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)

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NEWS

LIFT BAN ON GM CROP FIELD TRIALS, SAYS THAI AGRIC CHIEF

Adisak Sreesungpagit, chief of Thailand's Agriculture Department, plans to ask the cabinet to lift the ban on field trials of genetically modified (GM) crops in Thailand. He noted that the trials could shed light on the pros and cons of the technology. In a press release, Sreesunpagit said that he came to this decision after a group of northeastern farmers calling themselves the Farmer Institute Network urged the department to ask the government to review its ban on GM crops. Farmers voiced the need for an alternative technology in the light of the papaya ringspot virus problem that has been damaging their crop.

Adisak said the department's researchers have been collecting information to accompany the Agriculture and Cooperatives Ministry's request for the cabinet to consider lifting the GM field trial ban.

For information on crop biotechnology in Thailand, email Supat Attahom of the Biosafety and Biotechnology Information Center at rdispa@ku.ac.th.

VIETNAM SETS UP BOARD ON BIOLOGICAL DIVERSITY

Vietnam's Ministry of Natural Resources and Environment has set up a board to draft a law on biological diversity. The board will be headed by Minister Mai Ai Truc. Activities related to biological diversity will include surveys on biological diversity; building schemes for the preservation and sustainable development of biological diversity; and protecting gene pools of rare plants and animals.

The law on biological diversity will cover the establishment of nature reserves; the division of responsibilities for managing biological diversity; the sharing of benefits in managing and protecting biological diversity; and international cooperation and the implementation of international conventions related to biological diversity. The draft law will be submitted to the Government for approval in early 2007.

In other news, Vietnam signed a memorandum of understanding on science and technology cooperation with Italy during the third session of the Joint Vietnam-Italy Committee for Scientific and Technical Cooperation. Twenty-one projects on various fields that include biotechnology will be conducted.

Email Le Hien of Biotech Vietnam at hienbiotechvn@pmail.vnn.vn for other news summaries on biotechnology.

POTENTIAL FOR GM CROPS TO REDUCE MICRONUTRIENT DEFICIENCIES

Developing new varieties of staple foods, such as rice, maize, wheat, beans and cassava, by selectively breeding them to enhance nutritional qualities has merit for reducing micronutrient deficiencies in the developing world. This was forwarded by Jere Haas of Cornell University, USA, and his colleagues, as an implication of their recent work on bio-fortified, iron-rich rice and women's nutrition. Using their work as an example, Haas added that “rice that is bred to be higher in iron has great potential as a sustainable approach to reducing the micronutrient deficiency problems so common in developing countries.”

The efficacy of consuming high-iron rice was tested in a nine-month feeding trial among 192 religious sisters living in 10 convents around Metro Manila, Philippines. Results showed that the iron status of women who ate bio-fortified, iron-rich rice was 20 percent higher than in women who ate traditional rice. The bio-fortified rice was developed by the International Rice Research Institute in the Philippines.

Details of the study can be read in “Iron-Biofortified Rice Improves the Iron Stores of Nonanemic Filipino Women” published in the American Society of Nutrition's Journal of Nutrition. A Cornell University release is available online at **http://www.news.cornell.edu/stories/Nov05/rice.iron.ssl.html**

SWISS VOTE FOR BAN ON GM CULTIVATION

Switzerland has agreed to support a five- year ban on the commercial cultivation of genetically modified crops. In a referendum on a moratorium on biotechnology in Swiss agriculture, 55.6% of Swiss voters supported the ban until November 27, 2010.

EuropaBio, the European Union (EU) association for bioindustries, said that although the ban concerns only the commercial cultivation of GM crops, the impact will indirectly affect investment in research and innovation, as well as lessen crop alternatives for farmers.

