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)

May 19, 2006

In This Week's Issue:

NEWS

*** AFRICA ***

WORLD BANK TO SUPPORT AGRI DEVELOPMENT IN ZAMBIA

The World Bank approved a grant to support agricultural development in Zambia. The Agricultural Development Support Project aims to increase the commercialization of smallholder agriculture by promoting the development of a network of well-functioning and competitive value chains.

The project will provide resources for investments in agricultural production and marketing, develop innovative business linkages between smallholders and other actors in the target supply chains, and target investments in public goods. It will also improve smallholders' access to markets and the competitiveness of their agricultural commodities.

Tijan Sallah and Paavo Eliste, the World Bank Task Team Leaders of the project, said that the project will contribute to the strategic priorities of the Africa Action Plan. They noted that the Government of Zambia is supporting the development of smallholder agriculture and is committed to support their development.

For more information on the World Bank's work in Zambia visit http://www.worldbank.org/afr/zm or http://web.worldbank.org/external/projects/main?pagePK=64283627Ï-PK=73230&theSitePK=40941&menuPK=375708&Projectid=P070063

*** THE AMERICAS ***

IICA PROPOSES COOPERATION PROGRAM FOR BIOFUELS

A proposal to unite the forces of countries in biofuel production was made in the recently concluded First Inter-American Meeting on Bio-fuels. The meeting was held in Brazil, the world’s current leader in biofuel production, and was attended by specialists from 34 countries of the Americas, as well as representatives of the private and academic sectors.

Mario Seixas, Assistant Deputy Director General of the Inter-American Institute for Cooperation on Agriculture (IICA) presented a preliminary proposal calling for

the creation of a Hemispheric Horizontal Technical Cooperation Program in Agro-energy and Bio-fuels. The future program, Seixas said, would assist countries in Latin America and the Caribbean in developing agro-energy; generate employment and income; comply with environmental policy; and bring the member countries to the forefront of the world's biofuel industry.

The meeting was organized by the Ministry of Agriculture (MAPA) of Brazil. Read the press release at http://www.iica.int/noticias/detalles/2006/CP24-2006_eng.pdf.

CIP CONTRIBUTES NATIVE POTATOES TO POTATO PARK

The International Potato Center (CIP) in Lima, Peru has repatriated 246 virus-free varieties of native potatoes to the Potato Park in Cusco Department, Peru. These varieties are now yielding 30 percent more than ordinary potatoes.

CIP scientists are collaborating with the Potato Park to promote the crop, and the use and conservation of the diverse variety of native potatoes found there. Using advanced molecular techniques, CIP is looking into the possibility that the Park could be a minor center of origin of the tuber.

The Park is one of the few conservation initiatives in the world where residents manage and protect local genetic resources and traditional knowledge about health, food, and agriculture.

Details of CIP's work in the Potato Park are available at http://www.cipotato.org/news_more.asp?cod=23

VENEZUELAN-CUBAN COLLABORATION FOR IMPROVED SEEDS

Lara, Venezuela recently hosted the first of three planned courses aimed at raising the human and technical capacity of Venezuela for the production of improved seeds. The initiative is part of an agreement for technical cooperation between Cuba and Venezuela.

The first course, devoted to the genetic improvement of crops, was conducted by seed specialists of the "Liliana Dimitrova" Research Institute of Cuba, who shared their knowledge and experience with their Venezuelan colleagues. In addition to know-how, the Cuban Institute has also donated improved genetic stocks. The second course, slated for June, will review agricultural technologies for crop culture and seed improvement; while the last course will cover topics such as commercialization, intellectual property, and norms of quality, and is planned for October. The program will conclude with a workshop in November on food sovereignty and security.

