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RSPB criteria for assessing new GM crops

The RSPB does not object in principle to the genetic modification (GM) of crop plants. However to be acceptable any such technology must be compatible with a sustainable agricultural system. We recommend that each new Genetically Modified Organism (GMO) should pass the following tests before it is approved for commercial use.

1. The GMO in question provides an effective solution to an identified need. Considering the risks and uncertainties involved in this relatively new technology, and the high costs of developing a GMO as opposed to investing in improving existing practices, we do not support the creation of markets for a GMO simply to generate profits for the biotech company that has produced it.

2. This GMO has passed a rigorous risk assessment which considers all of the following:
   a. *Its effects on biodiversity, including indirect impacts through changes to farming practices.* A given organism might be affected via multiple routes. For example, a type of GM wheat might have several effects on a bird. The bird could eat spilt GM grain directly, which might have effects on its health. The GM crop might repel insects, so there would be less food available for the bird's chicks. The crop might require more fertiliser than its conventional equivalent, causing local water pollution with knock-on effects for wildlife, and so on.
   b. *Gene flow and its consequences*. There are multiple routes by which modified genes can enter the environment including pollen and seed dispersal; distribution of plant material by wind, water or animals (including humans), and horizontal gene transfer. For example, pollen from a herbicide-tolerant GM crop might be transferred to weeds around the field, creating a strain of herbicide-tolerant weeds which might be very hard to get rid of.
   c. *Selection for herbicide-tolerant weeds.* Even without gene transfer, prolonged cultivation of GM crops tolerant to a single (or multiple) herbicides can lead to selective pressure on weeds, eventually producing superweeds that are tolerant to those herbicides. This may result in increased rather than decreased use of complex mixtures of herbicides by farmers to control weeds, with consequent knock-on effects on wildlife.
   d. *Persistence, weediness and invasiveness of the GMO itself*. Will the GM crop spread into surrounding land, and if it does how can it be removed?
   e. *The cumulative risk from this GMO alongside other factors.* As described above, there might be multiple risks to the environment from one GMO. These risks will be on top of risks from other GMOs and other factors already present in the environment. Risks interact with each other, so the total risk cannot be calculated by 'adding up' separate risk assessments. For example an insect-resistant crop and a herbicide-tolerant crop might each be approved as low-risk, but when grown near each other could result in the emergence of a superweed that kills insects and cannot be controlled using herbicide.
   f. *Effects on soil function*. For example there is evidence of some GM crops suppressing beneficial soil fungi.

g. *Human health impacts,* including through exposure to this GMO or its products (e.g. insecticide produced by the plant); nutritional changes in the GM crop compared to its conventional counterpart; and presence of allergens that might only affect a small proportion of the population. The effects of altered farming practices on human health, such as increased herbicide use and higher residues in crops and food, must also be considered.

3. *The farming systems and the specific management requirements associated with this GMO have a smaller environmental impact than a) the practices they replace and b) alternative solutions that could address the identified problem, in terms of resource use, carbon footprint, reliance on non-renewable resources, biodiversity and pollution.* So for example, switching from non-GM wheat to an insect-resistant GM wheat that requires extra water and fertiliser would not be acceptable. More sustainable ways of managing the insect problem, for example changing the crop rotation or planting wheat in smaller blocks, should be explored instead.

4. All data about this GMO and any associated pesticide, and the risk assessments, are in the public domain and independent scientists are permitted to carry out and publish their own research. The latter requires that GM seed developer companies must make the necessary research materials available to the scientists without restriction: namely, the GM seed and the seed of its non-GM comparator. All GM seed supplied for research purposes that are engineered to tolerate one or more herbicides must be grown with applications of those herbicides according to normal farming practice.

5. Ongoing empirical monitoring of the environmental, human and animal health and agronomic impacts of this GMO is carried out and all data are published. Such monitoring should be a condition of approval for commercial use of each GMO.

6. This GMO will be used with the full knowledge and consent of those affected by it. This means that stringent traceability and accurate labelling rules should apply to GM crops and products so that farmers and their customers can differentiate between GM and non-GM. Removing this choice could undermine confidence in UK agriculture as a whole.

7. The chance of gene transfer from this GMO to the non-GM crops of neighbouring farms is reduced as far as possible. Gene transfer cannot be ruled out entirely, so any cost from the escape of genes from GM crops should be borne by the 'contaminator' and not those 'contaminated' - i.e. the polluter pays. Economic impacts could include threatening the livelihood of farmers (such as organically certified growers) who receive premiums for growing GM-free food.

The RSPB would oppose the commercial use of any GMO that does not meet all of these requirements.