

## CROP BIOTECH UPDATE

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A weekly summary of world developments in agri-biotech for developing countries, produced by the Global Knowledge Center on Crop Biotechnology, International Service for the Acquisition of Agri-biotech Applications SEAsiaCenter (ISAAA), and AgBiotechNet  
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### GERMANY TO APPROVE GM CROPS

Germany is all set to come out with a law to regulate the cultivation of genetically modified (GM) crops. This was announced by Renate Kuenast, Agriculture and Consumer Protection Minister of Germany and a member of the pro-environmentalist Greens party. In a press conference, she said that "with or without a law, biotechnology is on the market."

The law which is expected to be approved by the Cabinet in February, is intended to put into action existing European Union directives on what crops can be grown, where and under what conditions, and on issues like labeling. "With this law we will allow the coexistence of GM and non GM crops, provide liability rules and give consumers a choice," Kuenast said.

The law will set clear rules and responsibilities on growing GM crops and offer protection to farmers whose non-GM produce might be affected by accidental contamination. It will include measures to prevent cross pollination and allow farmers to claim damages if their non-GM crop is cross-pollinated by GM plants nearby.

For more information visit <http://www.gene.ch/genet/2004/Jan/msg00047.html>.

## GM SCIENCE REVIEW FINAL REPORT

The GM Science Review Panel's second report into GM crops and food which was recently published now completes the independent review by the United Kingdom of current scientific knowledge on GM crops and foods. The GM Science Review was requested by the Secretary of State for Environment Food and Rural Affairs with the agreement of Ministers in the devolved administrations.

The report clarified a number of points but did not alter the first report's original findings. The first report found no scientific case for ruling out all GM crops and their products. However, it emphasized that GM is not a single homogeneous technology and its applications should be considered on a case-by-case basis.

The second phase of the expert panel's work considered the report of the public debate, new scientific developments since the first report including the Farm Scale Evaluation (FSE) results, and feedback on the first report.

The second report of the GM Science Review found that:

- \* none of the new research published since the first Report significantly altered the earlier conclusions;

- \* the FSEs were of high scientific caliber. The panel found that if GM herbicide tolerant crops are managed as in the FSEs, a significant reduction would be expected in weeds with GMHT beet and spring oilseed rape, whereas the opposite would be found with corn. These effects arise from the herbicides and are not a direct consequence of the GM process. The different findings for different GM crops reinforced the conclusion of the first Science Review that GM crops must be assessed on a case-by-case basis.

The full Science Review (including the first and second report), full list of panel members, and more information is available at <http://www.gmsciencedebate.org.uk>.

## TOP 10 BIOTECHNOLOGIES TO IMPROVE GLOBAL HEALTH

Researchers at the University of Toronto's Joint Centre for Bioethics (JCB) conducted a study to identify 10 genomic and other biotechnologies that have the potential to improve global health within five to ten years. This study was conducted specifically to aid the developing and poorer countries. The study entitled "Top 10 Biotechnologies for Improving Global Health" represents the collective opinion of 28 international scientists and experts involved in genome-related technology and global health issues.

The top 10 list includes technologies that address a wide range of developing world problems such as: infectious diseases, non-communicable diseases, malnutrition, and environmental contamination. They include:

- \* Molecular technologies for affordable, simple diagnosis of infectious diseases

- \* Recombinant technologies to develop vaccines against infectious diseases

- \* Technologies for more efficient drug and vaccine delivery systems
- \* Technologies for environmental improvement (sanitation, clean water, bioremediation)
- \* Sequencing pathogen genomes to understand their biology and to identify new antimicrobials
- \* Female-controlled protection against sexually transmitted diseases, both with and without contraceptive effect
- \* Bioinformatics to identify drug targets and to examine pathogen-host interactions
- \* Genetically modified (GM) crops with increased nutrients to counter specific deficiencies
- \* Recombinant technology to make therapeutic products (e.g. insulin, interferons) more affordable
- \* Combinatorial chemistry for drug discovery

The World Health Organization (WHO) estimates that by 2010 around 8 million lives per year could be saved in developing countries if interventions against infectious diseases and nutritional deficiencies could be made. The use of GM crops was also identified to address the concern on nutritional deficiency.

The full article on this issue can be seen at [http://www.utoronto.ca/jcb/\\_genomics/pdfs/top10.pdf](http://www.utoronto.ca/jcb/_genomics/pdfs/top10.pdf).