For more information, visit: http://www.inia.gov.ve/noticias/050806_01.html

*** ASIA ***

BOLLGARD-II COTTON HYBRIDS APPROVED IN INDIA

The Genetic Engineering Approval Committee (GEAC), India's biotech regulatory body, recently approved the commercial release of four varieties of Bollgard-II cotton hybrids belonging to three Indian seed companies for planting in the country's central cotton growing zone. The Bollgard-II (commonly referred to as BG-II) cotton hybrids were developed by MAHYCO, and contain stacked Cry X (Cry I Ac and Cry 2 Ab) genes (event MON 15985) developed by Monsanto. The hybrids provide season-long control of key lepidopteran pests. A significant advantage of the BG-II cotton hybrids is that they aid in delaying the development of pest resistance to the Cry1Ac protein.

This is the fourth biotech cotton event approved in India since the commercialization of the first genetically modified cotton in the 2002-2003 planting season. So far, 40 varieties of Bt cotton hybrids have been released. Another important development is the approval for the export of transgenic eggplant (Brinjal) seeds containing the cry1Ac gene (MAHYCO EE-1 event), from India to Bangladesh and the Philippines.

Decisions from the GEAC meeting are available at: http://www.envfor.nic.in/divisions/csurv/geac/geac-66.pdf. For more information, contact Bhagirath Choudhary of the ISAAA South Asia Office at b.choudhary@cgiar.org

FAO, CHINA ALLIANCE TO IMPROVE FOOD SECURITY

China's government and the United Nations Food and Agriculture Organization (FAO) recently signed a pact that will allow China to sent at least 3,000 of its agricultural experts and technicians to provide help to small farmers and fisher folk in developing countries. The specialists to be deployed will have expertise in irrigation, livestock, fisheries, and post harvest handling.

This deal is part of the FAO's South-South Cooperation Initiative, a component of the Special Program for Food Security, which aims to strengthen economic relations among developing countries to improve agricultural productivity and ensure access to food for all. Over 100 countries are currently taking part in the program, with more than 600 South-South Cooperation experts and technicians working with rural communities in over 30 countries.

For more information, read the complete news release at http://www.un.org/apps/news/story.asp?NewsID=18535&Cr=china&Cr1=

VIETNAM PRIORITIZES SCIENCE & TECHNOLOGY FOR GLOBAL COMPETITIVENESS

Vietnam is drafting a strategy for sustainable agricultural development in rural areas. The strategy prioritizes scientific research investment and technology transfer to promote competitiveness of agricultural products. Focus of efforts will be on developing biotechnology and establishing high-tech agricultural models.

Trang Hieu Dung, head of the Ministry of Agriculture and Rural Development's Planning Department, told participants during the National Conference on Sustainable Development in Hanoi that targets for sustainable development have been set. These include programs to develop high-value plants and animals, and investment on processing and after-harvest technologies.

The Ministry likewise plans to increase investment in trade promotion; mobilize private resources for production, processing, and consumption; and create favorable conditions for farmers to gain access to hi-tech and agricultural promotion systems.

With reports from Le Thu Hien (hienbiotechvn@pmail.vnn.vn) from AG Biotech Vietnam. For more information, visit http://www.agbiotech.com.vn/vn/

*** EUROPE ***

EFSA RELEASES LATEST OPINION ON GM MAIZE VARIETY

The Scientific Panel on Genetically Modified Organisms (GMO Panel) of the European Food Safety Authority (EFSA) recently released its opinion on genetically modified maize 1507 x NK603, which is engineered with protection against specific lepidopteran pests, as well as tolerance to the herbicides glufosinate and glyphosate. The Panel concluded that the maize is "unlikely to have any adverse effect on human and animal health and the environment in the context of its intended uses."

In delivering its opinion, the panel considered the application filed, information provided by the applicant, and scientific comments submitted by the European Union (EU) member states. Scientific assessments included molecular characterization of transgenes and expression of target proteins; as well as comparative analysis of agronomic traits, nutrient composition, potential allergenicity and toxicity, and environmental effects. According to the report, the nutritional properties of maize 1507 x NK603 "would be no different from those of conventional counterparts," and "unintended environmental effects due to the establishment and spread of GM maize will not be different from that of conventionally bred maize."

