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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COTTON ADVISORY COMMITTEE REPORT ON BIOTECH COTTON

The International Advisory Committee has released its second Expert Panel on Biotechnology in Cotton report. It discusses issues associated with biotech cotton by updating the first report, and specifically addresses biosafety issues as well as potential benefits and challenges for biotech cotton adoption in the developing world. Chaired by Dr. Gary Fitt of the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia, the committee came up with the following recommendations for the adoption of biotech cotton by developing countries:

* All countries should to be free to make their own decisions about adoption of biotech cotton or other products of modern biotechnology unconstrained by philosophical, ideological, or economic pressures from outside

* Develop a centralized regulatory process that is clear, rigorous, expeditious, harmonized and science based, that requires testing to demonstrate benefits and follow-up procedures to ensure sustainability

* Ensure that legislation is in place to protect both the germplasm and the technology

* Develop technical teams that can educate farmers and support the use of new technology

* Encourage the adoption of the best technology in varieties with demonstrated local performance

* Include biotech cotton as one component of an integrated farming system supporting adoption of IPM (Integrated Pest management) or IWM (Integrated Weed management), not as a replacement or alternative technology.

Executive summaries of the report are available online in English, Spanish, Arabic, French, and Russian at:
http://www.icac.org/icac/cotton_info/tis/biotech/documents/expert_panel_2/english.html

CAMBIA DEVELOPS NEW GM TOOLS

Scientists from CAMBIA, a research centre affiliated with the Charles Sturt University in Canberra, Australia have developed new methods for genetically modifying plants. The technologies include TransBacter, a new method for transferring genes to plants, and GUSPlus, a new way of visualizing where these genes are and how they function.

Researchers made a breakthrough by successfully transferring genes to plants using several bacteria other than *Agrobacterium tumefaciens*. This bacterium has so far been considered the only microbe capable of such gene transfer but whose use is restricted by patent protection.

In an article in the journal Nature, Jefferson and his colleagues showed that gene transfer is also possible using strains of *Rhizobium, Sinorhizobium,* and *Mesorhizobium*. By introducing "disarmed" plasmids together with a helper molecule into bacteria, they were able to transfer genes into tobacco, rice and Arabidopsis plants. They noted that there was great potential in using other bacteria that could act as DNA carriers showed huge potential.

CAMBIA is making the technology freely available for scientists to use through "open source" licensing. It will enable scientists, particularly those from developing countries, to avail of the technology unhampered by licensing costs. More information on the new method is available in the February 10, 2005 issue of the journal Nature. The article can be downloaded from http://www.bios.net/daisy/bios/392. Contact Richard Jefferson of CAMBIA at his email address: raj@cambia.org.

EMERGING TECHNOLOGY: ROUNDUP READY ALFALFA

Alfalfa (*Medicago sativa*), considered a premier forage crop, may soon join corn, soybean, and cotton as one of the glyphosate-resistant crops, also known as "Roundup Ready" (RR), to be part of the biotech cropping system in the United States. The University of California (UC) reports that the crop will be commercialized by 2005 pending regulatory approval.

UC released a paper on "Roundup Ready Alfalfa: An Emerging Technology," which presents a comprehensive review of RR alfalfa as well as potential issues and impacts of this technology on both production systems and markets. Allen Van Deynze and colleagues found that glyphosate applied at the appropriate growth stage was found to generate at least 95 percent weed control of nearly all weed species invading alfalfa.

The publication also addressed major concerns regarding RR technology such as weed species shifts, weed resistance, possible gene outflow to feral alfalfa, stand removal, and market acceptance for export. Strategies to address these issues were forwarded. See the full document at: http://anrcatalog.ucdavis.edu/pdf/8153.pdf

CORN HYBRIDS LISTED FOR 2005 PLANTING

Available corn hybrids have been compiled by the online magazine Better Farming, after surveys and inquiries from seed companies regarding their latest genetic offerings. Hybrids are arranged by heat units and are rated for various corn qualities.

Corn hybrids enlisted and rated include RR, or Roundup Ready herbicide tolerance; LL, Liberty Link herbicide resistance; Bt, *Bacillus thuringiensis* insect resistance; YG, YieldGard Bt genetics; and W, or Waxy. Ratings were also

made on projected yield, stalk strength, and dry down, as supplied the seed companies themselves at Better Farming's request.

