

## **CROPBIOTECH UPDATE**

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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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**February 17, 2006**

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### **NEWS**

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### **PUBLIC HEARING WORKSHOP HELD IN BANGLADESH**

A regional public hearing workshop on biotech crops was held recently in Dhaka, Bangladesh. Attended by scientists, policy makers, marketing experts, government and non-government organizations, and private officials, the hearing was organized by the World Conservation Union (IUCN), Institution and Policy Support Unit (IPSU), and the Danish International Development Assistance (DANIDA). Papers presented discussed topics such as biotech issues and concerns, policies, and the Cartagena protocol. Mr. Kazi Abul Kashem, Secretary

of the Ministry of Agriculture, said that by the year 2050, 90% of the world population will be in developing countries. To feed the increased population, the country's biotech initiatives would need to go far ahead.

In related news, the country's National Biosafety Framework (NBF) has been reported to be in place by the end of 2006. This is to kick start applications of genetic modification in crops and livestock in the country without causing any harm to the natural environment.

The decision to finalize the NBF by December 2006 was taken at the first meeting of the country's National Coordination Committee on Biosafety. Bangladesh has four varieties on its priority list of biotech crops: drought and saline-tolerant rice, late blight-resistant potato, fruit and shoot borer-resistant eggplant, and pod borer-resistant chickpea.

With reports from <http://www.thedailystar.net/> and <http://www.checkbiotech.org>. For more information, contact Dr. Khondoker M. Nasiruddin of the Bangladesh Biotechnology Information Center at [k.nasiruddin@isaaa.org](mailto:k.nasiruddin@isaaa.org).

## **REPORT CALLS FOR END OF GM BAN IN AUSTRALIAN STATES**

The Australian Agriculture and Food Policy Reference Group was commissioned to help guide the development of future directions in Australian Government policies and programs affecting the agriculture and food sector. The Reference Group released this week its report: "Creating our Future: Agriculture and Food Policy for the Next Generation." The full scale review calls for a lift of the state moratorium imposed on the commercial application of GM technology. Currently, Queensland is the only Australian state allowing the commercial planting of biotech crops.

In response to the findings of the Reference Group, the National Farmers Federation (NFF), a group representing the interests of farm and food industries, issued a statement urging the State Governments to lift their GM moratoriums and to work with industry to ensure the benefits of the commercial application of approved GM technology can be captured in a safe and responsible way. "The world is moving forward on genetic technology, and those states that have moratoria are holding Australia back," says Mr. Corish, president of the NFF.

For more information visit: [http://www.agfoodgroup.gov.au/next\\_generation.html](http://www.agfoodgroup.gov.au/next_generation.html)  
<http://www.nff.org.au/pages/nr06/007.html>  
<http://www.theage.com.au/news/national/call-for-ban-on-gm-crops-to-end/2006/02/16/1140064205088.html>

## **NEW HIGH-LYSINE BIOTECH CORN RELEASED**

Relessen LLC announced that the U.S. Department of Agriculture (USDA) has deregulated Relessen's biotech corn containing the LY038 trait, clearing the way for commercializing the new technology for use in the livestock industry. High-lysine biotech corn contains higher levels of oil than conventional hybrids, and provides increased amounts of the essential amino acid lysine, a critical building block for animal proteins. This enhanced trait will reduce the need for livestock farmers to add synthetic lysine supplements to their animals' diets.

LY038 is the world's first crop-based quality trait produced through biotechnology for the animal feed industry. It will be sold under the name Maveria™ High Value Corn with Lysine, and will be evaluated in an experimental field program in 2006, before being produced on limited acreage in 2007. At present, grain containing the biotech corn will only be marketed to specific end users in the United States.

Relessen is a joint venture between Cargill Incorporated and the Monsanto Company. For more information, visit <http://www.relessen.com>. Download the press release at <http://www.relessen.com/news/02.06.2006.eng.pdf>.

