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)

January 26, 2007

In This Week's Issue:

NEWS

*** GLOBAL ***

BELGIAN, AMERICAN SCIENTISTS SHARE WOLF PRIZE IN AGRICULTURE

The latest winners of the Wolf Prize for Agriculture are Ronald Phillips and Michel Georges for their groundbreaking discoveries in genetics and genomics. Wolf Prizes are being awarded since 1978 by the not for profit Wolf Foundation in Israel, to individuals with outstanding contribution to agriculture, arts, chemistry, mathematics, medicine and physics.

Philips is affiliated with the University of Minnesota, USA. He was cited to be the first to generate whole corn plants from cells grown in culture. This subsequently helped in accelerating genetic modification of corn. Georges on the other hand, is with the University of Liège, Belgium. He is credited on developing tools and methods that helped in the identification and mapping of genes that affect economically important traits in livestock. These genes include those responsible for milk yield, fertility, and disease resistance.

The complete announcement can be found at
http://www.wolffund.org.il/cat.asp?id=14&cat_title=AGRICULTURE

RR-FLEX COTTON - NO ECOLOGICAL RISK

A comparative assessment between Roundup Ready Flex cotton (MON 88913) and a conventional counterpart was conducted in 14 field sites in the US. The study was done to determine if RR Flex cotton, a second-generation GM product that provides increased tolerance to glyphosate, is no more likely to pose a plant pest risk than its conventional counterpart.

Data on plant growth and development, plant structure, and boll, seed, and fiber characteristics were used by researchers from Texas A&M University and the Monsanto Co. in a stepwise tiered decision process. The researchers wrote in their paper that compared to the conventional cotton, the transgenic “did not exhibit any significant adverse growth and development differences that would result in increased weed potential”.

The complete paper published in Crop Science, can be accessed by subscribers at
http://crop.scijournals.org/cgi/content/full/47/1/268

*** AFRICA ***

GABON TO BENEFIT FROM CHINESE AGRIC EXPERTISE

As part of the agreement signed by China, Gabon, and the Food and Agriculture Organization (FAO) under FAO’s South-South Cooperation initiative, China will be sending its agricultural experts and technicians to Gabon to help local farmers improve agricultural productivity and ensure access to food for all. The Chinese specialists will assist the Government of Gabon for two years in implementing the first phase of the country’s Special Programme for Food Security. In

addition to personnel, the Government of China will also provide inputs, tools and equipment for the technologies being introduced by its experts.

Readers can access the press release at
http://www.fao.org/newsroom/en/news/2007/1000481/index.html.

HUNGER PROBLEM IN AFRICA IN NEED OF SOLUTIONS

The quintessential question, “why does Africa remain famished?” remains unanswered, and the European Union, Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) and its African partners are betting on the Agricultural Innovation in Dryland Africa (AIDA) international project to determine the underlying causes of famine in the region. The project aims to pinpoint crucial factors in past failures and current successes, which would then provide a clearer understanding of the conditions for sustainable agricultural development in African dryland areas. The project will involve researchers and farmers, and also decision-makers and local players.

Read the news article at http://www.cirad.fr/en/actualite/communique.php?id=613.

*** THE AMERICAS ***

"ORANGE" CAULIFLOWER GENE AS NUTRIENT BOOSTER

Scientists working with the United States Agricultural Research Service (ARS) hope that a gene from an orange cauliflower plant found nearly three decades ago will provide a solution to Vitamin A deficiency. The gene, dubbed “Or” for the color orange, was isolated last year by researchers at ARS and Cornell University. The Or gene is a semi-dominant gene mutation that promotes high beta-carotene accumulation in various plant tissues in cauliflower that normally lack carotenoids. Carotenoids, which include beta-carotene, are converted inside the body into Vitamin A. The researchers will be using the gene to induce high levels of beta-carotene in food crops.

Read the news article at http://www.ars.usda.gov/is/pr/2007/070117.htm.

CANADA INVESTS $134 MILLION TO BOOST AGRIC INNOVATION

The Canadian government has announced an investment of $134 million towards the Agri-Opportunities Program, an Agriculture and Agri-Food Canada (AAFC) program that will focus on the commercialization of new agri-based products, processes and services. Individuals, producers, agri-businesses, cooperatives, non-profit and for-profit organizations and academia are eligible to apply for the funding, which will be delivered through contribution agreements.

