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)

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In This Week's Issue:

NEWS

*** GLOBAL ***

FAO SAYS "WORLD HUNGER INCREASING"

There are more hungry people in the developing world today than in 1996. "Far from decreasing, the number of hungry people in the world is currently increasing - at the rate of four million a year," said Food and Agriculture Director-General Jacques Diouf during the launch of the annual FAO report "The State of Food Insecurity in the World".

Diouf reminded the audience in Rome that despite a pledge made by leaders of 185 countries during the 1996 World Food Summit in Rome to reduce the number of undernourished people by half, the situation remains "unacceptable and intolerable".

The FAO report recommended ways to solve the problem of world hunger. These include focusing programs and investments on "hotspots" of poverty and undernourishment; enhancing the productivity of smallholder agriculture; creating the right conditions for private investment, including transparency and good governance; making world trade work for the poor, with safety nets put in place for vulnerable groups; and a rapid increase in the level of Official Development Assistance (ODA) to 0.7 percent of GDP.

See FAO's release at http://www.fao.org/newsroom/en/news/2006/1000433/index.html

IFPRI ASSESSES AGRIC R & D IN DEVELOPING COUNTRIES

Poor countries may no longer be able to depend on spillovers of new agricultural technologies and knowledge from richer countries, especially advances related to enhanced productivity of staple foods. As a consequence, developing countries continued use of current agricultural R & D policies may leave them "agricultural technology orphans" and may cause serious food deficits. "Agricultural R & D in the developing world: Too little, too late?" edited by Philip Pardey and colleagues of the International Food Policy Research Institute (IFPRI), makes this assessment.

The book goes on to say that developing countries may have to become more self-reliant and perhaps more dependent on one another for the collective benefits of agricultural R&D and technology. While countries like South Korea, Brazil, China, and India are gaining from productive and self-sustaining local research sectors, other countries in Asia and Africa are facing serious funding and institutional constraints that inhibit the effectiveness of local R&D.

Read the full report at http://www.ifpri.org/pubs/books/oc51.asp.

USAID GRANTS US$9M FOR SORGHUM, MILLET RESEARCH

The US Agency for International Development (USAID) has given a grant of US$9 M to the International Sorghum and Millet Collaborative Research Support Program (INTSORMIL) based at

the University of Nebraska-Lincoln to continue its research work in Africa, Central America, Eurasia, and the US.

The global collaborative effort enables plant breeders from U.S. land-grant universities to work with researchers in host countries through education, mentoring and collaborative research. It works to improve nutrition and natural resource management and to increase income in developing countries, while developing new technologies to improve sorghum and pearl millet production and its use worldwide.

For more information on INTSORMIL visit http://intsormil.org.

NANOCLAYS FOR IMPROVED CORN, SOY BIOPLASTICS

Iowa State University researchers are using high powered ultrasonics to make stronger plastics from corn and soybeans. With the experimental method, David Grewell and colleagues are trying to add very small clay particles, called nanoclays, to reinforce the plastic molecules.

Biodegradable and biorenewable plastics are made by mixing glycerin and water to corn and soy proteins. The bioplastics can be used as disposable wrap for hay bales, as pots for plants, and in food packaging. The material may also have direct industrial use. The Iowa State researchers are collaborating with private companies to test the bioplastic products in actual applications.

For the complete press release: http://www.iastate.edu/~nscentral/news/2006/oct/bioplastics.shtml

WINTER WEED EARNS NEWFOUND RESPECT

Long considered as a weed by soybean farmers, the field pennycress *Thlaspi arvense* is now being eyed by Agricultural Research Service (ARS) scientists as both a biodiesel resource and biobased fumigant. Oil from the seed of pennycress has been found to be similar to other biodiesel resources such as animal fats and soybean and sunflower oils in terms of long-chain fatty acid composition. By treating it as another crop, soybean farmers can use their land to produce fuel in the winter from pennycress and food in the summer from soybeans. ARS researchers also observed that crushed seed left over from biodiesel production inhibited the germination of sicklepod and other weeds, making the pennycress seedmeal a potential source of natural fumigant.