## **SCIENTISTS CREATE DISEASE-RESISTANT TOMATO**

Vietnamese scientists from the country's Southern Agriculture Science and Technique Institute have created a new disease-resistant tomato plant which can grow during the rainy season and withstand invasion by the lethal bacterium *Ralstonia solanacearum*.

The project, which won first prize at the 8<sup>th</sup> National Technology Initiative Competition, was conducted by a research group headed by Dr. Ngo Quang Vinh. The new tomato was created by grafting the NT386 tomato variety onto a conventional tomato plant.

More news available at [http://www.vnanet.vn/default.asp?LANGUAGE\\_ID=2](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](mailto:hienbiotechvn@pmail.vnn.vn).

## **INSECT BIRTH CONTROL ERADICATES FRUIT FLIES FROM PATAGONIA**

A ten-year collaborative effort between the Food and Agriculture Organization of the United Nations (FAO) and the International Atomic Energy Agency (IAEA) was successful in the eradication of the Mediterranean fruit fly in Argentina's Patagonia region. The method used, known as the Sterile Insect Technique (SIT), is a non-aggressive, low environmental impact technology. SIT is very powerful when applied as part of an integrated pest control strategy.

SIT involves the generation of large numbers of male insects sterilized by low exposure to irradiation. Sterile insects are released in infested areas where they mate with wild-type females, but produce no progeny. If an area has more sterile males than fertile ones, the insect populations gradually decrease in size, and eventually disappear. "It is a birth control technology, which unlike most other pest control methods is ecologically friendly and cannot impact biodiversity or harm the environment. Since the released insects are sterile, they cannot become established in the ecosystems and thus have no potential to cause future adverse effects on the environment," explained Walther R. Enkerlin, a member of the joint FAO/AIEA programme. FAO and the AIEA have also helped Chile and Mexico to eradicate the Mediterranean fruit fly using SIT.

For more information contact [inigo.alvarez@fao.org](mailto:inigo.alvarez@fao.org) or visit <http://www.fao.org/newsroom/en/news/2006/1000225/index.html>

## **CHOCOLATE-FLAVORED INTERNATIONAL SYMPOSIUM WRAPPED UP**

The 'Theobroma Cacao: The Tree of Change' Symposium was held in Washington, U.S., on February 9-10. The 2006 Symposium on Cocoa brought together a multi-disciplinary, international group of scientists from the public and private sectors to review the most recent scientific advances related to cocoa. Norman Hollenberg, Professor of Medicine at Harvard Medical School, presented at the meeting epidemiological findings that suggest consumption of flavanols found in cocoa can significantly lower rates of heart disease and cancer. "Our results indicate that a flavanol-rich diet may provide an extraordinary benefit in the reduction of the two deadliest diseases in today's world," said Hollenberg.

Presentations in the meeting also discussed new opportunities for cocoa to provide social, economic and environmental benefits to the millions of farmers who depend on this crop for their livelihood. Farmers typically lose a third of their cacao crops due to adverse environmental conditions, pests and diseases. The Symposium highlighted the positive impact that collaborative efforts among public and private sector scientists can have on improving cocoa farming.

For more information visit: <http://www.cocoasymposium.com/index.php>

## **US\$ 5 MILLION AWARDED FOR PUBLIC WHEAT RESEARCH IN THE U.S.**

Mike Johanns, Agriculture Secretary of the U.S., announced on February 16<sup>th</sup> an award exceeding US\$ 5 million to a consortium of public wheat scientists devoted to identify genes with the potential to produce increased quality, disease-resistant wheat. "This research will help U.S. wheat breeders to improve wheat yield, develop drought resistant wheat and help the environment," said Johanns.

The consortium of 18 universities, lead by the University of California Davis, aims to identify thousands of molecular markers linked to beneficial traits in wheat. These markers are then used to insert target genes into breeding lines to obtain a specific combination of improved traits. This technique is known as marker-assisted selection. The genetic information obtained by this initiative will be stored in national databases. The project also includes an extensive outreach/educational component.