Read the text of the opinion at http://www.efsa.eu.int/science/gmo/gmo_opinions/1482/gmo_ov_op5_annexa_en1.pdf. Read the press release at http://www.efsa.eu.int/science/gmo/gmo_opinions/1482_en.html.

CARGILL TO INVEST IN BIOFUEL PLANT

Another company is set to make its mark in the booming biofuel industry. Cargill, an international corporation involved in food, agricultural, and risk management products and services, will invest over 50 million euros in the construction of a rapeseed crush plant at its existing site in Montoir, France. Construction is expected to begin by the end of this year.

Cargill will make the investment through a joint venture with Sofiprotéol, a financial holding company engaged in oilseed production. The plant is expected to churn out up to 250,000 metric tons per year of rapeseed oil, the main ingredient in the production of biodiesel. A co-product of the crushing operations is rapeseed meal; 350,000 metric tons is expected to be produced annually, and will be sold to the animal feed market.

Read the complete press release at
http://www.cargill.com/news/news_releases/060503_rapeseedplantinfrance.htm.

RESEARCH

CHANGING GLUCOSINATES FOR TAILOR-MADE, DISEASE-RESISTANT CROPS

Plants are susceptible to a variety of bacterial and fungal pathogens, and such diseases represent a major constrain to crop production. Glucosinolates are natural plant products that function in the defense toward pathogens. Attack by a specific pathogen will elicit a complex molecular response in the plant, which will ultimately lead to the production and accumulation of a specific set glucosinolates most suited for defense. What are the prospects of modifying the composition of these compounds for engineering custom-made disease-resistant crops?

Günter Brader and his colleagues from the University of Helsinki and the Royal Veterinary and Agricultural University of Denmark explore the effects on disease resistance of expressing different single glucosinolate biosynthetic *CYP79* genes in Arabidopsis plants. Their report, “Altering glucosinolate profiles modulates disease resistance in plants” is published in the latest issue of the Plant Journal.

Arabidopsis plants expressing *CYP79D2* from cassava show enhanced resistance against the bacterial soft-rot pathogen *Erwinia carotovora*, while overexpression of the sorghum *CYP79A1* and of the endogenous *CYP79A2* provide increased protection towards the bacterial pathogen *Pseudomonas syringae*. However, an increase in certain glucosinolates also raised susceptibility to fungal pathogens. Arabidopsis with different glucosinolate contents can therefore be used as a valuable tool for the gathering of essential information on the engineering of disease resistance.

Read the abstract of the article in: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-313X.2006.02743.x

BIOASSAY DEVELOPED FOR WHEAT CROWN ROT

Crown rot of wheat is caused by the pathogen *Fusarium pseudograminearum*. Infected crowns appear brown and rot to a greater or lesser extent depending on the stage of the disease and on the severity of the infection. Plants with severe infections generally do not survive, and *F. pseudograminearum* persists in the

soil in infected plant matter, representing a chronic source of infection in affected fields.

Crown rot is mainly managed by controlling grass hosts prior to cropping, rotating susceptible cereals with non-host break crops, burning infected stubble, and selecting tolerant wheat varieties. Tolerance, however, refers to the ability of a plant to withstand infection, while resistance describes the ability of a host to resist or prevent infection by a pathogen, with minimal damage to the plant tissues. Resistant plants will also reduce the number of spores the pathogen is able to produce, minimizing the risks for future crops. The isolation of wheat varieties with genetic resistance to crown rot is therefore essential for controlling the disease.

