

BioLines

Where Nature and Science Meet

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Vol. 103

March 2008

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BioLines is AfricaBio's 'Biotechnology Headlines' – a quick guide to what is topical. By design, the articles are not exhaustive, but references are given to follow up points of interest. Let us know what you like and dislike about **BioLines** and what you want to see as part of this service. Articles are edited and some shortened to meet space requirements. It is not the intention of this service to infringe on copyright. **BioLines** is issued free of charge and every effort is made to acknowledge the source of information.

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NOTICE BOARD (6)

AFRICA

NEPAD-MSU Partnership to Bolster Africa's Biosafety Capacity

Prof. Aggrey Ambali at aggrey@nepadst.org.

The New Partnership for Africa's Development (NEPAD) and Michigan State University (MSU) announced a \$1.5 million grant to MSU from the Bill & Melinda Gates Foundation to bolster Africa's biosafety expertise. The partners will develop the African Biosafety Network of Expertise (ABNE) to help regulators access the most up-to-date training, data, and resources needed to properly regulate biotechnologies, ensuring countries are able to take full advantage of advances while safeguarding consumers and the environment. The ABNE

will be developed under the Biosciences Initiative, which comprises a cluster of life sciences flagship programs of the Africa's Science and Technology Consolidated Plan of Action (CPA), an African-led plan endorsed by the African Union (AU) Heads of State and Government. The grant will support the first phase of a long-term project.

The NEPAD-MSU partnership will collaborate with Development Alternatives, Inc. to ensure the network meets local and regional needs. "This project will allow African countries to start implementing some of the recommendations of the AU/NEPAD High Level Panel on Biotechnology", said John Mugabe, director of NEPAD's Office of Science and Technology. The establishment of appropriate regulatory measures was a key recommendation in a recent report by the AU/NEPAD High Level Panel on Modern Biotechnology.

NABNet to Improve Barley Varieties for North Africa

Prof Elarbi (nabnet@nepadst.org)

The North Africa Biosciences Network (NABNet), one of the four networks of NEPAD/Biosciences Initiative, has started a project aimed at improving barley production in North Africa. Poor yield of barley in the area has been attributed to lack of drought and salinity tolerant cultivars. Although the available varieties in North Africa are mainly suitable for livestock consumption, people are increasingly eating them due to lack of better alternatives, the director of NABNet Prof Mohamed Elarbi noted. It was with this in mind that NABNet organized a meeting of experts in Tunisia recently to review progress of the project titled "*Genetic improvement of nutritional quality and drought and salinity tolerance of North African barley germplasm*" aimed at improving the crop. With funding from the Canadian International Development Agency, the NABNet Barley team agreed to seek collaboration from relevant regional and international organizations to undertake comprehensive genetic resources evaluation, physiological and biochemical characterization, biotechnological improvement and field assessment. Institutions involved in the project include Egypt's National Research Centre (NRC) and Agricultural Genetic Engineering Research Institute (AGERI); Tunisia's Centre de Biotechnologie de Borj Cedria (CBBC) and Institut National de la Recherche Agronomique (INERA) and Algeria's Institut National de La Recherche Agronomique (INRAA).

NEWS FROM OTHER COUNTRIES

Global GM Crop Area Increased by 12% in 2007

<http://www.isaaa.org>.

In 2007, GM crop area grew 12% or 12.3 million hectares to reach 114.3 million hectares, the second highest area increase in the past five years. Two million more farmers planted GM crops which now total 12 million farmers globally benefiting from the technology. Nine out of ten, or 11 million of them were resource-poor farmers, exceeding the 10-million milestone for the first time. These were highlights of a report presented by Dr. Clive James, chairman and founder of the International Service for the Acquisition of Agri-biotech Applications (ISAAA). Other highlights of the report include:

- India experienced the highest proportional increase in 2007, with a 63% gain to total 6.2 million hectares of GM cotton grown by 3.8 million resource-poor farmers.
- China, increased Bt cotton production by 0.3 million hectares to total 3.8 million hectares, 69% biotech cotton area. A total of 7.1 million farmers planted the GM crop. In addition to biotech cotton, Chinese farmers also grew GM papayas and GM poplar tree.
- Brazil experienced the greatest absolute growth, at 3.5 million hectares to total 15 million hectares of herbicide-tolerant soybeans and Bt cotton.