For further information visit:

<http://www.usda.gov/wps/portal/!ut/p/ s.7 0 A/7 0 1OB?contentidonly=true&contentid=2006/02/0045.xml>

## **VIETNAMESE STAKEHOLDERS SHARE VIEWS ON BIOTECH**

In a recent interview conducted by Vietnam News, key Vietnamese stakeholders shared their views about developing biotechnology in Vietnam. "Viet Nam's .. bio-technology sector will be considered a priority in order to motivate socio-economic development," says Hoang Van Phong, minister of Science and Technology. "We will concentrate on the application of bio-technology in agricultural-forestry-fishery production with the goal of expanding the market and increasing the added value of exports...The State will offer tax and credit incentives to both domestic and foreign investors in the bio-technology sector with the aim of creating a market for bio-technology."

"Our target is to increase the contribution of bio-technology in agricultural production development by 50 per cent during the period 2006-10," says Dr Trinh Khac Quang, vice director of the Science and Technology Department, the Ministry of Agricultural and Rural Development.

More news are available at <http://www.vneconomy.com.vn/eng/>. For more information on this article, e-mail Le Hien of the Vietnam Biotechnology Information Center at [hienbiotechvn@pmail.vnn.vn](mailto:hienbiotechvn@pmail.vnn.vn).

## **FRENCH PUBLISHERS JOIN AGORA INITIATIVE**

The Access to Global Online Research in Agriculture (AGORA) initiative was established by the Food and Agriculture Organization of the United Nations in collaboration with several major scientific publishers. AGORA aims to provide free or reduced price online access to scientific publications to scientists in 69 eligible developing nations. To date, 644 institutions have benefited from this initiative. The Agence Universitaire de la Francophonie, John Libbey Eurotext, and their partners, are the latest publishers to join AGORA. As a result, the Francophone CAHIERS Agriculture journal will be incorporated to the list of 845 scientific journals already available through AGORA for consultation.

For more information visit: <http://www.aginternetwork.org/>;  
[http://www.fao.org/waicent/portal/detail\\_event.asp?back=back&lang=en&event\\_id=33618](http://www.fao.org/waicent/portal/detail_event.asp?back=back&lang=en&event_id=33618)

## **INDIA TO SET UP NATIONAL BIOTECH REGULATORY AUTHORITY**

The President of India APJ Abdul Kalam has called for the establishment of an institution in charge of regulating applications of genetic engineering in India. In an address to the Joint Session of the Parliament on February 16, Kalam said that the “National Biotechnology Regulatory Authority will regulate the import, release and post-release monitoring of GM crops and seeds. Kalam added that “the quality control of GM seeds is an important issue and it is proposed to strengthen the State Seed Testing Laboratories.”

The President also announced an initiative to promote bio-fuel: a National Bio-Diesel Programme is proposed to be launched in 2006-07.

For more information contact: [b.choudhary@cgiar.org](mailto:b.choudhary@cgiar.org) or visit: <http://presidentofindia.nic.in/scripts/eventslatest1.jsp?id=1160>

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**RESEARCH**

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**MAJOR BREAKTHROUGH IN WHEAT GENETICS: CHROMOSOME GLUE IDENTIFIED**

Wheat is one of the most important food crops in the world, and the domestication of this grass species is intimately linked to the rise of agricultural practices. Bread wheat (*Triticum aestivum*) is in fact a hexaploid, that is, it is composed of 6 sets of genomes (AABBDD) derived from 3 different species. Correct chromosome pairing and segregation during reproduction (meiosis) are essential for fertility and for ensuring genome stability. The *Ph1* locus, residing on

chromosome 5B, is responsible for this control, as chromosomes of lines carrying deletions of the *Ph1* locus fail to pair properly.

