

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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NEWS

ISLAMIC COUNTRIES SET IMPLEMENTATION STRATEGY FOR BIOTECH

Expert members have agreed on an implementation strategy for the development of biotechnology in Islamic countries. They presented the following recommendations during the workshop "Development of Biotechnology in Islamic Countries: Sharing Experience on Issues and Challenges":

- Mobilize political authorities to support biotechnology through legislation and to ensure financial support for research and development.
- Establish training and education centers in Islamic countries with special emphasis on modern biotechnology tools, information technology, and entrepreneurship.

- Establish key research priorities at regional and national levels.
- Increase public awareness and understanding on biotechnology and its applications

These recommendations will be presented at the Islamic Educational, Scientific, and Cultural Organization (ISESCO) Ministerial Meeting in August 2006 in Kuwait.

The Expert Meeting was held in Cairo, Egypt, on 6-8 March 2006, and was organized by ISESCO, the Organization of Islamic Conference Standing Committee for Science and Technology (COMSTECH), and Inter-Islamic Network on Genetic Engineering and Biotechnology (INOGE). The meeting was chaired by Prof. Abdul Latif Ibrahim, Director of the Biotech-IT Center Selangor, Malaysia.

For further information contact Prof. Faiq Billal, Director for Sciences, ISESCO at: sciences@isesco.org.ma

BIOTECH IN ISLAMIC COUNTRIES: ISSUES AND CHALLENGES

The workshop “The Development of Biotechnology in Islamic Countries: Sharing Experiences on Issues and Challenges” was held in Cairo, Egypt, on the 6th-8th of March. The event aimed to provide a forum for identifying common challenges and prospects for the application of biotechnology in Islamic countries, and promoting scientific collaboration among them. The workshop was attended by delegates from member states of the Organization of the Islamic Countries (OIC), including Bangladesh, Chad, Egypt, Eritrea, Indonesia, Malaysia, Morocco, Pakistan, Senegal, Syria, Sudan, Togo, and Tunisia.

Biotechnology, in particular with regard to agriculture and health, was identified by the meeting’s participants as an essential player in national development. In addition, public science awareness and acceptance were highlighted as key factors in promoting biotechnology. Key challenges for the development of biotechnology in Islamic countries include: public funding for research and development, absence of a legal framework in areas such as biosafety and intellectual property, and inadequate support infrastructure. Opportunities to strengthen collaboration and sharing of scientific information and capacity building were likewise identified.

During the workshop, Islamic scholars stated that Islam is not in contradiction to the development of science and technology, if it is intended for the betterment of mankind and does not harm the environment. However, efforts are needed to bridge the communication gap between religious scholars and scientists for the formulation of *fatwas* (Islamic laws) regarding biotechnology and its applications.

The Islamic Educational, Scientific, and Cultural Organization (ISESCO); the Organization of Islamic Conference Standing Committee for Science and Technology (COMSTECH); the Inter-Islamic Network on Genetic Engineering and Biotechnology (INOGEB); and the International Service for the Acquisition of Agri-Biotech Applications (ISAAA) organized the event.

For further information contact Ismail Abdel Hamid, Director of the Egypt Biotechnology Center at: ismael4@ageri.sci.eg

COMMENTARY PREDICTS GOOD FUTURE FOR AG-BIOTECH

L Val Giddings asks: What will the agricultural biotechnology landscape look like in 2016? And what form will the 'doubly green' revolution take? His commentary, "Whither Agbiotechnology?" appears in the latest issue of Nature Biotechnology, and predicts a good outlook for the technology based on its progress so far.

Giddings anticipates that the best is yet to come for agricultural biotechnology, after its first ten years have shown its potential and promise. He writes that biotech will be "the dominant global paradigm in commodity agriculture," and that the products that will show the greatest growth will be those "with value added for the end-consumer." Such food products include those with enhanced nutrition, or those with fewer worrisome components, such as trans-fats. Giddings also expects biotechnology to extend to animals, especially in livestock and fisheries improvements.

