CROP BIOTECH UPDATE

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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June 4, 2004

DOCUMENT REMINDER
NEW K-SHEET
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NEW POCKET K: 'OMICS' SCIENCES
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FRANCE APPROVES NEW GM FIELD TRIALS

Early this week, France approved new field trials of genetically modified (GM) crops. According to the farm ministry, as cited by Reuters, the field experiments will include eight types of GM maize and is part of the government’s biotech research program. These field trials aim to observe the “behavior” of the new strains in actual field conditions. Located mostly in the south-west of

the country, these field trials were resumed after the first public consultation, via the internet.

The French government previously conducted an internet consultation with the public before approving the field trial requests. The government was said to receive at least 2,700 emails from the public, 18 of which were specifically concerned about the 2004 crop trial program.

Further, this decision of the French government was also made weeks after the European Union (EU) lifted its five-year ban on approvals for biotech food varieties by clearing imports of a new type of canned sweetcorn.

Read the news release at
http://www.forbes.com/markets/newswire/2004/06/01/rtr1390905.html.

USDA CALLS FOR REGULATORY RESPONSIBILITY FOR GM CROPS

Incidents like the StarLink corn highlights the fact that “we needed to really understand, better define the appropriate role of government regulatory systems to make sure that we didn't undermine the consumer confidence in our food supply.” This was stressed by United States Department of Agriculture (USDA) Secretary Ann M. Veneman to The Advisory Committee on Biotechnology in Washington, DC.

Calling these incidents as wake-up calls, Veneman said that the USDA had taken the lead in bringing an inter-agency process to determine the appropriate regulatory responsibility necessary for “the diverse nature of biotech that we're dealing with today.”

Veneman noted that the USDA has taken several steps to build regulations, enhance permit systems for plant-made pharmaceuticals and industrials, increase inspections at the sites, and train personnel involved in field tests. She announced that in the next few weeks, efforts will be done to bolster transparency and the regulatory system.

In the same meeting, Veneman announced the Norman Borlaug International Science and Technology Fellows Program. This program will fund scientific training and exchanges at U.S. universities, USDA and its agencies, research centers, nonprofit institutions and private companies. She projects as many as 100 Borlaug fellows a year.

For the full transcription of her speech, visit
http://www.usda.gov/Newsroom/0220.04.html.

NEW GUIDELINES FOR RISK ASSESSMENT OF LMOS

Some 130 countries have adopted an international standard on how to assess the risks of living modified organisms (LMOs) to plants. The Food and Agriculture Organization (FAO) recently came out with the guidelines after the release of its annual report “The State of Food and Agriculture 2003-04” which calls for

adequate biosafety regulations. The guidelines also cover other LMOs that may be harmful to plants, such as insects, fungi and bacteria.

"Internationally accepted guidelines will help countries to reduce the risks of releasing LMOs that are weedy and could seriously harm our crop and plant ecosystems," said Niek van der Graaff, Chief of the FAO Plant Protection Service.

FAO explained that a country may use the guidelines to determine which LMOs pose a threat and, if necessary, can subsequently prohibit or restrict their import and domestic use. Developing countries can now use the same risk analysis criteria as developed countries.

For more information contact Erwin Northoff, FAO Information Officer, at erwin.northoff@fao.org. For the FAO release, visit http://www.fao.org/newsroom/en/news/2004/43684/index.html.

NEW CSPI REPORT ON BIOPHARMING

"When non-food crops like tobacco can be used for biopharming, it is unnecessarily risky to use crops like corn or rice without a much stronger and more transparent regulatory system. It would be a public relations catastrophe for both the biotechnology industry and the food industry if even minuscule amounts of vaccines or other drugs ended up in (the) cereal," says Gregory Jaffe, director, biotechnology project, at the Center for Science in the Public Interest (CSPI), Washington DC, USA, and author of the report entitled "Sowing Secrecy: The Biotech Industry, USDA, and America's Secret Pharm Belt."

According to Jaffe, food crops should not be used for biopharming unless protection could be assured through a strong regulatory system. He added that the US Department of Agriculture (USDA), and the Food and Drug Administration (FDA) should conduct the necessary environmental and food-safety risk analyses before permits are issued, or crops are approved to produce substances commercially. Jaffe also suggested that the entire permit process should be open and transparent.