So what is *Ph1*? A research team lead by Dr. Graham Moore in the John Innes Centre, in Norwich, UK, adopted an ambitious strategy to answer this question, and they report their major breakthrough in the latest issue of Nature. The authors found that the *Ph1* locus is localized to a 2.5 Mb region containing a segment of heterochromatin inserted into a cluster of *cdc2*-related genes (shown previously to affect chromosome condensation). The *cdc2* genes are therefore the best candidates for *Ph1* function. The presence of this structure correlates with *Ph1* function in related species, and can therefore be used to generate fertile cross species hybrids. “This will make it possible to cross wheat varieties with wild relatives which have features like drought tolerance or can grow in more saline conditions”, said Dr Moore.

Lys Holdaway, of Oxfam's Make Poverty History campaign, said: “This has the potential to benefit so many people who are struggling to grow food in very difficult soils and climates.”

To view the first paragraph of the article: “Molecular characterization of *Ph1* as a major chromosome pairing locus in polyploid wheat” access:

<http://www.nature.com/nature/journal/v439/n7077/abs/nature04434.html>. Written with information from: <http://www.jic.ac.uk/corporate/media-and-public/grains.htm>

## **NOVEL APPROACH TO FATTEN UP CASTOR BEANS**

A team of researchers of the Institute of Biological Chemistry, Washington State University, U.S. describe a high throughput approach designed to identify genes important for oil yield in castor bean. Their article: “A high-throughput screen for genes from castor that boost hydroxy fatty acid accumulation in seed oils of transgenic *Arabidopsis*” is published in the latest issue of the Plant Journal.

The over-expression of known enzymes in the biosynthetic pathway of fatty acids in castor beans has not been a successful approach to develop biotech castor beans with increased oil content, suggesting that additional genes to the ones engineered are required. To identify novel genes, the authors used the model species *Arabidopsis thaliana* and generated an *Arabidopsis* line over-expressing the castor fatty acid hydroxylase *FAH12* gene. They subsequently introduced into this line the entire set of cDNAs expressed in the castor seed endosperm (the nutritive tissue surrounding the embryo within seeds) by biolistic transformation. The resulting transgenic seeds were screened to isolate lines with increased oil yields. The cDNAs responsible were then identified by PCR, and retransformed into castor seeds to confirm their contribution. Although this approach was designed for oilseed engineering, it can be applied to many areas of plant biotechnology.

To view the abstract of the article “A high-throughput screen for genes from castor that boost hydroxy fatty acid accumulation in seed oils of transgenic Arabidopsis” visit:

<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-313X.2005.02636.x>

## **HORIZONTAL TRANSFER, HUMAN HEALTH EXPLORED**

A safety concern associated with biotech crops is horizontal gene transfer, or the movement of genes from one species to another. Horizontal transfer is a natural phenomenon, and occurs when bacteria exchange genes, or when free DNA is taken up by a bacterial cell and incorporated into the genome. But can transgenes move from biotech crops to microbes in animal guts? This aspect of horizontal transfer is an important health concern, as the process of developing biotech crops requires the use of antibiotic resistance genes in intermediate stages. These genes are microbial in origin, and may therefore pose a greater risk of conferring antibiotic resistance to microbes.

Gijs A. Kleter and colleagues of Wageningen University and Research Center, The Netherlands, take a look at the “Possible Health Aspects of Horizontal Transfer of Microbial Transgenes Present in Genetically Modified Crops,” in an article that appears in the latest issue of the Information Systems for Biotechnology News Report.

Plant genes have a number of features that are different from bacterial genes, which decreases the likelihood of effective transfer to and expression of plant genes in bacteria. The authors focused therefore on 20 transgenes of microbial origin, five of which are linked to herbicide resistance, three to hybrid breeding through engineered male sterility, two to prolonged fruit ripening, two to markers for genetic modification, and eight Cry proteins with insecticidal properties. The authors concluded that none of the 20 transgenes raised safety concerns.

For more information, visit <http://www.isb.vt.edu/news/2006/news06.Feb.htm>. More information on horizontal gene transfer can be found at [http://www.gmo-compass.org/eng/safety/human\\_health/46.antibiotic\\_resistance\\_genes\\_threat.html](http://www.gmo-compass.org/eng/safety/human_health/46.antibiotic_resistance_genes_threat.html).