Several roadblocks to progress in the field, according to Giddings, are poor investments in research and development, regulatory unreason, and low public acceptance. In the next few years, however, he sees the agriculture will advance, and consumers will increase their support of agricultural biotechnology.

Giddings is former Vice President for Food and Agriculture of the Biotechnology Industry Organization. Read the complete article at <http://www.nature.com/nbt/journal/v24/n3/full/nbt0306-274.html>. Contact the author at lvgiddings@yahoo.com.

EU APPROVES BT CORN 1507

The European Commission (EC) has issued in a recent statement the approval of biotech maize Bt 1507 for sale in the European Union (EU). The maize is genetically engineered to resist insect pests *Ostrinia nubilalis* (European corn borer) and *Sesamia calamistis* (pink stalk borer), and was jointly developed by

Pioneer Hi-Bred International, Inc. (a DuPont subsidiary) and by Mycogen Seeds, (a Dow AgroSciences subsidiary).

All three applications for Bt 1507 for food and feed, and for planting, have been approved by the European Food Safety Authority (EFSA). EFSA has assessed the corn as safe for consumption and cultivation as its conventional counterpart. Other countries that have approved Bt 1507 include Argentina, Canada, Japan, and the U.S.

With news from

http://www.bloomberg.com/apps/news?pid=1000082&sid=aZiqWx5mKP_o&refer=canada. For more information, contact Adeline Farrelly at a.farrelly@europabio.org, or read the Facts sheet on the corn's approval, as prepared by EuropaBio, at http://www.europabio.org/articles/EBio%20Background%20Briefing1507maize_Update%20March%202006l.doc.

WARDA SCIENTIST WINS RICE PRIZE

Dr. Moussa Sié, Lowland Rice Breeder from the Africa Rice Center (WARDA), has been chosen as one of the two laureates of the 2006 Fukui International Koshihikari Rice Prize of Japan in recognition of his significant contributions to rice production in sub-Saharan Africa. Dr Sié shares the prize with Dr. Akihiko Ando from Brazil, who has contributed to rice breeding by using radiation-induced mutations.

Dr. Sié has over 20 years experience in the selection and improvement of rice varieties, with particular emphasis on rain-fed systems; and is credited with the development of several high-yielding and multiple stress-resistant rice varieties. He was also instrumental in extending WARDA's upland New Rice for Africa (NERICA) rice breakthrough to lowlands - one of the most complex rice ecologies in the world.

Key to Dr Sié's success was the unique R&D partnership model forged between WARDA and the national programs of West African countries through the ROCARIZ rice network, which facilitated the shuttle-breeding approach to accelerate the selection process and achieve wide adaptability of the Lowland NERICAs.

Read the complete release at

<http://www.warda.org/warda1/main/newsrelease/newsrel-sie-mar06.htm>. For more information, e-mail warda@cgiar.org, or visit <http://www.warda.org>.

CARTAGENA MEETING IN BRAZIL TO DISCUSS BIOSAFETY

Detailed documentation requirements for bulk shipments of genetically modified (GM) corn, soybean, and other agricultural crops that are intended for food, feed, or processing will be decided upon during a United Nations Biosafety meeting in Curitiba, Brazil on March 13-17, 2006.

The Cartagena Protocol on Biosafety meeting will attempt to finalize requirements after efforts to do so in a meeting of the Parties in Montreal, Canada failed. The Biosafety Protocol aims to ensure that the transboundary movement of living modified organisms, commonly known as GM organisms, does not adversely affect biological diversity.

Background documents are available at <http://www.biodiv.org/doc/meeting.aspx?mtg=MOP-03>. Email David Ainsworth of the Secretariat of the Convention on Biological Diversity at david.ainsworth@biodiv.org.

AGRI-BIOTECH APPLICATIONS PROMOTED IN VIETNAM

Vietnam's Ministry of Agriculture and Rural Development (MARD) plans to carry out 12 scientific research and pilot production projects through the recently approved "Key Program on Development and Application of Biotechnology in Agriculture and Rural Development Through 2020". Under the program, the ministry will gradually improve the training of human resources; build technical infrastructure; boost international cooperation; receive and effectively implement a number of advanced biotechnologies; and promote the implementation of research and production projects. The program aims to encourage technology transfer, form a favorable market, and promote the formation and development of the biotech industry in agriculture.

