

GM in Europe, it's not what you think.

MEPs are looking at the European Commission's proposals on the freedom for Member States to decide on the cultivation of genetically modified crops. The Commission's proposals don't suit companies and some environmental campaigners but they could benefit research, which is just about managing to survive the drain of skills and resources from Europe. The proposals would end the current illegal policy deadlock that creates huge uncertainty about future applications of GM techniques for everyone, from basic researchers to farmers to national pest quarantine authorities.

GM has been continually presented as a corporate issue but this simplistic portrayal ignores its use in publicly funded research across Europe – as a more precise and reliable way to breed plants to tackle some of our most urgent farming needs and environmental threats.

The current discussion, and other upcoming debates in Europe including which genomic techniques should be classified as GM, makes it all the more important that discussions aren't based on misinformation.

If you don't know about this public-sector work, here are some examples (please contact us and we can put you in touch with the scientific institutes to learn more about any of them):

Researchers with France's Institut National de la Recherche Agronomique (INRA) have inserted virus-resistant genes into vines for field trials in Alsace. Court-noué or the fan-leaf virus causes an estimated €800 million in losses every year to French winemakers.

Researchers at the Sainsbury Laboratory in Norwich, UK have inserted genes from wild potatoes with natural resistance to potato blight into the potato varieties that European consumers prefer. These could help tackle the fungus-like disease, which causes annual worldwide losses of €3 billion and forces farmers to spray pesticides up to 25 times a season.

Eric van de Weg's research team at Wageningen University in the Netherlands is using gene silencing to switch off the genes in apples that create the proteins which some people are allergic to. (Three-quarters of people allergic to a protein found in birch pollen are also allergic to apples with a similar protein.)

Agricultural scientists at the Umeå Plant Science Center in Sweden have produced a winter sugar beet in a public-private partnership. This would extend the harvesting season saving European farmers from the high expenditure on equipment that is needed for a short, intensive harvest period.

Researchers at the John Innes Centre in the UK are working to identify the genes that cause frost-resistance in other plants so that they can insert them into staple crops. This is in response to climate change: Prolonged frosts are threatening staple crops such as wheat, barley and oilseed rape, which are adapted to grow in mild regions.

Italian, Spanish and UK scientists, led by Cathie Martin and Eugenio Butelli, are collaborating to use genes from snapdragons to create purple tomatoes which produce anthocyanin throughout the fruit. So far, these tomatoes have been found to have a longer shelf-life and to extend the lives of cancer-prone mice.

A study led by the Spanish National Research Council (CSIC) has developed wheat that is potentially suitable for most gluten intolerances. The wheat is very low in gliadin, the gluten proteins responsible for celiac disease, which was made possible through genetic modification.

Researchers at the Institute of Experimental Botany and Palacký University in Czech Republic, in a public-private partnership with a local agricultural company, have used GM techniques to increase the amount of phytase in barley. Phytase-enriched feed is easier for animals to digest and means there is less phosphorous in livestock faeces - which can pollute the soil.

Swedish researchers led by Torgny Näsholm at the Swedish University of Agricultural Sciences are using GM to develop amino acid transporters in crops that make them better at taking up organic fertilisers than weeds are.

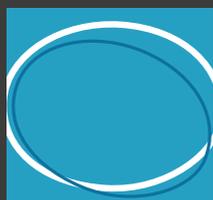
Professor Huw Jones and researchers at Rothamsted Research, UK have identified genes that cause plants to produce a smell similar to that aphids use to alert one another of dangers. When these genes are inserted into wheat, the plants have been shown to repel aphids in the lab. Farmers in the UK are losing £80m to £120m worth of cereal crops every year to aphids and are spending millions more on carbon intensive pesticides to prevent infestations.

Eddo Rugini at the University of Tuscia, Italy started research in 1982 to find varieties of olive trees, cherry trees and kiwifruit vines that are resistant to pathogens, mainly fungi and bacteria. This would reduce pesticide use, as well as producing shorter trees that would ease cultivation in certain Italian landscapes.

Researchers at the Czech Crop Research Institute in Prague genetically modified plum trees to explore resistance to the plum pox virus. The virus is an IIAII quarantine pest in the EU (Directive 2000/29/EC) but is proving difficult to contain because it is spread by aphids. It is now present in Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Moldova, Germany, Serbia, Greece, Hungary, Italy, Lithuania, Luxembourg and Montenegro, among others.

Professor Johnathan Napier at Rothamsted Research, UK identified the genes that allow fish to synthesize fatty acids and inserted them into oilseed plants. Fish are our primary source of omega-3s and are in decline because of overfishing and loss of habitat. These crops potentially provide a sustainable, land-based source of omega-3 oils – and could produce a large enough volume to meet future demands while protecting fish stocks.

Researchers from Universitat de Lleida in Spain and Johann Wolfgang Goethe Universität in Germany led by Paul Christou inserted genes from rice, potatoes, lettuce and tomatoes into corn to create a multivitamin corn with greater amounts of beta-carotene, vitamin C and folate. This corn could provide a nutritionally complete cereal for people whose diet is high in cereals that lack essential vitamins and minerals.



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