- South Africa, the only African country planting GM crops, increased plantings by 30% to total 1.8 million hectares.
- Europe surpassed 100,000 hectares of GM crops for the first time in 2007 with 77% growth. In EU, 8 of the 27 countries planted GM crops in 2007.
- Poland and Chile planted GM crops for the first time in 2007, bringing the total countries planting GM crops to 23

Role of Agricultural Biotechnology in Solving Water Scarcity

<http://www.fao.org/biotech/logs/C14/summary.htm>

Biotechnology has a valuable role to play in addressing the challenge of water scarcity in developing countries. However, many applications of biotechnology in this area have not yet met their full potential to deliver practical solutions to the end-user in developing countries. This was the consensus of the e-mail conference facilitated by the Food and Agriculture Organization (FAO) which attracted over 400 participants.

The summary document on "Coping with water scarcity in developing countries: What role for agricultural biotechnologies" discusses three main subjects: applications of biotechnology to develop crops with improved drought resistance or water use efficiency; the use of mycorrhizal fungi and bacteria as a biofertilizer; and the use of biotechnology in wastewater treatment.

Bt Toxin Resistance: an Evolutionary Action

<http://www.nature.com/nbt/journal/v26/n2/pdf/nbt1382.pdf>

Researchers from the University of Arizona led by Bruce Tabashnik, have recently published an article in Nature Biotechnology on the possibility of six chewing insect pests gaining resistance to the Bt toxins contained in transgenic Bt cotton and Bt corn.

Analysis conducted by research collaborators in Australia, China, Spain and the USA proved that the resistance of the southeast Asian cotton bollworm (*Helicoverpa zea*) to Bt cotton could have arisen from a natural evolutionary process. The other insect pests however, such as the pink bollworm, the most significant pest in the southwest USA, as well as the corn borer found in Europe and Asia have not changed their sensitivity to the Bt toxin.

The economic impact of the increased resistance of the cotton bollworm to Bt cotton is diminishing as the area of Bt cotton with the single gene *cry2Ac* is reduced. In addition, Bt cotton with the two-stacked genes *cry2Ac* and *cry2Ab* has become available for cultivation to control the pest. Other means of insect stewardship are discussed in the full report.

Philippines Calls for Paradigm of Cooperation in Biotechnology

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The challenge for the Philippine government which has registered "more than 27 consecutive quarters of economic growth" is to sustain and translate the benefits it has gained to the poorer classes who still remain the biggest sector in the country. One of the challenges is to increase collaboration between the Department of Agriculture, other science and technology units as well as agencies of government and state colleges and universities, and the private sector to push the agencies of science, biotechnology, and technology transfer. These perspectives were forwarded by Secretary Arthur Yap of the Philippine Department of Agriculture during a public seminar on the global status report of commercialized GM crops held in Manila, Philippines.

Secretary Yap called for a paradigm of cooperation so that different sectors can help in disseminating information to encourage a greater understanding by the public on what science in general, and biotechnology, in particular can do. He called on the audience

composed of academics, the science community, representatives from government and the private sector, as well as the farming community to identify what science or biotechnology can do for the rural communities, search out centers of excellence, and partner with the various sectors to use technologies to help alleviate poverty.

Bangladesh Calls for GM Crop Cultivation

Dr. Khondoker Nasiruddin at nasirbiotech@yahoo.com.

M. Abdul Aziz, Agriculture Secretary of Bangladesh, stressed the need to develop and cultivate GM crops in the country. He added that apart from diseases and pests, Bangladesh is severely facing problems of salinity, drought and flooding which can be addressed by developing resistant crop varieties. The Agriculture Secretary gave these insights during two separate workshops on "Implementing National Biosafety Framework and Biosafety Guidelines of Bangladesh" and "Compliance management of confined field trials of transgenic plants" held at the Bangladesh Agricultural Research Council (BARC), Dhaka. Both workshops were sponsored by the South Asia Biosafety Program (SABP) of AGBIOS, a Canadian company dedicated to providing public policy, regulatory, and risk assessment expertise for products of biotechnology.

