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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NEWS FLASH

The International Service for the Acquisition of Agri-biotech Applications will release its annual preview of the global status of commercialized biotech/GM crops for 2004 at 10AM EST on January 12, 2005. Dr. Clive James, author of the report and also ISAAA chair, will give highlights of the report in a press conference on the same day. A special edition of the Crop Biotech Update featuring key points of the report will be published immediately after the press conference. Non-subscribers of the Update can access this news from http://www.isaaa.org/kc.

In This Issue:

* Public Institutions in Developing Countries Doing GM Research
* Report Encourages S&T Investment for Developing Countries
* Vietnam Sets Up Biotech Center
* Crop Biotech for Livestock Feeds
* Survey Shows Corn Growers Complied with IRM Requirements
* GM Soybean Shows No Risk of Outcrossing - Report
* Sorghum DNA Sequences Donated to Genbank
* India’s Patents Act Amended
* Announcements:
  - Bangladesh Country Coordinator for Biosafety Program
  - BIO Conference Slated for April 2005
  - Hyderabad to Host BioAsia Forum
  - FAO Schedules Open Forum on GM and Developing Countries
  - Database on Plant Biotech Projects
* CBT News Feature:

PUBLIC INSTNS IN DEVELOPING COUNTRIES DOING GM RESEARCH

A study released by the International Food Policy Research Institute (IFPRI) notes that the public sector is a competent but largely unproven player for genetically modified (GM) crop production in developing countries. “GM crops are often framed as the products of multinational corporations, but in poorer nations it is public research that is vibrant and attempting their development,” says Joel Cohen, author of the article entitled “Poorer nations turn to publicly developed GM crops” published in the January 2005 issue of Nature Biotechnology.

Cohen surveyed GM crop research in 61 public research institutions in 15 developing economies. He found out that these institutes have demonstrated transformation capabilities across 45 plants, within eight categories of different transgenic phenotypes, and the ability to use such genes when transforming local genetic resources.

Despite these achievements, however, Cohen said that most developing countries have only limited experience in compiling regulatory data and in completing regulatory requirements. This has resulted in only few transformed crops being released from confined into pre commercial testing or into use. This can be attributed to several factors, among which include:

* Overall isolation of public research institutes
* Inability of public research to meet food safety and environmental regulatory requirements and confusion regarding regulatory standards between confined versus open trials
* Lack of regional abilities to exchange and evaluate regulatory data on specific transgenes and crops

Cohen concluded that policy, research and regulatory options are needed to expedite regulatory decisions and testing of public GM crops. “The sooner such evaluations occur, the faster GM crops unsuitable for field application can be discarded and successful GM crops moved forward,” he recommended.

A pdf of the full article is available at http://www.ifpri.org.

REPORT ENCOURAGES S&T INVESTMENT FOR DEVELOPING COUNTRIES

A recently compiled report by the Task Force on Science, Technology, and Innovation of the United Nations Millennium Project advised developing countries to increase investment in science and technology, as well as in research and development, to strengthen their economies. Entitled “Innovation: Applying

knowledge in development", the report was co-authored by Calestous Juma, Task Force coordinator and professor of international development at Harvard's Kennedy School of Government; and Lee Yee-Cheong, president of the World Federation of Engineering Organizations.

The report illustrates strategies to encourage economic growth through science and technology in developing countries. These include a) strengthening the role of the government, which should promote business activities in science, technology, and innovation, while finding the balance between protecting intellectual property rights and supporting technological development; b) changing the role of universities by making research more entrepreneurial, which may occur by direct involvement of the academe with local communities to gain direct knowledge about immediate needs; c) designing infrastructure projects to initiate technological innovation; and d) taking risks in terms of finances, by encouraging venture capital and risk capital, and establishing export processing zones and production networks. All this could be achieved, the report said, within the next five years, with proper risk management and foresight on the part of all stakeholders.

Access the report at http://www.isaaa.org/kc.