At present, the USDA has received 16 new applications for biopharming permits in the past 12 months. About two-thirds of those applications involved a food crop such as corn, rice or barley. Six of these permit applications involved genetically engineered (GE) corn, two involved GE barley, and one permit application each involved GE rice, safflower, and Indian mustard. However, it was observed that details about the proposed crop acreage nor the trial sites were not disclosed.

The full report can be downloaded at http://cspinet.org/new/pdf/pharmareport.pdf. While, the CSPI website is at www.cspinet.org.

GREATER BIOTECH OPPORTUNITIES FOR NEW EU MEMBERS

Industry observers believe that the addition of 10 countries from central and eastern Europe into the European Union will create a wider market for biotechnology companies. In an article in the journal Nature, Sabine Louet noted that the EU enlargement will bring more opportunities and greater visibility to partner with a wider network.

This development is expected to favor smaller companies as established companies have already set up subsidiaries in the United States, Canada and western Europe to offset the problem of not being internationally recognized due to the perception that they are on the "other side of the iron curtain."

Despite the many advantages of joining the EU, companies in accession countries see the compliance with Brussels' bureaucracy as a major drawback Nevertheless, industry insiders noted that the enlargement process will hopefully bring more venture capitalist investors to their countries. In addition, these countries will now be in a position to exploit advantages that are linked to their location.

Among the 10 new countries are Slovakia, Hungary, and Estonia who are into biotechnology research.

Read the full article online at http://www.nature.com/cgi-taf/DynaPage.taf?file=/nbt/journal/v22/n5/full/nbt0504-493.html#top.

GENE TO REGULATE PROGRAMMED CELL DEATH IN PLANT EMBRYO

Researchers at the Swedish University of Agricultural Sciences have succeeded in isolating a novel gene that regulates cell death in plant embryos. They hope the new knowledge about how programmed cell death is regulated can be exploited to increase production and bolster resistance in plants.

Working with the Durham University, England, and the Karolinska Institute, Stockholm, the team discovered programmed cell death in plant embryos and were able to identify the first gene that regulates this cell death. Programmed cell death is a natural and vital process during the life cycle of multicellular organisms. Among other purposes, it regulates the form of organisms during certain developmental stages and removes superfluous or damaged cells.

The discovery is reported in the journal Current Biology in an article entitled "Metacaspase-dependent programmed cell death is essential for plant embryogenesis." For more information contact Carin Wrange of the Swedish Research Council at Carin.Wrange@info.slu.se.

NEW RICE GENETIC STOCK FROM ARS

The rice genetic stock, called Guichao 2 eui, is the latest discovery by the Agricultural Research Service (ARS), the chief scientific research agency of the US Department of Agriculture (USDA). This discovery marks the first time a gene

for a key trait, called elongated uppermost internode (eui), has been found in an indica rice – a type of rice grown worldwide.

The "eui" trait is said to be beneficial for better pollen transfer in hybrid rice seed production because it produces taller male line panicles (the plant's flowering heads). Likewise, this trait can also be used to raise the female panicles and make them more available for pollination.

The Guichao 2 eui is the 11th addition to the new rice collection repository, called “Genetic Stocks-Oryza” (GSOR) found at the ARS Dale Bumpers National Rice Research Center in Stuttgart, Arkansas, USA. This genetic stock collection helps preserve germplasm, and has characteristics which breeders can use to create new lines.

Seeds are available upon request through the ARS Germplasm Resources Information Network at: http://www.ars-grin.gov/npgs/ or through the GSOR repository at http://www.dbnrrc.ars.usda.gov/gsor/.

THE ‘OMICS’ SCIENCES

The ‘omics’ sciences applied in biotechnology are genomics, proteomics, and metabolomics. Genomics is a new science that deals with the discovery and noting of all the sequences in the entire genome of a particular organism. In crop agriculture, the main purpose of the application of genomics is to gain a better understanding of the whole genome of plants to be able to identify important genes that may be targeted to produce more nutritious and safe food.

On the other hand, the goal of proteomics is to understand how the structure and function of proteins allow them to do what they do, what they interact with, and how they contribute to life processes. Proteomics can be applied to map protein modification to determine the difference between a wild type and a genetically modified organism (GMO). It is also used to study protein-protein interactions involved in plant defense reactions.

Metabolomics is one of the newest ‘omics’ sciences, and is aimed at determining a sample’s profile of compounds at a specified time under specific environmental condition. It is used to determine the differences between the levels of thousands of molecules between healthy and diseased plants. The technology can also be used to determine the nutritional difference between traditional and genetically
Modified (GM) crops, and in identifying plant defense metabolites.

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