Currently, confined field trials are being done on Golden Rice, Bt Brinjal, and Late Blight Resistant Potato.

Field Test of Cotton Modified for Waterlogging Tolerance

<http://www.ogtr.gov.au/ir/dir083.htm>

The Australian Office of the Gene Technology Regulator (OGTR) has received an application for the limited and controlled release of GM cotton enhanced for waterlogging resistance. The application was submitted by the Australian Commonwealth Scientific Research Organization (CSIRO). The GM lines contain genes coding for certain enzymes activated during anaerobic respiration as well as plant hemoglobin from *Arabidopsis*. If approved, the trial will be conducted in Narrabri in New South Wales, on a total area of 0.1 ha per growing season from October 2008 to May 2011. CSIRO is bound to adopt certain measures to restrict the dissemination of GM plant materials, like surrounding the trial site with a pollen trap and postharvest monitoring of fields.

Switzerland Approves GM Wheat Trial

<http://www.bafu.admin.ch/aktuell/medieninformation/00004/index.html?lang=de&msg-id=17201>

The Swiss Federal Environment Office (FOEN) has granted scientists from the Federal Institute of Technology (ETH) and the University of Zurich to carry out field trials involving transgenic wheat in Reckenholz, near Zurich. The scientists were allowed to perform three experiments over a two-year period despite the existing 5 year ban on the use of genetically modified crops in the country. The Environment Office made the decision after receiving approvals from the federal agriculture, health and veterinary offices.

The experiments will be carried out to find out if the transgenic wheat lines, shown to be resistant to certain fungal pathogens in the laboratory, will perform well in normal agricultural conditions. The trials will be performed under very strict conditions, which include prohibited access to experimental fields and constant monitoring by a technical commission.

Research Projects to Secure Agriculture in Developing Countries

http://www.bbsrc.ac.uk/media/briefings/080221_sarid.pdf

The Biotechnology and Biological Sciences Research Council (BBSRC) and the UK Department for International Development (DFID) unveiled 12 new projects, worth US\$ 14 million, that will tackle some of the common pests, diseases and environmental conditions that devastate agriculture in the developing world. The research projects will look at how important crops, like rice, maize, coconut and banana, respond at the molecular level to hostile factors like pathogen attacks and inclement conditions. The projects are part of BBSRC and DFID's flagship initiative - Sustainable Agriculture Research for International Development (SARID).

Parliamentary Under-Secretary of State for International Development and Business, Enterprise and Regulatory Reform, Gareth Thomas, said "Investing in science and research is essential to provide poor farmers with the seeds, knowledge and tools they need to make a better life for themselves. This research, bringing together UK, African and Asian scientists, has the potential to revolutionize farming in the developing world and reduce global poverty. The UK is delighted to support this initiative."

Projects include reducing arsenic levels in rice, fighting root-knot nematodes, development of drought tolerant millet varieties, and biological control of the African armyworm.

Australian Grains Industry Ready for GM Canola

http://www.aaaa.com.au/pdf/Delivering_Market_Choice_with_GM_canola.pdf

The Australian grains industry has the capacity to deliver and manage the commercial introduction of GM canola. This was forwarded in an industry report "Delivering market choice with GM canola" prepared under the Single Vision Grains Australia process. The report recommended that "commercialization of approved GM canola should proceed without further delay".

Although two types of herbicide tolerant GM canola were approved by the Gene Technology Regulator in Australia in 2003, a moratorium on its commercialization was imposed by state governments. The Australian grains industry reviewed the market requirements for GM canola, and it now feels ready to incorporate approved GM varieties into the supply chain.

UK Farmers Optimistic About GM Crops

<http://www.esrc.ac.uk/ESRCInfoCentre/PO/releases/2008/february/gm.aspx?ComponentId=25875&SourcePageId=20654>

Farmers are generally optimistic about GM crops, according to a study funded by the UK Environmental and Research Council (ESRC). The results of the study suggest that farmers do not think that genetic modification raises any issues of principle, or that it is a matter of right or wrong. Most of them regard genetic modification as an extension of previous plant breeding techniques.