Read the complete press release at http://www.ars.usda.gov/News/docs.htm?docid=1261.

FOOD COMPANIES DEPRIVE CONSUMERS OF BIOTECH BENEFITS

Some food companies may be too rash in dismissing biotech foods when in fact they are depriving consumers of an opportunity for safer and superior food products. In a recent issue of *Nature Biotechnology*, Henry Miller of Stanford University and colleagues presented in the article “Why spurning food biotech has become a liability” some of the positive effects of using biotechnology in food production and processing, and what food companies should know.

In the advent of modern biotechnology, new products might have come out of the market that would have offered the food industry a proven and practical means of tackling problems such as fungal contamination, allergenic reactions to food, and pesticide poisoning at their source. The obstacle lies on the unfounded risks of biotech foods and the perceived benefits of nonbiotech foods. However, the use of organic ingredients poses greater risks of pesticide poisoning and mycotoxin contamination, as organic crops are prone to colonization by killer fungi and therefore require frequent pesticide applications.

Readers can access the complete commentary “Why spurning food biotech has become a liability” at http://www.nature.com/nbt/journal/v24/n9/full/nbt0906-1075.html.

KFC SWITCHES TO LOW LINOLEIC SOYBEAN OIL TO REDUCE TRANS FATS

Kentucky Fried Chicken (KFC), a global chicken fast food company joins Kellog Company in announcing the use of low-linolenic soybeans to reduce or eliminate trans fats in its products. The switch to the new oil to replace partially hydrogenrated soybean oil will be completed by April 2007. Trans fat has been shown to increase the risk for heart disease.

Monsanto reports that low-linolenic soybeans contain less than three percent linolenic acid as compared to the typical eight percent level found in traditional soybeans. The result is more stable soybean oil, with less need for hydrogenation, which produces trans fats.

The conversion took over two years of extensive testing of oil options to identify the same taste profile identified with KFC products.

Read more on KFC's use of linoleic soybean oil at http://www.freep.com/apps/pbcs.dll/article?AID=/20061030/NEWS99/61030012. A related article is at http://www.monsanto.com.

*** AFRICA ***

LOST CROPS OF AFRICA

Bambara, lablab, enset, okra, moringa are just some of the vegetables that are considered as 'lost crops of Africa'. In Africa, where more than 300 million hungry mouths must be fed, no more than a couple dozen species of crops have been considered as staple food, and most of them are not native to Africa.

In a report by the United States National Academies, 18 African crops are deemed by a team of experts as suffering from lack of attention, research and funding. These range from enset, a mammoth herb almost unknown outside Ethiopia, to okra, a more common side dish. The group, headed by Nobel Peace Prize winner Norman Borlaug, believes that developing native crops will help combat malnutrition, ensure that more Africans have something to eat every day, and make farmers some money while being gentler on the land. As a result, they may cause less erosion and help preserve the ecology and genetic heritage of the continent.

Read the complete news article at http://www.nature.com/news/2006/061030/full/061030-7.html.

*** THE AMERICAS ***

BRAZIL: BIOSAFETY IN SLOW MOTION

“The possibilities for Brazil to arrive at new decisions pertaining the commercial release of biotech crops this year is practically null”, says Walter Colli, president of the Biosafety Commission of Brazil, CTNBio. According to the law, the approval of a new commercial release requires 18 favorable votes, and the presence of at least two thirds of the 54 members of the Commission. The high level of absentees during the last meetings has resulted in the impossibility to vote on the approvals requests under examination.

According to Leila Oda, president of the Brazilian National Biosafety Association (ANBio), the problem lies in the fact that the Commission is composed of two groups: one that is committed to speeding the process of approvals, and the other that intends to delay it. “The biotechnology research community should not be at the mercy of an agency that fails to deal with the evaluation and approval of their research efforts”, writes Oda. “How does the government intend to make biotechnology a great ally if it does not provide conditions to place these products in the hands of the Brazilian citizen?” This delay results in great economic and environmental losses to the country, and it is therefore necessary to reflect on the risks of not having the technology, in addition to evaluate risks associated with introducing them.

