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)

March 17, 2006

In This Week's Issue:

NEWS

Global
- 96 Governments Recognize Role of Agrarian Reform against Poverty
- UN Compiles Second World Water Report
- MOP-3 Meeting Opens in Brazil
- GM Trade Issues and Developing Countries

Africa
- Ethiopian Bills for Plant Breeder's Rights and Biodiversity

The Americas
- Brazil Announces Position on Labeling of GM crops
- Herbicide Resistant Alfalfa Sold to US Farmers

Asia
- Major Agricultural Program Set in Pakistan
- Pakistan Tries Bt Cotton

Europe
- EC Reports On Co-Existence Issue

RESEARCH
- Vietnamese Rice Gets Bt Boost
- Novel Approach Integrates Fruit and Whole Plant Analysis in Tomato
- Research Analyzes Wild Rice Diversity
- Non-Pathogenic Isolates Recruited in Fight against Banana Fusarium Wilt

ANNOUNCEMENTS:

DOCUMENT REMINDERS:

NEWS

Global

96 GOVERNMENTS RECOGNIZE ROLE OF AGRARIAN REFORM AGAINST POVERTY

Representatives of 96 Food and Agriculture Organization of the United Nations (FAO) member countries signed last week a declaration recognizing “the essential role of agrarian reform and rural development to promote sustainable development”. Governments that signed the declaration reaffirmed that “wider, secure and sustainable access to land, water and other natural resources” on which rural people depend are “essential to hunger and poverty eradication, which contribute to sustainable development and should be an inherent part of national policies.” Signatory governments pledged to develop mechanisms for dialogue and cooperation to reinforce agrarian reform measures at national and international levels.

The declaration was signed at the end of the International Conference on Agrarian Reform and Rural Development (ICARRD) that concluded on the 10th March in Porto Alegre, Brazil. Civil Society Organizations and Social Movements played a crucial, positive role the conference, calling for new levels of engagement with their governments.

Three-quarters of the world's 852 million men and women suffering from hunger are found in rural areas and depend on agriculture for their survival. Most of them are landless farmers or have such tiny or unproductive plots of land that they cannot feed their families. “Since the very poorest are landless farmers everywhere it will not be possible to achieve the Millennium Development Goals unless we find sustainable solutions to the challenge existing in the world's rural areas" said Parviz Koohafkan, Executive Secretary of ICARRD.

For more information visit: http://www.fao.org/

UN COMPILES SECOND WORLD WATER REPORT

According to the Second UN World Water Development Report: “Water, a shared responsibility”, limited resources, mismanagement and environmental changes are responsible for the fact that almost one-fifth of the world’s population still lacks access to safe drinking water, and 40% lack access to basic sanitation. The triennial report is the most comprehensive assessment to date of freshwater resources, and this edition focuses on the importance of governance in managing the world’s water resources and tackling poverty.

The report highlights include:

• Although freshwater supplies are adequate at the global scale, "mismanagement, corruption, lack of appropriate institutions, bureaucratic inertia and a shortage of new investments in building human capacity as well as physical infrastructure" are largely responsible for the unequal distribution of this resource.

• 90% of natural disasters are water-related events, and many are the result of poor land use.

• World food production needs to increase by 55% by 2030, which translates into an increasing demand for irrigation, which already claims nearly 70 percent of all freshwater consumed for human use. Despite increases in global food production, 13% of the global population (850 million people, mostly in rural areas) still do not have enough to eat.

"Water, a shared responsibility", will be formally presented to the Fourth World Water Forum in Mexico City on 22 March, World Water Day.

For more information visit: http://www.unep.org/NewsCentre/

MOP-3 MEETING OPENS IN BRAZIL

The Third Meeting of the Parties (MOP-3) to the Cartagena Protocol on Biosafety is now taking place in Curitiba, Brazil. Slated for the 13th to the 17th of March, the meeting aims to hold talks on identifying, labeling, handling, and the use of genetically modified organisms (GMO); and discussions on risk assessment, safety handling, communication, and cooperation with other organizations, conventions, or programs.

Fatimah Raya Nasron, president of the Convention on Biological Diversity (CBD), urged participants not to leave Curitiba without having resolved outstanding issues left over from MOP-2. "This is important if we are to enhance the effective implementation of the Protocol which we spent so many years and so much energy crafting," she said in her opening statement, "Such expeditious proceeding will reinforce the significance of the Cartagena Protocol as an international agreement that aims at establishing and implementing a harmonized framework of rules and procedures to govern the movement of living modified organisms across borders."

