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

PHILIPPINES TO DEVELOP MULTI-NUTRIENT RICE

The Philippine Rice Research Institute (PhilRice), based in Maligaya, Nueva Ecija, is gearing up efforts to develop rice with higher amounts of beta-carotene, vitamin E, iron, and even protein through a grant from the Bill and Melinda Gates Foundation's Grand Challenges in Global Health Program.

PhilRice scientist Rhodora R. Aldemita, who is currently doing postdoctoral research at the University of Freiburg in Germany, said the grant was acquired through a collaborative effort with Germany-based scientists who are working on improving the nutritional quality of rice.

A PhilRice research team headed by Antonio Alfonso will introduce some of the micronutrient traits to popular rice varieties through conventional breeding. Aldemita, on the other hand, will introduce other traits through genetic transformation.

Aside from the University of Freiburg and PhilRice, other beneficiaries of the grant are Michigan State University, Baylor College of Medicine in Texas, the International Rice Research Institute, and the Cuo Long Delta Rice Research Institute in Vietnam.

For additional information, visit http://www.philrice.gov.ph.

MALAYSIAN BIOTECH GETS BOOST

The Malaysian Biotechnology sector was given yet another boost by the government when Prime Minister Abdullah Ahmad Badawi announced the Budget for the year 2006. Under this budget, the Malaysian Life Sciences Capital Fund will be established, which will pool investments from various institutions to give biotechnology a head start. The Government has allocated an initial fund of RM100 million (USD26.4 million) for this and is expected to work on biotechnology application in agriculture, health, and industry.

Entrepreneurs involved in biotechnology can now apply grants from Commercialization of Research and Development Fund (CRDF) and Technology Acquisition Fund (TAF), besides banks and venture capitals. Another avenue is the Malaysian Technology Development Corporation (MTDC), which has been given RM1 billion in funding to support projects in biotechnology and life sciences.

With all these strong commitments from the Government, it is hoped that biotechnology will generate significant revenue for the nation.

For more information, contact Mahaletchumy Arujanan, director of the Malaysian Biotechnology Information Center (MABIC), at maha@bic.org.my.

AFRICAN MINISTERS MOVE TO ADVANCE SCIENCE, RESEARCH

Dakar, Senegal was the site of a recent conference of African Ministers for Science and Technology. The conference was organized by the African Union (AU) and the New Partnership for Africa's Development (NEPAD), and brought the ministers together to discuss Africa's Science and Technology Consolidated Plan of Action.

The ministers declared their commitment to support science and technology, and the integration of these into national development plans. They likewise noted that science, technology, and innovation were critical to the realization of the United Nations' Millennium Development Goals (MDGs). The ministers also plan to mobilize financial resources and increase expenditure on national research and development.

Ghana's Ms. Christine Churcher spoke at the conference, and said that Ghana would forge partnerships with the rest of the member states to fully use and gain scientific and technical knowledge to improve the standard of living in Africa. Also present was Nigeria's Turner T. Isoun, who called for African researchers to concentrate on research areas which would best serve the needs of Africa.

News feed from Linda Asante Agyei of the Ghana News Agency. For more news on Ghana, visit http://www.ghananewsagency.com.

AFRICAN COUNTRIES REJECT GM FOOD AID

Zimbabwe and Zambia have rejected genetically modified food donations intended to avert drought-induced food shortages. Wisdom Mdzungairi reports for Harare that participants to an international conference on genetic engineering and sustainable agriculture in Lusaka, Zambia commended the countries' decision to mill some of the donated food instead.

Dr. Luke Mumba, chairman of the Biosafety Council of Zambia and research of the University of Zambia, commented that while there was respect for the two countries' decision, there was need to adopt safe biotechnological advances, and that the use of GM technology could contribute to the complex problems of alleviating poverty and malnutrition. Meanwhile, Zambian Minister of Science and Technology Judith Kapijimpanga said the problem of food insecurity in Africa was a result of complex issues that required an integrated approach for sustainability.

See the article in http://allafrica.com/stories/200510110710.html.

