CROPBIOTECH 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)

October 13, 2006

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GLOBAL

FOOD SHORTAGES THREATEN 40 COUNTRIES, SAYS FAO REPORT

The Food and Agriculture Organization (FAO)'s report "Crop Prospects and Food Situation" says that 40 countries face a food crisis with Darfur in Sudan in a precarious food supply situation that may worsen with security problems.

The world cereal harvest in 2006, the FAO report warns, has deteriorated due to exceptionally hot and dry weather in countries like Australia, Argentina, and Brazil. South Asia is also experiencing drier-than-normal weathers that may affect second paddy crops. FAO's forecast for cereal production is about 1.6 percent less than that of the 2005 level. A global concern will thus be the declining stock of food and inadequacy of supplies to meet demand amidst surging world prices, the report noted.

For more information, visit
http://www.fao.org/newsroom/en/news/2006/1000416/index.html

MORE INVESTMENT NEEDED IN AGRICULTURE, SAYS FAO

Although agriculture plays a central role in combating poverty and malnutrition in developing countries, the Food and Agriculture Organization (FAO) warns that foreign investment in this sector continues to decline. From a total of over US$9 billion per year in the early 1980s, it fell to less than US$5 billion in the late 1990s. Meanwhile, more than 850 million people around the world remain undernourished. For this reason, the theme selected for 2006 World Food Day, celebrated on October 16, is "Investing in agriculture for food security".

Most of the world's farmers are small-scale farmers, often themselves with inadequate access to food. "Increasing the volume of public investment in agriculture is of absolute necessity" said Jacques Diouf, FAO's Director-General. Diouf noted that while increased development assistance, public investment and debt relief are key elements, equal importance should be given to private sector investment.

For more information visit: http://www.fao.org/wfd/2006/index.asp?lang=en and http://www.fao.org/wfd/2006/dgmessage.asp.

IRRI PRESENTS NEW VISION FOR COMBATING POVERTY

Food security will continue to be a major strategy for the Philippine-based International Rice Research Institute (IRRI) and for 2007 to 2015, its first goal will be to reduce poverty among rice farmers and consumers. Other goals will focus on environmental sustainability, health and nutrition, access to information and knowledge, and supporting efforts to develop new and improved rice varieties. IRRI's Director General Dr. Robert S. Zeigler announced the new Strategic Plan during the opening of the International Rice Congress in New Delhi, India.

"Unless many Asian nations can get their rural or rice-based regions growing economically, their national development efforts could stall completely. Asia needs to invest more in agriculture and especially agricultural research – without new ideas and technologies, their rice industries will stagnate and hold back the rest of the country", Zeigler noted.

Zeigler added that IRRI is embarking on several projects that include efforts to develop rice varieties that would help poor farmers cope with climate change and drought and to completely reconfigure the plant's photosynthetic system.

See the article on Zeigler's announcement at http://www.cgiar.org/newsroom/releases/news.asp?idnews=496.

PERFORMANCE PLANTS INC, SYNGENTA DEVELOP DROUGHT-TOLERANT CROPS

Performance Plants Inc. has entered into a licensing agreement with Syngenta Seeds for development of drought tolerant corn and soybeans seeds using Performance Plants' Yield Protection Technology (YPT). YPT minimizes water loss in crops during drought conditions by stimulating early closure of stomata (pores) in leaves preventing wilting. The YPT trait is now moving into field trials in corn, soybean, turf and ornamentals.

"The field results indicate that commercial corn and soybeans can be developed that will withstand the effects of drought, significantly improve water use efficiency, and generate powerful boosts in crop performance and yields." said David Dennis, President and Chief Executive Officer, Performance Plants.