By 2020, the government plans to increase the proportion of biotech crops to 70% of the nation's total crop area. More than 70% of the demand for disease-resistant plant varieties will be met by the biotechnological industry; and more than 80% of the area under vegetable and fruit cultivation will use fertilizers and plant protection products produced by biotechnology.

More news available at http://www.vnanet.vn/default.asp?LANGUAGE_ID=2. For more information on this article, e-mail Le Hien of the Vietnam Biotechnology Information Center at hienbiotechvn@pmail.vnn.vn.

RESEARCH

RICE ENGINEERED WITH SHEATH BLIGHT RESISTANCE

Sheath blight is a disease of rice that afflicts the crop in most rice-growing areas of the world. Caused by the fungus *Rhizoctonia solani*, sheath blight is controlled by fungicides, a practice which is neither practical nor sustainable, and causes damage to both human health and the environment. Genetically engineering *R. solani* resistance into rice is thus a promising approach for the management of sheath blight disease.

Krishnan Kalpana and colleagues of Tamil Nadu Agricultural University, India, take the steps toward this goal as they undertake "Engineering sheath blight resistance in elite indica rice cultivars using genes encoding defense proteins." Their work appears in a recent issue of *Plant Science*. The authors aimed to develop rice cultivars with enhanced resistance to sheath blight by genetically transforming high yielding indica rice cultivars, ADT38, ASD16, IR50, and Pusa Basmati1 (PB1), with the rice *t1p* gene, which encodes a pathogenesis-related (PR) protein. PR proteins can enhance plant resistance to pathogens when over-expressed.

The researchers report that the engineered rice had increased resistance to *R. solani* when compared with non-transformed plants; and that resistance was enhanced when *t1p* was co-transformed with rice *chi11*, a gene encoding a chitinase, another anti-fungal protein. In addition to sheath blight resistance, the *t1p* or *chi11* transgenic lines were also resistant to the rice sheath rot pathogen, *Sarocladium oryzae*.

Subscribers to *Plant Science* can read the complete article at <http://dx.doi.org/10.1016/j.plantsci.2005.08.002>

TOMATO EQUIPPED WITH LEAF CURL VIRUS RESISTANCE

Tomato is an important vegetable crop to many countries, but is plagued by a variety of viral diseases. One of the most devastating viruses is a group with the generic name Tomato Leaf Curl Virus (ToLCV), which are transmitted by whiteflies, and which cause tomato leaf curl disease (ToLCD). Efforts to breed tomato varieties resistant to the disease have hitherto been unsuccessful, since natural sources of resistance are not available.

Genetically engineering resistance remains a viable alternative to equipping tomato with protection against ToLCV. One method is introducing pathogen-

derived resistance (PDR), by either allowing transgenic tomato to produce a shorter version of the viral protein (protein-mediated resistance) or RNA (RNA-mediated resistance). Shelly Praveen and colleagues of the Indian Agricultural Research Institute investigate the possibility of “Engineering tomato for resistance to tomato leaf curl disease using viral rep gene sequences” in a recent issue of the *Plant Cell, Tissue, and Organ Culture* journal.

Scientists transformed, via *Agrobacterium*, tomato cells with replicase (rep) gene sequences of ToLCV. Transgenic plants were tested for disease resistance by exposing them to a high population of whiteflies reared on virus-infected plants. Researchers recorded a high level of resistance to ToLCV and inheritability of the transgene, up to the T2 stage following challenge inoculation with the virus. The mechanism of resistance, according to researchers, appears to be RNA-mediated, since plants carried the untranslatable anti-sense rep gene.

Subscribers to the journal can read the complete article at <http://dx.doi.org/10.1007/s11240-005-7858-8>.

RESEARCH DOCUMENTS FUNGICIDE-HERBICIDE INTERACTION IN SOY CROP

Fungicide seed treatments are becoming increasingly popular for use with glyphosate-tolerant soybean, but can the pesticide combination affect crop yields? Researchers from the University of Illinois and Michigan State University conducted a two-year field study to explore possibilities of “Fungicide–herbicide interaction in soybean (*Glycine max*).” Their findings appear in a recent issue of *Crop Protection*.

