CROPBIOTECH 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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*** Global ***

WTO RULES IN FAVOR OF BIOTECHNOLOGY

The World Trade Organization (WTO) ruled last week in favor of the United States, Argentina, and Canada in their WTO case against the European Union (EU) over its moratorium on approving agricultural biotech products. The WTO has also challenged product bans imposed by six EU Member States (Austria, France, Germany, Greece, Italy, and Luxembourg) on seven of the biotech crops approved by the EU prior to the adoption of the moratorium. In each case, the panel upheld claims that in light of positive safety assessments issued by European scientists, the Member State bans were not supported by scientific evidence and were thus inconsistent with WTO rules.

“Today's decision affirms what the world's farmers have known about biotechnology for many years,” said US Agriculture Secretary Mike Johanns. “Since the first biotechnology crops were commercialized in 1996, we've seen double-digit increases in their adoption every single year. Biotechnology crops not only are helping to meet the world's food needs, they also are having a positive environmental impact on our soil and water resources. Farmers who grow biotechnology crops in 21 countries around the world, including 5 in the EU, stand to benefit from today's decision.”

To read the WTO Reports of the panel that examined complaints by the United States, Canada and Argentina (DS291, DS292 and DS293) against “European Communities — Measures affecting the approval and marketing of biotech products” visit: http://www.wto.org/english/news_e/news06_e/291r_e.htm.

With reports from:
http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?contentidonly=true&contentid=2006/09/0389.xml

G77 MEETS, ORGANIZES ON SCIENCE DEVELOPMENT

Once the Third World Network of Scientific Organizations, the TWNSO is now the Consortium on Science, Technology and Innovation for the South (COSTIS), and aims to put science and technology development on the agenda of governments in the developing world. This was decided upon by the Ministers of Science and Technology of the Group of 77 and China, which met on the occasion of the 10th General Conference of the Academy of Sciences for the Developing World (TWAS) and the 9th General Assembly of the TWNSO, held recently at Angra dos Reis, Rio de Janeiro, Brazil.

The ministers emphasized the need to continue strengthening South-South operation in order to develop science and technology policy. Among the strategies proposed are increasing regional cooperation on science and technology, increasing funding for research and

development in support of national growth, placing science and technology on the national as well as the international development agenda, creating synergies between public and private support for science and technology, and eliminating illiteracy while promoting higher education and the creation of infrastructure for research and development as a way to prevent brain drain.

"We should not be forgetting the gains made in the field of science and technology and the potential benefits in areas such as nanotechnology, biotechnology, health technologies and water technologies," H.E. Mosibudi Mangena, Minister of Science and Technology of South Africa, said in his opening statement, "In this regard, we should continue with knowledge sharing, investment in research and development for poverty alleviation, including the research and development strategies in these key sectors. We should continue to have the dialogue, which speaks for the scientific community, particularly from the South."

Read the complete releases at http://www.g77.org/mmst/conclusion.html and http://www.g77.org/mmst/statement1.html.

RODENTS GET VITAMIN A BOOST FROM NEW BIOFORTIFIED MAIZE

Scientists from the University of Wisconsin report that maize bred to contain high concentrations of beta-carotene has indeed increased the Vitamin A status in gerbils. The study, published in the October issue of the Journal of Nutrition, reports that liver Vitamin A levels were 150% greater in gerbils fed with the maize than those of the control group, and equaled that of the group receiving the beta-carotene supplements.

The authors, Julie Howe and Sherry Tanumihardjo, also suggest that this biofortified maize could be used to tackle Vitamin A deficiency (VAD), a serious health problem in more than 50% of all countries, especially in Africa and South-East Asia.

Read the complete press release at http://www.nutraingredients.com/news/ng.asp?n=70826-syngenta-beta-carotene-vitamin-a-deficiency-biofortication. Subscribers to the Journal of Nutrition can read the complete article, "Carotenoid-Biofortified Maize Maintains Adequate Vitamin A Status in Mongolian Gerbils," at http://jn.nutrition.org/cgi/content/abstract/136/10/2562.