VIETNAM SETS UP BIOTECH CENTER

Ho Chi Minh City in Vietnam will build a biotechnology center to produce products for health care, agriculture, and other economic sectors in the country. Vietnam News Agency quotes Dr. Nguyen The Dung, Director of the city's healthcare service, as saying that the center will be built through the assistance of Cuban experts and will also train experts in biotechnology and conduct scientific research.

In related developments, Ho Chi Minh City's People Committee have agreed to invest US$4 million to build a laboratory in the city's Experimental Analysis Service Center to enable scientists to do viral and genetic research for agriculture, animals, and humans.

For summaries of agri-biotechnology articles in Vietnam, email Vietnam Trade Network (VITRANET) at vitranetvn@hn.vnn.vn.

CROP BIOTECH FOR LIVESTOCK FEEDS

A new generation of biotech crops designed specifically for livestock is being developed. These crops are being engineered with substantial changes in their content of major components (e.g., proteins, amino acids) or minor components (e.g., vitamins, minerals). Since these improved feed crops are designed and intended to be different from non-biotech varieties, their approval process will involve additional assessments of their safety for human and animal consumption. So says Allen Van Deynze of the Seed Biotechnology Center of the University of California, Davis and colleagues in an article “Crop biotechnology: Feeds for livestock” published by the same university.

Among the potential products include biotech corn and soybean varieties with increased oil content to provide greater energy intake for beef, swine, and poultry. Researchers have also produced soybean and corn with elevated levels of some essential amino acids. Still others are working on increasing the availability of phosphorus in animal feeds.

For the full article, visit http://sbc.ucdavis.edu/Publications/ABC_Series.htm.

SURVEY SHOWS CORN GROWERS COMPLIED WITH IRM REQUIREMENTS

An annual survey by the United States Environmental Protection Agency (EPA) shows that a large majority of corn growers in the Corn and Cotton Belt are adhering to insect resistance management (IRM) requirements designed for corn borer resistant Bt corn. The study was conducted by the Agricultural Biotechnology Stewardship Technical Committee (ABSTC), an independent research firm.

Using data gathered from interviews with more than 550 Bt corn growers during the 2004 growing season, researchers found that more than 9 out of 10 growers, or %, met regulatory requirements for IRM refuge size, while 96% met refuge distance requirements. Under IRM requirements, growers must plant at least a 20% refuge, or conventional corn, and ensure every Bt cornfield is located within one half mile of a refuge. This was created to help minimize the probability of corn insect pests, such as the European corn borer, from developing resistance to Bt technology.

The Compliance Assurance Program (CAP) is another factor that has contributed to IRM awareness in the grower community. Under the CAP, growers who do not meet their IRM refuge requirements in two consecutive years can be denied access to Bt corn in the third year by their seed provider.

Read the press release at
http://www.ncga.com/news/notd/2005/january/010605b.htm.

GM SOYBEAN SHOWS NO RISK OF OUTCROSSING - REPORT

In Biosafety of the Herbicide Resistant GM soybean 40-3-2: Experience in the Russian Federation, Dmitry Dorokhov of the Centre of Bioengineering of the Russian Academy of Sciences evaluated the possibility of outcrossing of genetically modified (GM) Roundup Ready Soybeans with wild soybean species in the Russian federation.

A total of 215 plants representing 40 wild soybean populations and 2 cultivated soybean varieties were used in the study. To test potential crossability of GM soybean with the local species in both the field and the greenhouse, Dorokhov's team tried to pollinate wild soybeans with GM pollen. No herbicide-resistant soy was found in two subsequent growing seasons, and transgenic DNA was found only in the first, but not in succeeding generations, leading to the conclusion that any outcrossing would be relatively rare, or with a frequency below the sensitivity of the experiment.

For more information, visit the Black Sea Biotechnology Association at http://www.bsbanet.org. The report may be downloaded at http://www.isaaa.org/kc.

SORGHUM DNA SEQUENCES DONATED TO GENBANK

Orion Genomics, a Second Code biotechnology company, recently donated all of its proprietary gene-enriched DNA sequences from the sorghum plant to the public domain. The sequences are available at Genbank, of the National Center for Biotechnology Information, a division of the National Library of Medicine (NLM) at the National Institutes of Health (NIH). Orion's collection of 500,000 gene-rich sequences and more than 20,000 different gene sequences derived from its sequencing projects provide the first in-depth look at sorghum's gene complement.