For more information write to Leila Oda at: cadastro@anbio.org.br. Read the full article at: http://www.anbio.org.br.

SOYBEAN WEED FOUND SUITABLE FOR PRODUCING BIODIESEL

A weed commonly seen at soybean fields in the U.S. Midwest has a potential use for biodiesel production. The weed, called pennycress (*Thlaspi arvense*), can also be used as source of fertilizer and soil fumigant, said the scientists at the National Center for Agricultural Utilization Research (NCAUR), Illinois.

The seed of pennycress is 36 to 40% oil by weight. The long-chain fatty acids from its oil are similar to soybean and sunflower oils, which are common sources of biodiesel. Terry Isbell and colleagues at NCAUR note that after soybean production in the summer, farmers can keep the weed on the fields during winter for fuel production.

The complete press release is at http://www.ars.usda.gov/is/pr/2006/061101.htm

*** ASIA AND THE PACIFIC ***

GM COTTON APPROVED IN NORTHERN AUSTRALIA

Five transgenic cotton varieties were approved for commercial release in northern Australia last week. The Australian government through the Office of the Gene Technology Regulator issued a license to Monsanto Australia Ltd., allowing the company to grow the herbicide and/or insect resistant varieties without any containment measures.

The approved varieties include Bollgard® II (MON15985), Roundup Ready® (MON1445), Roundup Ready Flex® (MON88913), Bollgard® II/Roundup Ready® (MON15985/MON1445), and Bollgard® II/Roundup Ready Flex® (MON1445/MON88913).

For more information please visit http://www.ogtr.gov.au/ir/dir066.htm

PAPER ASSESSES APPROVAL RATE OF GM CROPS IN AUSTRALIA

Two probable reasons for the slow approval of commercial planting of transgenic crops in Australia are community perceptions about the risks associated with transgenic technologies, and the regulatory framework currently used to approve them. These are forwarded in a paper “Risk assessment and management of genetically modified organisms under Australia's Gene Technology Act” by Nicholas Linacre and colleagues at the International Food Policy Research Institute.

Linacre and co-researchers describe the regulatory structure in Australia and examine some of the potential regulatory issues that may affect the review process and approval of transgenic technologies.

Download a PDF copy of the full paper at http://www.ifpri.org/divs/eptd/dp/eptdp157.asp

JOINT VENTURE TO DEVELOP HIGH AMYLOSE WHEAT

Australia's Grains Research and Development Corporation (GRDC) declared its support towards the development and commercialization of high amylose wheat.

Starch from this type of wheat contains more than 50% amylose. This proportion is about 20% more than the regular wheat varieties.

High amylose starch was found to help in preventing obesity, diabetes and colorectal cancer. This specialized wheat variety has been under development for several years. The original investors are Australia's CSIRO and Biogemma (a subsidiary of Limagrain).

The complete press release is at:
http://www.grdc.com.au/whats_on/mr/south/southern_region06031.htm

BT BRASSICAS FOR FIELD TESTING IN NEW ZEALAND

Scientists at the New Zealand Institute for Crop & Food Research have applied for a permit to field test genetically modified vegetable Brassicas expressing *Bacillus thuringiensis* (Bt) proteins. Bt kills caterpillar pests of Brassica without the need to use synthetic pesticides.

Among the Bt Brassicas developed by the group of Mary Christey are kale, cabbages, cauliflower and broccoli. These vegetable Brassicas are to be tested in the Canterbury area. New Zealand has existing regulations for field testing genetically modified crops. The Crop & Food Research has also conducted more than 34 field tests of genetically modified crops in the country.

