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), and AgBiotechNet

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CHINA ALL OUT ON GM RICE

China's fear of being unable to produce enough rice to meet domestic demand may impel the country to become the first in the world to approve genetically modified (GM) rice. In an article in the journal Nature, Hepeng Jia, K.S. Jayaraman and Sabine Louet noted that China has increased its budget for research and field trials of GM rice since 2001. Its biotech budget for 2001–2005 is $1.2 billion, a 400% increase compared with 1996–2000. About $120 million out of the current budget is devoted to GM rice programs.

Jia and colleagues reported that Chinese researchers have developed several GM rice varieties that are resistant to the country's major rice pests and diseases, such as the stem borer, bacteria blight, rice blast fungus and rice dwarf virus. Significant progress has also been made with drought- and salt-tolerant varieties of GM rice, which have been in field trials since 1998.

The article quoted Jikun Huang, director of the Center for Chinese Agricultural Policy in Beijing, as saying that the government thinks that high-output and insect-resistant GM rice varieties may help solve the country's supply problem.

For the full article online see http://www.nature.com/cgi-taf/DynaPage.taf?file=/nbt/journal/v22/n6/full/nbt0604-642.html.

PHILIPPINE DA AWARDS OUTSTANDING BT CORN FARMERS

Carlos Guevarra, a farmer from Pampanga, Philippines harvested a record yield of 10.25 metric tons per hectare from planting a biotech-enhanced corn variety during the last cropping season. Similarly, Carmelo Dinopol from South Cotabato also harvested about 10 metric tons in contrast to only 6.5 to 7 metric tons per hectare from his previous harvests. Both farmers realized significant increases in income with Guevarra being able to buy a vehicle to transport his products to direct buyers.

Guevarra and Dinopol are two of the six Bt corn farmers who were given plaques of recognition by Luis Lorenzo, Jr., Secretary of the Philippines' Department of Agriculture during the celebration of the Farmer and Fisherfolk Month. Lorenzo lauded the farmers for being open to new technologies noting that they are helping the country attain self-sufficiency in corn production. The event coincided with a corn technology fair which showcased organizations supporting corn production as well as demonstrations on using corn waste materials.

The awarding ceremony was co-sponsored by CropLife Philippines, an association of seed companies.

A RESURVEY OF FARMERS AND GROWERS' ACCEPTANCE OF GM

A study conducted by Andrew J. Cook and John R. Fairweather, of Lincoln University, New Zealand, entitled "New Zealand Farmer and Grower Intentions to Use Gene Technology: Results from a Resurvey," examined the changes in the intentions, attitudes, and beliefs of farmers and growers in New Zealand regarding their use of biotechnology. Intentions to use gene technology, attitudes towards using gene technology, and beliefs about market acceptance, commercial viability, and environmental risk from using the technology were gathered and compared against similar surveys conducted in previous years.

According to Cook and Fairweather, farmers and growers appear to be no more accepting or rejecting of gene technology than they were two years ago. However, fewer farmers and growers have agreed that New Zealand should become free of genetically modified (GM) crops. Further, farmers and growers deciding that risks to public health or personal health, damage to ecological systems, and adverse effects on future generations were unlikely, would have more favorable attitudes and intentions.

The authors, likewise, enumerated three conditional factors that should be addressed for gene technology to be accepted. These were:

* Farmers and growers must be convinced that the risks (damage to ecological systems, adverse effects on future generations, personal risk, and risks to public health) are acceptable.

* The marketplace and consumers must be accepting of the use of GM technology in agricultural production.

* Financial rewards from either efficiency in production or better returns for produce must be evident.

Read the full research paper at http://www.agbioforum.org/v6n3/v6n3a05-cook.htm.

RICE TECHNOLOGY VS MALNUTRITION

“A large number of people living in predominantly rice-eating countries suffer from various forms of malnutrition. Understanding the causes of malnutrition is the only way to bring about sustained improvements in overall health and well-being. Current advances in rice technology may be able to alleviate the severe malnutrition currently experienced. These advances must also be accompanied by actions which alleviate the core causes of malnutrition, namely, improvements in health care, sanitation and hygiene and education,” says G. Kennedy, Consultant; B. Burlingame, Senior Officer, Nutrition Planning, Assessment and Evaluation Service; and V.N. Nguyen, Agricultural Officer, Crop and Grassland Service; of the Food and Agriculture Organization (FAO) in Rome, Italy.

According to Kennedy and colleagues, rice is a rich source of carbohydrates and vitamin B, and with recent technological breakthroughs, rice may now have the potential to also supply other needed nutrients. However, the authors stressed that caution should be observed when promoting any single food source. A particular food product, no matter how extensively modified, may not be able to provide all the necessary nutrients required. Supplements, like vitamins and minerals, are still needed.

The authors also added that both agriculture and nutrition scientists should work towards understanding the ways in which nutrient composition is affected, and how to optimize the nutrient composition of products.

