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News

GLOBAL

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WILD RELATIVES MAY HOLD KEY TO DEADLY WHEAT DISEASE

The threat of a new, highly virulent wheat rust strain known as Ug 99 looms over global wheat production. Wheat varieties initially resistant to the pathogen are showing signs of succumbing to wheat rust. The survival of vulnerable wheat varieties may lie in the valuable genetic material of their wild relatives. Bioversity International (formerly, the International Plant Genetic Resources Institute) has been working on a global project to protect important and threatened crop wild relatives by encouraging their *in situ* conservation - in farmers' fields and in the wild - thereby ensuring that they are available to meet agricultural challenges like that posed by Ug 99.

Wild relatives offer a critical source of genes that can provide resistance to a wide range of diseases, pests and environmental stresses. However, over-exploitation, habitat loss and climate change threaten this vital resource. Bioversity and its partners are working to protect crop wild relatives. "Good protection of crop diversity and wild relatives is the best insurance policy we can have," said Emile Frison, Director General of Bioversity International. "You never know what the next problem will be. But whatever it is, agricultural biodiversity is likely to provide the

solution.”

Read the news release at <http://ipgri-pa.grinfo.net/index.php?itemid=1680>.

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CONSTRUCTION OF 'DOOMSDAY VAULT' BEGINS

Construction for the Svalbard International Seed Vault, or the “Doomsday Vault” as the media described it, has begun and is due to be completed in September 2007. The seed vault is an answer to a call from the international community to provide the best possible assurance of safety for the world’s crop diversity. The idea for a global genebank has been around since the 1980s, but it was only with the coming into force of the International Treaty on Plant Genetic Resources, and an agreed international legal framework for conserving and accessing crop diversity, that the seed vault became a practical possibility. The Svalbard International Seed Vault will be the ultimate safety net for the world’s most important natural resource.

The complete news release is available at <http://www.croptrust.org/main/arctic.php?itemid=211>.

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THE FUTURE OF GMO DETECTION FROM A SCIENTIST'S PERSPECTIVE

The LL601 rice incident last year brought the issue of detection of genetically modified organisms (GMO) in the limelight. The rice is believed to have escaped during field trials in the United States in 2001 and contaminated rice shipment into the European Union.

According to Dr. Holst-Jensen, Norwegian researcher in the Co-Existence and Traceability (Co-Extra) project and expert for GMO detection methods, protein-based screening methods applied in the US have limitations because some events are still unknown. In Europe the use of event-specific detection methods have been promoted for many years, but traditional application of event-specific methods would also fail to detect events like the LL601 rice. Policy makers could make GMO tests and monitoring more reliable by establishing an international register of GMO sequences and testing material, and requiring reference material for detection to be available at all stages of GMO development. Holst-Jensen also described high density micro-array technology, and multiplex screening tools which will be the latest addition in GMO detection methods. Dr. Holst-Jensen expressed his optimism on an approach based on bioinformatics, which may detect even completely unknown GMOs.

Read the full interview at <http://www.coextra.eu/researchlive/reportage765.html>.

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GENE DELETOR TECHNOLOGY TO PREVENT GENE FLOW

Scientists at the University of Connecticut have developed a tool which could prevent genetically-modified (GM) gene flow into non-biotech crops or weeds. Known as the “GM (genetically-modified)-gene-deletor”, the technology could be particularly useful to confine engineered genes by initiating the gene deletion process immediately prior to seed or fruit development. Yi Li and co-workers observed exceptionally high deletion efficiency in the experimental plants,

and they expect an enormous potential for the technology to be used in large-scale plantings of agricultural crops, genetically improved trees, and bioenergy/biofuel and pulp generating species.

Read the news release at <http://news.uconn.edu/2007/February/rel07015.html>.

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PRODUCTION OF BIO-PLASTICS IN PLANTS

There has been a growing concern on the effect of non-degradable plastic wastes on the environment. Pornpa Suriyamongkol and colleagues in Canada, say that one solution is to use naturally produced plastic compounds, called polyhydroxyalkanoates (PHAs). PHAs have many potential applications in the food industry (in bottles and other food material packaging), and in medicine (in implants, gauzes, and suture filaments).