“This is just one of the steps Canada's New Government is taking to fulfill its commitment to invest in the development of new opportunities for the Canadian agriculture and agri-food sector” said Chuck Strahl, Minister of Agriculture and Agri-Food and Minister for the Canadian Wheat Board.

Minister Strahl also announced $15 million in support for the Canadian Agri-Food Policy Institute (CAPI), an independent, national, not-for-profit organization for agriculture policy research.

Read more at:
http://www.agr.gc.ca/cb/index_e.php?s1=n&s2=2007&page=n70123 and
http://www.agr.gc.ca/cb/index_e.php?s1=n&s2=2007&page=n70123a

PLAN FOR $1.6 BILLION INVESTMENT IN BIOFUELS IN THE US

Plans were announced this week by the U.S. Department of Agriculture to propose $1.6 billion in new funding for renewable energy, with a focus on cellulosic energy research and production, aimed to support President Bush's goal of reducing gasoline usage by 20 percent in the next ten years.

“It remains a priority across USDA to support the development of biofuels. We will continue to build on current programs and turn the corner on renewable energy,” said Agriculture Secretary Mike Johanns. “With biofuels coming to the forefront, American agriculture faces the greatest opportunity of a generation to lead a future in which we get our energy by the bushel and not by the barrel.”

The news release is available at:
http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?contentidonly=true&contentid=2007/01/0012.xml

PEW INITIATIVE ON FOOD, BIOTECH TO WRAP UP WORK

The Pew Initiative on Food and Biotechnology (PIFB) will wrap up its work at the end of March 2007, after six years of serving as a credible broker that brought together stakeholders of differing views to discuss the opportunities and challenges that ag-biotech presents. “Through its balanced analysis of the opportunities and challenges posed by these emerging technologies, the Initiative highlighted strengths and weaknesses of the oversight system and pinpointed solutions to make it stronger”, said Michael Fernandez, executive director of the Pew Initiative on Food and Biotechnology. Research and other materials produced by the Pew Initiative on Food and Biotechnology will continue to be available on http://pewagbiotech.org/ after PIFB closes.

For more information, contact Kara Flynn (email: kflynn@pewagbiotech.org).

PERU: NATIVE POTATOES IN THE LIMELIGHT

Peru has been bestowed with more than three thousand varieties of native potatoes, which represents a comparative advantage that the country should be developing. Since native potato varieties require particular climatic and agro-ecological conditions, most of them could not be grown outside the Peruvian Andes, making these potatoes unique to Peru. “It is not possible to compete internationally with the white potato,” pointed out André Deavux, Coordinator of the regional project Papa Andina, of the International Potato Center; hence, efforts to promote native potatoes have started through the project Innovation and Competitiveness for the Peruvian Potato (INCOPA in Spanish). Under INCOPA, Papa Andina has been helping to link the native potato producers with other parts of the produce chain to ensure higher quality in native potatoes, with added value and oriented to specific markets.

To read more: http://www.cipotato.org/pressroom/press_releases_detail.asp?cod=31.

PESTICIDES AND PESTICIDE POISONING IN THE ANDES

Many farmers in Peru are unaware of the dangers of pesticides on their own health and continue to use hazardous pesticides such as organophosphates and carbamates without wearing extensive protection, according to a study that resulted from the project, Persistent Organic Pollutant (POPs) Pesticides in Andean Farming Communities in Peru, financed by the Canadian POPs Fund through the World Bank, Washington DC and executed by the International Potato Center (ICP). On average, 25% of the farmers interviewed in the hotspots have suffered severe poisoning from using pesticides.

The problem of pesticide poisoning can be minimized through integrated pest management (IPM) that includes cultivation of resistant varieties deriving from modern biotechnology. The main objective of IPM is to reduce the excessive use of pesticides to achieve a more sustainable agriculture. However, only a few farmers in Peru have adopted IPM as a practice on their farms.

The complete press release can be read at http://www.cipotato.org/pressroom/press_releases_detail.asp?cod=30.

COFFEE – THAT'S SUCROSE TO THE TASTE BUDS

When somebody tells you to wake up and smell the coffee, he might as well be referring to sucrose in coffee beans that releases several aroma and flavor precursors during roasting. Sucrose plays a vital role in coffee organoleptic quality, and recently, a team of scientists from Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) and the Agricultural Institute of Paraná in Brazil has identified the genes responsible for sucrose accumulation in coffee beans.