Read the complete press release at
http://www.performanceplants.com/documents/PPI_Syngenta_Release_10_12_06.pdf

ADDING VALUE TO CASSAVA

According to the Food and Agriculture Organization (FAO), many developing countries could strengthen their rural economies by converting more cassava, a relatively cheap raw material, into high-value starches. "Compared to starches derived from most other plants, it has greater clarity and viscosity, and it's very stable in acidic food products. It also has excellent properties for use in non-food products, such as pharmaceuticals and thermobioplastics," said Danilo Mejia, an agricultural engineer with FAO's Agricultural Support Systems Division.

The key to cassava's future in global and domestic starch markets, FAO says, will be improvements in efficiency and quality, and a reduction in production costs. For a model of successful cassava starch industry development, African and Latin American countries should turn to Thailand, the world's top producer. The country now uses about 50 percent of its annual cassava root production to extract some two million tons of starch. Half of it goes to domestic food and non-food industries, while the rest are exported, increasingly in the form of higher-value modified starch for specialized applications. The country is also exploring the use of starch as raw material for production of bioethanol.

For the complete article, the readers can access:
http://www.fao.org/WAICENT/FAOINFO/AGRICULT/magazine/0610sp1.htm

IPGRI CHANGES NAME

The International Plant Genetic Resources Institute will be known as “Biodiversity International” or “Biodiversity” from December 2006. Emile Frison, IPGRI’s Director General said in a statement that this move will reflect the current organization’s strategy “which focuses on improving people’s lives through biodiversity research”. The organization is the world's largest international institute dedicated to the conservation and use of plant genetic resources.

For more details visit: http://www.ipgri.cgiar.org/institute/NewName.htm.

AFRICA

KENYA GETS NATIONAL BIOTECHNOLOGY POLICY

The government of Kenya has adopted a comprehensive national policy to guide the research, development and trade in biotechnology products, the National Biotechnology Development Policy 2006, which comes into effect immediately. According to Kenyan laws, a Policy, unlike a Bill, does not have to go through parliamentary debate. The policy has been the result of several years of debate involving all major biotechnology stakeholders and relevant government departments.

Noah Wekesa, Kenyan Minister for Science and Technology, said the policy is one of the measures the government is putting in place to chart its vision on biotechnology development and application in the country. “This policy will provide those developing and applying the technology a clear framework in which to operate in order to address fears on their safety,” saidWekesa. She added that the government is determined to explore the use of biotechnology for the benefit of Kenyans, and to ensure that the country becomes a key participant in the international biotechnology enterprise within a decade.

The approval and adoption of the policy now clears the way for fast-tracking the enactment of biosafety and biotechnology laws to enable the country to be compliant with international instruments governing trade in biotechnology products.

For more information contact Kenya National Biosafety Office at telefax 318249. Visit their website at http://:www.biosafetykenya.co.ke.

BIOTECH CROP PLANTINGS INCREASE IN SOUTH AFRICA

Genetically modified (GM) crops are now widely planted in South Africa with biotech cotton accounting for approximately 92 percent of total production. Of the total soybean acreage in the country, 59 percent was GM, while biotech corn accounted for 29 percent. GM corn plantings increased from 16.6 percent in 2005 to 29.4 percent in 2006. White corn varieties, a staple food for majority of South Africans, saw an increase from 8.6 percent to 28.8 percent. These are highlights of a report on biotechnology in South Africa released by the US Department of Agriculture’s Foreign Agricultural Service.

The 22-page report examines the use, development, and regulation of agricultural biotechnology in the country. “South Africa can play a vital role as other countries in Africa develop biotechnology policies because it has the most resources, such as scientific expertise and financial support, as well as a

progressive regulatory system. Without the South African Government's leadership role in this region, the progress in agricultural biotechnology, or for that matter any technology, can be stifled by anti-technology groups", the report noted.

Although no new commercial crop is expected soon, South African scientists are doing research on new varieties of GM corn, melon, millet, lupins, soybeans, strawberries, sugar cane, cotton, apples, tomatoes, sorghum, wheat, potatoes and grapes.