Sorghum is a close relative of corn, and is one of the most important cereal crops worldwide. The information provided by Orion Genomics is expected to help researchers understand and harness sorghum's unusual resilience in sub-optimal environments, in order to improve other grains, and to contribute to the development of biofuels.

Access the press release at http://www.oriongenomics.com/pr-01042005.html.

For more information, visit http://www.oriongenomics.com, or contact Nathan Lakey, President and CEO of Orion Genomics, LLC at lakey@oriongenomics.com.

INDIA'S PATENTS ACT AMENDED

A third amendment has been made to India's Patents Act, this time extending the country's patent protections to include agro-chemicals, food, and biotechnology products, apart from drugs and pharmaceuticals. This was made in order to meet with the World Trade Organization (WTO) Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, to which India is committed. The TRIPS agreement has stipulated three criteria for patent rights, namely novelty, inventive step, and utility; however, it has not defined microorganisms and microbiological processes. Thus, the new patent regime will cover seeds created by novel means, including transgenic seeds; and claims in gene patent applications may pertain to genes or partial DNA sequences, proteins encoded by these genes, vectors used for transfer of genes, genetically modified micro-organisms, cells, plants, and animals, and the process of developing a transgenic product. The amendment went into effect on January 1, 2005.

With news from http://www.financialexpress.com/fe_archive_full_story.php?content_id=78652.

Access the patent ordinance at http://www.isaaa.org/kc.

ANNOUNCEMENTS

BANGLADESH COUNTRY COORDINATOR FOR BIOSAFETY PROGRAM

Agriculture & Biotechnology Strategies (AGBIOS) Canada has appointed Dr. M. Imdadul Hoque as the Bangladesh Country Coordinator for the South Asia Biosafety Program. Hoque is from the Department of Botany at Dhaka University, where he has been involved in the development of plant tissue culture techniques and molecular markers for tropical crop improvement. He has also been involved in the evolution of biosafety policy within Bangladesh and served as an associate coordinator during the preparation of the national biosafety guidelines.

The South Asia Biosafety Program (SABP) is dedicated to assisting the Governments of Bangladesh and India in further strengthening institutional governance of agricultural biotechnology. In Bangladesh, the Program will be focusing on biotechnology policy development, facilitating the safe conduct of experimental field trials of new biotech crops, identifying and responding to technical training needs and communicating both the benefits and concerns of new agricultural biotechnologies to farmers and other stakeholder groups. SABP is designed and delivered through a collaboration between AGBIOS and the International Food Policy Research Institute (IFPRI), with funding from the U.S. Agency for International Development.

For further information on SABP activities, visit the SABP website at: http://www.agbios.com/sabp.

BIO CONFERENCE SLATED FOR APRIL 2005

Bangalore Bio 2005, an event showcasing global capabilities in biotechnology, will be held from April 22-24, 2005 in Bangalore, India. The conference is an annual event that brings together key industry players, research personnel, academia, and policy makers together, and focuses on emerging opportunities in areas such as human and animal healthcare, agribiotech, and industrial biotechnology

Organizations in the fields of biotechnology, research and development, bioinformatics, agri-biotech, clinical research, health care and pharmaceuticals, research process outsourcing, education, and equipment manufacture, as well as members of government agencies, institutional investors, and venture capitalists are invited to attend.

For more information, visit http://www.bangalorebio.com.

HYDERABAD TO HOST BIOASIA FORUM

The second BioAsia Global Bio Business Forum will be held in Hyderabad, India from February 10-12, 2005. The forum has emerged as one of Asia's important biotech events, and seeks to bring all biotech players and stakeholders under one roof.

BioAsia 2005 will provide the ideal meeting ground to transact business, build global alliances and collaborations, showcase products/services, and network with industry leaders, research scientists, and media analysts.