The study was conducted by a group of scientists from the UK Open University. According to them, this is the first systematic look at what large scale commodity farmers, not those involved in organic agriculture, think about GM crops.

Andy Lane, lead author of the study, said: "New technology such as GM is attractive to farmers. They want to produce high-quality food profitably and they want to farm in an environmentally sensitive way. GM may allow them to reconcile this conundrum by doing both of these things at once." Lane and his colleagues also found out that most farmers feel that there is poor communication between growers and people involved in agricultural policy and scientific research.

Biofuels Platform Established

<http://www.cgiar.org/monthlystory/march2008.html>

The Bioenergy Platform of the Alliance of the Consultative Group on International Agricultural Research (CGIAR) Centers was formed to help developing countries ensure that biofuels contribute rather than negate the benefits these products are suppose to provide. Nine of the CGIAR Centers will do collaborative research on crops and cropping systems as well as land management and policy options.

The Platform was created in the light of the rapid rise of the biofuel industry and its potential development impacts. The biofuels revolution has opened up new prospects for developing countries in terms of stronger energy security, new sources of wealth, and reduced greenhouse gashouse emissions and pollution from fossil fuels. On the other hand, strategies may backfire, causing prices of basic cereals to go up, and may also result in the destruction of ecosystems and biodiversity.

Agricultural Sustainability Initiative

<http://monsanto.mediaroom.com/index.php?s=43&item=578>

A multi-sector initiative composed of growers, conservation organizations, and companies was formed to create sustainable outcomes for agriculture. Its initial concern is a sustainability index to measure and track the impact of agriculture in terms of environment and natural resource sustainability. This prototype index will analyze and report use of land, water, energy, greenhouse gas emissions, and crop production inputs in four key commodity crops – corn, cotton, soybeans and wheat.

“Sustainability is becoming increasingly important to consumers as they make their food choices,” said Sarah Stokes Alexander, director of sustainability and leadership programs for The Keystone Center, the non-profit group facilitating the initiative. “By creating this coalition, participants throughout the food supply chain are demonstrating their ongoing commitment to increasing productivity to meet future food and fiber needs while decreasing impacts on the environment.”

World's First Transgenic Phytase Corn

http://www.originagritech.com/news/news_contents.php?id=35

Origin Agritech limited, a China-based crop seeds and agri-biotech company, announced that it has licensed the world's first phytase corn. The transgenic corn is the product of a seven-year study by the Chinese Academy of Agricultural Sciences.

Phytase is used as an additive in animal feed to degrade phytic acid, the storage form of phosphorus. Phytase can increase phosphorus absorption in animals by as much as 60%. With the transgenic crop, there is no need to purchase phytase and corn separately. The use of phytase corn should also reduce phosphate pollution caused by animal waste and excessive fertilizer use.

The worldwide potential phytase market is estimated at US\$500 million, including some US \$200 million from China alone. Addition of phytase to animal feed is mandatory in the European Union, Southeast Asia, Japan and Taiwan. Origin's GM phytase corn is expected to be commercially launched in 2009.

Victoria Ends Four-Year GM Moratorium

<http://www.gmo-compass.org/eng/news/346.docu.html>

Starting February 29, two lines of GM canola can be cultivated in the Australian state of Victoria. The approvals mark the end of the four-year ban on GM crops on the federal

state. Andrew Weidemann, of the Victorian Farmers' Federation (VFF), says that the approval will allow them to compete on a level footing with other oilseed growers across the world. He further commented that the new choices for growers may lead to the modernization of farming methods in the state.

Victorian Minister for Agriculture, Joe Helper points out that the GM canola lines have passed regulatory hurdles, and that they are safe with regard to health and the environment.

Regulators estimated that the GM crops can increase the state revenue by as much as 115 million Australian dollars in the next eight years.

UK Consumers are Less Concerned About GM Food Ingredients

<http://www.food.gov.uk/multimedia/pdfs/cas2007ukreport.pdf>.

Results of the annual "Consumer Attitude to Food" survey by the Food Standards Agency (FSA) revealed that only 20% of UK consumers consider GM ingredients in foods as a safety issue. This is significantly lower compared to the results of last year's poll, wherein more than 25% of the respondents identified GMO as a safety concern. The amount of fat, salt and sugar in food are the top issues of concern identified by the respondents. This is followed by 32% citing the use of pesticide in crop cultivation and 28% identifying hormones in meat as safety issues.