See the full report at http://www.fas.usda.gov/gainfiles/200608/146208636.pdf

A GOOD HARVEST NOT END TO CYCLE OF MALNUTRITION, WARNS WFP

Despite predictions of generally improved harvests in the Sahel region this year, the United Nations World Food Program (WFP) warned that localized crop failures persist that contribute directly to malnutrition. The Sahel is a semi-arid belt that comprises parts of Mauritania, Senegal, Mali, Burkina Faso, Chad and Niger in West Africa.

"Malnutrition does not simply disappear with the arrival of the new harvest and return the next lean season. WFP and our partners are fighting a battle that cannot be won over a few weeks or months", said Jean-Jacques Graisse, WFP senior deputy executive director.

According to a report by the aid agency Oxfam, while spending on food and humanitarian aid has increased, aid for agricultural production within sub-Saharan Africa dropped by 43 percent between 1990-92 and 2000-02. Oxfam has criticized the international community's approach to hunger, saying that poverty, not hunger, is the main cause of food emergencies, and that food aid should "not be viewed as the inevitable default response to food insecurity".

With reports from:
http://www.irinnews.org/report.asp?ReportID=55892&SelectRegion=West_Africa&SelectCountry=WEST_AFRICA

NEW DESERT LOCUST THREAT IN NORTH, WEST AFRICA

The United Nations Food and Agricultural Organization (FAO) warns of another possible locust invasion of North and West Africa. Adults of the crop-devouring insects were recently detected in northwestern Mauritania, and neighboring

countries have already been warned by the FAO Locust Group to increase the level of alert against a potential Desert Locust threat.

In 2004, a Desert Locust upsurge caused heavy damage to agriculture in several parts of West Africa. By summer 2005, the upsurge has ended, thanks to unfavorable weather and control operations. This time, FAO intends to test a new control method which employs a natural fungus, called *Metarhizium anisopliae*. The fungus infects locust hoppers in such a way that they stop feeding and die in one to three weeks. According to FAO's Assistant Director-General Alexander Müller, “the current situation is an opportunity to field test environmentally friendly alternatives to conventional pesticides.”

Access the news release at http://www.fao.org/newsroom/en/news/2006/1000418/index.html and http://www.un.org/apps/news/story.asp?NewsID=20208&Cr=Africa&Cr1=Locust. For the most up-to-date information about the Desert Locust situation, visit the Locust Watch web site: http://www.fao.org/ag/locusts.

THE AMERICAS

NEW PEW INITIATIVE/NASDA WORKSHOP REPORT ON “PEACEFUL COEXISTENCE”

The Pew Initiative on Food and Biotechnology and the National Association of State Departments of Agriculture (NASDA) held in Boulder, US, on March 2006, a workshop aimed at identifying potential options for advancing “peaceful coexistence” of conventional, biotech and organic crops in the market place. Participants to the workshop included representatives from state and federal governments; GE, conventional, and organic farmers; the European Union, seed companies, food processing and marketing companies, academia and the biotech industry.

Highlights of the report include:

• Growers of conventional and organic crops have at times been denied market access when unable to meet market specifications.

• The lack of standardized, internationally accepted marketing standards, testing methodologies, and protocols pose a significant challenge to the operation of agricultural marketing chains.

• Overcoming the challenges and capitalizing on the opportunities provided by fostering “peaceful coexistence” will require a combination of market, research, farmer-to-farmer communication and Federal, state and local government efforts.

To read the report “Peaceful Coexistence among Growers of: Genetically Engineered, Conventional and Organic Crops”, visit http://pewagbiotech.org/events/0301.

US$1.1 MILLION AWARDED FOR RESEARCH ON INVASIVE PESTS

The United States Department of Agriculture (USDA) has announced US$1.1 million have been granted to universities in Arizona, Michigan, Minnesota, Montana, Ohio, Texas, and Washington to study the economic implications of preventing, controlling, or eradicating invasive pests and diseases.

