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)

October 21, 2005

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NEWS

EXPERTS MEET TO LINK SMALLHOLDERS TO HIGH VALUE PRODUCTS

How can the poor, particularly rural women, benefit from growing markets of high value agricultural products (HVP)? This was tackled by some 40 experts who met at the Centro Internacional de Agricultura Tropical (CIAT) in Cali, Colombia. They developed a common understanding about how small producers can obtain market linkages, technologies, and other related information that they need to benefit from dynamic markets for high value products.

In addition, the participants were able to review strategies used in different regions for linking smallholders to HVP markets, identify high-priority issues for a shared research agenda, and initiate informal networks and alliances for addressing key themes.

The meeting was convened by the Global Forum for Agricultural Research and the CGIAR Science Council in collaboration with CIAT, the World Vegetable Center, International Plant Genetic Resources Institute, and the International Federation of Agricultural Producers. It was the first initiative following the Science Council's recent decision to establish “reducing poverty through agricultural diversification and emerging opportunities for high-value commodities or products” as one of five priorities for the research of the international centers during the period 2005-2015.

Updates on the international workshop are available at http://www.ciat.cgiar.org.

WORLD FOOD DAY STRESSES ISSUE OF HUNGER

The world today has the resources and technology to produce enough food to meet a population and bring an end to hunger and poverty. This was the gist of a speech made by Food and Agriculture (FAO) Director-General Jacques Diouf during the World Food Day celebration in Rome, Italy. He said that he was seeking approval from FAO Member States to implement a program that would enable FAO to play a more effective role in solving problems related to hunger, development of sustainable agriculture, food safety, control of transboundary plant and animal pests and diseases, and in negotiating a more equitable regime of trade for agricultural commodities.

Italian Minister of Agriculture and Forestry Gianni Alemanno commented that "It is not an issue of increased agricultural production, but rather of allowing people who suffer from hunger to be in a better position to get, in whole or in part, their own food." He particularly called for more attention to Africa and for greater collaboration with nongovernment organizations.

This year's theme on “Agriculture and intercultural dialogue: it's our common heritage” stressed on the exchange of agricultural information over the centuries that have contributed to better nutrition and reduction in poverty. Reacting to the theme, Simon Barber of EuropaBio, Europe's association of bioindustries, noted that “The sharing of the significant body of knowledge and experience that has been accumulated on biotech crops in developing countries, since their commercialization in 1996, is an essential ingredient for a transparent and knowledge-based discussion by an informed global society about the potential

benefits that biotech crops offer developing countries in helping them meet their food, feed and fiber needs."

For the full articles from FAO and EuropaBio, visit http://www.fao.org and http://www.europabio.org/documents/PR_World%20Food%20Day.doc, respectively.

GLOBAL HEALTH INITIATIVE TO FUND INNOVATIVE RESEARCH

The Bill and Melinda Gates Foundation, Wellcome Trust, and the Canadian Institutes of Health Research are set to finance 43 grants on a broad range of innovative research projects involving scientists in 33 countries. Through the Grand Challenges in Global Health initiative, efforts will be done to create "deliverable technologies" that are effective but also inexpensive to produce, easy to distribute, and simple to use in developing countries.

The Grand Challenges initiative was launched by the Gates Foundation and the National Institutes of Health in 2003 to help apply innovation in science and technology to the greatest health problems of the developing world.

The 43 projects address 14 Grand Challenges identified by international scientists and health experts. One of the main goals will be to grow more nutritious staple crops to combat malnutrition that affects more than 2 billion people worldwide. Scientists will, for example, develop a more nutritious strain of cassava, a rootcrop that is the staple food for many people but contains little nutrition and can be toxic if not prepared properly. They will also increase the levels of key micronutrients in cassava and improve storage time.

More information on the Grand Challenges in Global Health initiative is available online at http://www.gatesfoundation.org./GlobalHealth/BreakthroughScience/GrandChallenges/Announcements/Announce-050627.htm

SOUTH AFRICA OKS NEW BT COTTON VARIETY

Farmers in South Africa can now plant a new Bt cotton variety that has the stacked genes for insect and herbicide resistance. The official permit for Monsanto's new cotton will be issued by the Department of Agriculture this week in time for the 2005-06 planting season.