For more information on the ban, visit **http://www.europabio.org.**

AFRICAN AGRIC MINISTER CALLS FOR HARMONIZED BIOTECH POLICY

Permanent Secretary James Ongwae of the Kenya Ministry of Agriculture said there is the need for a harmonized policy on biotechnology for the eastern and southern African region. He made this remark during the opening ceremonies of the Kenya National Consultative Workshop on Biotechnology and Biosafety. Allan Kisia of the East African Standard quoted Ongwae as saying that countries were in different levels of enacting their biosafety guidelines.

The consultative workshop was organized to understand regional opportunities, challenges, views and positions on genetically modified organisms, and the impact on trade and food security. A regional position will be formalized based on recommendations made.

For more news from Africa, visit **http://allafrica.com.**

HARVARD CENTER TO STUDY LEGAL SIDE OF BIOTECH

The Harvard Law School in the United States launched the Petrie-Flom Center for Health Law Policy, Biotechnology, and Bioethics to deal with the legal aspects of biotechnology and health policy. The center will fund large-scale research projects, hold conferences, and fund a fellowship program modeled on Harvard's Society of Fellows. Fellows will be paid $60,000 a year for two years and be free from any teaching obligations.

Funded by a $10 M private donation, the program is designed "to be the crucible for the next generation of young scholars in this area," said Joseph Flom of the Skadden, Arps, Slate, Meagher and Flom LLP in New York. The Center is envisioned to “bring sound ideas to very emotional and political topics.”

See the full article by Marcella Bombardieri at
http://www.boston.com/news/local/articles/2005/11/30/new_harvard_center_to_study_legal_aspects_of_biotechnology/?rss_id=Boston+Globe+--+City%2FRegion+News

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RESEARCH

RICE DEVELOPED FOR ALLERGY TREATMENT

Allergy is a significant health problem, and affects over 15% of all children and adults worldwide. It may involve the skin, respiratory tract, and gut, and may arise due to a great variety of environmental triggers, such as exposure to pollen, fiber, or certain kinds of molecules present in certain types of food.
Synthetic medicines are currently the most common treatment for most allergies, but Hidenori Takagi of Tsukuba, Japan, and colleagues seek another route by exploring how “A rice-based edible vaccine expressing multiple T cell epitopes induces oral tolerance for inhibition of Th2-mediated IgE responses.” Their work appears in the latest issue of the Proceedings of the National Academy of Sciences online.

Researchers utilized dominant epitopes found in allergens carried by Japanese cedar pollen. Epitopes are short amino acid sequences which, on their own, can trigger a mild immune response. By fusing the gene sequence of the epitope with the seed storage protein glycinin, and by introducing this into rice, researchers were able to produce crops with about 0.5% of total seed protein composed of the glycinin-epitope fusion protein.

When mice were fed with this transgenic rice, researchers found, among others, that the mice were expressing lower levels of histamine, and did not develop the symptoms of pollen-induced allergies. The protein was also shown to be stable for 6 months in the transgenic seed, even when stored at room temperature.

For more information, read the complete article at **http://www.pnas.org/cgi/content/full/102/48/17525** or its accompanying commentary at **http://www.pnas.org/cgi/content/full/102/48/17255.**

GLYPHOSATE MAKES GR CROPS RUST RESISTANT

Paul C. C. Fengof Washington State University, and colleagues, show that "Glyphosate inhibits rust diseases in glyphosate-resistant (GR) wheat and soybean." Their work appears in the latest issue of the Proceedings in the National Academy of Sciences online.

Glyphosate is a herbicide used to control weeds in glyphosate-resistant crops. Researchers have found that it can also provide both preventive and curative activities against Puccinia striiformis f. sp. tritici and Puccinia triticina, which cause stripe and leaf rusts, respectively, in wheat. Moreover, glyphosate applied to GR crops also suppressed Asian soybean rust in GR soybeans.

Researchers believe that GR crops engineered with a glyphosate-insensitive, instead of glyphosate-deactivating gene, can allow for better rust control, since glyphosate is not destroyed and can be allowed to act on other invading pathogens.