“The control of invasive plant pests and foreign animal diseases is a major priority in protecting our environment and agricultural sector,” said US Agriculture Secretary Mike Johanns. “This research will help identify effective strategies for preventing the introduction of invasive species and managing their presence.”

More information about the projects in: http://www.ers.usda.gov/briefing/invasivespecies. With reports from: http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?contentidonly=true&contentid=2006/10/0401.xml

ON THE HORIZON: AFLATOXIN-FREE NUTS

Researchers at the USDA-ARS Western Regional Research Center discovered a way to almost eliminate aflatoxins in nuts, such as almond and walnuts. Aflatoxin is a cancer-causing compound produced in nuts by the fungus *Aspergillus flavus*.

Bruce Campbell and his colleagues determined that certain antioxidants can prevent the fungus from producing aflatoxins. One among the antioxidants is caffeic acid, a natural ingredient in coffee beans and a chemical compound found in many crops. The researchers observed that by applying caffeic acid to walnuts and pistachio extracts, the level of aflatoxin produced by the fungus was reduced by 95%. The results of their study may have implications in controlling aflatoxin using the antioxidants in tree nut orchards.

For the complete story please visit http://www.ars.usda.gov/is/AR/archive/oct06/nuts1006.htm

ASIA AND THE PACIFIC

AUSTRALIA APPROVES 24 GM COTTON LINES

Australia's Office of the Gene Technology Regulator approved Monsanto Australia Ltd.'s application for the limited and controlled release of about 24 genetically modified (GM) cotton lines with different genes that are expected to enhance water use efficiency. The release involves preliminary (proof of concept) research covering a maximum total area of 20 hectares on up to 10 sites during each of the two summer growing seasons of 2006/07 and 2007/08 in New South Wales and Queensland.

Details of the decision are available online at http://www.ogtr.gov.au

MALAYSIA'S BIOTECH COUNCIL APPROVES BIOSAFETY ACT

Malaysia's National Biosafety-Biotechnology Council approved the Biosafety Act in a meeting chaired by Prime Minister Dato' Seri Abdullah Ahmad Badawi, and attended by cabinet members who discussed the implications of the Act on the country's biotechnology industry. The Biosafety Act is expected to complete the National Biotechnology Policy which aims to regulate the use of genetically modified organisms. It is expected to be discussed in Parliament this November.

In related developments, the proposal to set up a National Biosafety Board will also be tackled in Parliament next year. The Board will be responsible for approving the import and export of biological products. In addition, a Genetic Modification Advisory Committee composed of scientists will be formed to assist the Board in implementing policies.

Email Mahaletchumy Arujanan of the Malaysian Biotechnology Information Centre (MABIC) at maha@bic.org.my for additional information. Visit MABIC's website at http://www.bic.org.my for other updates on Malaysia's biotechnology activities.

INDIAN PM URGES SCIENTISTS TO TAP BIOTECH POTENTIAL IN RICE

While inaugurating the second International Rice Congress (IRC) 2006 in New Delhi Prime Minister Manmohan Singh said "owing to the ecological, social and cultural diversity of rice based production systems, we can utilize rice cultivation to address concerns relating to food security, nutrition, poverty, food safety, and environmental and natural resource sustainability, across the world. What we need is the further application of science and technology to develop the rice

economies." He enumerated examples of "golden rice" and "iron rich rice", and of their potential to address deficiency of vitamin A and micronutrients.

PM has called for scientist's community to address a number of profound social, economic and ethical questions that are associated with biotechnology.

Prime Ministers' Speech at IRC 2006:
http://www.icar.org.in/irc2006/ircmedia/PMSpeech.doc
Press release for inaugural address: http://www.icar.org.in/irc2006/9102006.doc

KHUSH RECEIVES SWAMINATHAN AWARD FOR LEADERSHIP IN AGRICULTURE

Gurdev Singh Khush, a rice breeder from the International Rice Research Institute (IRRI), has been awarded the Swaminathan Award for Leadership in Agriculture by the Prime Minister of India Manmohan Singh during the International Rice Congress 2006 in New Delhi. Khush has been the main force behind the development of more than 300 high yielding rice varieties that played significant role towards achieving the 'Green Revolution'.

