

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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INDIA STRENGTHENS BIOTECH INFO SYSTEM

About 8,000 scientists in India are benefiting from the bioinformatics program that the Department of Biotechnology (DPT) in Delhi envisaged as a distributed database and network organization. Dr. Manju Sharma, Secretary of the DPT, said that the program has "become a very successful vehicle for transfer and exchange of knowledge, information, technology packages and references in the country."

Involved in the bioinformatics program are ten distributed information centers and 38 sub-distributed information centers located in universities and research institutions in India. Six national facilities have been set up for interactive graphics- based molecular modeling and other bio-computational needs.

Scientists have been noted to regularly use the bioinformatics facilities as well as industry people who use the facilities to find out new product developments and available markets. The interaction of these centers with computer scientists has also been on the rise with some institutions jointly developing software products and teaching aid packages.

A DPT publication "Biotechnology Information System" provides a profile of the bioinformatics centers and a list of distributed information centers and sub centers. For information about this publication and India's bioinformatics program visit <http://www.btistnet.nic.in> or email Dr. Madhan Mohan, director

and Program Coordinator, at madhan@dbt.nic.in. Visit the DBT website at <http://www.dbtindia.nic.in>.

KELEMU: AFRICANS MUST TAKE A RISK TOWARDS AGRI-BIOTECH

"Africans must be willing to take some potential risks to gain substantial immediate and future benefits...they themselves must decide on the future of their agriculture, using the best available scientific data and, hopefully, taking politics out of the equation. Food and its availability are basic human rights issues - for people without food, everything else is insignificant," says Segenet Kelemu of the Centro Internacional de Agricultura Tropical (CIAT) in Cali, Columbia, and his colleagues from the research institutions in Uganda, Ethiopia, Kenya, and Rwanda.

Kelemu and his colleagues from the Kawanda Agricultural Research Institute (Uganda), African Highland Initiative (Ethiopia), University of Nairobi (Kenya), and the ISAR/CIAT/USAID Agriculture Technology Development and Transfer Project (Rwanda) prepared a report entitled "Harmonizing the agricultural biotechnology debate for the benefit of African farmers," which examines the potential benefits and risks that agricultural biotechnology may bring to African farmers.

According to the authors, new technologies and their products should be discussed and challenged, but putting the science (agricultural biotechnology) into the context of the food aid debate for Africa, where people are in dire need of this assistance, is quite "irresponsible." Technology issues like crop and animal productivity, food security, alleviation of poverty and gender equity must be the focus of the public debates, and not the political considerations.

Kelemu and his colleagues stressed that agricultural biotechnology has the potential to improve the food security and reduce the environmental pressures in Africa - provided that the risks associated with the technology are properly addressed. They added that although biotechnology may indeed have the answer to the issues at hand, the public's concerns must still be prioritized and addressed responsibly.

For more information, email Segenet Kelemu at s.kelemu@cgiar.org. A full copy of the report is also available at <http://www.africabiotech.com/biotechinfo/reports/agbiodebate2003.pdf>.

NEED TO ALTER PATENT POLICY FOR AFRICAN STATES

The current patent policy in the United States is impeding the use of biotech advances in developing countries. Instead, a set of policy changes must be put into place to help African farmers access these technologies, while leaving intact the structure of the patent system and not undercutting the innovation incentives it provides. This was the view forwarded by Michael Taylor and Jerry Cayford of the Resources for the Future (RFF), an independent institute dedicated exclusively to analyzing environmental, energy, and natural resource topics.

The RFF study noted that modern biotechnology can help solve some of the productivity problems that affect African farmers but that many of the technologies have been patented in the US and elsewhere by companies with "little economic incentive to develop and disseminate the technology to meet the need of these farmers." Taylor and Cayford argued that policy should, among others:

- * Create a strong research exemption
- * Establish a compulsory license requirement for agricultural biotechnology
- * Exercise US eminent domain authority or allowing developing country users to be deemed as using the technology for the US
- * Establish a "working requirement" for agricultural biotechnology patents such that anything not used for a developing country purpose within three years could be subject of a nonexclusive license.

