

CROP BIOTECH 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)

December 16, 2005

In This Week's Issue:

NEWS

- Von Braun: Policies Needed to Improve World Food Situation
- India Holds Dialogue on Bt Cotton
- CIMMYT Working on New Genomic Map for Maize Application
- Coexistence of GM and Non-GM Crops in Ireland
- IITA Project to Increase Awareness of Biotech in Nigeria
- Crop Researchers Wins 2005 Science Awards
- Quarterly Update on China's Ag-biotech Scene Now Available

RESEARCH

- Maize Genome Analyzed
- Gene Makes Plants Live in Cold
- New Markers for Oat Introduced

ANNOUNCEMENTS

NEWS

VON BRAUN: POLICIES NEEDED TO IMPROVE WORLD FOOD SITUATION

Three factors have not changed in the world food situation: the world's population continues to increase; small farmers continue to dominate agriculture in the developing world; and poverty remains to be the root cause of hunger and malnutrition. To improve the world food situation requires concrete moves, said Joachim von Braun, Director General of the International Food Policy Research Institute (IFPRI), during the Consultative Group on International Agricultural Research (CGIAR) Annual General Meeting at Marrakech, Morocco.

Von Braun noted that achieving the Millennium Development Goals to reduce hunger and malnutrition will entail:

- * Strengthening governance of the food and agriculture system at the global, country and local levels;
- * Scaling up public investment for agricultural and rural growth;
- * Taking targeted steps to improve nutrition and health; and
- * Creating an effective global system for preventing and mitigating disasters. Efforts to reduce poverty has taken place in Asia and Latin America and it is now necessary to “direct efforts towards Africa and towards smaller and poorer countries that have few resources and little capacity to plan and implement effective policy action,” Von Braun stressed. He enumerated several strategies which include the need for bio- and info-technological innovations based on science for the poorest and marginalized.

For the IFPRI release, visit <http://www.ifpri.org/pubs/agm05/jvbaqm2005.asp>.

INDIA HOLDS DIALOGUE ON BT COTTON

A one-day National Dialogue on the ‘Resurgence of Cotton’ was recently held at the Central Institute for Research on Cotton Technology in Mumbai, India. The national dialogue was organized as a stocktaking exercise to assess the Indian cotton outlook amidst the implementation of various mini missions of the Technology Mission on Cotton (TMC) and introduction of Bt cotton in India.

Various speakers were present at the event. Dr. CD Mayee traced important events in the history of cotton development in India, and attributed the increase in cotton production over the past decade to the successful implementation of TMC and commercialization of Bt cotton in India in 2002.



Dr. CD Mayee presides over the session of the Bt cotton conference in India.

Mr. Andrew McDonald, an international expert on cotton, also lauded Indian policy makers and scientists for the excellent work done in the successful promotion of Bt cotton in India. He also stated that ecological issues should also be given importance besides the quality and production aspects.

The Inaugural Session also featured the release of a documentary film on Bt cotton, "The Story of Bt Cotton in India," produced by ISAAA and the South Asia Biosafety Program (SABP); and a publication entitled "Cotton Production, Technology Mission and Need for Paradigm Shift" by Sh UC Sarangi and Sh TSR Subramanian.

The day's sessions discussed "Indian Cotton Outlook," where four speakers presented their views on various aspects of Indian Cotton; and the joint sessions "Role of Government in Stimulating Growth and Investment Opportunities for Cotton/Cotton Textiles" and "Expanding Trade Prospects in Cotton Textiles." All sessions were chaired by Dr. CD Mayee.

For more information, please contact Bhagirath Choudhary of the ISAAA South Asia Office at b.choudhary@isaaa.org. Download the press release at <http://www.isaaa.org/kc/Publications/pdfs/documents/Proceedings-ISAAA-ISCI.pdf>.

CIMMYT WORKING ON NEW GENOMIC MAP FOR MAIZE APPLICATION

Scientists at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico are developing a new genomic map that applies to a wide range of maize breeding populations. This may help scientists develop maize more tolerant to drought.

CIMMYT reports that previous genomic maps for drought tolerance in tropical maize applied only to specific lines or populations. Researchers have developed a single map that combines data from many experiments involving different tropical maize types in diverse environments. "Having all the QTL information integrated into a single map should allow us to identify the outstanding genomic regions involved in drought tolerance," says Jean-Marcel Ribaut, former CIMMYT molecular geneticist and now Director of the CGIAR's Generation Challenge Programme. The teams are linking field data for traits such as ear number, chlorophyll content, and carbohydrate content with DNA analyses for the same plants.

For the full story, visit <http://www.cgiar.org/monthlystory/december2005.html>.

COEXISTENCE OF GM AND NON-GM CROPS IN IRELAND

Ireland's Department of Agriculture and Food (DAF) released its Report on "Coexistence of GM and non-GM Crops in Ireland," which examines issues relating to the growing of GM crops in Ireland.

