

Consultation on proposals for managing the coexistence of GM, conventional and organic crops

Overview

The decision on how to manage the coexistence of genetically modified (GM), conventional and organic crops is primarily a policy decision driven by social, political and economic considerations. We are aware of no evidence that genetically modified crops pose a real risk to human health. Also, there is currently little evidence that movement of introduced genes from cultivated crops to weed and wild species is likely to have significant ecological or agricultural implications. However further work should be undertaken in these areas. Given that a policy decision has been taken to avoid mixing crop types, we believe that the best scientific evidence should be used to inform the coexistence regimes and that these should be periodically reviewed as the evidence base expands.

Introduction

The Society has been actively involved in discussions about GM crops, and has produced a number of reports on this subject (Royal Society 1998; 2000; 2002; 2003). In our 2002 report, 'Genetically modified plants for food use and human health' we concluded that given the very long history of consuming DNA from a wide variety of sources, it is very unlikely that the additional ingestion of GM DNA has an effect on human health. However we recognise the requirement by the Department for Food, Environment and Rural Affairs (Defra) to develop a framework for the separation of GM, conventional and organic crops in the UK and the need to base this on the best available scientific evidence.

We have limited our response to areas of the consultation where scientific evidence has been used to inform the development of the proposed coexistence policy: separation distances and detection.

Separation distances

It is important to realise that it is impossible to completely avoid movement of genes amongst crop types if viable pollen is produced in the field. The issue is to prevent movement above a threshold set as a policy decision. There is general agreement in the scientific literature that there needs to be separation between GM, conventional and organic crops if cross-pollination between crops is to be reduced. However determining the distances required to achieve a certain level of non-contamination from the available scientific data is complex due to a range of factors such as synchronicity of flowering, pollen flow (by pollinators or on the wind) and the size of source and recipient crops. It must also be recognised that some low frequency, long-distance dispersal can be involved in the persistence of some species. To inform this consultation, Defra commissioned a report from NIAB (Norris and Sweet 2002) which recommended separation distances for oilseed rape, maize and sugar beet. However this report only deals with the adventitious presence of genetically modified DNA due to transfer of pollen from a single neighbouring field. Specifically, it does not take into account any GM material that may already be present in a given field due to the presence of GM volunteers, seed spilt from farm machinery, presence of GM within a seed lot or presence of wild relatives within a field. We are unable to comment on the proposed separation distances for individual crops and other associated issues without a detailed review of the underlying science; a review which we encourage Defra to consider.

Detection

In our 1998 report, 'Genetically modified plants for food use' we recommended that scientifically validated testing methods would have to be developed and agreed, in order for enforcement of maximum levels of GM material to be carried out in a reliable, repeatable and practical basis. At that time, we were concerned

that no rigorous tests existed that were able to detect the presence of GM material at very low levels (such as those proposed for the threshold for adventitious presence). Recent advances in detection technologies, as well as more sophisticated GM constructs, means that specific primers can be designed for the transformed genetic material rather than detecting genetic material that is present in naturally occurring micro organisms. We recommend that Defra review the current state of testing as this will impact on the ability of authorities to ensure robust regulation that is practical and enforceable.

References

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