EU TO DEVELOP BIOTECH RESEARCH PROGRAM

The European Commission has proposed a new biotechnology research and development program for 2007 to 2013.The program will be discussed with the European Parliament before being decided on by the Council. EuropaBio, the association of European bioindustries, says that the four major specific proposed areas are:

* Cooperation: Interfaces with universities, industry, research centers, and public authorities designed to gain leadership in key scientific and technological areas

* Ideas: Establishment of an European Research Council, a pan-European mechanism to support creative scientists, engineers, and scholars

* People: Strengthening of human resources to stimulate research in Europe

* Capacities: Enhancement of research and innovation capacity through new research infrastructure, support for small and medium-sized companies, developing 'regions of knowledge', and improving the position of Science and Society.

Online access to the program may be obtained by visiting: http://europa.eu.int/comm/research/future/pdf/specifc_programmes/fp7sp_cooperation_en.pdf

AGRIC WORKERS SUFFER FROM HUNGER AND POVERTY SAYS FAO

Waged agricultural workers who account for the largest labor force in the world suffer from the highest incidences of poverty and hunger. This was the gist of a joint report of the Food and Agriculture Organization, International Labor Organization, and the International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco, and Allied Workers' Associations.

Entitled “Agricultural workers and their contribution to sustainable agriculture and rural development”, the report says that “Agriculture cannot be sustainable whilst over 40 percent of the workforce suffer precarious employment and poor working conditions, and live in poverty.” In addition to economic pressures, workers have to contend with low wage levels, job security, health, safety and environmental standards and social protection.

The report likewise noted a rapidly increasing number of waged women workers who receive consistently lower wages than male workers. Child labor was also cited as a major concern. To address problems of agricultural workers in general,

the report calls for the development and promotion of an agenda for fair and decent work conditions in agriculture.

FAO's release on this report can be accessed through http://www.fao.org/newsroom/en/news/2005/107955/index.html. The full report can also be viewed at the FAO website.

RESEARCH

RESISTANCE GENE FOR POTATO LATE BLIGHT MAPPED

Late blight is a disease which affects potatoes. It is caused by *Phytophthora infestans*, and is controlled by chemical applications on the crop. *P. infestans*, however, evolves rapidly, so that most control methods are providing to be ineffective.

An alternative would be to incorporate the gene for late blight resistance into potato. But where can this gene be found? Tae-Ho Park of Wageningen University, the Netherlands, and colleagues take the first step in identifying the gene by undertaking "High resolution mapping and analysis of the resistance locus Rpi-abpt against Phytophthora infestans in potato." Their findings are published in Molecular Breeding.

Scientists were able to narrow their search down to Rpi-abpt, a resistance locus originating from *Solanum bulbocastanum*. They then mapped and completely sequenced the locus, and found that it was similar to a like locus in tomato. Its protein product was also found to be similar to several disease resistance related proteins from other plants.

Molecular Breeding subscribers can read more at http://dx.doi.org/10.1007/s11032-005-1925-z. Other readers can view the abstract at the same site.

PAPER RECOUNTS EFFORTS FOR BETTER DISEASE RESISTANCE IN PLANTS

Plants are ravaged by hundreds of diseases causes by fungi, bacteria, and viruses. Such diseases can wipe out entire harvests of important crops - in fact, it

has been estimated that about 40% of all crop destruction can be directly attributed to plant diseases. The reliance on chemical solutions to such diseases has also resulted in resistant microorganisms.

Genetic enhancement of agriculturally important crops is one of the tools which may be used in protecting plants from these dangerous diseases. Scientists are currently in the process of looking for broad-spectrum disease resistance, where a single plant can be engineered to be resistant to a good number of bacterial and fungal pathogens.

Santosh Misra documents these efforts in “Engineering Broad-Spectrum Disease Resistance,” published in the latest issue of Information Systems for Biotechnology. The technologies developed by Misra and her colleagues are based on engineering antimicrobial peptides into plants.

Such peptides include a class of potent, natural antibiotics which Misra's colleagues have used to engineer broad-spectrum disease resistance in potato, protecting it from late blight and pink rot, as well as some post harvest pests. These engineered potatoes could be stored for over 27 months and still remain fresh.