GLOBAL BIOENERGY PARTNERSHIP SECRETARIAT UP TO PROMOTE BIOENERGY

The Food and Agriculture Organization (FAO) has been chosen to host the GBEP (Global Bioenergy Partnership) Secretariat. GBEP was launched in May 2006 to promote the use of bioenergy, with particular focus on developing countries. In the light of high oil prices, concerns on diminishing fossil fuel reserves, and global warming, there is a growing need to develop renewable energy sources. The overall aim of the Partnership is to respond to these needs through the development of biofuels as renewable energy sources.

Alexander Muller, FAO Assistant Director-General for Sustainable Development, hopes that the "positive synergies between GBEP and FAO's International Bioenergy Platform (IBEP) will contribute to an expanded and sustainable role of biofuels." FAO has been known to be actively promoting biofuels as a means of reducing poverty while producing clean low-cost energy.

The Secretariat will be the principal coordinator of Partnership communications and activities, and will assist international exchanges of know-how and technology, promote supportive policy frameworks, and identify ways of fostering investments and removing barriers to the development and implementation of joint projects.

Italy and Mexico were appointed as Chair and Vice-Chair, respectively, of GBEP's Steering Committee for the next two years. The full press release can be accessed at http://www.fao.org/newsroom/en/news/2006/1000405/index.html.

MOUSE MODEL DEVELOPED TO TEST GM FOOD ALLERGENICITY

Scientists from Michigan State University (MSU) have developed a mouse model to test the allergy-causing potential of genetically modified foods. The researchers, led by Venu Gangur, assistant professor of food science and human nutrition, have received a $447,000 grant from the Environmental Protection Agency (EPA) for their work.

The potential of GM foods to cause allergic reactions in humans is a major concern when evaluating the biosafety of GM crops. Although there are already protocols in place to make assessments association with such issues, there has hitherto been no definitive test of GM food allergenicity. The MSU scientists will use the grant to verify whether the model works on a variety of proteins. If successfully validated, the testing could be available commercially in about five years.

Read the complete press release at http://newsroom.msu.edu/site/indexer/2864/content.htm.

MILKEN INSTITUTE RELEASES REPORT ON BIOTECH IN UNIVERSITIES

Five United States universities topped 683 universities worldwide for their ability to turn biotechnology research into licensing income and business startups. These were Massachusetts Institute of Technology, University of California system, California Institute of Technology, Stanford University, and University of Florida. According to a report "Mind to Market: A Global Analysis of University Biotechnology Transfer and Commercialization released by the nonprofit Milken Institute, US universities dominated the top 50 of the universities studied.

Milken Institute examined the biotechnology transfer process in universities from knowledge creation to technology transfer and early-stage commercialization. Among the key findings were:

- Harvard University ranks first in terms of biotech research, as measured by papers and citations, followed by the University of Tokyo and University of London.
- The University of Texas system scores first on the Biotech Patent Composite Index, followed by U.C. San Francisco. The University of London ranks first among foreign universities (10th overall).
- Among U.S., Canadian and European universities, the United States leads in invention disclosures, patents filed and granted, licenses executed and licensing income. However, European universities surpass their U.S. counterparts in startups established.
- Research activity has a high rate of return. Each 10-point increase in research papers score contributes an additional $1.7 million in annual licensing income.
- Investments into offices of technology transfer (OTT) also offer high returns. For every $1 invested in OTT staff, the university receives a little more than $6 of licensing income.

Read more on the Milken report at http://www.milkeninstitute.org/publications/m2m.html

ICRISAT TOUTS POTENTIAL OF BIOFUELS

The world's drylands can contribute to a bio-fueled future, and the challenge and opportunity for those interested in developing biofuels are to ensure that the dryland poor are not left behind. This was stated by Dr. William Dar, Director General of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), in a document now available on the ICRISAT website.

Dr. Dar takes a look at the prospects of developing bioethanol and biodiesel in India, both of which are attractive alternatives to increasingly expensive fossil fuels. The cost of ethanol production is no constraint; rather, it is the supply of raw materials for production that is hampering India's ethanol industry. This is where ICRISAT and partners come in: instead of using leftover molasses from sugar refining, ICRISAT is working on sweet sorghum. This little known dryland crop stores large quantities of energy as sugar in its stalk while producing reasonable grain yields. This sugar can be fermented into ethanol more cheaply than from molasses and with even greater energy savings compared to maize grain.

