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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BECA LAUNCHED IN NAIROBI

The Biosciences Eastern and Central Africa (BECA) was officially launched in Nairobi, Kenya by the country's Agriculture Minister Kipruto arap Kirwa. The Minister reiterated the country's support for the use of science and technology to increase food production.

BECA consists of a network of institutional nodes and a hub, located at the International Livestock Research Institute, in Nairobi, Kenya. The hub provides a common biosciences research platform, research-related services, and capacity building and training linked to a network of laboratories, universities and other institutions throughout eastern and central Africa. Prof. James Ochanda, BECA Coordinator, said the facility offers a unique opportunity for African scientists to access state-of-the art biosciences laboratory facilities and training to develop technological innovations to help relieve hunger in Africa.

Minister Kipruto arap Kirwa called for rapid adoption of new agricultural technologies to help in the fight against Striga weed and stem borer whose damage to maize is said to cost sub-Saharan Africa up to US $ 7 billion and US$ 90 million annually, respectively. He said Kenya would increase investment in agricultural research in general to meet the challenges of food requirements. He commended NEPAD for striving to harness science and technology for Africa's sustainable development.

Following a NEPAD request, Canada pledged C$30 million of the Canada Fund for Africa to support the facility. The Fund has so far released C$4.5 million to support the planning and design phase of BECA.

For more information contact Daniel Otunge of the Kenya Biotechnology Information Center at dotunge@absfafrica.org

KENYA IMPORTS BT COTTON FOR TRIALS

Kenya has imported Bt cottonseed from the United States for field trials. Dr Charles Waturu, Kenya Agricultural Research Institute's (KARI) Thika Center director, said that Bt cotton, which has a gene that is resistant to stalk-borer, is expected to reduce pesticide spraying from five to two times. "Of all the input in cotton, 32 percent is channeled to pest control, and the Bt cotton will lead to a reduced number of pesticide spray until harvest time," he said.

The trials are about to start at KARI farms in central Kenya. The Kenya Plant Health Inspectorate Service (KEPHIS) has inspected the trial sites and has given the go-ahead for the project.

Currently, cotton is grown on approximately 2.5 million hectares in Africa, most of which comprises small plots of less than five hectares. The introduction of Bt cotton on the continent has the potential of dramatically increasing yields among the smallholder farmers.

The National Biotechnology Committee approved the application for Bt cotton only last year.

For more information, contact Daniel Otunge of the Kenya Biotechnology Information Center KBIC at dotunge@absfafrica.org.

INFANT NUTRITION MEETS GM FOODS IN PEDIATRIC CONFERENCE

Genetically modified (GM) foods found their place in a discussion on infant nutrition in the 2nd Asian Conference on Pediatric Nutrition (ACPN) in Jakarta, Indonesia.

Dr. Tantono Subagyo of the Ministry of Agriculture, Indonesia began with a talk on the environmental safety of GM crops, where he recounted GM crop statistics of 2003. Included in his speech were the concerns of his native Indonesia regarding the effect of GM on health and the environment – concerns which, he said, were compounded by low public knowledge of GM technology, as well as the "good news is no news" concept prevalent amongst local journalists.

Dr. Nina Barzaga of the National Institute of Biotechnology and Molecular Biology in the Philippines discussed the effect of GM crops on human health. Several common issues were tackled, including crop weediness and allergencity. The process of GM food assessment was likewise presented, with the assurance that scientists are meticulous when dealing with issues regarding GM food safety.

Dr. Dedi Fardiaz of the National Agency for Food and Drug Control, Indonesia closed the session with applications of GM in infant nutrition. GM crops could be part of infant food, he said, and current technology may lead to more nutritious or even allergen-free food, both of which are the most common concerns when dealing with foods for infants and children.