Their work showed that an enzyme, sucrose synthetase, is responsible for sucrose accumulation in coffee (*Coffea arabica*) beans. Sucrose synthetase exists in the form of at least two similar proteins with the same biological function - isoforms -, but which are coded by two different genes: SUS1 and SUS2. Isoform SUS2 is responsible for sucrose accumulation in coffee beans, while isoform SUS1 seems to be involved in sucrose breakdown and thus in energy production. The researchers also examined the relationship between shading, which is known to improve coffee quality, and the activities of sucrose metabolism enzymes.

Read the press release at http://www.cirad.fr/en/actualite/communique.php?id=610.

BUMPY ROAD TO ENERGY INDEPENDENCE LIES AHEAD

In every enterprise, there are gainers and losers, and Frank Dooley, a Purdue University agricultural economist who specializes in transportation, foresees potential losers in the global race for ethanol production. According to Dooley, ethanol plants are going up faster than the transportation infrastructure that support them, and this would require dramatic changes in transportation industries to accommodate the expanding ethanol business. One of the biggest losers being considered by Dooley is the rail industry, which he thinks will not be able to replace

their outbound corn shipments with outbound ethanol or DDGS (distillers dried grains with solubles).

"The state could be a potential loser if it doesn't monitor changing traffic patterns and roads," Dooley said. "For example, are we going to need to build more interchanges on the interstates? Let's say an ethanol plant pops up. How are we going to get corn off the interstate and over to that plant? The state could have bills coming in that it hadn't anticipated."

The news article can be read at http://news.uns.purdue.edu/UNS/html3month/2007/070110DooleyEthanol.html.

*** ASIA AND THE PACIFIC ***

RICE RESEARCH HUB FOR GREATER MEKONG OPENS IN LAOS

The countries of Cambodia, Laos, Myanmar, Thailand, Vietnam, and the Yunnan province of People's Republic of China comprise the Greater Mekong Subregion (GMS), considered as one of the most important rice bowls in Asia. It is also one of the hardest hit by age-old problems of pests, diseases, floods, and drought.

For the first time in its history, the International Rice Research Institute (IRRI) has established a Greater Mekong Subregion (GMS) office to coordinate efforts to help farmers in the region deal with production problems and improve their lives. Lao Minister for Agriculture and Forestry Sitaheng Rasphone and IRRI Director General Dr. Robert Ziegler signed a memorandum of understanding (MOU) for the establishment of the new GMS office in Vientiane, Laos on 12 January.

“Working with the national research programs of the GMS, we have developed a research strategy to reduce crop losses from floods, drought, and pests, while improving the yield potential and management efficiency of the most popular rice varieties,” Dr. Ziegler said. “IRRI’s most recent success in this area was the discovery of a gene that enables rice to survive complete submergence for 2 weeks. The gene is being introduced to several popular rice varieties, including a variety of Lao sticky rice.”

To read the press release, visit http://www.cgiar.org/newsroom/releases/news.asp?idnews=532.

VIETNAM JOINS INT'L PLANT PROTECTION UNION

Vietnam has become the 63rd member of the International Union for the Protection of New Varieties of Plants (UPOV), the Ministry of Agriculture and rural development announced on Jan 23 the membership was made in recognition of the country's efforts in building a system to protect varieties of plants, contributing to accelerating research on creating and developing plant varieties. Those efforts helped effectively implement protection of varieties of plants through cooperation with UPOVmembers.

On this occasion, the ministry granted certificates of protection of new plant varieties to the Hai Phong Hi-tech Agriculture joint-stock company, the Bio-Agriculture Institute, the Monsanto company and Syngenta Vietnam Co. Ltd. for their new rice and maize varieties.

For more information, contact Le Hien of the Vietnam Biotechnology Information Center at hienbiotechvn@pmail.vnn.vn.

BIOTECH CROPS APPROVALS IN THE PHILIPPINES

The Philippine Department of Agriculture (DA) recently granted Pioneer Hi-Bred's Corn DAS 59122 x Corn NK603 feed and food approval, making it the 12th stacked trait product to be allowed for import for consumption and processing. However, food and feed approval does not include approval for release as reported last week in the CBU, as approval for release in the Philippines requires propagation approval. The Philippines has approved four events for propagation: Corn MON810, Corn NK603, and Corn Bt 11, which are single-trait events, and Corn MON810 x Corn NK603, a combined-trait event developed by Monsanto.