EU Delays GM Potato Approval

<http://www.gmo-compass.org/eng/news/349.docu.html>

GM potatoes will not be cultivated in the EU this year, after the EU Commission delayed the approval of BASF's Amflora. The transgenic potato was modified to produce pure amylopectin starch, which is suitable for paper, textile and adhesive production. It is intended for industrial use, and not for animal or human consumption.

The EU Commission has previously recommended the approval of the transgenic potato. This is after the European Food Safety Authority (EFSA) concluded that Amflora is identical to non-GM potatoes in regard to its effect on the environment. The recommendation was unable to find support from a qualified majority in the EU Council and by EU law, hence the responsibility for the approval was returned to the Commission.

Three New Briefs Address Issues Related to GM Food and International Trade

The Program for Biosafety Systems (PBS), an international program managed by the International Food Policy Research Institute (IFPRI) that supports the responsible development and safe use of agricultural biotechnology in Africa and Asia, has just released the following three policy briefs on GM food and international trade-related regulations in developing countries:

- International Trade-Related Regulations Of GM Food: What Policies for Developing Countries? 2007. Guillaume Gruère. <http://www.ifpri.org/pbs/pdf/pbsbriefgruere.pdf>
- Labeling Policies of Genetically Modified Food: Lessons from an International Review of Existing Approaches 2007. Guillaume Gruère. <http://www.ifpri.org/pbs/pdf/pbsbrieflabeling.pdf>
- What Information Should be Required on Shipments of LMO-FFPS? Analyzing Options Under Article 18.2.a of the Biosafety Protocol 2007. Guillaume P. Gruère and Mark W. Rosegrant. <http://www.ifpri.org/pbs/pdf/pbsbrieflmoFFPS.pdf>

NOTICEBOARD

27 – 29 March 2008 - A Biofuels Summit is scheduled for the JW Marriot Hotel in Bangkok, Thailand. Among the topics for discussion include market development of alternative fuels, key trends in the development of biodiesel worldwide, and biofuels development in Asia and developing countries. The Summit is being organized by Salvo Renewable Energy Series. For more information email vivian@salvoglobal.com or visit [http:// www.salvoglobal.com](http://www.salvoglobal.com).

Advancing Agriculture through Knowledge and Innovation.

7 – 9 April 2008 - The international conference "Advancing Agriculture in Developing Countries through Knowledge and Innovation" will be held in Addis Ababa, Ethiopia. The conference organized by the International Food Policy Research Institute (IFPRI) aims to provide a forum for the exchange of ideas and experiences on knowledge and innovation systems among public, private, and civil sectors; to showcase methods and applications of successful experiences in knowledge and innovations; and to identify areas for further research, advocacy, and cooperation.

More information at

<http://www.ifpri.org/events/conferences/2008/20080407.asp>.

16 – 21 November 2008 - Held biennially by the International Society for Biosafety Research, the 10th International Symposium on the Biosafety of Genetically Modified Organisms will highlight past achievements and future directions in environmental biosafety research and risk assessment of GMOs. It is scheduled for Te Papa, Wellington, New Zealand. For more information visit <http://www.isbgmo.info> or email Michelle Kane at mk@tcc.co.nz

Joint FAO/WHO Food Standards Programme, Codex Committee on Food Labelling. 36th Session, Ottawa Congress Centre, Ottawa, Canada from 28 April - 2 May 2008.

The 1st All Africa Congress on Biotechnology 2008. 22nd – 26th September 2008. www.abneta.org/congress
www.absfafrica.org

Bio 2008 USA - 17 to 20 June San Diego, USA. For more information visit their website: www.bio2008.org

7th Plant Breeders Symposium - 10 to 13 March being held at Alpine Heath, Drakensberg. For more details contact Rae on OelofseR@arc.agric.za

SARIMA Annual will be held from 4 to 6 June 2008 at the Wallenberg Research Centre in Stellenbosch, Western Cape. Kindly consult the SARIMA website (<http://www.sarima.co.za/>) for more information and registrations.