

For farmers deciding whether or not to plant genetically modified (GM) crops, there are a number of issues to take into account including their marketability. This briefing considers what is known about the current market for GM foods, public opposition, the demands it makes on growers, and how it has affected farmers already using the technology.

### **Commercial growing of GM crops**

GM crops have been one of (if not the) quickest new agricultural technologies to be adopted by farmers in the countries where they are commercially available. From 1996 to 1999 there was a 23-fold increase in the area of land growing GM crops (98.6 million acres in 1999). Most of these crops are grown in the USA (nearly 70%), with Argentina and Canada accounting for another 10%. The rest have been grown in China, Australia, South Africa, Mexico, Spain, France, Portugal, Romania and the Ukraine. The dominant crop has been Monsanto's Roundup Ready soybean (made tolerant to the herbicide glyphosate), but GM maize, cotton, oilseed rape, potato, squash and papaya have also been grown<sup>1</sup>.

### **The basis of public opposition in Europe**

Alongside this phenomenal growth in the use of GM crops, there has been widespread rejection of this new food technology by consumers. Public concern in the EU was fuelled by the introduction of Monsanto's herbicide tolerant soybean into 60% of processed foods and the use of an antibiotic resistance gene in Novartis's GM maize in 1997. A study in 1996<sup>2</sup> found that people had an "*unease at inadequately restrained meddling with nature, and a questioning of intentions*". People also drew analogies with the use of chemicals and industrial systems of food production - additives and BSE being the most common examples - and many felt it was a technology that was moving too far, too fast. Mistrust in the ability of regulators and industry to manage the technology safely continues to be an important factor in public opposition.

### **The response of food producers in Europe**

Since 1998, most of the UK supermarkets and food processors have removed GM ingredients from their products. In recent months, there have also been moves to remove GM ingredients from animal feed. Iceland and Marks & Spencers have both committed to non-GM feeding of all livestock and already have GM-free poultry as do McDonald's and Sun Valley Chickens. Tesco have stated that its target is the complete elimination of GM ingredients from animal feed. Safeway already have non-GM fed chicken in their stores and, whilst having no commitment to excluding all GM feed, they state they will increase their range of GM-free meat products.

This story has been repeated across Europe as more and more consumers have rejected GM foods. The EU has placed a *de facto* moratorium on the

commercialisation of new GM crop varieties under the EU directive 90/220/EEC until a revised version is in place. Austria has banned a number of GM varieties. A consortium of European supermarkets including Sainsbury's, Marks & Spencer, Carrefour (France), Superquinn (Ireland), Migros (Switzerland), Delhaiz (Belgium) and Effelunga (Italy) was formed in March 1999 to source non-GM ingredients jointly. A month later, Spain's largest supermarket chain, Pryca, banned GM ingredients<sup>3</sup>.

Some European supermarkets are also joining the move away from GM animal feed. A Reuters press release in May announced that:

*"French poultry firm Groupe Doux has imported at least 20,000 tonnes of non-GM soybeans from Brazil, while a pool of pork and poultry producers led by supermarket chain Carrefour signed a deal in February to buy 180,000 tonnes of non-GM Brazilian soybeans"* <sup>4</sup>.

Ironically, Novartis, one of the world's leading producers of GM crops, has recently announced that it too will stop using GM ingredients in the foods it produces<sup>5</sup>.

### Public concern elsewhere

The uproar about GM foods in the UK and Europe is now being reflected elsewhere and food producers are responding in a similar way. In the USA, many fast food outlets - including McDonald's and Burger King - have asked their suppliers to stop growing Monsanto's NewLeaf Potato variety (genetically modified to be toxic to the Colorado potato beetle) for their chips. Similarly, Proctor and Gamble have told suppliers that they will not accept potato flakes made from the NewLeaf variety for their Pringle crisps<sup>6</sup>.

Elsewhere, Argentina is having problems selling its GM maize to neighboring Brazil, which currently has a ban on the crop. Because Europe will not accept the maize, Argentina is apparently being forced to go to countries such as Iran, Egypt, Chile, and Mauritius, but is still looking for buyers for 2 million tons of the GM maize. Meanwhile, Brazil is trying to source 4 million tons of non-GM maize, which it will probably have to obtain from the USA, the only country that has sufficient capacity<sup>7</sup>.

In May, in one of the most striking responses so far, Japan launched the world's first GM-free

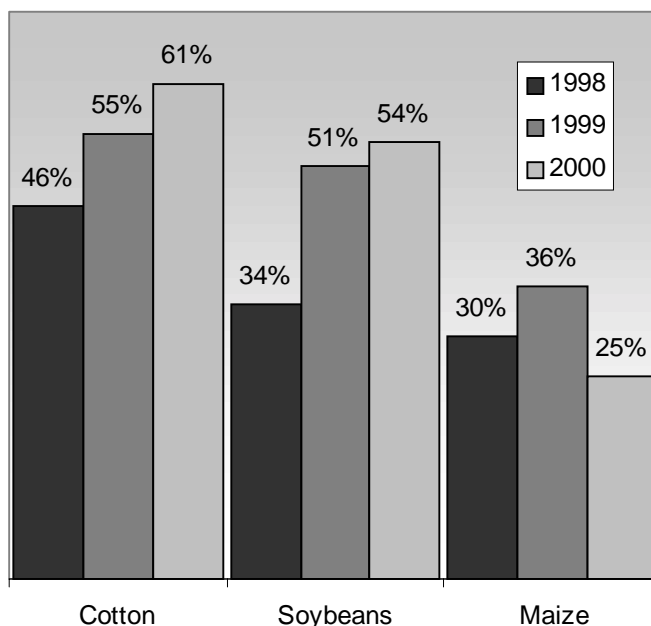
futures market for soybeans as a response to consumer concerns. Japan consumes 5 million tons of soya each year, most of which is imported from the USA<sup>8</sup>. They will have compulsory labelling of GM food by April 2001.