An additional column on Market Choices (MC) was also added, which identifies hybrids that are not yet approved for importation by the European Union.
For the complete list, consult http://www.betterfarming.com/2005/bf-feb05/cornchart.htm

INBRED MAIZE LINES SHOW DNA SEQUENCE CHANGES

One assumption of genetics is that the genomes of individuals belonging to the same species will contain the same DNA sequences. One exception was found recently, by Stephan Brunner and colleagues of DuPont Crop Genetics Research, as they explored the "Evolution of DNA Sequence Nonhomologies among Maize Inbreds" in the January 19 issue of The Plant Cell.

More than 2.8 megabases of genomic DNA were sequenced in two inbred maize lines, Mo17 and B73, and then compared over distances of 100-350 kilobases. Alignment of corresponding DNA sequences showed that, on the average, more than 50% of the compared sequences were non-colinear, mainly because of the insertion of large numbers of long terminal repeat (LTR)-retrotransposons.

These regions of insertion, however, and the non-shared gene segments between the two lines were gene-poor. The lack of colinearity still poses biological implications, in that the presence of inserted, gene-poor DNA sequences could still affect the expression of neighboring genes.

Download the complete article at http://www.plantcell.org/cgi/reprint/17/2/343.

KLAUS AMMANN RECOMMENDS PAPERS

With the coming Public Research and Regulation Initiative conference, as well as the meeting of the parties of the Cartagena Protocol, Dr. Klaus Ammann recommended several papers to aid participants, readers, and researchers in assessing and understanding important regulatory developments. Dr. Ammann is the Director of the Botanical Garden at the University of Berne, and Chairman of the Biodiversity Section of the European Federation of Biotechnology.

"Harmony or havoc: can the WTO, Biosafety Protocol and Codex Alimentarius work together?" is a new SciDev policy brief that looks at the complex

relationships amongst the three accords. It explores evolving treaty rules, with regard to promoting trade, protecting the environment, safeguarding human health, and recognizing consumer interests. Access the complete policy brief at http://www.scidev.net/dossiers/index.cfm?fuseaction=policybrief&dossier=6&policy=54.

Updates and information on the initiative can be found at www.pubresreg.org. Download the latest version of the programme at http://www.botanischergarten.ch/PublicSector/Danforth-2005-03-program-draft-4.pdf

CBT NEWS FEATURE: DR. PEDRO SANCHEZ: 2002 WORLD FOOD PRIZE AWARDEE

Distinguished soil scientist Dr. Pedro Antonio Sanchez is the 2002 World Food Prize recipient for his groundbreaking contributions to reducing hunger and malnutrition throughout the developing world by transforming depleted tropical soils into productive agricultural lands.

A native of Havana, Cuba, Dr. Sanchez was born on October 7, 1940. He was raised on a farm, and exposed to the fertilizer business at an early age. He obtained his elementary and secondary education from Havana's Colegio de la Salle. He then studied at Cornell University, where he received his BS in Agronomy (1962), MS in Soil Science (1964), and PhD in Soil Science (1968) degrees. During his PhD studies he worked as a soil fertility professor for the University of the Philippines-Cornell Graduate Education Program, and at the same time did his PhD research at the International Rice Research Institute.

After his PhD, he joined the faculty of North Carolina State University in 1968 and served as the leader of the North Carolina State University Rice Research Program of Peru in the 1970s. In this program, Dr. Sanchez helped guide Peru to dramatically improve its national food security, achieving self-sufficiency in rice production within three years, and achieving among the highest rice yields in the world. As leader of the Tropical Soils Program of North Carolina State University (1971-1976), Dr. Sanchez developed a comprehensive approach to soil management which enabled 30 million hectares of marginal Brazilian land, known as the Cerrado, to be brought into production – the single largest increase in arable agricultural land in the last half-century. Next, he brought the Green Revolution to Africa when he served as Director General of the International Centre for Research in Agroforestry (ICRAF) based in Nairobi, Kenya, from 1991-2001. He developed means to replenish crucial nutrients in exhausted soils, through the development and promotion of agroforestry.

Currently, Dr. Sanchez is the Director of Tropical Agriculture and Senior Research Scholar at the Earth Institute of Columbia University in New York City, and the Co-Chair of the Hunger Task Force of the United Nations Millennium Project. He also serves as Professor Emeritus of Soil Science and Forestry at North Carolina State University.