As in bioethanol, raw materials are in short supply for biodiesel in wasteland areas. ICRISAT is working with a private company on the possibility of using sweet sorghum, along with two other dryland species that can contribute to better biodiesel production: *Pongamia pinnata*, a leguminous tree adapted to wetter wastelands with problem soils; and *Jatropha curcas*, a more drought-tolerant shrub adapted to well-drained wastelands. Both produce fruits containing about 35% oil suitable for bio-diesel.

Find out more about ICRISAT at http://www.icrisat.org.

*** Africa ***

PHILANTHROPIST DONATES TO MILLENNIUM ALLIANCE

George Soros announced recently that he has pledged $50 million to help the Millennium Promise Alliance. Soros is a financier, as well as chairman of the Open Society Institute, a private operating and grant-making foundation.

The gift will go to support Millennium Villages, which are composed of roughly 5,000 people, and which take a private investment of $300,000 a year, for five years to complete the project. Funds are used to provide practical and proven interventions aimed at meeting the Millennium Development Goals like bed nets to prevent malaria; fertilizers to replenish depleted soils; school lunches for malnourished children; treatment for people living with HIV/AIDS; and other tried-and-true approaches to controlling the symptoms and effects of extreme poverty. Millennium Promise is working in more than 75 villages in ten different countries: Ethiopia, Ghana, Kenya, Malawi, Mali, Nigeria, Rwanda, Senegal, Tanzania and Uganda.

Read the complete press release at http://www.millenniumpromise.org/site/PageServer?pagename=about_supporters.

JATROPHA SHIPMENT ARRIVES IN NAMIBIA

According to Namibia's New Era, the first large consignment of Jatropha seeds have arrived in the country from India. After having looked at other alternative fuel sources such as plant oils from sunflower, canola, soy, or cotton, local experts have determined that oil from *Jatropha carcus* is the most viable option for Namibia. Jatropha is well suited to the country's climate, as it thrives under hot conditions and is able to survive long periods of drought.

With reports from http://www.newera.com.na/. Read the complete article at http://allafrica.com/stories/200609250081.html.

*** The Americas ***

A DIFFERENT BREED OF TOOLKIT – THE SOYBEAN BREEDER'S TOOLBOX

Scientists at the Agricultural Research Service (ARS) recently unveiled an online database, which they hope soybean breeders, producers, and scientists will use in their research. "The Soybean Breeder's Toolbox" makes it easier to compare current soybean genetic maps and will allow study of maps from other legume species when they become available. Molecular markers on genetic map, and diseases and insects that attack soybean plants are only a few of the topics that can be sourced from the database. Also in the online toolkit are data associated with soybean quantitative traits, such as resistance of different soybean genotypes to biological and environmental stresses. The toolbox's linkage with other databases will also make it possible to combine information from other databases into a single report. The website

is the new interface to SoyBase, a pioneering, ARS-supported plant-genetic database established in 1993.

Access the database at http://soybase.org/. View the complete press release at http://www.ars.usda.gov/is/pr/2006/060925.htm.

*** Asia ***

NEED TO BUILD CONSUMERS' CONFIDENCE IN GM CROPS, SAYS INDIAN AGRIC MINISTER

Sharad Pawar, India's Agriculture Minister, stressed the need for creating confidence among consumers on the safety of genetically modified foods during an inauguration speech for the international conference on “Recent scientific developments in agricultural bio-technology: sharing experiences and knowledge”. The event was organized by the International Life Sciences Institute-India (ILSI-India) and co-sponsored by Ministry of Agriculture and Cooperation, Government of India in New Delhi.

Expressing concern over the decreasing availability of water for agricultural purposes, the Minister underlined the need for developing transgenic crops tolerant to drought in order to extend the area under cultivation and consequently increase total food production. India has taken up an ambitious agricultural biotechnology program to ensure food security, and is among the 21 countries in terms of acreage under GM crops. Many transgenic crops including eggplant, rice, tomato, potato and pigeon pea, are currently being developed.

For more detailed information visit: http://pib.nic.in/release/release.asp?relid=21040, or contact: b.choudhary@isaaa.org

ASIA FARMERS DEVELOPING BETTER MUNGBEAN

With prices of meat higher in developing countries, especially in Asia, consumers will be turning more and more to alternative sources of protein. Legumes are a good source of such nutrients, and mungbean, in particular, has 24% easily digestible protein, high iron content, and significant amounts of calcium, phosphorus, and some essential vitamins.