Visit the ACPN website at www.acpn2004.org

NEW TECHNIQUE TO GENERATE GM WHEAT

In "A reverse genetic, nontransgenic approach to wheat crop improvement by TILLING," or targeting induced local lesions in genomes, Ann J Slade, and her colleagues of Anawah Inc., in Seattle, Washington introduce a technique that can identify new mutations in a polyploid plant, such as wheat, as well as uncover inherent variation within an organism's genome and eliminate the need to introduce a foreign DNA to get a new strain. The paper is published in the latest issue of Nature Biotechnology.

With TILLING, DNA from multiple individuals is pooled, and the Polymerase Chain Reaction (PCR) is used to amplify a targeted region of the genome. The PCR product from the pool is heated and reannealed, allowing DNA strands from mutants and wild types to base pair with each other. The individuals composing the positive pools are sequenced to determine which individual carries the mutation, and further tests may be undertaken to reveal the nature of the mutation. Unlike conventional mutation breeding, TILLING provides a direct measure of mutations induced.

Slade identified 246 alleles of the waxy genes of wheat and was able to produce a new strain yielding large amounts of amylopectin in its grains. This full waxy wheat can be

useful for making breads and pastas, as well as enhancing the strength and printing properties of paper products.

Read the full article at http://www.nature.com/cgi-taf/DynaPage.taf?file=/nbt/journal/vaop/ncurrent/full/nbt1043.html

CROP MANAGEMENT AND GM CROPS

It is the way the crop is farmed, not the crop itself, that determines its effect on biodiversity. So says Jeremy Sweet, scientific coordinator of a four- year study "Botanical and Rotational Implications of Genetically Modified Herbicide Tolerance" (BRIGHT) in the United Kingdom. The first trial to compare transgenic and conventional crops farmed in rotation, the study showed that crops genetically modified to be resistant to herbicides could make weeds easier to manage without destroying valuable biodiversity.

The study, featured in Nature magazine, involved alternating transgenic sugar beet or winter oilseed rape and conventional wheat or barley on the same plots of land. It was conducted on five different agricultural research stations in Britain using patterns of crop rotation that farmers use to preserve nutrients in the soil or disrupt pest life cycles.

Results showed that the number of weed seeds on the plots, a measure of biodiversity, increased over the four years in all cases. Researchers noted that although weed plants themselves can be controlled, transgenic crops do not necessarily damage diversity.

See the Nature article entitled "Crop management gets vital role in transgenic debate" (November 29, 2004) online at http://www.nature.com/news/2004/041129/full/041129-2.html.

SOUTH VIETNAM TO ACCELERATE AGRIC DEVELOPMENT

South Vietnam has formed a key economic region composed of Chi Minh City, Ba Ria - Vung Tau, Dong Nai and Binh Duong to hasten agricultural development. According to Vietnam Trade News, among the measures being considered are to:

* Form a sustainable, highly effective, high quality, diverse, and strong commercial agricultural sector on the basis of advantages in potentials and application of new technologies, meeting domestic and export requirements.

* Reduce the land area under rice and switching to aquaculture and animal husbandry as well as increasing the areas of cotton, maize, vegetables, and fruit trees.

* Enhance the application of advances in agriculture production, particularly ecological technology with priority given to fruit trees, flowers, ornamental fish, fisheries, and cattle.

For more news on Vietnam, contact Vietnam Trade Network or VITRANET at vitranetvn@hn.vnn.vn.

ASARECA RECEIVES FUNDING FROM EU

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) has received 8 million euros from the European Union (EU), with the aim of funding agricultural research to be conducted over the next three years. Sigurg Illing, the head of the European Commission delegation to Uganda, and Seyfu Ketema, ASARECA's executive secretary, recently signed the agreement in Kampala, Uganda.

ASARECA is a non-political organization of the National Agricultural Research Institutes (NARIs) of ten African countries: Burundi, D. R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. It aims at increasing the efficiency of agricultural research in the region so as to facilitate economic growth, food security and export competitiveness through productive and sustainable agriculture.

For more information, see www.asareca.org

REPORTS ON FUNCTIONAL FOODS MOST POPULAR IN KOREAN MAGAZINES

Foods for better health formed the headlines of 28% of articles from 19 Korean magazines in November 2004, the Asian Food Information Council (AFIC) reports in its latest online issue.