PHAs has been found to bio-degrade in 3-9 months, and mass production can be done using plants or microorganisms. Suriyamongkol and colleagues believe that the use of plants is considerably less expensive than in bacteria because the former does not need the costly requirements used in growing the microorganisms, such as sterile environment, fermentation equipments, and electricity.

The efficiency of producing PHA in transgenic plants has already been examined by using the model plant *Arabidopsis* and several crop species. The main challenge is how to produce commercially viable levels (greater than 15% dry weight) of PHA in the transgenics. If the desired level is attained, it is hoped that the cost of producing bio-plastics in plants could be lower or equivalent to the cost of producing petroleum-based polymers, which is about \$1/kg.

Subscribers to the journal *Biotechnology Advances* may read the complete review at <http://dx.doi.org/10.1016/j.biotechadv.2006.11.007>

AFRICA

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AU AGRIC MINISTERS ENDORSE PAN-AFRICAN SEED, BIOTECH PROGRAMME

The third Conference of African Union Ministers of Agriculture held in Libreville, Gabon, recently, endorsed the development of the African Seed and Biotechnology Programme (ASPB) to help streamline the two sectors on the continent. They concurred that improved seeds offer an opportunity to meet the challenge of enhancing agricultural productivity in which lie the pathway towards sustainable food security.

The meeting stressed the need to enhance seed trade and to agree on harmonized rules among Member States, to improve collaboration between regional economic communities, and to enhance the role of the private sector in the seed industry. In discussions regarding funding for the Programme, the Director of the Rural Economy and Agriculture Department of the African Union Commission, Dr. Babagana Ahmadu, reminded the delegates of the Maputo Declaration of 2003, in which the Heads of State and Government pledged to allocate at least 10% of the national budgets to implement the agricultural agenda.

The meeting was attended by ministers from Algeria, Angola, Cameroon, Chad, Egypt, Gabon, Gambia, Guinea, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Nigeria, Republic of Congo, Senegal, South Africa, Tanzania, Togo, Tunisia, and Zambia.

For more information email Daniel Otunge (d.otunge@cgiar.org) of ISAAA AfriCenter.

AU AGRICULTURE EXPERTS OUTLINE POSITION ON GMOS

African Agriculture experts meeting during the third Conference of AU ministers of agriculture, Libreville, Gabon, have urged to put in place a biosafety framework in order to harness the potential from biotechnology while minimizing the risks, since their countries are signatory parties to the Cartagena Protocol on Biosafety.

In a paper presented to ministers from 24 countries and to representatives of leading development agencies organizations and institutions, the experts argued that genetic engineering is a tool that could be used to resolve some of the constraints of African agriculture, and should therefore be considered along with other conventional farming practices. However, they underscored the high cost related to biotechnology research and development and encouraged international collaboration and partnership as well as institutional linkages, regional initiatives and innovative approaches to access patented technologies for the benefit of small holder farmers in Africa.

Experts observed that research to develop indigenous African crops can best be done by African research institutions with the support of African governments.

To harness the benefit of GM technology, "it is necessary for Africa to develop facilities for regulatory purposes, to enhance scientific capacity of institutions operating in biotechnology research and development and those conducting risk assessment studies, and establish GMO testing facilities and to streamline regulations for testing GM crops to assess their merit", the experts told the ministers.

For more information email Daniel Otunge (d.otunge@cgiar.org) of ISAAA AfriCenter.

AMERICAS

NEW SCIENCE-BASED CROPS TO BENEFIT DEVELOPING COUNTRIES

Research in agricultural biotechnology holds "immense promise" and can lead to new crops that will help fight human diseases and increase productivity in marginal areas affected by drought and poor soil. This is the consensus of scientists interviewed by the United States Bureau of International Information Programs (USINFO).

Among potential possibilities include the development of "functional foods" -- those with components associated with the prevention or treatment of diabetes, cardiovascular disease, hypertension, arthritis and improved mental alertness, said Martina Newell-McGloughlin, director of the University of California's biotechnology research and education program. Others include plants modified to deliver anti-oxidants, which protect against cancer; lipids, which contain essential fatty acids that serve as energy sources; vitamins, such as beta-carotene or vitamin A, which protect against premature blindness and susceptibility to other illnesses; and iron, whose deficiency results in fatigue and decreased immunity.