Tamar Kahn of Business Day quotes Wally Green of Monsanto's regional biotechnology regulatory manager as saying that the crop is already being grown in the United States and Australia. The variety combines the features of its Bollgard cotton that resists bollworms, and Roundup Ready cotton that is resistant to the weed-killer glyphosate.

See the full article in
http://www.businessday.co.za/articles/national.aspx?ID=BD4A103269

RESEARCH

PAPERS EXAMINE BT COTTON EFFECTS ON NON-TARGETS

Cotton's biggest insect enemies are the Lepidopterans, which can cause annual damages amounting to billions of dollars. Lepidopterans, however, are also prey to natural enemies such as *Benisia tabaci* (silverleaf whitefly), *Lygus hesperus* (Lygus bug), and *Pectinophora gossypiella* (pink bollworm). Bt cotton offers promise as a way to combat Lepidopteran infestations, but its effect on the natural enemies is still unknown.

Steven Naranjo takes the first step as he documents the results of a long term field test of Bt cotton and its effect on non-target arthropods. Both “Long-Term Assessment of the Effects of Transgenic Bt Cotton on the Abundance of Nontarget Arthropod Natural Enemies” and “Long-Term Assessment of the Effects of Transgenic Bt Cotton on the Function of the Natural Enemy Community” are published in the latest issue of Environmental Entomology.

Using data from five year long field studies of insects in fields planted to conventional cotton, as well as fields planted to Bt cotton producing the Cry1AC endotoxin, Naranjo found that no chronic, long term effects of Bt cotton were observed over multiple generations of the non-target arthropods.

Naranjo found that insecticide applications had greater negative effects on 10 non-target taxa. He also reported that 1) predator : prey ratios for *B. tabaci* and *L. hesperus* were similar in unsprayed Bt and non-Bt cotton, 2) potential predator impact was unaltered by Bt cotton but consistently depressed by insecticide applications, 3) sentinel eggs and pupae of P. gossypiella experienced the same rates of predation in both cotton types, and 4) Bt cotton had no effect on the sucking predation, parasitism, and dislodgment of B. tabaci.

Read the complete articles at http://puck.esa.catchword.org/vl=5633566/cl=15/nw=1/rpsv/cw/esa/0046225x/v34n5/s27/p1193 and http://puck.esa.catchword.org/vl=5633566/cl=15/nw=1/rpsv/cw/esa/0046225x/v34n5/s28/p1211.

CHOCOLATE FUNGI RELATED, REPORT FINDS

Cacao plants are besieged with two main fungal pests: *Crinipellis perniciosa*, which causes witches' broom; and *Moniliophthora roreri*, the causative agent of frosty pod rot. Despite the wide use of fungicides to combat both these fungi, they constantly threaten the world's chocolate industry, and are well spread throughout South and Central America.

Although they are well known, the fungi themselves, and their life cycles, have been studied little. Such research can help farmers control them. Researchers from the United States Department of Agriculture's Agricultural Research Service (ARS-USDA) take the first step as they study both the fungi's molecular profiles and make conclusions on the pests' taxonomy.

Using DNA and RNA analysis of both fungi, researchers found that the two are, taxonomically speaking, “sisters.” If *C. perniciosa* and *M. roreri* are as close as the molecular tests show, then a single fungicide can one day be made to combat both of them, and keep the chocolate industry up and running.

Find out more by reading the current issue of Agricultural Research magazine, available online at: http://www.ars.usda.gov/is/AR/archive/oct05/cocoa1005.htm.

REPORT LOOKS AT PVP EFFECT ON COTTON PROD

The 1970 Plant Protection Act (PVP) in the U.S., amended in 1994, was enacted with the hope that plant breeders' rights would be protected, and that productivity would increase. But how effective has the act been so far, given that some authors have criticized it as being nothing more than a marketing tool?

Anwar Naseem of the International Food Policy Research Institute (IFPRI) and colleagues seek to answer this question, at least in terms of one crop, in “Does Plant Variety Intellectual Property Protection Improve Farm Productivity?

Evidence from Cotton Varieties." The paper appears in the online AgBioForum journal.