The MOP-3 is a preparatory meeting for the 8th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP-8), which begins on the

20th of March, also in Curitiba. COP-8 will be attended by official delegations of the 188 members of the CBD.

For more information, visit http://www.biodiv.org

GM TRADE ISSUES AND DEVELOPING COUNTRIES

There is a large heterogeneity in current import approval and marketing policies of genetically modified (GM) food worldwide. Developing countries tend to develop regulations based on their own objectives and on their international obligations. Despite harmonized safety approval regulations, there is no agreement on labeling and marketing regulations for GM food. These are conclusions from "An analysis of trade related international regulations of genetically modified food and their effects on developing countries" published by the International Food Policy Research Institute (IFPRI).

Guillaume P. Gruère, author of the discussion paper, proposes "policy arrangements to enable developing countries to simultaneously satisfy production, consumption, international trade and risk management objectives." He suggests two critical measures: the practical and efficient use of harmonized safety standards for imports, and the setting up of segregation strategies of GM versus non-GM for sensitive export commodities.

The discussion paper released by the Environment and Production Technology Division of IFPRI is downloadable at http://www.ifpri.org/divs/eptd/dp/eptdp147.asp.

Africa

ETHIOPIAN BILLS FOR PLANT BREEDER'S RIGHTS AND BIODIVERSITY

The House of Peoples' Representatives of Ethiopia recently endorsed two bills: the Plant Breeders' Right and the Genetic Resources and Community Knowledge and Rights. The Plant Breeders' Right bill aims to enable the private sector to release new plant varieties suitable for the local ecosystems and environmental conditions of the country, and will encourage private investment and facilitate the utilization of crop varieties developed abroad. The bill was presented by the Rural Development and the Natural Resources and Environmental Protection Standing committees of the House.

The Bill Providing for Genetic Resources and Community Knowledge and Rights is set to provide protection of Ethiopia's genetic resources, as well to facilitate the expansion of investment and the equitable share of the benefits of utilizing local genetic resources.

The bill was presented by the Rural Development, Legal, Information and Cultural Affairs Standing Committees. Member of the Committee indicated that community knowledge and recognition given for community resources would have immense contribution for the protection and preservation the genetic resources of the country.

For more information visit:
http://www.ena.gov.et/default.asp?CatId=6&NewsId=191992

The Americas

BRAZIL ANNOUNCES POSITION ON LABELING OF GM CROPS

Brazil will adopt the use of the expression "it contains" referring to live, genetically modified organisms (GMOs). This was announced by Marina Silva, the Brazilian Minister for the Environment, at the 3rd Meeting of the Parties to the Cartagena Biosecurity Protocol (MOP3). The labeling of GMO shipments exported to other countries will also include information on the processes of production, transportation, and storage. A four-year transition period has been established to implement the system.

According to the National Confederation of Agriculture (CNA), the new labeling rules will add 10% to the sector's production costs, and will negatively affect Brazil's international competitiveness in the agricultural sector. For soybeans exports the cost to producers is expected to amount to approximately US$ 1 billion.

The 3rd Meeting of the Parties to the Cartagena Biosecurity Protocol (MOP-3) took place this week in Curitiba, Brazil, and was attended by representatives of 131 countries which have already ratified the Cartagena Protocol.

For further information on MOP-3 visit: http://www.radiobras.gov.br/ and http://www.biodiv.org/meetings/cop8mop3/mop-03.shtml

HERBICIDE RESISTANT ALFALFA SOLD TO US FARMERS

Roundup Ready alfalfa J101 and J163 seed is now for sale in the United States. Roundup Ready alfalfa represents the fifth genetically engineered crop with resistance to broad-spectrum herbicides to be commercialized, after soybean, maize, cotton and rapeseed. Alfalfa, a perennial herbaceous plant, is one of the leading forage crops, and it is grown in over 9 million hectares in the US. The Roundup Ready trait enables a more flexible and effective weed management. However, as alfalfa is a perennial crop with potential for out-crossing, environmentalists fear lateral gene transfer. A file has been filed in California to overturn the authorization decision.