Aside from being a World Food Prize laureate, Dr. Sanchez received several honors and awards, including the International Soil Science Award from the Soil Science Society of America (1993), and the International Service in Agronomy Award from American Society of Agronomy (1993). He was also elected Chairman of the Soil Fertlity and Plant Nutrition Commision of the International Society of Soil Science (1994) and received decorations from the governments of Colombia and Peru. In 2001, the Catholic University of Leuven of Belgium awarded him a Doctor Honoris Causa degree; he was also anointed a Luo Elder with the name of Odera Kang'o by the Luo community of Western Kenya, in recognition for his assistance in eliminating hunger from many villages in the region. He is also a Fellow of the American Society of Agronomy and the Soil Science Society of America.

Dr. Sanchez is the author of the top 10 best-selling book in soil science worldwide- Properties and Management of Soils of the Tropics. He has authored over 200 scientific publications.

http://www.worldfoodprize.org/Laureates/Past/2002.htm
http://www.earthinstitute.columbia.edu/tropag/about/bios/sanchez_p.html

DOCUMENT REMINDERS:

FRENCH TRANSLATIONS OF ISAAA PUBLICATIONS

The International Service of the Acquisition of Agri-biotech Applications (ISAAA) has made available in both hard copies and on its website, the French translations of some major ISAAA documents for readers in Francophone Africa. The titles are:

* Avant Premiere : Statut Global des Cultures Transgéniques Comeercialisées en 2003 (ISAAA Briefs No. 30)
* Riz GM : Cela conduira-t-il sur le chemin d'une acceptation mondiale pour la technologie des plantes GM ? (ISAAA Briefs No. 28)
* Evaluation détaillée du coton Bt (Source: ISAAA Briefs 26)
* Evaluation détaillée du maïs Bt (Source: ISAAA Briefs 29)

A brochure of AfricaBio entitled "Agricultural Biotechnology Facts for Decision Makers" was also translated into French.

To download the French translations in PDF format, visit http://www.isaaa.org/kc.

UPDATED POCKET KS

Revised versions of Pocket Ks Nos. 1 and 2 are now available online at http://www.isaaa.org/kc. Pocket K1 is on "Questions and Answers about Genetically Modified Crops" while Pocket K2 is on "Plant Products of Biotechnology."

French translations (France) of seven Pocket Ks are likewise available for downloading. Topics of these series include GM food safety, GM crops and the environment, Bt insect resistance technology, herbicide tolerance technology, and the global status of commercialized biotech crops in 2004.

Pocket Ks are Pockets of Knowledge, packaged information on crop biotechnology products and related issues. They are produced by the Global Knowledge Center on Crop Biotechnology of the International Service for the Acquisition of Agri-biotech Apllications. There are already 16 Pocket Ks which are all available at http://www.isaaa.org./kc.

ANNOUNCEMENTS:

EUROPABIO FORUM TO BE HELD IN GREECE

BIONOVA and EuropaBio present the 2nd International Greek Biotechnology Forum, to be held on July 1-3 2005, in Athens, Greece. The three-day conference covers all issues of biotechnology, its fundamentals, and its applications. It also promises to showcase about 200 exhibitors from Europe's companies, from the large conglomerates to small and medium-scale enterprises.

The conference aims to direct the convention to new markets, specifically to Arabic countries of the Middle East and North Africa. Its programs will cover White and Green Biotech (July 1), human disease biology and medicine (July 2), and biotechnology transfer and bio-finance (July 3)

Applications for sponsorship are open until March 5th, 2005. For more information, visit http://www.igbf.gr.

SCHOLARSHIPS AVAILABLE FOR GHENT SUMMER SCHOOL

The 2nd summer school on "Biosafety assessment and regulation of agricultural biotechnology" will be held at the University of Ghent, Belgium, on August 9-20, 2005.

The Institute of Plant Biotechnology for Developing Countries is opening 12 scholarships for participants from Developing Countries supported by the VLIR (Flemish Interuniversity Council) to cover the cost of the course, including travel and stay. Scholarship applications should be submitted before March 1.

More information on the course and the forms to be filled can be found at http://www.ipbo.ugent.be.

Do not hesitate to tell other colleagues/contacts about this mail list. If they wish to join, they should send an e-mail message to knowledge.center@isaaa.org leaving the subject blank and entering the one-line text message as follows: SUBSCRIBE Crop Biotech Network

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