The report quantifies the effect of PVP varieties on cotton productivity. It found that of the 658 distinct cotton varieties in the U.S., 292 were protected by PVP certificates. It also found that more and more cotton varieties were being protected under the act, such that 69% of planted varieties were protected by the year 2000. This, coupled with increasing cotton production, and an increasing number of new cotton varieties being released annually since the act was first enacted, led the authors to conclude that, at least for cotton, the PVP Act has encouraged a greater flow of innovation and the development of more productive cotton varieties.

Read more at http://www.agbioforum.org/v8n23/v8n23a06-oehmke.htm

ARGENTINA IP EXAMINED

Property rights legislation with respect to new seed varieties is weak in Argentina. In fact, patent protection is not generally available for new plant varieties.

Jay Kesan and Andres Gallo examine this IP regime in greater detail in "Property Rights and Incentives to Invest in Seed Varieties: Governmental Regulations in Argentina." The paper appears in the online AgBioForum journal.

The authors analyze Argentina's legislation by looking at soybean and corn production data, and comparing these to the United States', which has a stricter IP regime. They found that soybean production increased dramatically (669%) from 1998-2003, while corn production increased by 73% because of improvements in yield. The new IP legislation promotes registration of new corn varieties instead of new soybean varieties, leading to a drop in soybean prices despite the production boom, and to domestic producers allocating resources to corn production.

Authors, moreover, found that 1) increases in market appropriation will increase investment in all varieties only if the increase in appropriation is similar for all market varieties, 2) changes in property protections favoring one variety over another should result in an increase in investment and research for that protected variety, 3) greater security in intellectual property rights will result in higher market prices for new seeds and a higher quantity of supplied seeds, and 4) productivity gains should be observed for the higher investment in the varieties with more secure property rights.

Read the complete article http://www.agbioforum.org/v8n23/v8n23a08-kesan.htm

STACKED GM CORN EFFECTS ON NON-TARGETS ASSESSED

Stacking of traits in biotech plants, or having more than one special trait in the same plant, is often undertaken by scientists to slow down any resistance which may occur. Such is the objective of VIP-Cry corn, which has both the Bt toxin and the vegetative insecticidal protein. Together, these traits can allow corn to be resistant to the European corn borer, black cutworm, fall armyworm, Southwestern corn borer, and corn earworm.

The effects of such combined traits on non-target arthropods however, have not been fully studied. Galen P. Dively of the University of Maryland takes the first step as he looks as the “Impact of Transgenic VIP3A x Cry1Ab Lepidopteran-resistant Field Corn on the Nontarget Arthropod Community.” The paper appears in the latest issue of Environmental Entomology.

Using data from a three year field trial, Dively found that over 500,000 arthropods were present in the plants, air, and soil surface of the corn field. These represented 203 taxonomic groups in 112 families and 13 orders, with 70% of them saprovores, 13% herbivores, 14% predators, and 3% parasitoids. He also found that the densities of the non-target arthropods were not significantly affected by the stacked trait biotech corn. However, some taxa were affected in the Bt only plots, but the effects were still significantly less than disturbances caused by insecticide applications.

Read the complete article at
http://puck.esa.catchword.org/vl=5633566/cl=15/nw=1/rpsv/cw/esa/0046225x/v34n5/s32/p1267

ANNOUNCEMENTS

SYMPOSIUM ON BIOTECH FOR HEALTH

An international symposium on Biotechnology Approaches for Alleviating Malnutrition and Human Health will be held on January 9-11, 2006 at Bangalore, India. The symposium seeks to explore the ways in which technology can help to improve human nutrition. The potential of biotechnology and educating the rural masses, especially women and children to alleviate the nutritional deficiencies of

rural India will likewise be tackled. For more information, visit http://www.nutritionforall.org/.

ASIA-PACIFIC CONFERENCE

The 8th Asian-Pacific Molecular Biology Conference will be held at Thong Nhat Palace, Ho ChiMinh City on October 27 to 29, 2005. Hosted by HCM City Biotechnology Center, the conference hopes to boost the development of biotechnology in Vietnam and the rest of the Asia-Pacific region. See event details at http://www.agbiotech.com.vn.

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