Researchers are now working on probiotic-enhanced wheat and barley. Both crops should be resistant to Fusarium Head Blight, whose pathogen, a fungus, is toxic even to humans. The mycotoxin is one among many which contaminate staple crops such as corn, tree nuts, peanuts, and sorghum.

For more information, read the article at http://www.isb.vt.edu/news/2005/news05.Oct.htm.

BT COTTON PERCEPTIONS, IMPACTS DOCUMENTED

India accounts for 25% of the world's total cotton area, and 16% of global cotton production. A limiting factor to the growth of its industry, however, is damage due to insect pests, the most important of which are bollworms. Before the arrival of Bt cotton, these pests were controlled primarily through multiple applications of insecticides.

To assess the impact of Bt cotton on the industry and farmers, Uma Kambhampati, and colleagues of the University of Reading, the United Kingdom (UK), conducted a survey in late 2004 in the Western Indian state of Gujarat. They looked at the impact of Bt cotton adoption on markets, businesses, and institutional arrangements in India.

“Perceptions of the Impacts of Genetically Modified Cotton Varieties: A Case Study of the Cotton Industry in Gujarat, India,” published in the latest issue of AgBioForum, shows that the greatest impacts are felt by the input and seed suppliers. Both groups said that the demand for Bt varieties was increasing, while the demand for insecticides was decreasing.

All respondents mentioned an increase in cotton quality, although they suggested that the government should purchase the Bt gene and insert it into a finer cotton hybrid.

For more information, read the complete article at http://www.agbioforum.missouri.edu/v8n23/v8n23a13-morse.htm.

DOCUMENT REMINDER

FULL BROOKES, BARFOOT PAPER RELEASED

The complete version of the paper “GM Crops: The Global Economic and Environmental Impact - The First Nine Years 1996-2004,” written by Graham Brookes and Peter Barfoot of PG Economics Ltd., UK has been released online. The study presents the group's findings on the global socio-economic and environmental impact of genetically modified (GM) crops since their introduction in 1995. It focuses on farm level economic effects, the environmental 'foot print' resulting from changes in the use of insecticides and herbicides, and the contribution towards reducing greenhouse gas (GHG) emissions.

Download the report at http://www.pgeconomics.co.uk/pdf/globalimpactstudyfinal.pdf.

ANNOUNCEMENTS

TEN YEARS OF GM CONFERENCE

“GM Crops: 10 years on,” a conference, will be held on the 14th-16th of December 2005 at Homerton College, Cambridge, United Kingdom. Organized by Nigel Halford and Martin Parry of Rothamsted Research, the conference will cover topics such as the global status of genetically modified (GM) crops and their current and potential impact in different parts of the world, from the USA to

Africa; GM traits currently in use in commercial agriculture; the next ten years - from edible vaccines to pharmaceutical oils, and advances in the laboratory that could lead to the next generation of GM crops; and gene flow, co-existence, and safety and regulation of GM crops. To register for the conference, visit http://www.aab.org.uk/page.php?start=184&conf=12.

PEW ANNOUNCES POLICY DIALOGUE

The Pew Initiative on Food and Biotechnology is sponsoring a policy dialogue exploring "GM Imports: Implications for U.S. Biotechnology Policy," to be held on November 2, 2005 from 12:00 to 1:30 p.m. at the Holeman Lounge, National Press Club, Washington, D.C. Participants include: Joel Cohen, of the International Food Policy Research Institute; Mark Mansour, of Morgan Lewis; Greg Jaffe, of the Center for Science in the Public Interest; and David Coia, of the USA Rice Federation.

If you are interested in attending this event, please go to http://pewagbiotech.org/events/1102/ or send an e-mail to Kara Flynn at kflynn@pewagbiotech.org.

BIOSQUARE 2006

BIO Square 2006 will take place March 8-10, 2006 at the International Conference Center, Geneva, Switzerland. It is a platform for the top management of biotechnology companies to meet with key research and business development executives from the pharmaceutical, nutraceutical, agriculture, food, and finance industries. For more information, visit http://www.ebdgroup.com/biosquare.

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