### Has the GM controversy affected planting levels in the USA?

This global collapse of the market for GM crops has created many problems for farmers, especially in the USA. 36% of soybean and 20% of maize grown in the USA will be exported in the 2000 growing season<sup>9</sup>, most of it intended for the EU and Japan. However, in 1998-99, EU imports of US soya dropped to a quarter of the 1997-98 levels, a situation attributable in part to public opposition to GM soya<sup>10</sup>. As both Europe and Japan require segregation, farmers have become responsible for keeping their GM and non-GM crops separate, including cleaning machinery between use on GM and non-GM varieties. US farmers are also being told that they must select varieties depending on whether they will be grown for export or not.

There has been much debate over whether or not the 2000 planting season would see farmers turning away from GM crops in the USA. The USDA's initial survey of planting intentions indicated that GM crop acreage would drop<sup>11</sup>. However, a later survey carried out by USDA in June 2000 showed this drop was less than expected<sup>12</sup>. Compared to 1999 acreages, there has been little difference in the growing of GM

**Table 1: GM crops planted in the USA (% of total crops planted)** <sup>12, 13, 14</sup>



soybeans and a small increase in GM cotton acreage, but GM maize showed a significant decline. An American Corn Grower Association (ACGA) survey confirmed the reduction in the area of GM maize being grown by its members. The main reason given for this was concern over selling the crop<sup>11</sup>.

The ACGA has recently launched the 'Farmer Choice-Customer First' programme<sup>15</sup> to provide farmers with advice about the problems of segregating and finding markets for GM crops. The Association has been angry that government and industry have only promoted the benefits of these crops whilst not being honest about the problems facing farmers.

## **Does a market exist in the UK for GM crops?**

### ***Oilseed rape***

Food producers - including the supermarkets and multi-national food corporations - have gone to great lengths to reformulate products to be GM-free. Oilseed rape oil has been the main alternative to soybean oil and the presence of a GM-free area in Europe has been crucial to success. At the present time, it seems unlikely that the attitudes of food producers will change since there is no consumer advantage to be gained from oils derived from GM crops. As a result, finding a market for GM oilseed rape may prove difficult and segregation will be essential.

### ***Sugar Beet***

Because all sugar beet in the UK is grown under contract to British Sugar, they have a unique role in affecting the varieties that are grown. British Sugar have already expressed concern about accidental contamination of conventional beet from the field trials currently taking place and claim to have many checks in place to ensure their supplies remain GM-free. In their statement of March 1999, British Sugar said they had no plans to introduce GM sugar beet varieties now or in the future. In a more recent letter to GeneWatch UK, they said:

*"British Sugar is not involved in any biotechnology research. We do not deem it appropriate to consider biotechnology as a means to developing new traits in sugar beet while the environmental consequences are as yet unproven and consumer resistance is strong."*<sup>16</sup>

### ***Fodder beet and forage maize for animal feed***

There is increasing pressure from the supermarkets and other food producers for farmers to use non-GM ingredients in their animal feed. A group of farmers near Burton-on-Trent are trying to raise £25 million for a GM-free milk processing plant that would serve 120-135 herds<sup>17</sup>. Therefore, the market for animals fed on GM feed is rather uncertain at present and, at the very least, there are likely to be increased demands for information about feed composition.

## **Segregation and identity preservation**

It is clear from the way in which the market is developing that when GM crops are grown they will have to be handled separately from non-GM crops. SCIMAC, the Supply Chain Initiative on Modified Agricultural Crops, is an industry body formed to oversee the introduction of GM crops and establish a code of practice for maintaining segregation, identity preservation and customer choice. However, the recommended separation distances between GM and conventional crops are under review and could be more than doubled (see GeneWatch UK Farmers Information Series, No.2). This could make the growing of GM oilseed rape extremely difficult for most farmers or, conversely, make the growing of uncontaminated conventional oilseed rape very difficult.

Farmers will need to make arrangements with their neighbours (and perhaps their neighbours' neighbours) about what crops can be grown. For spring planted crops, farmers are expected to inform neighbouring farmers in writing and resolve differences by 1st March, and by 1st August for autumn planted crops. SCIMAC also recommends actions such as "*cleaning drills thoroughly after use [for planting GM seed] before leaving the field to prevent the introduction of herbicide tolerant seed into unplanned areas of the farm*"<sup>18</sup>. Similar controls apply to combine harvesters and other farm equipment. This kind of tight control is more reminiscent of the controls on chemical use than for seed.

In contrast, farmers wanting to ensure their seeds are GM-free prior to sowing may have to resort to private testing. There are now GM contamination tests available from Reading Scientific Services and soon from NIAB at a cost of £110 and £50 per sample respectively<sup>19</sup>. Ensuring the crop harvest is GM-free before sale may add additional costs.

## Conclusions

There is little evidence for a market for GM crops in Europe at present and the global market looks increasingly fragile. The negative image that has developed around GM crops is making demands on how the crops are farmed more stringent. Separation distances are increasing and demands for identity preservation will add to the workload for farmers. How the market evolves, together with the performance of GM crops (see GeneWatch UK Farmers Information Series, No.2), will influence the difficult decision farmers will have to make if GM crops become commercially available in the UK.

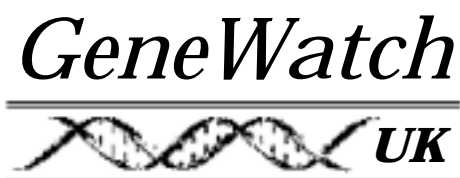
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