## **COOPERATION BETWEEN HEALTH AND AGRICULTURE AUTHORITIES NEEDED TO STOP MALARIA**

Two independent studies carried out in the Amazon Basin, one in Peru and one in Brazil, have established a correlation between deforestation practices and an



increase in the incidence of malaria. The clearing of land for frontier settlements, agricultural development, and road construction, provide *Anopheles darlingi* mosquitoes, the most important vectors for the spread of malaria in South America, the ideal environment to reproduce. Jonathan Patz and his colleagues report that the risk of infection was about 300 times higher in cleared areas compared to forested land. Their article, "The effects of deforestation on the human-biting rate of *Anopheles darlingi*, the primary vector of Falciparum malaria in the Peruvian Amazon" was published in the January issue of the American Journal for Tropical Medicine and Hygiene. "I feel conservation policy is one and the same with public health policy. It's probable that protected conservation areas may ultimately be an important tool in our disease prevention strategies," says Patz.

A link between deforestation of the Amazon and the spreading of malaria was also reported by a separate study published in the latest issue of the Proceedings of the National Academy of Sciences, entitled "Malaria risk on the Amazon frontier". The authors note that biting rates are highest in the initial stages after forest clearance, and decrease with the establishment of agriculture and urban settlements. "Malaria mitigation strategies for frontier settlements require a combination of preventive and curative methods and close collaboration between the health and agricultural sectors. Of fundamental importance is matching the agricultural potential of specific plots to the economic and technical capacities of new migrants. Equally important is providing an effective agricultural extension service" says the team, lead by Dr. Burton Singer of South Carolina University, U.S.

The abstract for the article "The effects of deforestation on the human-biting rate of *Anopheles darlingi*, the primary vector of Falciparum malaria in the Peruvian Amazon" can be viewed at: <http://www.ajtmh.org/cgi/content/abstract/74/1/3>

To access the abstract of the "Malaria risk on the Amazon frontier" go to: <http://www.pnas.org/cgi/content/abstract/103/7/2452>

For more information visit:

<http://www.worldagroforestry.org/news/archives.asp?NewsID={A87BF84C-6CAD-4E4F-8F0B-EB937A068411}>

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**ANNOUNCEMENTS**  
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**MABIC TO HOLD MEDIA WORKSHOP**

The Malaysian Biotechnology Information Centre (MABIC) has organized a media workshop focusing on "Current Issues in Biosafety, Bioethics, and Bio-communication." It will be held on the 21<sup>st</sup> of February 2006, in Riba Ilmu,

University of Malaya. Speakers include members of the Ministry of Natural Resources and Environment (NRE), Malaysian Agricultural Research and Development Institute (MARDI), University of Malaya, Yayasan Ilmuwan, and the media.

The workshop is organized in cooperation with the Center for Biotechnology Research in Agriculture (CEBAR) of the University of Malaya, and the Malaysian Society for Molecular Biology and Biotechnology (MSMBB). For more information, send an email to [info@bic.org.my](mailto:info@bic.org.my).

### **SEARCA SEED FUND FOR RESEARCH AND TRAINING**

The Southeast Asian region has a number of promising researchers and scientists whose desire to contribute to the region's development through research and knowledge dissemination initiatives is hindered by lack of funds. This situation serves as a barrier to translating promising research and training into scientific outputs that could be applied to promote development. To address this concern, SEARCA will dedicate funds to be known as the SEARCA Seed Fund for Research and Training (SFRT). SEARCA will fund both Graduate and PhD scholarships. For PhD scholarships for school year 2006-2007, the deadline for applications is 1 April 2006.