The report entitled “Nutritional contribution of rice and impact of biotechnology and biodiversity in rice-consuming countries” can be downloaded at http://www.fao.org/DOCREP/006/Y4751E/y4751e05.htm#bm05

PLANT BIOINFORMATICS EXPAND APPLICATIONS

Advances in genomic technologies have led to an explosion of data and in the growth of the science of bioinformatics. More complex data integration across the ‘–omic’ platforms with a direct link to traditional genetics are now required. Hence, bioinformatics is being challenged to integrate the carried data generated by the expanding –omic technologies. This was stressed by Australian researchers David Edwards and Jacqueline Batley in an article published in the journal Trends in Biotechnology.

Edwards and Batley said that linking gene expression, protein sequence and protein structure data with genetic and physical map data will integrate genetics, genomics, transcriptomics and proteomics. The incorporation of metabolomic data and data from phenotype studies will create the foundation for advanced knowledge bases, thus facilitating queries across whole-systems biology.

Read the full article entitled “Plant bioinformatics: From genome to phenome” in the Volume 22, No. 5 May 2004 issue of Trends in Biotechnology. The full text is provided at http://www.sciencedirect.com. Contact David Edwards at his email address: dave.edwards@dpi.vic.gov.au.

INSIGHTS ON SELLING BIOTECHNOLOGY

Media representations play a crucial role in framing public understanding of science. Hence, the need to do more research on the source, impact and nature of media representations as well as long-term policy implications of the ‘selling of the science.’ This view was forwarded by Timothy Caulfield of the University of Alberta, Canada.

Caulfield noted that the popular media is an important source of scientific information and is often thought about as providing inaccurate information. However, he said that the hyping of research results in the popular media “might be part of a more systematic problem associated with the increasingly commercial nature of the research environment.” Researchers and research institutions, for example, are pressured to justify in terms of near-future economic benefits.

The article “Biotechnology and the popular press: Hype and the selling of science” published in the journal Trends in Biotechnology concluded by saying that governments should consider the development of a system that enables both the independent assessment of new technologies and the communication of accurate and trustworthy information.

Contact Timothy Caulfield at tcaulfld@law.ualberta.ca.

IMPT OF THE CULTURAL CONTEXT IN SCIENCE COMM

Last week, the eighth international conference on the Public Communication of Science and Technology (PCST-8) was held in Barcelona, Spain. Attended by 650 delegates from 50 countries, the conference highlighted the importance of understanding cultural values, and respecting traditional knowledge to successfully communicate science. Some of the delegates urged the scientists, journalists and others involved in the communication of science to take account of cultural factors and local knowledge in their work. Another issue tackled was on how to effectively communicate science in the local languages.

Says Yuwanuch Tinnaluck of the ASEAN Handicrafts Promotion and Development Association, in Bangkok, Thailand, “science and local knowledge are not that far away from one another. We need to share space and time between scientists and indigenous people." She added that scientists should work together with local people to 'co-create' knowledge.

Further, Patrick Luganda, chairman, Network of Climate Journalists in the Greater Horn of Africa, stressed that an appreciation of traditional knowledge is essential for science to be communicated successfully. "The message will be better understood and better appreciated if you have an understanding of local knowledge. The messages (often) get diluted as the information gets passed on," says Luganda.

See the article from SciDevNet entitled “Science communicators 'must respect cultural context” at http://www.scidev.net/news/index.cfm?fuseaction=readnews&itemid=1417&language=1

NEW ROLE FOR SCIENTISTS

Until recently, scientists' major role was to simply acquire knowledge. Now, it must also be to transfer knowledge to society. This idea was stressed by Leroy Hood, Biotechnology Heritage Award winner, during the Industry Pioneers plenary session at BIO 2004. He noted that public acceptance will also be key to scientific and product advances.

The five-day international biotechnology conference ended June 9 in San Francisco which attracted 16,901 delegates from 61 countries. More than 50 high-level officials from at least 15 countries outside the United States attended the convention.

BIO represents more than 1,000 biotechnology companies, academic institutions, state biotechnology centers and related organizations. Members are involved in the research and development of health-care, agricultural, industrial and environmental biotechnology products.

For more information on the Bio Conference, visit http://www.bio.org/events/2004

ANNOUNCEMENTS

FIRST INT'L AGRICULTURAL VIRTUAL TRADE SHOW AND EXHIBIT

AHead Business Solutions Ltd is sponsoring the first international agricultural trade show and exhibit via the internet starting July 15 until October 15, 2004. This event is considered to be the leading online resource event for manufacturers in the different sectors of agriculture, such as: irrigation, agricultural machinery, fertilizers, pesticides and insecticides, greenhouses, research, packaging, organic agriculture, seeds, projects management, fishing and gardening. For more information, visit http://www.agriahead.com.

NEW ARTICLE ON BIODIVERSITY

The abstract of a new biotech article published in the European Review of Agricultural Biotechnology is available online at http://erae.oupjournals.org/cgi/content/abstract/31/1/1. Entitled "Biodiversity versus transgenic sugar beet: the one euro question," and authored by Matty Demont, Katholieke Universiteit Leuven, Leuven, Belgium; Justus Wesseler, Wageningen University, Wageningen, The Netherlands; and Eric Tollens, Katholieke Universiteit Leuven, Leuven, Belgium; the publication analyzed the case of herbicide-tolerant sugar beet in light of whether the European Union (EU's) 1998 de facto moratorium on transgenic crops for sugar beet is a valid decision from a cost-benefit perspective.

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