Functional Foods featured included quince, oysters, and pomegranate. The most common focus was on fresh fruit and vegetables (selection, general health benefits, specific nutrient benefits) and soy products (nutritional and other health benefits, versatility, and recipe/serving suggestions).

Following in the tally were features on healthy lifestyle and well being (20%), infant feeding & breastfeeding (10%), children’s diet and health (10%), cancer & diet (5%), obesity (5%), and nutritional supplements (5%).

To read the complete article, visit http://www.afic.org/AFICNews-December2004.htm.

IN-HOUSE FUNGUS CORN'S NEW DEFENSE

If endophytes are organisms that live in another living organism without harming or benefiting ther host, then Acremonium zeae is the latest exception. Once considered a benign fungus, Agricultural Research Service microbiologist Don Wicklow and University of Iowa scientist Jim Gloer recently showed that A. zeae can protect corn from Aspergillus flavus and Fusarium verticillioides.

Both A. flavus and F. verticillioides infect ripening corn kernels: Aspergillus contaminates corn crops with aflatoxin, which is harmful to both humans and livestock; while F. verticilliodes causes stalk rot. A. zeae, Wicklow and Gloer found, produces substances called pyrrocidines, which can disrupt activity of either pest. Wicklow conducted field studies to make sure the lab-based observations of A. zeae's antifungal activity are not the result of a natural corn defense or the byproduct of human error.

Further research may reveal another possible approach: inoculating corn seed with the endophyte as a living barrier against A. flavus and F. verticillioides.

Read more at http://www.ars.usda.gov/is/AR/archive/dec04/fungus1204.htm

DOCUMENT REMINDER:

LIST OF ARTICLES ON GM FEED SAFETY

A list of papers studying Animal Feed Performance and Safety has been released, with articles grouped according to Beef Cattle, Poultry, Dairy, Swine, Rabbits, Sheep, and Multiple Animals. The search was conducted through the PubMed database, using relevant search terms coupled with crop species with known genetic modifications, including maize, soybean, canola, cotton, potatoes, tomatoes and peas.

The overwhelming majority of publications report that GM feed and food produced no significant differences in the test animals.

Download the list of publications right on the Knowledge Center website at http://www.isaaa.org/kc

CBT NEWS FEATURE: The Donald Danforth Plant Science Center

The Donald Danforth Plant Science Center in St. Louis Missouri, USA is the product of a unique and innovative partnership formed from the joint efforts of the Danforth Foundation, the State of Missouri, and six partners in the Midwestern United States. Founded in 1998, this independent, not-for-profit research institute has a global vision to improve the human condition through research in plants to improve nutritional content and increase agricultural production, and to provide the scientific ideas and technologies that will contribute to economic growth. The Danforth Center is considered as a resource for all who are devoted to discovery and all who are committed to making available the critically needed knowledge of plant science for sustainability.

The Danforth Center's Mission is to:

* increase understanding of basic plant biology

* apply new knowledge to help sustain productivity in agriculture, forestry, and allied fields

* facilitate the rapid development and commercialization of promising technologies and products

* contribute to the education and training of graduate and postdoctoral students, scientists, and technicians from around the world

Research at the Center is organized around four research focus areas to efficiently deliver plant science solutions to meet the global needs of agriculture and human health and nutrition. The research focus areas include developing new materials and products in plants, adapting plants for environmental stresses, enriching the nutritional value of foods, and controlling plant pests and pathogens.

A distinguishing feature of the Center is the commitment to translational research with colleagues from developing countries, targeting projects that lead to products designed for use in less developed countries.

The Danforth Center's founding partners are all recognized leaders in the plant sciences and include: the Missouri Botanical Garden, Purdue University, the University of Missouri-Columbia, the University of Illinois at Urbana-Champaign, Washington University in St. Louis, and the St. Louis-based Monsanto Company.

http://www.danforthcenter.org

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