For more information on the conference, visit http://www.bioasia2005.org

FAO SCHEDULES OPEN FORUM ON GM AND DEVELOPING COUNTRIES

The U.N. Food and Agriculture Organization (FAO) has scheduled an e-mail conference on "Public participation in decision-making regarding GMOs [Genetically Modified Organisms] in developing countries: How to effectively involve rural people" from Jan. 17 to Feb. 13, 2005.

Questions such as a) "What priority should governments give to involving the rural people in decision-making regarding GMOs in developing countries?" b) "What is the best medium (e.g. newspaper, radio, Internet etc.) for rural people in developing countries to access quality information about GMOs that will allow them to participate effectively in the decision-making process?" and c) "Concerning requests for approval of individual GM products, what kind of information should it be possible to withhold from public disclosure?" will be addressed and discussed

The conference is open to all, is free, and will be moderated.

For more details on the electronic meeting, visit <http://www.fao.org/biotech/C12doc.htm>.

DATABASE ON PLANT BIOTECH PROJECTS

PlantBiotech Projects is a new database of transgenic plants with worldwide coverage of all major sectors of plant biotechnology. Launched in November 2004, the database contains information on genetically engineered plants in the agricultural biotechnology sector and consists of four modules; input traits, crop production, quality traits and plants as factories. The data profiles include products currently in research, as well as launched products.

For more information, please contact Ms Rebecca Drake, Editor, PlantBiotechProjects at rebecca.drake@informa.com.

CBT NEWS FEATURE: DR. CHARLES J. ARNTZEN

Dr. Charles J. Arntzen is highly recognized for his pioneering work in the development of plant-based vaccines for human disease prevention, as well as disease prevention in animal agriculture. These vaccines, developed by manipulating plants through genetic engineering, contain pharmacologically

active ingredients for overcoming health constraints, with emphasis on the needs of poor countries.

Dr. Arntzen and his colleagues have genetically engineered food plants to confer immunity to several infectious diseases. Some of these are potatoes and bananas that carry the hepatitis B surface antigen, and vaccine potatoes against human papilloma virus (HPV) which cause cervical cancer. Dr. Arntzen is also responsible for the clinical trials of edible vaccines on humans, in which he found that 95% of the patients to whom he administered a raw potato carrying a subunit vaccination for E. coli exhibited mucosal and systemic immune responses. For most of these vaccines or subunit vaccinations, research is leaning towards the use of banana as vector because bananas can be eaten raw and most third-world countries, who would benefit most from edible vaccines, are in tropical climates that are suitable for growing bananas.

Born in Granite Falls in Minnesota, Dr. Arntzen began his career in plant science in the University of Minnesota, from which he obtained his bachelor's (1965) and master's (1967) degrees in plant physiology. He received his doctorate in cell physiology from Purdue University in 1970. He held several teaching positions at the University of Illinois and Michigan State University (MSU), and visiting professorships from universities in China, Australia, and France. He worked with USDA as a research scientist, and with MSU-Plant Research Laboratory as director. He has also held positions as director for biotechnology research, agricultural products department of DuPont Company; dean of the College of Agriculture and Life Sciences, Texas A & M University; and president and CEO, Boyce Thompson Institute for Plant Research in Cornell University. Dr. Arntzen was appointed to the Florence Ely Nelson Presidential Endowed Chair at Arizona State University in Tempe in 2000 and as Regents Professor in 2004. He served as the Founding Director of The Biodesign Institute until May 2003, and currently serves as the Director of the Center for Infectious Diseases and Vaccinology of that Institute.

Dr. Arntzen was elected to the U.S. National Academy of Sciences in 1983 and to the National Academy of Sciences in India the following year. He is a fellow of The American Association for the Advancement of Science, and a recipient of the Award for Superior Service from the U.S. Department of Agriculture for international project leadership in India. He has been a member of numerous national and international committees, and also served as member of the editor board of SCIENCE for eight years. Dr. Arntzen also serves as a Distinguished Advisor on the Council for Biotechnology.

http://sols.asu.edu/faculty/carntzen.php
http://www.bio.davidson.edu/people/kabernd/seminar/2002/edible/vaccines.htm
http://events.uwa.edu.au/view/student/simple?start=20031009

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