Mungbean is also abundant in many Asian countries. Scientists in South Asia, in a project supported by the World Vegetable Center, looked at how mungbean production could be improved in the region, not only to provide cheap protein but also to raise the income of farmers. After three years of field trials and laboratory work, Bangladesh and India were able to develop and release improved cultivars with high yields of 1.5 tonnes per hectare, maturing evenly in only 60-65 days. Other varietal features developed were large shiny seeds and resistance to thrips and mungbean yellow mosaic virus.

Scientists now aim to work with farmers to produce mungbean varieties with better drought tolerance for use in marginal and semi-arid situations. Also in the offing are research projects

on management of insects such as pod borer, white fly, and weevils; and the control of diseases such as leaf spot and powdery mildew.

Read the complete feature at http://www.avrdc.org/news/06Mungbean_fastfood.html.

*** Europe ***

EC RESPONDS TO GALILEO REQUEST ON GM IN ITALY

The European Commission (EC) will take into account the request of the Galileo scientific organization as it looks at Italy's current legal framework regarding the planting of genetically modified (GM) crops. This was the EC's response to a recent letter by the organization that expressed concerns on the progress of GM research because of decrees in Italy. The letter had asked the EC to intervene to allow researchers to resume work within rules in collaboration with other European Union (EU) researchers

The EC, the letter said, is aware of Italy's legal framework, and that discussions on co-existence are ongoing. The EC has also opened a formal investigation on the ban on GM cultivation in the country, but since the ban has been declared by the Italian constitutional court, the investigation has been closed.

For more information, contact Dr. Bruno Mezzetti at b.mezzetti@univpm.it.

ACROSS THE CHANNEL COOPERATION FOR AGRIC RESEARCH

The National Institute for Agricultural Research of France (INRA) and the Biotechnology and Biological Sciences Research Council (BBSRC) of the United Kingdom have launched this month three joint research projects. These projects, to receive a total grant of 4 million euros, are the first to be funded as part of an initiative aimed at encouraging bilateral collaboration on research on four key crops: wheat, rice, barley and potatoes. The objective of the program is to transfer the knowledge derived from the study of model plants, such as the small weed Arabidopsis, to plants important for agriculture.

"These collaborative programs are crucial to deepen out understanding in the area of agricultural research. Climate change and the current trends in food demand and in emerging diseases render the collaboration with international partners more crucial than ever, in order to optimize the exchange of information and the use of the resources", said INRA and BBSRC presidents Julia Goodfellow and Marion Guillou in a joint statement.

Read the complete press release at:
http://www.inra.fr/presse/projets_recherche_communs_inra_bbsrc

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RESEARCH

OPINION ARTICLE EXPLORES RICE GENOME SEQUENCE DISCREPANCIES

When the complete sequence of the rice genome was validated and released in 2002, debates arose as to whether the whole-genome shotgun method used by the Beijing Genomics Institute and the Syngenta Corporation was better than the map-based sequence published by the International Rice Genome Sequencing Project (IRGSP). Because there were some discrepancies, doubts arose as to which sequence was valid. The validity of the entire sequence is important, as it will aid in future rice improvement programs.

In an opinion article in a recent issue of Trends in Plant Science, Jun Yu and colleagues write about “Comparing the whole-genome-shotgun and map-based sequences of the rice genome.” They argue that the most serious differences between the sequences are mostly found in the large transposable elements in intergenic regions. Differences in published gene counts and polymorphism rates are similarly resolved by considering how transposable elements affect the sequence analysis, the authors write.

A similar argument arose after the complete sequence of the human genome was released, but the researchers say that different species have to be treated differently. Since there are some issues with plant genomes, such as the many intergenic repeats common to cereal crops and changes associated with breeding, these issues have to be factored into the debate. Other issues include differing quality standards amongst laboratories working on the sequences. The researchers also employ statistics to compare data between the methods, and contest that once the mentioned issues are factored in, there is “remarkable agreement in the sequences produced by these two methods.”