For more information visit: http://www.gmo-compass.org/eng/home/

Asia

MAJOR AGRICULTURAL PROGRAM SET IN PAKISTAN

The US$ 4.8 million, four year program, is aimed at building linkages between the agricultural sectors of Australia and Pakistan. The main goals of the program in terms of agriculture are to transfer Australian knowledge and expertise to key sectors of Pakistan agribusiness to increase profitability and enhance export potential. In addition, the plan will contribute to poverty alleviation of smallholder farmers through collaborative research and development, and will enhance the capacity of the Pakistan research, development and extension systems to deliver targeted and practical research outputs to agribusiness and farmers. Main focus of the program will be horticulture (mango and citrus) and livestock (dairy) enterprises, while at the same time underlying issues of water management and institutional and technical capacity building will be addressed. Components of the program also include the strengthening of market and academic linkages.

The project is funded by the Australian Government Overseas Aid Programme (AusAID), and the Australian Centre for International Agricultural Research (ACIAR) is responsible for implementing the agricultural component of the program.

For more information visit: http://www.aciar.gov.au/web.nsf/doc/ACIA-6LLVXQ

PAKISTAN TRIES BT COTTON

Initial planting of Bt cotton in cotton growing regions in Punjab-Bahawalpur, Multan, Muzaffer Garh and Karor Pakka in Pakistan has resulted in positive

benefits for first time growers of the crop. Farmers noted a reduction in the use of insecticide spraying, down to 4-5 applications as compared to 6-9 sprayings in conventional cotton varieties. Crop yields were also significantly higher with Bt cotton yielding an average of 23-28 *maund* (1 *maund* = 40 kg) per acre versus 17 to 20 *maund* in traditional cotton varieties. These results were reported by Ijaz Ahman Rao for the agriculture website Pakissan.com.

Rao said that the Pakistan Atomic Energy Commission (PAEC) distributed Bt cotton seed varieties to be grown over 8,000 acres in the 2005-06 season. PAEC earlier sought special permission to do so from the Ministry of Environment under the "Voluntary Code of Conduct for release of GMO into the environment" prepared by the National Institute for Biotechnology and Genetic Engineering. Pakistan enacted its Biosafety Rules in April 2005.

Email Ijaz Ahmad Rao at luckystarpk@gmail.com for more information or read his articles at http://www.pakissan.com/english/advisory/biotechnology/first.bt.cotton.grown.in.pakistan.shtml and http://www.dawn.com/weekly/science/science1.htm

Europe

EC REPORTS ON CO-EXISTENCE ISSUE

According to a recently published report from the European Commission (EC), the development of a European Union (EU)-wide legislation on the co-existence of genetically modified (GM) crops with conventional and organic farming does not appeared justified at the present time. This is due to the EU's limited experience with the cultivation of GM crops, and the need to conclude the process of introducing national measures.

The EC recommends that: 1) co-existence measures should not go beyond what is necessary, to ensure that accidental traces of GM in non-GM products stay below EU labeling thresholds in order to avoid any unnecessary burden for the operators concerned; and 2) co-existence measures should be science-based and proportionate and must not generally forbid the growing of GM crops.

In line with this, the EC has organized a co-existence conference, which will take place in Vienna, Austria in April. In the meantime, it proposes to strengthen its efforts to ensure the maximum cooperation between EU Member States; analyze the latest scientific and economic information available on segregation measures; develop jointly with the Member States best practices for technical segregation measures leading to crop-specific recommendations; and obtain more information on national civil liability systems. In 2008, the Commission will report

on the progress made, including an update on the development and implementation of national co-existence measures.

Read the press release at http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/230&format=HTML&aged=0&language=EN&guiLanguage=en. Read more about the EU stand on the co-existence issue at http://europa.eu.int/comm/agriculture/coexistence/index_en.htm.

RESEARCH

VIETNAMESE RICE GETS BT BOOST

Rice is an important cereal grain crop worldwide. In Vietnam, it is cultivated on 5.9 million hectares, and provides 80% of the carbohydrate and 40% of the protein intake of the average Vietnamese. Rice production has increased in the country, but insect pests, such as the yellow stem borer, lead to severe crop losses. Pest control measures using pesticides are largely ineffective, since the insect larvae feed inside the rice stem. Attempts to incorporate resistance to yellow stem borer to rice by conventional breeding methods have failed due to lack of suitable genes in the rice gene pool. The transfer by genetic engineering of the Bt toxin gene (*cry*) from the soil bacterium *Bacillus thuringiensis* offers therefore an alternative solution. Bt toxins are highly specific to certain insect species larvae.