Read the complete article at **http://www.pnas.org/cgi/content/full/102/48/17290**

LACK OF VITAMIN DRIVES IMMUNE RESPONSES IN PLANT

Both plants and animals are subject to programmed cell death (PCD), a phenomenon which allows a living body to eliminate unneeded cells, and which can allow it to develop the correct morphology, or even respond to environmental stress. PCD is triggered by intrinsic factors or extrinsic defense cues, and is initiated through genetic signals which move cells through a specific suicide program. A plant may also undergo PCD when faced with pathogens, where infected cells die to prevent the spread of a disease.

In the latest issue of Plant Physiology, Valeria Pavet, of the Universidad Nacional de Córdoba, and colleagues demonstrate that “Ascorbic Acid Deficiency Activates Cell Death and Disease Resistance Responses in Arabidopsis.” By studying the Arabidopsis low vitamin C mutants vtc1 and vtc2, researchers found that such low levels of the vitamin retard plant growth and senescence, and may even limit the proliferation of bacteria through the plant. By tracking certain plant molecules known to be involved in senescence, researchers also found that the levels of vitamin C affect how plants arm themselves against pathogens, and in a pathway independent from the natural senescence or cell death programs.

Subscribers to Plant Physiology may access the complete article at **http://www.plantphysiol.org/cgi/content/full/139/3/1291.** Other readers may view the abstract at **http://www.plantphysiol.org/cgi/content/abstract/139/3/1291**

GENE MAKES PLANTS RESISTANT TO STRESS, INFECTION

With a little work on the weed Arabidopsis, Nobuhiro Suzuki of the University of Nevada, Reno, and colleagues report “Enhanced Tolerance to Environmental Stress in Transgenic Plants Expressing the Transcriptional Coactivator Multiprotein Bridging Factor 1c.” Their article appears in the latest issue of Plant Physiology.

To acclimatize themselves to abiotic conditions such as drought, salinity, or heat, plants undergo a complex defense process, which, in turn, is mediated by a complex network of transcription factors and other regulatory genes that control multiple defense enzymes, proteins, and pathways. Molecules called transcriptional co-activators are involved in such pathways, and enhance the reactions that take place.

In their work, researchers increased expression of the stress-response transcriptional coactivator multiprotein bridging factor 1c (MBF1c) in Arabidopsis, then subjected the transgenic plants to various biotic or abiotic stresses. They found that the transgenic plants were 20% larger than control plants and produced more seeds. They also found that transgenic plants had enhanced tolerance to bacterial infection, heat, and osmotic stress. The enhanced tolerance of transgenic plants to osmotic and heat stress, moreover, was maintained even when these two stresses were combined.

Subscribers can access the complete article at **http://www.plantphysiol.org/cgi/content/full/139/3/1313.** Other readers may read the abstract at **http://www.plantphysiol.org/cgi/content/abstract/139/3/1313.**

DOCUMENT REMINDERS

IFPRI RELEASES CHINA, INDIA ESSAYS

The International Food Policy Research Institute (IFPRI) has released its 2004-2005 Annual Report Essays. Lessons Learned from the Dragon (China) and the Elephant (India) consists of essays on agricultural and economic strategies, and may be downloaded from **http://www.ifpri.org/pubs/books/ar2004/ar2004_essay.asp#dl#dl.**

GM GUIDELINES BOOK TO BE PUBLISHED

Environmental Risk Assessment of Genetically Modified Organisms Volume 2: Methodologies for Assessing Bt Cotton in Brazil, edited by Angelika Hilbeck and colleagues, will soon be released by CABI Publishing. Scientists from developing countries may be able to receive a free copy of the book, as GEF STAP is financing the mailing of 2000 such copies for those who mail their exact postal address by December 10, 2005. Those interested in obtaining one may contact evelyn.underwood@env.ethz.ch or visit **http://www.gmo-guidelines.info.**

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