For more information on second generation biotech crops, go to <http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=February&x=20070212150633AKIlennoCcMO.9100153>

USDA REPORTS ON BIOTECH IN BRAZIL

Agricultural biotechnology in Brazil continues to be a "difficult issue" as government agencies, and consumer and environmental groups have yet to agree on how to approach commercial applications for biotech products. Differences between these groups have kept CTNBio, the National Commission of Biosafety, from approving new biotech events. This is the scenario forwarded by a report from the United States Department of Agriculture.

The report says that despite the approval and implementation of Brazil's biosafety law, the establishment of a National Development Policy Plan for Biotechnology, and a National Committee on Biotechnology, Brazil is still unclear about how to move forward as the government has declined to cite funding sources for the plan. It has also been unable to address legal problems faced by CTNBio.

See the full report at
<http://www.fas.usda.gov/gainfiles/200702/146280222.pdf>

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AGRICULTURAL PROJECTIONS TO 2016

The United States Department of Agriculture (USDA) recently published a report, "USDA Agricultural Projections to 2016" which cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income and food prices. The projections are a conditional scenario based on specific assumptions regarding the macroeconomy, agricultural and trade policies, the weather, and international developments.

In the United States increases in corn-based ethanol production will provide a major impetus for a strong net farm income projection. Increased demand for grain used to produce ethanol in the United States will raise the price of corn relative to prices for other grains and soybeans. In response, increased corn production and exports are assumed for countries such as Argentina, Bulgaria, Romania, Ukraine, Republic of South Africa, and Brazil. In addition, vegetable oil prices rise relative to prices for oilseeds and protein meals because of expanding biodiesel production in a number of countries.

Cotton consumption and textile production are projected to increase in countries where labor and other costs are low, such as China, India, and Pakistan. Although China's cotton imports are expected to grow more slowly than the rapid gains since 2001, these increases account for the gains in global cotton trade in the projections. Improved Indian cotton crop yields, in part due to the adoption of Bt cotton, have raised India's output in recent years. Rapid yield growth is projected to continue with the increase in cotton output being used for domestic textile production rather than for export.

Readers can access the full report at <http://www.ers.usda.gov/publications/oce071/oce20071.pdf>.

ASIA AND THE PACIFIC

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MOLECULAR TOOLS FOR TEA BREEDING IN CHINA

Molecular marker assisted selection, micropropagation techniques and genomics tools, such as cDNA microarray, are being used to accelerate tea breeding efforts in China. Tea is a very important source of export revenue in China and other countries such as Kenya, India and Sri Lanka. Together, these four countries account for more than 60% of tea exports worldwide.

Chinese researchers report that more than 3,000 accessions of tea conserved by the China National Germplasm Tea Repositories (CNGTR) can be utilized to develop cultivars that are higher yielding, have higher cup quality, contain elevated levels of functional components, and are more tolerant to biotic and abiotic stresses.

Molecular markers are useful in constructing tea genetic linkage maps, and to appraise and evaluate germplasm for desirable genes. Genetic engineering, transformation techniques, and RNA interference (RNAi) technologies offers a lot of potential on the crop, however a lot in these methods still need to be improved so that they could be routinely used. The researchers propose that RNAi be explored as it may be useful in developing tea cultivars with low or no caffeine.

The complete review article was published in *Euphytica* and accessible to subscribers at <http://www.springerlink.com/content/vw7322n354543082/>

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INDONESIAN SCIENTISTS TARGET TRANSGENIC RICE AND CORN IN THREE YEARS

The Indonesian Agency for Agricultural Research and Development (IAARD) of the Ministry of Agriculture plans to develop transgenic rice and maize in the next three years. Dr. Ir. Achmad Suryana, head of IAARD, says this projection indicates IAARD's commitment to biotechnology research in the country. He noted that it would be unfortunate if scientists did not do their share in taking advantage of the new technologies to improve yields and overcome major production constraints. Suryana added that aside from rice, other crops being studied by IAARD are soybean, papaya, potato, sweet potato and tomato.

Visit <http://www.litbang.deptan.go.id/berita/one/430/> for more information.