A Working Group convened by the Department forwarded several recommendations which include:

- * A combined mandatory and voluntary arrangement best meets the objective of implementing coexistence measures. Mandatory measures require that they be given legal status, while voluntary measures should be specified in a Code of Good Farming Practice.
- * Growers must obtain prior approval from the DAF to grow GM crops and applications should be lodged a minimum of 60 days prior to the planned date of sowing.
- * Growers of GM crops must attend prescribed education and training courses. All other interested parties, e.g. neighboring non-GM crop growers, seed suppliers, machinery and transport operators, contractors, advisers/extension workers should attend education and training courses on GM crop production and coexistence.
- * A GM crop grower must obtain signed written agreement with his/her neighbor, where part of the neighbor's farm is required to satisfy the necessary separation distance. This agreement must be submitted as part of the application for approval to grow a GM crop.

The complete set of recommendations is available online at http://www.agriculture.gov.ie/publicat/publications2005/gm_coexistence/introduction.doc

IITA PROJECT TO INCREASE AWARENESS OF BIOTECH IN NIGERIA

The International Institute of Tropical Agriculture (IITA) has established the Nigeria Agriculture and Biotechnology Project (NABP) to assist the government to enhance institutional and scientific capacity to conduct biotechnological research, implement priority regulatory guidelines, and increase public awareness of biotechnology.

Its research collaborative program aims to develop insect-resistant cowpea varieties through biotechnology which have the potential to significantly improve agricultural productivity. It intends to link with partners like the Ahmadu Bello

University in Zaria, which has a mandate for cowpea improvement in Nigeria; the Biotechnology Advanced Laboratory at the Sheda Science and Technology Complex in Abuja; and the University of Agriculture in Abeokuta.

The project also intends to provide training and capacity building to the members of the National Biosafety Committee and the National Agricultural Research Institutes' biosafety officers. Workshops and related activities will be implemented to various stakeholders to popularize biotechnology.

Email Taye Babaleye of IITA at t.babaleye@cgiar.org for additional information.

CROP RESEARCHERS WINS 2005 SCIENCE AWARDS

Ravi Singh of India won the "Science Award for Outstanding Scientist" for developing "slow rusting" wheat varieties with improved resistance to diseases such as leaf rust, yellow rust, powdery mildew, and spot blotch, among others. The Consultative Group on International Agricultural Research (CGIAR) reports that these improved wheat varieties have saved poor farmers an estimated US\$5 billion worth of production losses. The research is being conducted at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico.

Meanwhile, Shaobing Peng of China and his co-authors won the "Science Award for an Outstanding Scientific Article" for the research article "Rice yields decline with higher night temperature from global warming" published in the Proceedings of the U.S. National Academy of Sciences in 2004. The researchers provide the first direct evidence of decreased crop yields that result from increased night time temperatures associated with global warming. Findings indicate that climate change will have a negative impact on food production in some tropical areas. The research was done at the Philippines-based International Rice Research Institute (IRRI).

Other winners are announced in <http://www.cgiar.org/newsroom/releases/news.asp?idnews=346>

QUARTERLY UPDATE ON CHINA'S AG-BIOTECH SCENE NOW AVAILABLE

China's Agricultural Biotechnology Information Center (CABIC) has just released "Crop Biotech Update in China", a summary of current developments in China's agri-biotech scene, written in English and composed for the global audience. Housed at the China National Center for Biotechnology Development (CNCBD),

and working in cooperation with ISAAA, the CABIC will deliver the update every quarter.

In the latest update, researchers report, among others, that significant headway has been made in breeding super hybrid rice. They also find a new cotton resistant to glyphosate and cotton bollworm, and write that a gene has allowed maize seeds to produce more lysine and protein than its conventional counterparts. More news and research are available in the quarterly report itself, and are presented as short news bulletins, with links to the full articles.

The latest issue is now available at <http://www.isaaa.org/kc>. To find out more about CABIC, visit their Mandarin website at <http://www.cncbd.org.cn/nyzhk/pingjia/pingjia.html>. You may also email cabic@cncbd.org.cn for more information.

RESEARCH

MAIZE GENOME ANALYZED

Maize, though important to trade and science, is a crop whose genome is still incompletely sequenced. The costs and complexity of completing the maize genome has long held back such a project, not only because of the crop's genome size, but because of the presence of repetitive elements, which pose computational challenges for accurately assembling the entire sequence.

In the latest issue of *Plant Physiology*, Georg Haberer of the Munich Information Center for Protein Sequences, and colleagues take the first shot at studying the "Structure and Architecture of the Maize Genome." Researchers carry the analysis out by selecting 100 random regions of the genome averaging 144 kilobases of DNA in size, and using these regions as a dataset possibly representative of the entire maize genome.

Their analysis showed, among others, that a) at least 66% of the whole maize genome is composed of repetitive elements; b) maize has 42,000-56,000 genes in total, substantially more than rice or *Arabidopsis*; c) these same genes average about 4,000 DNA base pairs in size; and d) much of the increase in genome size of maize relative to rice and *Arabidopsis* can be attributed to an increase in number of both repetitive elements and genes.