The study entitled "American patent policy, biotechnology, and African agriculture: The case for policy change" is available at <http://www.rff.org/rff/Documents/RFF-RPT-Patent.pdf>.

AFRICAN FARMERS INCREASE RICE HARVESTS DUE TO "NERICA"

Farmers in nearly a dozen countries in West and Central Africa are currently experiencing bountiful rice harvests. They are growing enough rice to feed their families, and have surpluses to sell in the markets. All these benefits are now taking place due to the "Nerica" - a new rice variety that is a cross between an ancient, hardy African rice variety, and a high-yielding Asian variety.

The Nerica, which was developed originally by the scientists of the West Africa Rice Development Association (WARDA), combines the features of both of its parent plants. Developed thru tissue culture technology, the Nerica is resistant to drought and pest, have higher yields even with little irrigation or fertilizer, and has more protein as compared to the other rice varieties.

In an interview with Africa Recovery, the WARDA Director-General Kanayo Nwanze said that the adoption of the Nerica would mean "more food on each household's table and more money in the (African) farmers' pockets." Nwanze added that this would also help women farmers, whose total labor input in rice production (about 40% to 60%) is spent in weeding. Due to the Nerica's ability to reduce weed growth, women now spend less time weeding.

Read the full story from Africa Recovery at <http://www.un.org/ecosocdev/geninfo/afrec/vol17no4/174rice.htm>.

US TO STRENGTHEN BIOTECH REGULATIONS FOR GMOS

The United States Department of Agriculture (USDA) will update and strengthen its biotechnology regulations for genetically modified organisms (GMOs). Agriculture Secretary Ann Veneman said that "The science of biotechnology is continually evolving, so we must ensure that our regulatory framework remains robust by anticipating and keeping pace with those changes."

Currently, companies creating new transgenic plants must submit an application to the USDA and the new GM crops must undergo field tests to ensure that it does not pose a threat to agriculture or other plants. The updated rules will likely involve a wider scope, and will incorporate threats to the environment and public health.

Veheman added that the USDA's Animal and Plant Health Inspection Service will prepare an environmental impact statement to evaluate biotechnology regulations and several possible regulation changes. This will also include a multi-tiered, risk-based permitting system to replace the current permit/notification system as well as a more flexible process for monitoring.

Visit the USDA site at <http://www.usda.gov>.

TRANSFER OF TRANSGENES FROM GM SOYA NOT POSSIBLE

Ever since the introduction of genetically modified (GM) plants, its inclusion in the human diet and the possible transfer of transgenes from GM plants to intestinal microflora and enterocytes have been a major concern. The persistence in the human intestinal tract of DNA from dietary GM plants is still an unexplored area.

In a research conducted by Harry J. Gilbert of the Schools of Cell and Molecular Biosciences, University of Newcastle in the United Kingdom, and his colleagues, they determined the survival of the transgene epsps from GM soya in the small intestine of human "ileostomists," or individuals whose terminal ileum is surgically removed and where digesta are diverted from the body via a stoma to a colostomy bag.

Results showed that the transgene did not pass through the intact gastrointestinal tract of human subjects fed with GM soya. Three of the seven ileostomists also exhibited a low-frequency of gene transfer from GM soya to the microflora of the small bowel of the subjects before their involvement in the feeding experiments.

For more information, email Harry J. Gilbert at h.j.gilbert@NewCastle.ac.uk. The article published in Nature Biotechnology is also downloadable at <http://www.nature.com/cgi-taf/DynaPage.taf?file=/nbt/journal/v22/n2/full/nbt934.html&filetype=pdf>.

EU EXPLORES THE APPROVAL OF BT-11 SWEET CORN FOR FOOD USE

The regulatory dossier for the approval of Bt-11 sweet corn for food use as corn on the cob and/or as a processed food product (i.e. frozen and canned) was sent to the European Union (EU) Council of Ministers for their evaluation. This type of crop was genetically modified to be resistant to the corn borer. Last April 17, 2002, the EU Scientific Committee on Foods stated that the Bt-11 sweet maize is safe for human consumption.