Scientists used a combination of six seed treatments (thiabendazole (TBZ), pentachloronitrobenzene (PCNB), captan, TBZ/PCNB/captan, fludioxonil, and a fungicide-free control) and six weed control treatments (imazethapyr, imazamox, glyphosate, glyphosate/imazethapyr, glyphosate/cloransulam-methyl, and a hand-weeded control). All 36 combinations were evaluated in soy planted in four different environments in Illinois, USA.

Researchers found that: 1) fungicide treatments did not significantly affect the crop’s response to the herbicide treatments; 2) fungicide, herbicide, or fungicide–herbicide combinations did not significantly affected crop yield; and 3) the fludioxonil/no herbicide treatment was the only treatment whose yield was significantly different from that of the no fungicide/no herbicide control.

Subscribers to the journal may read the complete article at <http://dx.doi.org/10.1016/j.cropro.2005.03.013>.

ANNOUNCEMENTS

HUNGARY TO HOLD BIOTECH CONFERENCE

The Hungarian Biotechnology Association will hold "Biotechnology in Hungary," a conference that will tackle the present situation of the biotechnology sector in Hungary; governmental assistance; grant opportunities; innovation in Hungary; Venture Capital investment in biotechnology; and spin-off companies. The conference will be held on the 23rd of March, 2006, from 10:00 am to 6:00 pm at the Novotel Budapest Centrum, Budapest, Hungary. The detailed agenda of the event and the registration form are available at http://www.hungarianbiotech.org/html_eng/konf2006.htm. To attend, register by returning the registration form to info@hungarianbiotech.org.

WORKSHOP FOR TRAIT DETECTION SLATED

A Biotech Trait Detection Workshop will be held on May 8-10, 2006 at the Iowa State University Seed Science Center, Ames, Iowa, U.S.A. The workshop will present and discuss the technical and scientific challenges in trait detection, and provide hands-on training in the current process and PCR methodologies utilized for biotech trait detection. Also scheduled is a round table discussion on quality control issues. For more information, visit <http://www.ucs.iastate.edu/mnet/biotechtrait/home.html>

BIOSAFETY COURSE SET FOR MAY

A practical course on the evaluation of field release of genetically modified plants will be held in Florence, Italy, from the 15th to the 19th of May, 2006. Organized by the International Center for Genetic Engineering and Biotechnology (ICGEB), the course is designed for people in a position to evaluate applications for the release of GMOs, primarily members of the national competent authorities and officials engaged in the implementation of the Cartagena Protocol. For more information, contact courses@icgeb.org, or visit http://www.icgeb.org/MEETINGS/CRS06/15_19maggio.pdf.

DOCUMENT REMINDERS

ANNOUNCEMENTS SECTION NOW UP IN KC SITE

The Knowledge Center site (<http://www.isaaa.org/kc>) is now home to a special section on coming meetings, courses, and workshops related to crop biotechnology worldwide. The list will be updated regularly. Please write to knowledge.center@isaaa.org if you would like your event to be included in the list. To view the list of events for 2006, visit http://www.isaaa.org/kc/bin/Home_Event/index.htm.

NEW DATABASE AVAILABLE

CropLife International has released a new database online, to aid researchers in locating peer-reviewed, published studies highlighting the benefits of agricultural biotechnology. Users can search the database by crop, traits, country, region, and impact area. Visit the database at <http://www.croplife.org/biotechdatabase>.

FOREST, GENOMICS BOOK RELEASED

What is the future of transgenic conifer plantations? The recently released book, "Landscapes, Genomics and Transgenic Conifers (Managing Forest Ecosystems)" addresses this question. The book has information on policy, forest history, genomics, metabolism, pollen dispersal and gene flow, landscape ecology, evolution, economics, technology transfer, and regulatory oversight. One chapter, "Foresters and DNA" is available at <http://phe.rockefeller.edu/docs/ForestersAndDNA.pdf>.

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:
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