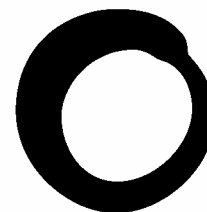


Briefing Note



**Friends of
the Earth**

Herbicide use and GM crops

In 2001, crops modified to be tolerant to the application of certain herbicides accounted for 77 per cent of the global area under genetically modified (GM) cultivation¹. If GM crops get the commercial go-ahead in the UK, herbicide tolerant crops will be the first to be grown. For the biotechnology industry they offer substantial opportunities for increasing profits, as they own both the GM seed and the herbicide to which it is tolerant. Any claims of environmental benefits from the reduced use of herbicides must be viewed in the light of the industry's drive to sell as much herbicide as possible.

What is herbicide tolerance?

In the UK all the GM crops close to gaining commercial approval, and those used in the farm scale trials, are herbicide tolerant. The crops are genetically modified to withstand the application of powerful herbicides using genes from soil bacteria.

The herbicides to which the GM crops are tolerant are 'broad spectrum' weedkillers, which means they can be sprayed over the entire field, killing all plants apart from the GM crop. For many farmers a 'clean field' free of weeds is a sign of good farming practice. GM herbicide tolerant crops will allow farmers total control of weeds in maize, beet and oilseed rape, removing potential food sources for wildlife living in the field and field margins.

There is concern that widespread growing of herbicide tolerant crops will add to the decline of farmland birds. These concerns have led the Government's wildlife advisor, English Nature, to state that the "*untested introduction of GM crops could be the final blow for such species as the skylark, corn bunting and the linnet, as the seeds and insects on which they feed disappear.*"²

Claims for GM herbicide tolerant crops

The biotech industry claims that GM herbicide tolerant (GMHT) crops will bring environmental benefits by reducing the use of chemicals in farming, particularly the older, more toxic herbicides. It claims farmers will need to spray their fields less often - perhaps only once - in the course of a rotation. They will also be able to spray at different times, leaving weeds available for wildlife at particularly crucial times.

By encouraging the practice of 'no-till', ie minimum ploughing prior to sowing, it is also claimed that GMHT crops can contribute to reduction in soil erosion. It is claimed that farmers will benefit from simplified weed management, thereby saving time and money.

The herbicides

Crops have been modified for use with two commonly used herbicides: glufosinate ammonium and glyphosate. Both are broad spectrum weedkillers and have been marketed as environmentally safe.

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In comparison to some older herbicides, they may appear relatively benign, but research is increasingly suggesting that they are still harmful to our health and the environment³. In North America, resistance to the herbicide glyphosate is creating new weed problems for farmers⁴.

Environmental and health impacts

- Loss of farmland biodiversity
- Increased herbicide residues in food and animal feed, and water courses
- Spread of herbicide tolerant genes to related weed species and neighbouring crops
- GMHT crops appearing as weeds in non-GM crops
- Increased risk of weeds developing resistance to the herbicide

Glyphosate

Commonly known as Roundup, glyphosate is made by Monsanto and is the world's best selling herbicide. The patent on Roundup expired in 2000, meaning that other companies are free to make it. In order to maintain its market share, Monsanto developed "*Roundup Ready*" crops, including GM sugar and fodder beet. Glyphosate is toxic to humans and animals, causing eye and skin irritation as well as being linked to reproductive problems⁵. It is also toxic to beneficial organisms in the soil and on crops. Despite this, perhaps as a result of pressure from industry, the UK Government raised the legal maximum level of glyphosate residues in food from 0.1 mg/kg to 20 mg/kg⁶.

Glufosinate

Glufosinate is marketed by Aventis/Bayer under the brand name Liberty, to be used on GM oilseed rape and fodder maize crops. It is described as 'mobile and persistent', and no use was permitted between October and February to reduce run-off into water courses. Despite this, permission to use glufosinate on GM oilseed rape over the winter has been given for the Farm Scale Trials. When Friends of the Earth requested to see the safety information relating to this approval, Aventis/Bayer objected and took legal action against the Government in an attempt to prevent release of the data.

Will GM crops reduce herbicide use?

Although it is claimed that GM crops will reduce herbicide use the evidence from North America does not support this. Figures from the US show that in fact herbicide use is on the increase⁷. The promise that one spray per rotation would be enough is proving to be false as weeds develop resistance to the herbicides. In the case of glufosinate tolerant maize, farmers in the US are using the older, toxic chemicals as well because glufosinate performs so badly on its own.⁸ It is also doubtful whether the gains in biodiversity from leaving weeds available to wildlife would ever be acceptable in commercial practice, as crops such as maize are very sensitive to weed competition and can quickly lose yield if weeds are not controlled⁹.

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