Subscribers to *Plant Physiology* can read the complete article at <http://www.plantphysiol.org/cgi/reprint/139/4/1612>. Other readers may access the abstract at <http://www.plantphysiol.org/cgi/content/abstract/139/4/1612>.

GENE MAKES PLANTS LIVE IN COLD

Fabio Fiorani and colleagues of Duke University report that “The Alternative Oxidase of Plant Mitochondria Is Involved in the Acclimation of Shoot Growth at Low Temperature: A Study of *Arabidopsis* AOX1a Transgenic Plants.” Their findings appear in the latest issue of Plant Physiology.

By using the AOX1a gene, transforming *Arabidopsis* plants with it, and monitoring the growth of the plants at 12°C, researchers found that plants thrived and survived the low temperature. Among others, they found that AOX activity plays a role in shoot acclimation to low temperature in *Arabidopsis* at relatively early growth stages, but growth diminished as plants approached flowering.

Subscribers to Plant Physiology can read the complete article at <http://www.plantphysiol.org/cgi/reprint/139/4/1795>. Other readers may access the abstract at <http://www.plantphysiol.org/cgi/content/abstract/139/4/1795>.

NEW MARKERS FOR OAT INTRODUCED

J.-L. Jannink and S. W. Gardner of Iowa State University present their work on “Expanding the Pool of PCR-Based Markers for Oat.” Their research appears in the latest issue of Crop Science.

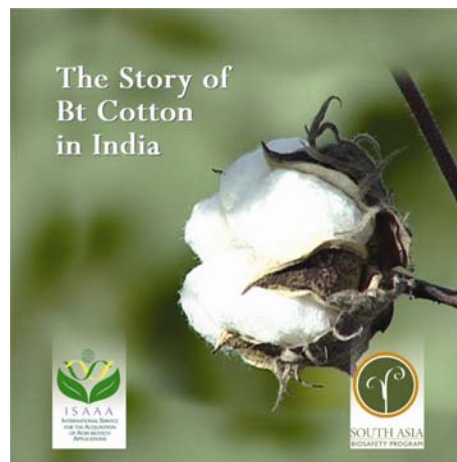
There are only a few polymerase chain reaction (PCR)–based markers for oat, and the crop would benefit from such markers, as PCR is a less expensive alternative to current methods used to analyze, classify, and breed oat (such as restriction fragment length polymorphisms, or RFLP).

In their research, Jannink and Gardner design 32 markers based on oat sequence data available. Subscribers to Crop Science can access the complete article, as well as the sequences of the markers, at <http://crop.scijournals.org/cgi/reprint/45/6/2383>. Other readers may see the abstract at <http://crop.scijournals.org/cgi/content/abstract/45/6/2383>.

ANNOUNCEMENTS

INDIA BT COTTON DOCUMENTARY NOW AVAILABLE

ISAAA and the South Asia Biosafety Program (SABP) have released “The Story of Bt Cotton in India”. This 20-minute documentary captures the history of India’s first commercial approval of a genetically modified crop. It focuses on the roles of various stakeholders in bringing Bt cotton to farmers’ fields and recounts the experiences of farmers, including an objective treatment of some of the challenges and opportunities that have arisen with the deployment of Bt cotton.



In addition to English and Hindi, the video is available in six other regional languages: Punjabi, Gujarati, Marathi, Tamil, Telugu and Kannada.

For copies, please contact Bhagirath Choudhary of the ISAAA South Asia office at b.choudhary@isaaa.org, or Purvi Mehta-Bhatt of SABP at P_Mehta_Bhatt@rediffmail.com.

PLANT CONFERENCE SLATED

The European Plant Science Organization (EPSO) will hold its 3rd Plant Science Conference, “Plant Dynamics: from Molecules to Ecosystems” in Visegrád, Hungary, from May 28 - June 1, 2006. The conference promises to bring together scientists from Europe and other continents to present and discuss cutting edge science. The number of participants is limited to 300, and the deadline for early registration is on January 31, 2006. For more information, visit <http://www.epsoweb.org/catalog/Conf2006.htm>.

ICABR CONFERENCE CALLS FOR PAPERS

The International Consortium on Agricultural Biotechnology Research (ICABR), in association with several European and U.S. universities, calls for papers to the "10th International Conference on Agricultural Biotechnology: Facts, Analysis and Policies." The conference will take place at Ravello, Italy, on June 29 – July 2, 2006, and will focus on, among others, the impact of agricultural biotechnology on international trade, public acceptance of the technology, intellectual property rights, and biotechnology and developing countries. Proposals for contributing papers should be sent to icabr@economia.uniroma2.it. For more information, visit <http://www.economia.uniroma2.it/conferenze/icabr2006/Default.asp>

ENGLISH VERSION OF VIETNAM'S DECISION ON GMO

Decision No. 212 on genetically modified organisms formulated by the Vietnamese Government is now available in English. The complete text is available at <http://www.agbiotech.com.vn/en/?mnu=preview&key=349>.

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