

## Plant genomes sequenced

### ...*Arabidopsis*

The first complete sequence of a plant genome has been published – namely the sequence of the genetic model plant *Arabidopsis thaliana* (*Nature* 2000, **408**, 796–815). *Arabidopsis* was chosen as a genetic model because its genome is one of the smallest and seemingly one of the simplest among flowering plants. Other plant genomes will follow [e.g. rice (see below) and maize], and eventually researchers will be able to identify important genes in crop plants for breeding or genetic engineering programmes. For more information see [http://www.nature.com/genomics/papers/a\\_thaliana.html](http://www.nature.com/genomics/papers/a_thaliana.html)

### ...rice

Syngenta and Myriad Genetics announced in late January 2001 that they had finished the sequencing of the genetic code for rice – the first crop plant to be completed. The two companies had beaten a publicly funded group of scientists working in Japan, China, Korea, Europe and the USA (see T Sasaki, *Pesticide Outlook*, 1999, **10**(3), 114). Action Aid, a hunger charity, was alarmed by the announcement as there are currently 239 patents granted on the crop, which is the staple diet of much of the world's poorest people. Syngenta says that it will sell data to seed and other companies and make the information available to research scientists through contracts, but that it will not charge those working with subsistence farmers. The companies do not plan to patent the genes but they will cover their uses. For more information see <http://www.myriad.com/> or <http://www.syngenta.com/>

## Gametocides in hybrid production

Gametocides are chemicals used to sterilise the pollen of the mother line in the production of hybrid crops. Only two are approved in the EU: Genesis from Monsanto and Crosoir from Hybrinova. In northern Europe their use is only permitted in France. Monsanto now intends to sell Genesis and its interests in present wheat hybrids, ostensibly because of indifferent profitability of the enterprise. However, the product is on conditional approval until 2003, has high application rates and soil

residue problems. Monsanto intends to stay in hybrid wheat production, but perhaps through gene technology. Hybrinova's problems are different; Crosoir is environmentally benign but less effective as a steriliser. Field trials in the UK with current wheat hybrids show gametocides to be unsuitable for the climate. For more information see [www.monsanto.com](http://www.monsanto.com) and [www.hybrinova.com](http://www.hybrinova.com)

## Aventis halts research on GM sugar beet because of cross-pollination

Aventis has stopped research on a genetically modified glufosinate-resistant sugar beet after discovering that some plants had also developed resistance to glyphosate through accidental cross pollination with another sugar beet crop. This is the first time in Europe that involuntary cross-pollination has occurred between two different GM crops. The glufosinate-tolerant sugar beet was developed for Aventis by KWS, Germany. The EU's standing committee for seed and propagation material is holding discussions on how much cross-pollination should be allowed from approved and non-approved GM seed varieties. The levels currently being considered are 0.5% for approved GM varieties and zero amounts of non-approved seeds. If no degree of mixing is permitted then crops will have to be separated by unprecedented distances which, according to Novartis Seeds, Sweden, would be impractical and very expensive. For more information see [www.aventis.com](http://www.aventis.com)

## Transgenic corn contamination saga

The reverberations from the discovery some weeks ago of unapproved genetically modified corn in taco shells continue. The companies involved are taking action to prevent any similar occurrence and federal agencies are intensifying efforts to make sure the corn does not contaminate any further human food products. The US Department of Agriculture is to buy almost all the corn grown this year from Aventis CropScience's StarLink seed and sell it to animal feedlots or ethanol makers. The corn is approved for animal feed, but not for human consumption, because there are

concerns it may cause allergic reactions. It is engineered with a gene to produce a Bt-endotoxin (Cry9C). The protein is stable to heat and digestion – two of the characteristics of food allergens. The USDA's repurchase of the corn is aimed at preventing more StarLink entering the human food supply. It is also seeking to reassure foreign grain customers, like Japan, that shipments will not contain any StarLink. The FDA is testing more processed food for the presence of StarLink.

## California high court takes up Bt dispute

The California Supreme Court is to hear an appeal filed by Dow AgroSciences subsidiary Mycogen in a dispute over the licensing of *Bacillus thuringiensis* genes. The dispute relates to a 1989 technology arrangement between Monsanto and Lubrizol Genetics, which Mycogen acquired in 1992. Mycogen sued after Monsanto delayed Mycogen's access to the genes in the agreement for 4 years. A California jury awarded Mycogen damages of \$175 M in 1998, but an appeals court overturned the verdict against Monsanto. Mycogen then filed to have the damage award reinstated.

## Snippets

...France's highest administrative court has upheld the French government's approval in 1998 for the sale and planting of three types of GM corn containing Syngenta's Novartis Event 176.

...Monsanto says it has developed genetically modified potatoes containing an antifungal gene present in alfalfa. Researchers isolated an alfalfa peptide sequence known as defensin, that inhibits the growth of a key potato fungal pathogen. The company says defensin genes have potential for fungal control in commercial crops.

...Demegen has been awarded a US patent for a method of modifying plants to produce lytic peptides. Crops producing these peptides show resistance to gram-negative bacteria as well as fungi causing a number of foliar and crown diseases. The technology is likely to benefit US farmers whose crops are affected by citrus canker, Pierce's disease and late blight. See [www.demegen.com](http://www.demegen.com).