porthmadog Town Council
Rhyl Town Council
St Davids City Council
Ystrad Fflur Community Council

Friends of the Earth

April 2004