#### MONSANTO PULLS OUT GM SOYBEAN IN ARGENTINA

Agricultural seed company Monsanto announced that it will end soybean seed sales in Argentina due to piracy concerns, and the increased use of illegal biotech soy seeds. Associated Press reported that the company is unable to recoup its investments because of a huge black market for genetically modified seeds. Unless the government combats illegal seed sales, Monsanto Argentina said it will not sell new-and-improved soy seeds or carry out research to develop new varieties tailored to local conditions.

Argentina is the third largest soy-producing country and derives significant economic boost from soybean production. It is estimated that 50 to 60 percent of all soybean seeds in Argentina are bought on the black market.

#### MANDATORY & VOLUNTARY LABELING OF GM FOOD

Mandatory labeling of genetically modified (GM) foods provide food processors and retailers a choice, however it does not facilitate consumer choice. This type of labeling is seen as a market barrier due to the rational decisions made by food processors. As a result, GM food products have disappeared from the

retail shelves and have, so far, failed to provide consumers a choice. Colin A. Carter and Guillaume P. Gruere of the University of California-Davis share this insight in their article entitled "Mandatory Labeling of Genetically Modified Foods: Does it Really Provide Consumer Choice?"

Carter and Gruere added that voluntary labeling, on the other hand, provides consumers a choice - as long as the willingness to pay for non-GM products exceeds the corresponding price premium. The authors further stated that some economists perceive voluntary labeling to be more efficient since it allows consumers to choose the quality of the products. It also allows them to choose between buying only non-GM food, and buying both conventional and GM food.

Read the full article at <http://www.agbioforum.org/v6n12/v6n12a13-carter.htm>.

#### AGBIOTECH RESEARCH BUILDS K-BASED ECONOMY

Plant biotechnology is helping to create a vibrant knowledge-based economy throughout the United States. This was a finding of a study by C. Ford Runge, professor of economics at the University of Minnesota.

The study, "The economic status and performance of plant biotechnology in 2003: Adoption, research and development in the United States provides a view of biotechnology's value at the farm level and beyond the farm gate. It notes that additional jobs, income and investment in the agrifood chain and public and private research community have been created.

"It's clear why farmers have been adopting these crops: managerial efficiencies and increased profits per acre," said Runge. "The most compelling evidence for me as an economist of the value of biotech crops is the preference of farmers to plant these crops year after year after year," he said. The report predicts that the "plant biotech sector will grow wider and deeper in its activities and applications in the years to come."

Download the full report at <http://www.apec.umn.edu/faculty/frunge/plantbiotech.pdf>. For additional information email C. Ford Runge at [frunge@apec.umn.edu](mailto:frunge@apec.umn.edu).

#### SCIENTISTS URGE "SCIENCE-BASED APPROACH" FOR UK GM CROPS

More than 150 scientists are calling on the United Kingdom government to base their decisions on "science-based policies that foster the development of demonstrated safe technologies with significant environmental and economic benefits in the UK." The scientists signed a letter delivered to Prime Minister Tony Blair noting "the positive impact that biotechnology is contributing to conventional agricultural practices in many parts of the world."

The letter to the Prime Minister outlines the scientists' concerns that the government's science-based reviews of new technologies, including crops enhanced

through agricultural biotechnology, are being adversely impacted by politics. According to the letter's authors, "It is distressing to us to see the impacts that anti-science efforts in the UK have had on the development of excellent basic research into new technologies, as well as those engaged in it."

The letter and full list of signers can be seen at:  
<http://www.agbioworld.org/openletterUK.html>

#### INTEGRATED APPROACH FOR BIOCONFINEMENT OF GMOS

Developers of genetically engineered organisms should consider how biological techniques ("bioconfinement") such as induced sterility can prevent transgenic animals and plants from escaping into natural ecosystems and breeding or competing with their wild relatives, or passing engineered traits to other species. This is the gist of a report from the US National Academies' National Research Council entitled "Biological Confinement of Genetically Engineered Organisms."

"Deciding whether and how to confine a genetically engineered organism cannot be an afterthought," said committee chair T. Kent Kirk, professor emeritus, department of bacteriology, University of Wisconsin, Madison. "Confinement won't be warranted in most cases, but when it is, worst-case scenarios and their probabilities should be considered. He also noted that developing new biological confinement methods will further minimize risks and boost the public's confidence in biotechnology.