For the complete press release please visit http://www.crop.cri.nz/home/news/index.jsp

*** EUROPE ***

EUROPEAN PARLIAMENT HOSTS PUBLIC HEARING ON BIOTECH

The European Parliament hosted a public hearing last October to tackle pertinent issues regarding European agriculture. Public perception on biotechnology ran a wide gamut with European consumers and the academic and scientific sector occupying opposite ends of the spectrum. In the latest survey done across the European Union, majority of consumers said they were against genetically modified organism (GMOs) due to fears that GMO crops can damage biodiversity and be a danger to human health. However, the scientific community presented a dissenting opinion. According to Jussi Tammisola, an academic and leading advisor to the Finnish government on the issue, some opportunities GMOs could offer included "the creation of aromatic rice and wheat, edible vaccines for asthma or allergies and breeding corn that is resistant to pests and (be a source of) biofuels".

Getting information across is therefore very crucial and Irish Member of the European Parliament (MEP) Mairead McGuinness for the European People's Party summed it up by saying that scientists "have a duty to come out of their labs more frequently to explain their activities to ordinary citizens."

For the press release on the public hearing, readers can visit http://www.europarl.europa.eu/news/public/story_page/032-11626-283-10-41-904-20061012STO11625-2006-10-10-2006/default_en.htm.

RESEARCH

ENGINEERING ROOT-KNOT RESISTANCE IN PLANTS

Root-knot nematodes (RKN) are the most economically important group of plant-parasitic nematodes worldwide, attacking nearly 2000 species of crop and fiber plants. The nematode invades plant roots, and by feeding on the roots' cells, they cause the roots to grow large galls, or

knots, damaging the crop and reducing its yields. Led by professor Richard Hussey, researchers from the University of Georgia, Iowa State University, and North Carolina State University engineered root-knot nematode resistance in transgenic plants by silencing or 'knocking out' an essential gene that causes the nematode to become parasitic. The result of their study is published in a recent issue of the Proceedings of the National Academy of Sciences (PNAS).

The research group described experiments to silence the parasitism gene 16D10 in root-knot nematode, and they confirm that the gene is essential for root-knot nematode to exhibit parasitism. In addition, expression of the same regulator for 16D10 in Arabidopsis resulted in resistance against the four major RKN species. The results of silencing of parasitism gene 16D10 in RKN could lead to the development of crops with broad resistance to this destructive pathogen.

Readers can access the full article, “Engineering broad root-knot resistance in transgenic plants by RNAi silencing of a conserved and essential root-knot nematode parasitism gene” at http://www.pnas.org/cgi/content/full/103/39/14302. For the abstract, visit http://www.pnas.org/cgi/content/abstract/103/39/14302.

RESEARCH OUTLOOK IN MANGO ANTHRACNOSE CONTROL

Anthracnose is considered as the most important disease of mango worldwide. It is caused by the fungi Glomerella and there is no method that can effectively control it. The disease affects mango fruits and several parts of the tree.

Chrys Akem at the Horticulture and Forestry Science, Australia presented possible research areas to find better ways of controlling this disease. In his review, published by the Plant Pathology Journal, he stated that there's a need to 1) identify more effective chemicals that target the fungi, 2) better understand the causal organism, and 3) screen large germplasm collections of mango for inherent resistance for use in breeding programs.

Currently, the options for preventing the disease under field conditions include suitable cultural management practices, and the use of chemicals. After harvesting, fruits can be treated by dipping them in hot water, using fungicides, or by keeping them in cold storage.

To read the complete article please visit: http://ansijournals.com/ppj/2006/266-273.pdf

MODIFIED FLORAL DIP METHOD FOR ARABIDOPSIS TRANSFORMATION

The floral dip method is a very efficient way of transforming Arabidopsis but it requires large volumes of the Agrobacterium culture in liquid media. European researchers reported that an efficient floral dip method can also be performed by using bacteria that were cultured on plates. The modification on the transformation procedure was described by Elke Logemann and colleagues in their paper published in the journal Plant Methods.

One advantage of using bacterial plates is they can be kept at 4oC for days. The bacteria is available anytime until the plants reach the optimum stage for transformation. "This makes it much easier to synchronize Agrobacterium and plants for transformation", wrote the researchers.