To view the full list of approvals in the Philippines access:
http://www.isaaa.org/kc/cbtnews/pubs/GM%20Products%20Approval%20Philippines.pdf

*** EUROPE ***

SYNGENTA TO START FIELD TRIALS OF GM MAIZE IN ROMANIA

Syngenta Agro SLR will be the first company to grow genetically modified maize in Romania after it has been granted approval by the Romanian Ministry for the Environment for field trials of the GM maize. The authorization remains valid until 2009. Read more:
http://www.coextra.eu/country_reports/news783.html.

EUROPE LAGGING BEHIND IN AGRI-BIOTECH

The Chairman of International Plant Biotechnology Organisation (IPBO) Gent University and president of the European Federation of Biotechnology Prof. Dr. Marc Van Montagu issued a press release recently, stating that European farmers are lagging behind the rest of the world in terms of access to agricultural biotechnology. Most EU farmers are restricted by a dysfunctional regulatory system and by disproportionate co-existence rules. According to Van Montagu, EU countries are missing out on the benefits offered by biotech crops as a result of the GMO debate in Europe that often "centers on emotional arguments, rather than looking at scientific positives".

The complete press release is available at the EuropaBio website:
http://www.europabio.org/ISAAApress%20lunch/Press%20Release_230107.doc.

RESEARCH

ETHANOL DELAYS POSTHARVEST DECAY OF GRAPES

Ethanol treatment may prevent the decay of grapes during storage while maintaining fruit quality. The research conducted at the Israel's Volcani Center, indicated that ethanol is a promising alternative to sulfur dioxide (SO_2), the currently used treatment during grape storage.

The effectiveness of ethanol in prolonging storage was tested using two grape cultivars and three methods of ethanol application: 1) dipping the grapes in 50% ethanol, 2) placing a container with a wick and ethanol inside the grape package, and 3) applying ethanol to paper and placing this paper above the grapes in the package. After each treatment, the grapes were stored for up to 8 weeks at 0°C and then assessed for quality.

Of the three methods, it was the wick application that showed the best result with excellent grape quality and taste after storage. Compared with the untreated grape berries all the methods gave excellent results in preventing the decay of grapes.

The full paper, published by the journal Postharvest Biology and Technology, can be accessed by subscribers at http://dx.doi.org/10.1016/j.postharvbio.2006.06.011

MOLECULAR TOOLS HELP UNDERSTAND SPREAD OF WEED GENOTYPES

Molecular tools can be extremely useful in determining the spread of weed genotypes and gene flow. The paper by the group of Christopher Preston in University of Adelaide and Indonesian colleagues, discussed how molecular tools can help detect the movement of herbicide resistance genes within and between plant populations.

Three case studies were presented as a guide how to choose the most appropriate molecular tool for answering specific research questions. These include: a) detection of herbicide resistance in barley grass using randomly amplified polymorphic DNA (RAPD) markers, b) estimation of the degree of outcrossing between varieties of canola using inter-sequence simple repeat (ISSR) markers, and c) determination of herbicide resistance in blackgrass using PCR amplification of specific alleles (PASA).

Preston's group stress that the choice of molecular marker will depend on the reproductive biology of the species studied (obligate outcrosser, self-fertilising, apomictic or clonal). Pollination biology of the species is an important factor for consideration as gene flow is intimately linked to the mode of reproduction.

The paper, published by the journal Crop Protection, can be accessed by subscribers at http://dx.doi.org/10.1016/j.cropro.2006.06.018

OPPORTUNITIES AND RISKS IN GM SUNFLOWER RELEASE

Sunflower is the fifth most important edible oil crop and contributes about 8 percent in volume in the world market. According to researchers at the *Universidad Nacional del Sur*, Argentina, there are many transgenic sunflowers but most are still under research and none is commercialized. Miguel Cantamutto and Monica Poverene predict that sunflower production would greatly benefit from the introduction of GM varieties.

The researchers enumerated that among the transgenic traits under field experimentation are those for tolerance for glyphosate and glufosinate herbicides, insect resistance, disease resistance, and product quality traits such as increased latex. Cantamutto and Poverene stated that the transgenic events do not offer any competitive advantage to the GM sunflower varieties and have low environmental impact.