For further information, email: [sfirt@agri.searca.org](mailto:sfirt@agri.searca.org) or visit: <http://www.searca.org>

### **ROTHAMSTED INTERNATIONAL FELLOWS PROGRAMME**

Rothamsted International is a not-for-profit organization, based in the United Kingdom, committed to promote research across the world for the benefit of rural economies and for agricultural and environmental sustainability in developing countries. Rothamsted International offers two types of International Fellowships, one open to agricultural scientists from all developing countries, and another exclusively for African scientists. Both fellowships are awarded on a competitive basis to enable scientists to carry out research projects in Rothamsted Research, UK, for 6 to 12 months. The next deadline for pre-proposals for African Fellowships is March 3<sup>rd</sup>, 2006, and the next deadline for fellowships from all developing countries is May 27<sup>th</sup>, 2006.

For more information about the fellowships contact: [paresh.shah@bbsrc.ac.uk](mailto:paresh.shah@bbsrc.ac.uk) or visit: <http://www.rothamsted-international.org/index.html>

## **BIOSAFETY COURSE TO BE HELD IN BELGIUM- SCHOLARSHIPS AVAILABLE**

The Institute for Plant Biotechnology for Developing Countries (IPBO) has a mission to assist developing countries to have access to the latest plant biotechnology developments.

IPBO will hold a third summer course on Biosafety Assessment and Regulation of Agricultural Biotechnology, in Ghent, Belgium, between July 31<sup>st</sup> and August 11<sup>th</sup>, 2006. Topics covered by the course include biosafety and biotechnology, biosafety evaluation, the development of national biosafety frameworks, and international platforms for biosafety regulation.

The course will have a maximum of 20 participants: students, scientists, and government officials involved in various aspects of biosafety of agricultural biotechnology. Twelve scholarships are available for students from developing countries, sponsored by the Flemish Interuniversity Council. Deadline for application is March 1<sup>st</sup>, 2006.

For further information contact Veerle Van Ongeval ([veong@psb.UGent.be](mailto:veong@psb.UGent.be)) or Dr. Nancy Terryn ([nancy.terryn@UGent.be](mailto:nancy.terryn@UGent.be)) or visit: <http://www.ipbo.ugent.be/news/news.html>

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**DOCUMENT REMINDERS**  
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### **MABIC RELEASES NEW BIC ALERT**

The Malaysian Biotechnology Information Center has recently released its latest BICAlert, a monthly newsletter devoted to reporting news on biotechnology in Malaysia and around the world. Topics include agricultural biotechnology and the environment, food, industry and trade, and policy. To download the alert, visit <http://www.bic.org.my/BICAlert/index.html>.

### **DATABASE OF ARTICLES ON GM CROP PLANTS AVAILABLE**

The Union of the German Academies of Sciences and Humanities is an association of seven academies of sciences and humanities created to promote scientific exchange and high quality research. The "Green Biotechnology" Commission of the Union has compiled a database containing about 240 publications on various aspects of genetically modified crop plants, with the aim of providing an overview of agricultural biotechnology applications in developing

countries. The collection contains, in addition to many original publications, extensive reviews produced by organizations such as the Royal Society, the International Council for Science, and the Food and Agricultural Organization of the United Nations (FAO), as well as introductions to the Cartagena Protocol on Biosafety by the World Conservation Union and the UN Secretariat of the Convention on Biological Diversity. The Global Reviews of Commercialized Transgenic Crops published by ISAAA are also included in this database.

For more information and to access the database visit:

[http://www.akademienunion.de/publikationen/literatursammlung\\_gentechnik/englisch.html](http://www.akademienunion.de/publikationen/literatursammlung_gentechnik/englisch.html)

Note: this database requires Microsoft Access 2000 or higher.

## **RIS PUBLISHES JOURNAL**

The Research and Information System for Developing Countries (RIS) has published a special edition of the Asian Biotechnology and Development Review. The latest issue, entitled "Expanding Frontier of Biotechnology," is edited by Edgar J. DaSilva, and discusses issues such as biosecurity, biosafety, and biological weapons.

Download the journal at [http://www.ris.org.in/abdr\\_november2005.htm](http://www.ris.org.in/abdr_november2005.htm).

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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](mailto:knowledge.center@isaaa.org)) us for your views and comments on any crop biotechnology product and related issues.

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