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)

November 11, 2005

NEWS

- CIMMYT Draws Up New Maize Map
- Africa Urged to Up Agri Systems to Meet MDG's
- Thai Corp Calls for GM Field Trials
- France GM Grape Trials Resume
- Dialogue Explores Implications of GM Imports on US Policies
- Pigeonpea Back in China

RESEARCH

- Gene Flow Model Presented for Irish Crops
- Report Examines Lower Isoflavone Soy
- Millet Gets Mildew Defense from Within

DOCUMENT REMINDERS

ANNOUNCEMENTS

NEWS

CIMMYT DRAWS UP NEW MAIZE MAP

Maize is an important crop, especially throughout the developing world, but its yields are hampered by problems such as soil infertility and insect infestation. The second greatest constraint to its production, however, is drought, and such a phenomenon is thought to reduce yields worldwide by more than 15%, or over 20 million tons, annually.

Maize is also a complex crop, at the genetic level. Domesticated from the grass teosinte, it contains high levels of genetic diversity compared with other cereal crops such as rice and wheat. There are portions of its genome, however, which

may be able to improve the crop from within. For instance, Quantitative Trait Loci (or QTLs), are potential hotspots for genes which can make the crop better.

With a view of using these QTLs to improve maize's drought resistance, scientists from the International Maize and Wheat Improvement Center (CIMMYT) and its partner organizations have developed a singe genomic map for maize that identifies regions of DNA that are involved in conferring drought tolerance. Such maps have already been drawn for the crop, but applying only to specific maize lines and populations. The latest map combines data from many trials of 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," Jean-Marcel Ribaut, director of the Generation Challenge Program of the Consultative Group on International Agricultural Research (CGIAR) said, "The idea is ambitious for it should allow maize breeders to select the right parents for drought tolerant maize by ensuring they have these important regions on their genome."

With funding from the Rockefeller Foundation, members of the project team will give courses on this approach to scientists in Kenya and China over the coming months.

Read the complete article at <u>http://www.cimmyt.org/english/wps/news/2005/oct/hotSpots_maize.htm</u>. For further information, contact Jean-Marcel Ribaut (<u>j.ribaut@cgiar.org</u>) or Mark Sawkins (<u>m.sawkins@cgiar.org</u>).

AFRICA URGED TO UP AGRI SYSTEMS TO MEET MDG'S

The Special Advisor to United Nations Secretary-General Kofi Annan on the Millennium Development Goals (MDGs) and UN Millennium Project Director Dr Jeffrey D. Sachs has called on African governments to fast track adoption of transgenic crops to boost food security on the continent.

He said more African scientists should be trained in cutting-edge biotechnology so that they can provide the much needed scientific advice on the use of genetically modified crops on the continent. "This is something the MDGs could look into as it explores various possibilities of achieving the goals in Africa," he observed.

Dr Sachs, who is also the director of The Earth Institute, was addressing via telephone about 200 delegates of the First Annual Conference of the African Science Academy Development Initiative (ASADI) that has just ended in Nairobi,

Kenya. With the theme "Improving Public Policy to Achieve the Millennium Development Goals in Africa: Harnessing Science and Technology Capacity," the conference was attended top scientists, academicians, ministers, journalists, and politicians.

Dr Sachs said Africa would not achieve the MDGs unless her agricultural systems are modernized to produce more food, end hunger and famine, and boost nutritional content of foods. He likewise called on the African Academies of Sciences to be prepared to provide expert scientific advice to their governments on agriculture, health, climate change, water management, energy science, and good ecological science, which he identified as crucial to poverty reduction on the continent.

For more information, contact Daniel Otunge of KBIC at dotunge@absfafrica.org

THAI CORP CALLS FOR GM FIELD TRIALS

The Charoen Pokphand Group (CP), Thailand's largest agricultural corporation, has called on the local government to allow field trials of three genetically modified (GM) crops: cassava, rubber, and corn for animal feed.

"China, Indonesia, the Philippines, and Vietnam have already developed their own GM crops, including rice, corn and soybean," CP's managing director, Sumet Pinyosanit, said, "The global market is increasingly receptive to GM crops." He also asked the Thai government to consider allowing commercial cultivation of GM crops to help Thai farmers compete in the world markets of the future.

CP began as a seed supplier in Thailand. It is now a global conglomerate, with investments, operations and trading in 20 countries around the world. It focuses on agri-business production and processing, as well as telecommunications, logistics, and retailing services.

Visit the CP Corporation at <u>http://www.cpthailand.com/webguest/home.aspx</u>. Read the complete article at <u>http://www.nationmultimedia.com/search/page.arcview.php?clid=3&id=123117&u</u> <u>srsess</u>=.

FRANCE GM GRAPE TRIALS RESUME

Nature Biotechnology reports that field trials of genetically modified (GM) grapevine rootstocks have resumed in France. These vines are designed to

resist infection to grapevine fanleaf nepovirus, a virus transmitted by the soil nematode Xiphinema index, as well as infected seeds. No naturally occurring resistance genes are available in wild grapevines, ruling out traditional breeding methods as an alternative.