Since no single bioconfinement method is likely to be 100% effective, the committee recommended that developers of GMOs use more than one method to lower the chance of a failure. The committee added that scientists need to do more research to understand how well specific methods work, and that planned combinations of confinement methods will need to be tested.

The report is available at <http://www.nap.edu/books/0309090857/html>.

#### WHAT MAKES FLOWERS BLOOM?

Two researches were conducted by Sibum Sung and Richard M. Amasino of the Department of Biochemistry, University of Wisconsin-Madison, and Caroline Dean and colleagues at the Department of Cell and Developmental Biology, John Innes Centre. These researches separately investigated flower development at the molecular level, and aimed at uncovering the mechanism that prevents the model plant *Arabidopsis thaliana* from blooming until spring.

Dean and colleagues studied the VRN1 and VRN2 genes found in the Flowering Locus C (FLC) gene - a protein product that blocks flowering by repressing the numerous genes required for flower development. Sung and Amasino, on the other hand, identified another gene, the VIN3.

These three genes are controlled by the Flowering Locus C (FLC) gene, and are among the numerous genes required for plant flowering. The FLC gene also controls when plants should flower, specifically: the length of day, the plant's

age, and requirements for vernalization (a process employed by the plants during an extended cold period). During cold seasons, the high levels of expression of the FLC gene are lowered, and stays at this low level even after warm weather returns.

Sung and Amasino identified the gene that is involved in the measurement of the duration of cold exposure and in the establishment of the vernalized state. They concluded that vernalization induces changes in histone proteins (components of chromatin) in the vicinity of the FLC gene, and that VRN1, VRN2 and VIN3 mediate these changes. They also discovered that VIN3 is necessary to deacetylate H3 during the cold seasons, while VRN1 and VRN2 are required afterwards to maintain the silenced state.

For more information, email Richard M. Amasino at [amasino@biochem.wisc.edu](mailto:amasino@biochem.wisc.edu), and Caroline Dean at [caroline.dean@bbsrc.ac.uk](mailto:caroline.dean@bbsrc.ac.uk). Their full researches can also be downloaded at [http://www.nature.com/cgi-taf/DynaPage.taf?file=/NATURE/journal/v427/n6970/full/nature02195\\_fs.html](http://www.nature.com/cgi-taf/DynaPage.taf?file=/NATURE/journal/v427/n6970/full/nature02195_fs.html) and at [http://www.nature.com/cgi-taf/DynaPage.taf?file=/NATURE/journal/v427/n6970/full/nature02269\\_fs.html](http://www.nature.com/cgi-taf/DynaPage.taf?file=/NATURE/journal/v427/n6970/full/nature02269_fs.html).

#### ANNOUNCEMENTS

##### BIODIVERSITY CONFERENCE IN MALAYSIA

The 7th meeting of the Conference of the Parties to the Convention on Biological Diversity and the first meeting of the Conference of the Parties will be held from February 9 to 27, 2004 in Kuala Lumpur, Malaysia. For more information go to <http://www.biodiv.org>.

##### CROP SCIENCE CONGRESS

"New directions for a diverse planet" is the theme of the 4th International Crop Science Congress to be held at the Brisbane Convention and Exhibition Centre, Queensland, Australia from September 26 to October 1, 2004. Deadline for poster paper submission is February 27, 2004. For more information visit their website at <http://www.crops2004.com>.

##### CARTAGENA PROTOCOL REPORT

"The Cartagena Protocol on Biosafety: A record of the negotiations" is now available. It seeks to record the evolution of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity from the initial provision in Article 19(3) of the Convention itself through the final adoption of the text of the Protocol in January 2000. The 140-page paper was developed by the Foundation for International Environmental Law and Development (FIELD). See <http://www.biodiv.org/doc/publications/bs-brochure-03-en.pdf> (1.2 MB) or contact [secretariat@biodiv.org](mailto:secretariat@biodiv.org) for more information and copies of the report.

##### NEW K-SHEET

The "Nuffield Council: Explore GM Crops for Developing Countries" is the latest K (Knowledge) Sheet of the International Service for the Acquisition of Agri-Biotech Applications-Global Knowledge Center on Crop Biotechnology. This K-Sheet summarizes the Nuffield Council on Bioethics' views on the possible costs,

benefits and risks associated with GM crops in developing countries. Download the article at <http://www.isaaa.org/kc>.

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