The complete article can be accessed at
http://www.plantmethods.com/content/pdf/1746-4811-2-16.pdf

ANNOUNCEMENTS

ANNUAL MEETINGS OF AMERICAN SOCIETIES

The annual meetings of the American Society Of Agronomy (ASA), Crop Science Society Of America (CSSA), And Soil Science Society Of America (SSSA) will be held in Indianapolis, Indiana, 12-16 November 2006. The event will bring together people representing academia, government and private industry, including a large contingent of undergraduate and graduate students. This year's themes are “Information that Sustains the World” (ASA), “Science for a Sustainable Bioeconomy” (CSSA), and “Soil Science in a Changing Climate” (SSSA). Also in conjunction with the Societies' Annual Meetings will be the annual research conference of the U.S. Canola Association (USCA).

More information on these events is available: http://www.acsmeetings.org

REGIONAL WORKSHOP ON BIOSAFETY RESEARCH FOR THE RELEASE OF GM CROPS

The International Service for National Agricultural Research (ISNAR) together with the Sudanese Ministry of Science and Technology is organizing a regional workshop, “Principles of Biosafety Research for the Release of Genetically Engineered Crops”, slated on 4-9 February in the following year. Prospective participants can request information and applications through i.eujayl@cgiar.org.

For more information, visit http://www.icgeb.org/MEETINGS/CRS07/Meetings2007.htm.

MEETING ON BIOSAFETY OF PLANT PRODUCTION IN ROME

The Marche Polytechnic University in Aula Magna Rectorate Piazza Roma will be the venue for a meeting on "Biosafety of plant production: technology, development, innovation, environment and health" on November 23, 2006. Organized in collaboration with the United Nations Industrial Development Organization, COST and SAPIO Research Award, it is linked with an interdisciplinary training program supported though a technical cooperation project under UNIDO.

For more information about the training program, visit
http://ingweb.unian.it/Agraria/Engine/RAServePG.php/P/2770130214.

DOCUMENT REMINDERS

PHILRICE PUBLICATION ON GOLDEN APPLE SNAIL

The Philippine Rice Research Institute (PhilRice) recently announced the upcoming launch in November 2006 of a publication on golden apple snails (GAS), considered to be one of the worst invasive alien species by the International Union for the Conservation of Nature, Global Species Information Database, and Invasive Species Specialist Group. Current information about GAS, the rice systems and countries it has afflicted are included in the book, as well as various aspects of snail taxonomy, impacts of GAS on aquatic ecosystems and farmers' health, and pesticide abuse and misuse. Foreword of the publication was written by Dr. Peter Kenmore and Dr. Niek van der Graaff, Chief of FAO Plant Protection Service.

For more information about the publication “Global advances in the ecology and management of golden apple snails” readers can visit http://www.philrice.gov.ph//index.php?option=com_content&task=view&id=104&Itemid=139 or contact one of the editors through rcjoshi@philrice.gov.ph.

NEW BOOK ON VEGETABLE DISEASES

The University of California Cooperative Extension recently launched a book 'Vegetable Diseases.' The publication focuses primarily on diseases of field and greenhouse grown vegetable crops that are caused by pathogens. For each disease entry, a brief introduction of the disease, detailed description of disease symptoms, information on the pathogen and disease development, and suggestions on how to manage them are also discussed.

For more information, readers can contact stkoike@ucdavis.edu.

FRENCH COMPENDIUM OF RABESA REPORTS ONLINE

The Regional Approach to Biotechnology and Biosafety Policy in Eastern and Southern Africa (the RABESA Initiative) has launched a compendium of all RABESA reports in French. The RABESA project was initiated and endorsed by the Common Market for Eastern and Southern Africa (COMESA) in 2003. It was designed to examine the potential ramifications of GMOs on trade, food security and access to emergency food aid in member countries of COMESA and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).

For more information on RABESA, visit http://acts.or.ke/prog/agriculture/afs_rabesa.html. The RABESA French Compendium is available at http://acts.or.ke/prog/agriculture/rabesa%20french%20compendium.pdf.

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