Scientists are now developing two-toxin Bt crops to slow down any resistance insects may have to the Bt toxin. This “pyramiding” technique also results in hybrid toxins with increased potency. In the latest issue of Crop Science, researchers find out that “Translational Fusion Hybrid Bt Genes Confer Resistance against Yellow Stem Borer in Transgenic Elite Vietnamese Rice (*Oryza sativa* L.) Cultivars.” The group, led by N.H. Ho, is composed of scientists from Vietnam’s Institute of Tropical Biology, the Louisiana State University AgCenter, the International Rice Research Institute, and the Campus International de Baillar-guet, France.

Scientists used a Bt fusion gene, which translates a single Cry1Ab-Cry1B fusion protein, and they introduced the transgene into cells of Vietnamese rice cultivars. They then confirmed the presence of the fusion protein in transgenic plants, analyzed the progenies for the presence and stability of the transgene; and assessed the efficacy of the transgenic plants against yellow and striped stem borers. The authors report that the Bt fusion gene confers 100% mortality of yellow and striped stem borer larvae within one week of infestation with no negative effects on yield.

Subscribers to Crop Science can read the complete article at http://crop.scijournals.org/cgi/content/full/46/2/781.

NOVEL APPROACH INTEGRATES FRUIT AND WHOLE PLANT ANALYSIS IN TOMATO

Tomato is an important food crop world-wide, with over 120000 metric tonnes produced in 2004. As with most other crops, the bulk of the genetic variation lies within related wild relatives and landraces of cultivated tomato varieties. The screening of genetic resources of wild relatives for the introgression of desirable traits for crop improvement is therefore an important goal of modern plant breeding. Although some agronomic traits are controlled by a single gene and fall into discrete phenotypic classes, most natural variation, including that underlying many important agronomic traits, is continuous rather than discreet. Continuous variation is regulated by multiple genes, known as Quantitative Trait Loci (QTLs). QTLs differentially influence the expression of a phenotypic trait, and each segregates according to Mendel's laws.

Researchers at the Max-Planck-Institute in Germany and at the Hebrew University of Jerusalem, Israel, describe in the latest issue of Nature Biotechnology a novel approach that integrates data from high throughput metabolic screening with data derived from whole plant phenotype analysis. For the analysis the authors used lines of the wild species *Solanum penellii* in which chromosomal regions defined by genetic markers had been replaced by homologous regions of the cultivated variety of *Solanum lycopersicum*. The approach identified novel and previously known QTLs important for fruit metabolite production, and allowed to determine associations between these QTLs and whole plant phenotype.

As many biotechnology applications altering fruit composition also negatively affect plant yield and reproductive fitness, an integrated analysis that allows the selection of improved lines without compromising yield is of great agronomical significance.

To view the abstract of: “Comprehensive metabolic profiling and phenotyping of interspecific introgression lines for tomato improvement” visit: http://www.nature.com/nbt/journal/vaop/ncurrent/abs/nbt1192.html

RESEARCH ANALYZES WILD RICE DIVERSITY

Rice is an important crop to many economies worldwide, but is constantly plagued by fungal diseases and insect pests. To protect rice varieties, scientists

turn to the crop's wild relatives, which harbour genes that may protect their domesticated counterparts from destruction and damage. One such wild rice is *Oryza granulata*, which has genes for immunity against bacterial blight, and for tolerance to shade and seasonal drought. *O. granulata,* however, is difficult to cross with cultivated rice, and is threatened with extinction due to disturbance of its habitat. To contribute to conservation efforts for *O. granulata*, Wei Qian and colleagues of the Chinese Academy of Sciences carried out studies on the "Genetic diversity in accessions of wild rice *Oryza granulata* from South and Southeast Asia." Their work appears in a recent issue of Genetic Resources and Crop Evolution.

The scientists used Random Amplification of Polymorphic DNA PCR (RAPD-PCR) to assess the genetic variability among 23 accessions of *O. granulata* collected from main distribution areas worldwide. RAPD-PCR makes use of short primers which anneal to an organism's genome at random. This PCR technique generates hundreds of sequences of different lengths, which in turn generate a DNA or profile that can differentiate within and between species. The authors report that RAPD-PCR analysis of *Oryza granulata* reveals moderate to high levels of genetic variation in the wild rice species. The researchers thus suggested that population studies should be done to further research in wild rice conservation, a feat which could be achieved by international cooperation amongst rice geneticists.

Subscribers to Genetic Resources and Crop Evolution can read the complete article at http://dx.doi.org/10.1007/s10722-004-6691-y.