However, because sunflower is a highly outcrossing species, strict environmental monitoring should be imposed and effective management strategy practiced in releases near the crops center of diversity. An example of an effective management strategy, the researchers suggest, would involve alternating the types of herbicides used. This should reduce the risk of herbicide resistance developing in the non transgenic sunflower populations.

The paper, published by the journal Field Crops Research, can be accessed at http://dx.doi.org/10.1016/j.fcr.2006.11.007.

ANNOUNCEMENTS

"FROM BASIC GENOMICS TO SYSTEMS BIOLOGY"

The conference "From Basic Genomics to Systems Biology" will be held on May 2-4, 2007 in Ghent, Belgium. Sessions will focus on: control of plant development, photosynthesis and chloroplast and mitochondrial functions, plant-microbe and plant-virus interactions, plant reproduction, genetic variation & comparative genomics, metabolism and metabolic signaling, RNA processing, gene silencing and recombination.

For more information, visit http://cwp.embo.org/cfs07-07/index.html

TRAINING COURSE ON RICE BREEDING

The International Rice Research Institute (IRRI) will be offering "Rice Breeding Course: Laying the Foundation for the Second Green Revolution" on August 20-31, 2007. The training course aims to provide the participants with the theoretical knowledge on modern plant breeding methods and techniques, and teach them planning and information management tools and experimental techniques and software for developing an efficient rice breeding program. The course will be coordinated by the Plant Breeding, Genetics and Biotechnology Division (PBGB) and facilitated by the Training Center of IRRI.

Readers can access the brochure at http://www.training.irri.org/activities/documents/2007/RICE%20BREEDING%20COURSE%20Brochure%202007.doc

MOSCOW BIOTECHNOLOGY CONGRESS

The Fourth Moscow International Congress with the theme "Biotechnology: State of the Art and Prospects of Development" will be held in parallel with the Fifth Biotech World International Exhibition on March 12-16, 2007 in Moscow, Russia. The events are intended to enable participants to be updated on recent developments in biotechnology. International participants from both the public and private sectors will also have a chance to know more on the activities of Russian biotechnologists.

More on this event at http://www.mosbiotechworld.ru/eng/index.php.

CONFERENCE ON ZINC DEFICIENCY

The Zinc Crops 2007 international scientific conference will be held at Istanbul, Turkey from May 24 to 26 2007. Conference sessions will review the latest knowledge and best agricultural practices in addressing zinc deficiency and its impact on global crop production and human health. This event is organized by the International Zinc Association (IZA) and the International Fertilizer Industry Association (IFA) in cooperation with Sabanci University and HarvestPlus.

Visit the website at http://www.zncrops2007.info/

OIL AND PROTEIN CROPS BREEDING CONFERENCE

The Oil and Protein Crops Section of the European Association for Research on Plant Breeding (EUCARPIA) will hold a scientific conference on 7-10 October 2007 in Budapest, Hungary. Researchers, breeders and others with an interest in the genetics and breeding of oil and protein crops are invited to participate. Among the topics to be discussed are directions of breeding for resistance to abiotic and biotic stresses, improved industrial use, and conventional versus organic production.

For more information please visit http://www.altagra.hu/eucarpia, or contact F. Viranyi at Szent István University, Hungary (phone: 36 (28) 522-000 ext. 1785; fax: 36 (28) 522-077; e-mail: viranyi.ferenc@mkk.szie.hu).

THE 4th SOLANACEA GENOME WORKSHOP 2007

The 4th Solanacea Genome Workshop 2007 is slated on September 9-13, 2007 in Jeju Island, Korea. The workshop will focus on how to apply genomic tools for understanding secondary metabolisms and improving nutritional values of Solanaceous crops. More information are available at http://www.solanaceae2007.org/.

DOCUMENT REMINDERS

IFPRI'S STRATEGY TOWARD FOOD AND NUTRITION SECURITY IN AFRICA

The International Food Policy Research Institute's (IFPRI) latest publication states its renewed attention and commitment to economic development and food and nutrition security in Africa. Among IFPRI's vision on its Africa Strategy include secure access by all to sufficient food to sustain a healthy and productive life, and that food-related decisions are made transparently, with both consumer and producer participation.

To read the publication overview visit http://www.ifpri.org/pubs/books/gi20.asp, or download the complete brief at http://www.ifpri.org/pubs/books/gi21.pdf

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