The trials come after a six-year suspension, and are now being carried out by researchers at the National Institute for Agricultural Research (INRA). According to Olivier Lemaire, project leader, the technology will not be patented, allowing all wine growers to use GM rootstocks. He also adds that the grape scion will remain non-GM, "making the acceptability of such a strategy easier for society."

In line with the resumed field trials, strict biosafety measures, are in place, and were decided upon by a local steering committee made up of researchers and consumer groups, among other concerned sectors. Only the rootstocks are GM, and non-GM scions of Pinot Miunier, a grape variety not used in wine-making, will be grafted on top of the rootstocks.

As added precautions, floral buds from the rootstocks will be cut off. Currently, over 1,500 non-GM rootstocks have been planted to surround the 70 GM rootstocks being tested.

Subscribers to Nature Biotechnology can access the article in brief at <u>http://www.nature.com/news/2005/051031/pf/nbt1105-1329_pf.html</u>. Visit INRA at <u>http://www.inra.fr</u>.

DIALOGUE EXPLORES IMPLICATIONS OF GM IMPORTS ON US POLICIES

The Pew Initiative on Food and Biotechnology recently sponsored a policy dialogue entitled GM Imports: Implications for U.S. Biotechnology Policy. The goal of the dialogue was to stimulate an informative discussion about how various industry sectors are preparing to address genetically modified (GM) imports from other countries, and what, if any, U.S. government policies are in place to address these commodities.

"While a great deal of attention has been paid to international trade in genetically engineered products, relatively little of it has been focused on the potential that products developed abroad may enter into the U.S marketplace," said Michael Fernandez, executive director of the Pew Initiative on Food and Biotechnology.

Moderated by Michael Rodemeyer, former Executive Director of the Pew Initiative, the dialogue was attended by participants such as Joel Cohen, director of the program for biosafety systems at the International Food Policy Research Institute; Mark Mansour, a partner at the Washington, D.C.-based law firm Morgan, Lewis and Bockius, LLP; Gregory Jaffe, director of the biotechnology project at the Center for Science in the Public Interest (CSPI); and David Coia, vice president of communications at the USA Rice Federation.

Cohen identified intellectual property rights as a potential problem down the road for countries developing these technologies. Mansour, on the other hand, said the U.S. must remain consistent in its approach to biotech products from other countries.

For more information contact Kara Flynn at <u>kflynn@pewagbiotech.org</u>, or listen to the webcast at <u>http://www.connectlive.com/events/gmimports</u>.

PIGEONPEA BACK IN CHINA

Pigeonpea is an essential ingredient in Indian cooking. Next door in China, however, pigeonpea is used to hold up the soil in mountainous regions, and to rear insects. When the latter industry collapsed, pigeonpea cultivation decreased in Chinese farmlands.

With help from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), China has once again started to cultivate improved varieties of the crop. Work started back in 1997, when they were first tested in selected locations in the country. Today, pigeonpea is estimated to be grown on around 50,000 acres in China alone. Strong research programs on the crop have also been established by the Institute of Resources Insects of the Chinese Academy of Forestry in Kunming, Yunnan and at Guangxi Academy of Agriculture Sciences (GxAAS), Nanning, Guangxi.

According to Dr William Dar, Director General of ICRISAT, the impact of the institute's varieties in China recognizes the significance of pigeonpea as a crop with many useful qualities. Among others, it can also be used as animal fodder, which is important to the rural economy in Southern China.

For further information, contact Dr KB Saxena at <u>k.saxena@cgiar.org</u>.

RESEARCH

GENE FLOW MODEL PRESENTED FOR IRISH CROPS

The issue of co-existence of genetically modified (GM) and non-GM crops is important in the European Union (EU). Related to this issue is gene flow, which is

currently evaluated by ranking a crop as a high, medium, or low risk one. This system, however, does not provide the detail required to highlight aspects of a crop's biology that will serve to challenge coexistence management. Marie-Louise Flannery of Teagasc Crops Research Centre, Ireland and colleagues offer their country's side of the story by "Employing a composite geneflow index to numerically quantify a crop's potential for gene flow: an Irish perspective." Their article is published in Environmental Biosafety Research.

Researchers present a means to calculate the gene flow index (GFI) of a crop, and apply it to sugar beet, oilseed rape, potato, perennial ryegrass, maize, wheat, and barley. They also combine the four strands of gene flow to establish a baseline data set that describes the potential of Ireland's crops for both pollen and seed mediated gene flow. These are the crop pollen-to-wild relative (CPW); crop pollen-to-crop (CPC); crop seed-to-volunteer (CSV); and crop seed-to-feral (CSF).

Researchers found that oilseed rape, ryegrass, and sugar beet attained a high GFI value, but cautioned that such a value does not imply that the crops are not suitable for GM development, but have a higher propensity for gene flow and may require greater management precautions if efficient coexistence is to be attained.

Read the complete article at http://www.edpsciences.org/articles/ebr/pdf/2005/01/ebr0418.pdf.