Mittera and co-workers in the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Plant Industry, the University of Ballarat in Australia, and the Hebei Academy of Agricultural Sciences of China, report on the development of a new high-throughput and reliable seedling bioassay to screen wheat germplasm for crown rot resistance in the Plant Pathology scientific journal . Single wheat seedlings were inoculated with *Fusarium* and assessed for crown rot severity after an incubation period of 35 days. The seedling bioassay mimicked field resistance to crown rot in adult plants, and by detecting small but consistent differences in crown rot severity among different wheat cultivars, the bioassay proved an effective tool for large-scale screening for partial resistance. Read the abstract of “A high-throughput glasshouse bioassay to detect crown rot resistance in wheat germplasm” at: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-3059.2006.01384.x

FUNGI AGAINST FUNGI FOR BETTER AGRICULTURE

Trichoderma are fungi found in nearly all agricultural soils. Their ability to grow toward the hyphae of other fungi, coil around them, and disintegrate them through the secretion of degrading enzymes have made them important allies in agriculture for limiting the spread and activity of pathogenic fungi. The mycoparasitic activity of *Trichoderma* has been exploited for the biological control of black pod or *Phytophthora* pod rot, one the most important cacao pathogens in Africa; and against *Rhizoctonia solani*, which attacks crops such as rice, wheat, potato, and maize.

In addition to directly attacking plant pathogens, *Trichoderma* fungi also directly benefit the plant: specific strains will colonize and penetrate the root system eliciting specific plant defense mechanisms that result in induced systemic resistance (ISR) in the entire plant, thereby strengthening the plant’s defense system against pathogen attack.

How is the interaction between *Trichoderma* and the host plant mediated at the molecular level? Ada Viterbo and Ilan Chet of the Weizmann Institute of Science, Israel, report on the isolation of *TasHyd1*, a gene that encodes a hydrophobin-like protein that is detected in young *Trichoderma* mycelia. *Trichoderma* mutants lacking *TasHyd* could still attack *Rhizoctonia solani* pathogens in vivo, but failed to interact with the plant. The authors therefore show that *TasHyd1* is specifically required for root attachment and colonization, and is not needed for the mycoparasitic ability of *Trichoderma*.

To read the abstract of the article, entitled "TasHyd1, a new hydrophobin gene from the biocontrol agent *Trichoderma asperellum*, is involved in plant root colonization", visit: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1364-3703.2006.00335.x

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ANNOUNCEMENTS

DIRECTORY AVAILABLE ON KC WEBSITE

A directory of biotech-related sites is now available on the ISAAA-KC website. This directory contains links to research institutes, universities, companies, sources of biotech information, and other directories specific to agricultural biotechnology and related fields. If you want your organization's website to be included in the directory, please email knowledge.center@isaaa.org. Visit the KC website at http://www.isaaa.org/kc/directory/index.htm.

$10,000 PRIZE FOR JOURNALISTS ANNOUNCED

The fifth annual Bastiat Prize for Journalism is now open. The competition aims to encourage and reward writers whose published works promote the institutions of a free society: limited government, free markets, rule of law brokered by an independent judiciary, protection of private property, free speech, and sound science. The deadline for this year's competition is June 30, 2006. Read the complete rules and judging criteria at http://www.bastiatprize.org. For any questions please email nickspurrell@policynetwork.net.

TRAINING FELLOWSHIPS FOR SSA OPEN

The Third World Organization for Women in Science has instituted Training Fellowships for Women Scientists in Sub-Saharan Africa (SSA), open to students from SSA and least developed countries who wish to pursue postgraduate training leading to a PhD at centers of excellence abroad in southern developing

countries. Application deadline is the 30th of May, 2006. For details, visit: http://www.ictp.trieste.it/~twows/postgrad.html

WORLD VEGETABLE CENTER OFFERS COURSE

The World Vegetable Center, Regional Center for Africa is offering an intensive course on vegetable crops production and research from July to November 2006. The course is open to African professionals who currently undertake the vegetable research and development activities in the African continent. For more information, visit: http://www.avrdc.org/training.html

SHORT COURSES OFFERED BY MSU

Michigan State University (MSU) in the United States is offering several short courses in 2006 on various topics related to biotechnology. An International Internship Program in Intellectual Property Rights (IPR): Technology Transfer, Use and Management will be held from July 9-14; An International Short Course in Food Safety from July 23-28; An International Short Course in Agroecology, Integrated Pest Management (IPM), and Sustainable Agriculture from Jun 18-28; and an International Short Course in Environmental Aspects of Agricultural Biotechnology from Jul 30-Aug 4. For more details, visit http://www.iia.msu.edu/courses05.htm.