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INDONESIA PILOTS JATROPHA PRODUCING VILLAGES FOR BIOFUEL

Indonesian President Susilo Bambang Yudhoyono says the government will ensure that farmers' production of jatropha, a rich source for biofuel production, will be absorbed by industries. "Jatropha seed and oil yield production will be well marketed," said President Yudhoyono during his visit to a village in Tanjung Harjo, district of Ngarangan, regency of Grobogan, Central Java, which has been earmarked to produce jatropha on a self-sustaining basis.

The village is a pilot project for jatropha cultivation which has an organized farmer association and a factory capable of processing 3 million tons of jatropha seeds per day. Villages like that of Tanjung Harjo will have a system which will enable them to go into jatropha production through the provision of capital support, and the development of infrastructure, and marketing avenues, among others.

The use of jatropha, according to President Yudhoyo, is in line with Indonesia's strategic plan to develop biofuels as alternative to conventional fuel sources.

See the full article at <http://www.media-indonesia.com/> for more information.

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AUCKLAND REGIONAL COUNCIL VOTES AGAINST RELEASE OF GMOs

The Auckland Regional Council (ARC) voted against the release of genetically modified organisms (GMOs) in field and food, though it did not oppose the development of GMOs in laboratories for medical purposes. The Council adopted the policy in principle as a precautionary approach to GMOs, according to ARC Regional Strategy and Planning Chair Paul Walbran. The policy also acknowledges the overwhelming opposition to GMOs that was demonstrated in public submissions to the ARC's annual plan.

Read the press release at <http://www.arc.govt.nz/index.cfm?88F08791-BCD4-1A24-9DE9-E5E959F47B1C&entryID=D7F3F4DF-BCD4-1A24-92AA-A39ED87569F5>.

EUROPE

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RUSSIA APPROVES TWO BIOTECH CORN VARIETIES

Russia recently approved two biotech corn varieties for use in animal feed. The two events, Bt11 and T25 were developed by Syngenta Seeds and Bayer CropScience, respectively. "The approvals are part of the World Trade Organization (WTO) ascension agreement between Russia and the United States," commented Alexander Kholopov, USGC director in Russia.

Russia's Federal Agency for Veterinary and Phytosanitary Control approved the two events, bringing the total number of biotech events approved in Russia for feed to seven. Currently, there are fifteen transformation events approved for food, and two for biosafety.

For more information, contact Irina Yakovleva of the Russian Biotechnology Information Center iacgea@biengi.ac.ru.

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EU COUNCIL VOTES ON TWO GMO PROPOSALS

The European Union's (EU) Environmental Council rejected the Commission's request to have Hungary lift its illegal ban on the cultivation of EU-approved genetically modified crops. EuropaBio, Europe's association of bioindustries, said that this move "denied the freedom of choice to Hungarian farmers who want to grow insect protected maize crops".

The European Commission had asked the Council to overturn the Hungarian ban on the genetically-modified maize seed that has repeatedly been pronounced safe after rigorous and protracted EU reviews, EuropaBio added.

In the case of a genetically modified carnation, the Council did not find the required majority for or against the proposal to authorize placing the GM carnation on the market for import and retailing.

EU legislation requires that the Commission take the final decision in cases where the Council fails to reach a qualified majority either for or against Commission proposals in the area of GMOs. This case will therefore go back to the Commission.

Read on for more information at http://www.europabio.org/articles/PR_ENVI%20Council_Feb%202007_FINAL.doc and <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/69&format=HTML&aged=0>

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EUROPEAN NETWORK TO DEVELOP SUSTAINABLE CROP PROTECTION STRATEGIES

The European Network for the Durable Exploitation of Crop Protection Strategies (ENDURE) was launched recently at the National Institute for Agricultural Research of France (INRA). ENDURE aims to develop crop protection strategies compatible with sustainable development. The network will foster investment in the biology of pathogens, insect pests and weeds and the creation of varieties with sustainable resistance; the use of biological control; the spatial diversification of agricultural ecosystems; the management of invasive species and the integrated management of weeds. ENDURE, coordinated by INRA and managed by its subsidiary INRA Transfert, has received 11.2 million Euros in funding, and will involve more than 130 researchers working in 18 European organizations over the next four years.

The news article is available at http://www.international.inra.fr/press/inra_is_coordinating_endure.