REPORT EXAMINES LOWER ISOFLAVONE SOY

Soybean contains isoflavone, a compound associated with positive health effects in human adults, such as reduced risk of breast and prostate cancer, cardiovascular disease, and osteoporosis. However, isoflavone may be harmful for infants. It would thus be advisable to breed soybean low in isoflavones, but what impact would this change have on agronomic, and other seed quality traits?

Valerio S. Primomo of the University of Guelph, and colleagues, seek to answer the question as they assess the "Agronomic Performance of Recombinant Inbred Line Populations Segregating for Isoflavone Content in Soybean Seeds." Their work appears in the latest issue of Crop Science.

By breeding low isoflavone content soybean seeds and looking at traits such as yield, researchers found there were significant differences among populations, environments, and their interaction for isoflavone content. They also found that yields of low isoflavone content plants were comparable to high yielding soybean cultivars, and that isoflavone content in the seed had minimal effects on oil content, seed quality, and weight.

Subscribers to Crop Science may access the full article at <u>http://crop.scijournals.org/cgi/content/full/45/6/2203</u>.

MILLET GETS MILDEW DEFENSE FROM WITHIN

Pearl millet is the most drought tolerant of all domesticated cereals. It is widely grown, and its worst pest is downy mildew disease, which is caused by the fungus Sclerospora graminicola (Sacc.) Schroet. Control methods are ineffective, since the crop is grown under a wide range of environmental settings.

With a little outside help, Bejai R. Sarosh, and colleagues, of the University of Mysore, India document the "Elicitation of defense related enzymes and resistance by L-methionine in pearl millet against downy mildew disease caused by Sclerospora graminicola." Their work appears in the latest issue of the Journal of Plant Physiology and Biochemistry.

Researchers induced resistance to downy mildew by treating the crop with Lmethionine. They then profiled the messenger RNA transcripts which accumulated, and found that a good number of defense response genes were being expressed due to the treatment.

Subscribers to the Journal of Plant Physiology and Biochemistry can access the complete article at <u>http://dx.doi.org/10.1016/j.plaphy.2005.06.009</u>.

DOCUMENT REMINDERS

ARS BRIEFS POSTED

The United States Department of Agriculture's Agricultural Research Service (USDA-ARS) has posted its latest issue of Food and Nutrition Research Briefs at http://www.ars.usda.gov/is/np/fnrb/fnrb1005.htm. Readers can choose to receive the full issue as an e-mail, or to receive an e-mail alerting them that a new issue has been posted to the web. Details on how to subscribe to either free service are at: http://www.ars.usda.gov/is/np/fnrb/fnrb1005.htm. Readers can choose to receive the full issue as an e-mail, or to receive an e-mail alerting them that a new issue has been posted to the web. Details on how to subscribe to either free service are at: http://www.ars.usda.gov/is/np/fnrb/fnrb/fnrb1005.htm.

FOOD PRODUCTION DAILY NEWS AVAILABLE

Food Production Daily has released its latest news update. Topics include the state of the European Union (EU) with regard to the use of genetically modified organisms, how healthy compounds in fruits and vegetables may be lost in processing, and how broccoli can fight cancer-causing bacteria in humans. Read more at:

http://www.foodproductiondaily.com/news/ng.asp?n=63675&m=1FPDN03&c=ljsj uezwvsuqhgn

ANNOUNCEMENTS

CGIAR TO HOLD GENERAL MEETING

The Consultative Group on International Agricultural Research will hold its annual General meeting on the 5th of December 2005, at the Palais des Congres, Marrakech, Morocco. The event, entitled "Mitigating the Impact of HIV/AIDS on Agriculture in Sub-Saharan Africa Towards a Coordinated Perspective and Approach," aims to be a multi-stakeholder discussion forum on new action plans and the opportunities for a more coordinated effort from the CGIAR centers and their partners to have a bigger impact in the area of the effects of HIV/AIDS on agriculture in the region.

The conference is organized by the Africa Rice Center (WARDA) and CABI Bioscience. For more information, visit <u>http://www.cgiar.org/meetings/agm05/index.html</u>.

INDIA TO HOLD COTTON DIALOGUE

A national dialogue on "Resurgence of Cotton" will be held on the 26th of November 2005, at the CIRCOT Auditorium, CIRCOT, Adenwala Road, Matunga, Mumbai, India. Organized by the Indian Society for Cotton Improvement (ISCI) and the International Service for the Acquisition of Agribiotech Application (ISAAA), the dialogue will provide an opportunity to deliberate on the potential and prospects of improvement of quality, production and trade of cotton, and its implications for cotton textile industry in India.

Confirm your participation by sending an email to <u>b.choudhary@cgiar.org</u>, <u>charumayee@yahoo.co.in</u>, or <u>perianambi@hotmail.com</u> at the earliest possible time. 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 <u>knowledge.center@isaaa.org</u> 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 <u>knowledge.center@isaaa.org</u> and write, "unsubscribe newsletter" in the subject box.

Please visit CropBiotech Net web pages (<u>http://www.isaaa.org/kc</u>) 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 (<u>knowledge.center@isaaa.org</u>) us for your views and comments on any crop biotechnology product and related issues.

Copyright (c) 2005. CropBiotech Net.