INVITATION FOR COLLABORATIVE PROJECTS EXTENDED

The Australian Center for International Agricultural Research (ACIAR) is extending an invitation to register Expressions of Interest in collaborative agricultural R&D Projects in Papua New Guinea (PNG). Proposals should incorporate conceptual models of the structure and operation of the project(s), support ACIAR's current research priorities in PNG, and nominate collaborative partners. For more information, visit http://www.aciar.gov.au/web.nsf/doc/ACIA-6PDVLV.

RICE SHORT STORY CONTEST FOR FILIPINO STUDENTS

A short story writing contest, with the theme "Rice is Life," has recently been opened to all Filipino high school students aged 12-17, who will be enrolled during the 2006-2007 school year. The deadline for submission of entries is on the 16th of October, 2006, World Food Day. For more information, visit http://www.asiarice.org

NEW AGRICULTURAL WEBSITE LAUNCHED IN CHILE

The network of agricultural and forestry information of Chile (Red de Información Silvoagropecuaria de Chile- REDAGROCHILE) has launched a new website, aimed to integrate the available agricultural information found in libraries, documentation centers, and research institutions in a single resource for more convenient access by users. The site contains over 420 thousand titles and about a hundred subscriptions to national and international specialized scientific journals, mostly free of charge.

Access the site at: http://www.redagrochile.cl/

DOCUMENT REMINDER

MABIC RELEASES BIC ALERT

The Malaysia Biotechnology Information Center (MABIC) has released its monthly newsletter, the BICAlert. BICAlert contains news articles, features, announcements, and documents regarding the latest in biotechnology in Malaysia and around the world. To read the BICAlert, visit http://www.bic.org.my/BICalert/index.html.

PUBLICATION OF BRAZILIAN CROPS' WILD RELATIVES GOES ONLINE

The Ministry of Environment of Brazil (MMA) will make available online the document "Wild relatives of Cultivated Plant Species", presented in Curitiba last month during the Conference of the Parties to the Convention Of Biological Diversity. The document is the first of a series planned by the MMA, and reviews the wild relatives of Brazil's seven most important crops: cotton, peanut, rice, pumpkin, cassava, maize and peach palm. These species represent an important source of genetic variation for crop improvement initiatives, and therefore constitute an invaluable national patrimony.

The document also highlights the importance of local varieties developed by traditional communities, threatened by the introduction of invasive species and by the destruction of their habitat. The publication argues that the conservation of wild species important for agriculture is complex, as the Brazilian economy relies on the cultivation of exotic species, such as sugar cane, coffee, and rice.

For more information visit:
http://www.procitropicos.org.br/index.cfm?saction=conteudo&mod=76574187090

10615&id=23CD3999-9BF8-F0D1-BED8B62A71242780 . To read the publication Wild relatives of Cultivated Plant Species" visit: http://www.mma.gov.br

PRRI PUBLISHES NEW DOCUMENTS

The Public Research & Regulation Initiative (PRRI) has published documents with an overview of public research activities in biotechnology conducted worldwide, as well as a draft guide for Notifications and Risk Assessments for Releases of genetically modified organisms (GMO's). For more information, visit http://pubresreg.org/Members/Kim/working%20groups/Aarhus/ and http://pubresreg.org/Members/Kim/working%20groups/biosafety%20protocol/CPB/Notificationguide.

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