Research

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TRANSGENIC APPROACH TO COLOR COTTON FIBERS

A potential method of modifying cotton fiber color without the need for dyeing was recently described by Chinese researchers. Using redesigned genes from *Streptomyces antibioticus* for melanin biosynthesis, the group of X. Xu observed that cotton fiber color can be modified from white to brown.

The researchers used *dORF438* and *dtYrA* gene sequences for transforming the cotton cultivar 'Xinluzao 6'. These genes have been identified to be important in the production of tyrosinase, an enzyme needed in melanin biosynthesis. The T1 transgenic plants were analyzed for melanin production and fiber color by observing epidermal cells under a microscope and by using a colorimeter system, respectively.

Xu and colleagues have also determined that the *dORF438* and *dtYrA* genes also work when introduced to tobacco. The transgenic 'Shan Xi Yan' tobacco cultivar was found to exhibit melanin in its trichomes.

The abstract, with links to the full article can be accessed by subscribers at <http://www.thieme-connect.de/DOI/DOI?10.1055/s-2006-924346>

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TRANSPOSITION-BASED PLANT TRANSFORMATION

Among the public concerns on genetic transformation is the permanent introduction of bacterial, viral, and synthetic DNA into the genomes of food crops. A new method of genetically modifying plants that does not require bacterial DNA inserted into their genomes has been reported by Hua Yan and Caius Rommens of the J.R. Simplot Company in Idaho.

Yan and Rommens used *Agrobacterium* T-DNAs containing both a maize *Dissociation (Ds)* element and *Activator-Transposase (Ac-Tpa)* gene to deliver the desired DNA sequence to potato stem explants. The method was found effective in the transformation of 'Ranger Russet' potato variety. Single-copy and backbone-free transformation events were observed at a rate that is a bit lower (2.5-fold) than the regular T-DNA transformation of potato.

The abstract published by the journal *Plant Physiology*, with links to the full paper for subscribers, is accessible at <http://www.plantphysiol.org/cgi/content/abstract/143/2/570>

Announcements

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FOOD SECURITY AND AG-BIOTECH NEWS NOW AVAILABLE IN FRENCH

Meridian Institute has announced the launch of a French-language version of Food Security and Ag-Biotech (FS-AgBiotech) News. FS-AgBiotech News is a free daily news service that provides summarized news and analysis of global developments related to agricultural biotechnology, with a special focus on implications for food security in the developing world. Daily news summaries are available by email, on the web, or through a RSS news feed.

To access FS-AgBiotech News online, please visit <http://www.merid.org/fs-agbiotech/fr>.

ADVANCED COURSE IN MODERN BREEDING TECHNIQUES

The Institute of Plant Biotechnology for Developing Countries is organizing a two-week course in modern breeding techniques. The summer course will be held on August 14-23, 2007 in Ghent, Belgium. Major topics in the field of breeding will be covered, including the latest techniques in breeding using molecular data as a tool, and the use of different kinds of markers in breeding programs. A section will also deal with the commercial aspects of "elite transgenic events" and their specific breeding strategies.

For more information, visit: http://www.ipbo.ugent.be/activities/education/brochure_summer_course_2007.doc.

PLANT GENOMES CONFERENCE

15-18 March 2007, New York, USA

The sixth Cold Spring Harbor Laboratory winter conference this year will focus on Plant Genomes. The conference, to be held on 15-17 March, 2007 in New York, USA, will review progress in genome analysis of major plant groups and determine the similarities and differences in the genome structure, composition and function in major groups of experimental and crop plants.

More information on this event at <http://meetings.cshl.edu/meetings/plants07.shtml>.

CRAWFORD FUND DEREK TRIBE AWARD, 2007

Nominations are now being accepted for Australia's Crawford Fund Derek Tribe Award. The award is made biennially to a citizen of a developing country in recognition of his/her distinguished contributions to the application of research in agriculture or natural resource management in a developing country or countries.

The awardee will attend a seminar, deliver a public address, and undertake a visit of about two weeks to agricultural centers in Australia with the intention of enhancing networking and linkages between the recipient's home institution and country with similar bodies and individuals in Australia.

More information at <http://www.crawfordfund.org/events/pdfs/DTAward2007Final.pdf>.

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