NON-PATHOGENIC ISOLATES RECRUITED IN FIGHT AGAINST BANANA FUSARIUM WILT

Worldwide, bananas rank fourth as world's most valuable food crop with a global, annual production of almost 80 million metric tons, of which 72 million tons are produced in developing countries. Bananas and plantains constitute a major staple food crop for millions of people in developing countries, and about 80% of the global banana production is produced by small scale farmers and sold in local markets. Fusarium wilt is one of the most devastating banana diseases at the global level, and a major constrain to banana production.

Researchers at the University of Pretoria, South Africa, have conducted a study to evaluate the ability of non-pathogenic fungal and bacterial isolates from South African soils to suppress banana fusarium in glasshouse conditions. Several biological control agents and products were included in the study. The report: "The potential of non-pathogenic *Fusarium oxysporum* and other biological control organisms for suppressing fusarium wilt of banana" is published in the latest issue of the scientific journal Plant Pathology.

The authors report that two non pathogenic Fusarium isolates and one bacterial isolate reduced fusarium wilt incidence by 87.4, 75.0 and 87.4%, respectively in glasshouse trials. The report recommends that these isolates should be further evaluated for potential application in the field, independently and in combination.

To read the abstract of "The potential of non-pathogenic *Fusarium oxysporum* and other biological control organisms for suppressing fusarium wilt of banana" visit:
http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-3059.2006.01344.x

---

ANNOUNCEMENTS

EC TO HOLD CO-EXISTENCE CONFERENCE

The European Commission (EC), together with the Austrian Presidency of the Council will hold a conference on "Co-existence of genetically modified, conventional and organic crops – freedom of choice" from the 4th to the 6th of April 2006 in Vienna, Austria. The conference aims to bring together, in one forum, policy makers, scientists, and a broad range of stakeholders, such as farmers, consumer associations, NGOs, seed producers, importers, and food and feed processors. Presentations and discussions will focus on the political and societal aspects of co-existence, with a particular attention to regulatory, technical, and economic approaches to co-existence, as well as consumer attitudes and market responses. Attendance at the conference is by invitation only. For more information, visit
http://europa.eu.int/comm/agriculture/events/vienna2006/index_en.htm.

FAO TO AWARD GRANTS

The University of Rome "La Sapienza" and the Italian National Committee for relations between the Italian Government, and the Food and Agriculture Organization of the United Nations (FAO), on occasion of the 60th anniversary of the foundation of the FAO award, announce the following available grants: 1) 50 grants for scientific research papers, 2,000 Euro each, deadline on the 30th of June, 2006; and 2) 10 grants for postgraduate research, 17,000 Euro each, deadline on the 31st of March, 2006. Applications and the requested documents should be received not later than the respective deadlines at the following address: Università degli Studi di Roma "La Sapienza", Ripartizione IX "Relazioni Internazionali", Palazzo del Rettorato, Piano ammezzato, stanza 11, Piazzale Aldo Moro n. 5, c.a.p. 00185, Roma. Please indicate on the envelope the word "PREFATES", if the application is for a research paper grant, or the word

"CORIPOL" if the application is for a postgraduate research grant. For more information, visit www.uniroma1.it/internazionale/borse/fao/tesi_eng.asp.

DOCUMENT REMINDERS

NEW AGRI-HISTORY FEATURE ON KC SITE

The Crop Biotech Update's Monthly feature is now available for reading at the Knowledge Center site. "Tales from Tortoiseshells" recounts agricultural practices during China's Shang dynasty. Read the feature at http://www.isaaa.org/kc/bin/features/index.htm

AFRICOVER DATABASE AVAILABLE

The Africover Project is developing the tools needed to produce reliable and detailed environmental resource information: a software suite for structuring, developing, querying spatial environmental databases and strengthening the capacities of data users and producers in developing countries. The Multipurpose Africover Databases on Environmental resources (MADE) is now available for 10 countries. With the database, users can: consult available metadata on the content and characteristics of the data sets; visualize and browse public domain data through interactive maps; download public domain geographic layers; and download data warehouses for free interactive desktop geographic information systems (GIS) use. Visit the database at: http://www.africover.org/.

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

To stop receiving this newsletter, please send an e-mail message to knowledge.center@isaaa.org and write, "unsubscribe newsletter" in the subject box.

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

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

Copyright (c) 2006. CropBiotech Net.