At present, food products derived from the Bt-11 field maize are already approved for use in the EU.

More information can be read from the EuropaBio website, http://www.europabio.org/upload/articles/article_285_EN.doc.

GM CROPS ENRICHED WITH QUALITY PROTEIN

Scientists at the National Centre for Plant Genome Research (NCPGR) in India are working on improving the content and quality of proteins present in starch rich crops such as potatoes, rice, sweet potato and cassava through genetic engineering. Professor Anus Datta, Director of the New Delhi-based NCPGR, said that the essential amino acid rich AMAL + Kufri potato variety developed by the Center is approaching its release to the country's farming communities. "This nutritionally improved potato line gives higher yields of tubers to the extent of 25% besides being richer in protein content by 35-45%," he added.

Datta noted that attempts at introducing Amal gene in the commercial cultivates of rice, sweet potato and cassava are likewise being made. The regenerative protocols in the new plant systems have been developed. Considerable progress has also been made in reducing the content of anti-nutritive kidney stone causing substances, and oxalic acid in vegetables including tomato, spinach, groundnut, Lathyrus and soybean by using the OXDC gene. The OXDC tomato lines are already undergoing field trial and biosafety tests.

Details of these researches are found in the Center's Annual Report for 2002-2003. For more information on the activities of the NCPGR email ncpgr02@bol.net.in.

GM PLANT DETECTION OF LANDMINES

It is now possible to produce a plant, which, in the presence of specific compounds in the soil, can change color from green to red within three to five weeks of growth. This biodetection system has several potential applications like detecting explosives present in landmines and soil, as well as finding and removing heavy metals in polluted soil. Aresa Biodetection, a biotechnology company in Copenhagen, Denmark, said that this invention could significantly speed the removal of landmines in areas where agricultural cultivation is possible.

The technology is based on the genetic engineering of *Arabidopsis thaliana*. "This is a pioneering example of how we will see GM plants applied for humanitarian and environmental purposes in the future," said John Mundy of the Department of Plant Physiology, University of Copenhagen.

Visit Aresa Biodetection at <http://www.aresa.dk> or send an email at info@aresa.dk.

ANNOUNCEMENTS

ASIAN BIO-NET

The Coordinator of the Food and Agriculture Organization (FAO) BiotechNet News announced the launch of Asian Bio-Net, the website of the FAO project on Capacity Building in Biosafety of GM Crops in Asia, based at the FAO Regional Office for Asia and the Pacific. The project, supported by the Government of Japan, was formulated to "assist countries in the region in safe harnessing of the benefits of biotechnology in accordance with relevant global agreements on the subject." See <http://asiabionet.org> or contact nobuyuki.kabaki@fao.org for more information. View the FAO Biotechnology website at <http://www.fao.org/biotech/index.asp> (in Arabic, Chinese, English, French and Spanish).

GENOMICS MOMENTUM 2004

A discussion forum on genomics for all Europe is set for August 31 and September 1, 2004 in De Doelen, Rotterdam, Netherlands. Organized by the Netherlands Genomics Initiative, Genomics Momentum 2004 is open to all who have a stake in genomics, particularly user groups, developers, policy makers, and scientists. Specific themes in genomics and society will be addressed by international keynote speakers. Details of the forum can be viewed online at http://www.genomics.nl/genomics_momentum_2004.

INTERNATIONAL CONFERENCE ON POST-HARVEST FRUIT

An International Conference entitled "Post Harvest Fruit - the path to success" will be held on November 7 to 10, 2004 at the Universidad de Talca in Talca, Chile. This conference aims to strengthen research and development ideas and expertise in all aspects of post-harvest fruit. Sessions will highlight the facets involved from the growth of the plant to the fruit that is eaten or processed. The conference website is fruits2004@utalca.cl.

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