The Citation for Gurdev S Khush is available at:
http://www.icar.org.in/irc2006/ircmedia/citation.pdf
Press release for inaugural address: http://www.icar.org.in/irc2006/9102006.doc

INDIA, NEW PHONE-BASED AGRIC INFO SERVICE FOR FARMERS

"Soochna Se Samadhan Sewa" is a new phone-based information service to provide agricultural and veterinary advice to farmers now available in selected villages in North India. The service, established by OneWorld in collaboration with BT and Cisco, is part of a community project in support of one of the UN Millennium Development Goals on digital inclusion, aimed at helping developing countries to become part of the digital society.

Farmers can access the service by dialing to register their query. The system stores the call on a web-based application, and knowledge workers seek answers from experts and provide these back to the farmers, in the local language, within 24 hours. The content and agriculture information is being provided by the Indian Society of Agribusiness Professionals (ISAP). It is expected that this initiative will supplement ongoing research and funding initiatives aimed at raising agricultural productivity and improving farmers' livelihood.

Read the full press release at:
http://southasia.oneworld.net/article/view/140355/1/1893

EUROPE

EFSA WRAPS UP 2nd STAGE PESTICIDE PEER REVIEW PROCESS

The European Food Safety Authority (EFSA) has completed its work on the 2nd stage of the EU-wide peer review of active substances used in plant protection products (pesticides), and issued conclusions on 50 substances that have been peer reviewed for safety by experts from the EU Member States and EFSA. Based on these conclusions, the European Commission and Member States must now decide in the next six months whether to continue the use of these substances in the EU.

"EFSA is at the center of a truly European process involving experts from all the EU Member States, pooling their knowledge to improve the quality of risk assessment in the interests of consumers and operators", said EFSA Director of Science, Dr. Herm Koëter.

Read the complete press release at http://www.efsa.europa.eu/en/press_room/press_release/pr_praper-2nd-stage.html. The conclusions on all 50 active substances including background documents are available on the EFSA website at http://www.efsa.europa.eu/en/science/praper/conclusions.html.

RESEARCH

RNA INTERFERENCE (RNAi) TO KEEP PESTS AT BAY

The root knot and cyst nematodes are pests that cause significant damage to important cereals, vegetables, and legumes in most parts of the world. There is no effective and environmentally safe method available to prevent or treat plant nematode infections. In an article published in a recent issue of *Molecular and Biochemical Parasitology*, Bindhya Chal Yadava and colleagues of the Indian Institute of Technology and Madurai Kamaraj University find that “Host-generated double stranded RNA induces RNAi in plant-parasitic nematodes and protects the host from infection.”

Researchers made a construct containing two genes from the nematode *Meloidogyne incognita*, constructed in such a way that the resultant transcript would be a double-stranded RNA molecule. Double-stranded RNA is cleaved into short interfering RNA molecules (RNAi) that impair with the activity of genes that have the same sequence. The researchers introduced this construct into tobacco plants, and inoculated plants with *M. incognita*, which would lodge in knots in plant roots.

The researchers found that: 1) while all control plants developed large root knots, only 2 out of 25 transgenic plants formed root knots; 2) root knots on transgenic plants were much smaller than those found on conventional plants; and 3) the inability of nematodes to infect transgenic roots was a result of RNAi of the targeted genes. The scientists add that their method is also a powerful tool to characterize the functions of parasite genes.

Subscribers to Molecular and Biochemical Parasitology can read the complete article through http://dx.doi.org/10.1016/j.molbiopara.2006.03.013

TRACKING SUGAR METABOLISM IN LIVING PLANTS, IN REAL TIME

Scientists at Carnegie’s Department of Plant Biology have made the first real-time observations of sugars in the cells of intact and living plant tissues. Led by Carnegie staff member Wolf Frommer, the researchers designed a groundbreaking imaging technique to monitor glucose, an important sugar, in leaf and root tissues of the model plant *Arabidopsis thaliana*. Aside from being a source of energy, glucose is a starting material in the formation of bioethanol.

The protein-based imaging tags used by the group resemble a hinged clam shell. When glucose binds to the ‘hinge’, the ‘shell’ opens up. The fluorescent tags then

change colors depending on the distance between the two protein ‘shells’. With the help of such sensors, the researchers found that the plant maintained glucose at higher levels in leaf tissue than in roots. In fact, root cells were found to contain sugar at concentrations at least 100,000 times lower than previous estimates.

“Imaging techniques like this are the next frontier in the study of metabolism, and will help to answer some of the most pressing questions on plant biologists’ minds, such as the role of individual genes in the distribution of sugars,” said Frommer. The new technology will enable new studies of sugar metabolism in plants, which will inform the effort to engineer higher crop yields for food and biofuel production.

The readers can view the complete news release at http://www.carnegieinstitution.org/fret_sugars/default.html.

ANNOUNCEMENTS

ASIANBIO'06- BIOTECHNOLOGY OPPORTUNITIES FOR DEVELOPING COUNTRIES

The Research and Information System for the Non-Aligned and Other Developing Countries (RIS) of India is organizing with the Biotechnology Coalition of the Philippines and other institutions the Asian Conference on Biotechnology and Development, to be held in Manila, Philippines, on November 9-10. The conference aims to bring together representatives of different stakeholders in order to review and discuss the issues surrounding biotechnology, and to identify how this technology can be used to spur development and growth of countries within the Asian region.

More information on this event is available:
http://www.bcp.org.ph/asianbio2006/about/index.htm

WRITING COMPETITION FOR YOUNG INDONESIAN RESEARCHERS

The Biotechnology Research Institute of Indonesia will hold a writing competition for Indonesian young researchers to enhance the quantity and quality of scientific publications in Indonesia. The topics covered include: Social and Culture; Economy and Management; Nature Science and Environment; Engineering and Technique of Science; and Health and Medical Science.

The deadline for the submission of article is 31 October 2006. For further information, visit: http://www.lipi.go.id

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DOCUMENT REMINDERS

UPDATED POCKET K ON BENEFITS OF BIOTECHNOLOGY

Pocket K No. 5 on Documented Benefits of GM Crops has just been updated. It includes recent studies on the impact of biotech crops in both developed and developing countries. Pocket Ks are Pockets of Knowledge, packaged information on crop biotechnology products and related issues. They are produced by the Global Knowledge Center on Crop Biotechnology of the International Service for the Acquisition of Agri-biotech Applications. Download the Pocket Ks at http://www.isaaa.org/kc.

FARMERS TALK ABOUT BENEFITS OF BIOTECH IN WEB VIDEOS

View the experiences of farmers in nine countries on growing genetically modified (GM) on a website called “Conversations about Biotechnology”. The website also includes opinions from several experts in the field, which includes Norman Borlaug, Clive James, and Klaus Amman.

The website is hosted by the Monsanto Co. and can be found at http://www.monsanto.com/biotech-gmo/asp/default.asp.

Do not hesitate to tell other colleagues/contacts about this mail list. If they wish to join, they should send an e-mail message to knowledge.center@isaaa.org leaving the subject blank and entering the one-line text message as follows: SUBSCRIBE Crop Biotech Network

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Please visit CropBiotech Net web pages (http://www.isaaa.org/kc) to view previous issues of this newsletter and see other available resources for download.

While we are still developing this site, feel free to e-mail (knowledge.center@isaaa.org) us for your views and comments on any crop biotechnology product and related issues.

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