Subscribers to the journal can read the complete article at http://dx.doi.org/10.1016/j.tplants.2006.06.005.

CHICKPEA GENE MAKES TOBACCO STRESS TOLERANT

The APETALA2/ethylene-responsive factor (ERF) family of proteins regulates various processes of development and metabolism in plants. Proteins of this family also allow plants to react to various hormones, which, in turn, are produced in response to environmental cues, such as temperature and salinity stresses. This may imply that *APETALA2* genes can help plants cope with stress. Rakesh K. Shukla and colleagues of the National Center for Plant Genome Research, India found out that “Expression of *CAP2*, an *APETALA2*-Family Transcription Factor from Chickpea, Enhances Growth and Tolerance to Dehydration and Salt Stress in Transgenic Tobacco.”

In an article published in a recent issue of Plant Physiology, the researchers characterized, *CAP2*, a gene from chickpea, which was found to encode a novel AP2-family protein. They analyzed the activity of the gene, characterized the protein; and then expressed the gene in tobacco.

Through their work, researchers found that: 1) the CAP2 protein bound specifically to a dehydration-responsive element in a gel-shift assay, which shows that it was directly involved in plant stress response; 2) levels of *CAP2* mRNA increase by dehydration and by treatment with sodium chloride, abscisic acid, and auxin, but not by treatment with low temperature, salicylic acid, and jasmonic acid; 3) When expressed tobacco, transgenic plants had larger leaves and more lateral roots; and 4) CAP2 transgenic tobacco shows greater tolerance to dehydration and salt stress than wild-type plants. Taken together, the results show that CAP2 can control both plant growth and development, and allow plants to respond to dehydration and salt stress.

Subscribers to Plant Physiology can read the complete article at http://www.plantphysiol.org/cgi/reprint/142/1/113. Other readers can take a look at the abstract at http://www.plantphysiol.org/cgi/content/abstract/142/1/113.

FROM THE BICS

ISAAA & KMA HOLD WORKSHOP FOR KANNADA MEDIA

ISAAA along with the Karnataka Media Academy (KMA) recently organized a one-day media workshop for Kannada and English media in Bangalore. The entire workshop was conducted in both the Kannada and English language.



Mr. Ramachandra Gowda, Hon. Min. for Science and Technology, Gov't of Karnataka, Bangalore; **Dr. C. D. Mayee**, Chairman, Agricultural Scientists Recruitment Board, ICAR, New Delhi; **Mr. Bhagirath Choudhary**, National Coordinator, ISAAA, New Delhi; **Dr. Anup K. Pujari**, Principal Secretary, IT, BT and Science and Technology, Gov't of Karnataka, Bangalore; **Mr. V. N. Subba Rao**, Chairman, Karnataka Media Academy, Bangalore; **Dr. T. M. Manjunath**, Workshop Coordinator and Consultant - AgriBiotech, Bangalore



Mr. Bhagirath Choudhary, National Coordinator, ISAAA, New Delhi; **Dr. T. K. S. Gowda,** Director (PG Studies), University of Agricultural Sciences, Bangalore; **Prof. C. Kameswara Rao**, Secretary, Foundation for Biotechnology Awareness and Education (FBAE), Bangalore; **Dr. T. M. Manjunath,** Workshop Coordinator & Consultant - AgriBiotech, Bangalore; **Dr. S. Shantharam,** Biologistics International, USA; **Dr. M. Udaya Kumar,** Head (Crop Physiology), University of Agricultural Sciences, Bangalore; **Mr. V. N. Subba Rao,** Chairman, Karnataka Media Academy, Bangalore; **Dr. S.R. Rao**, Advisor, Dept of Biotechnology, New Delhi

Sh. Ramachandra Gowda, Minister for Science & Technology, Government of Karnataka inaugurated the workshop. Others dignitaries in the workshop included Dr. CD Mayee, Chairman of the Agricultural Scientists Recruitment Board (ASRB); Dr. Anup Pujari, Principal Secretary of IT,BT, and S&T of the Government of Karnataka; Sh. VN Subba Rao, Chairman of the Karnataka Media Academy; Dr. SR Rao, Advisor-Dept of Biotechnology (DBT) and Dr. TM Manjunath.

More than 90 journalists participated in the inaugural session, and 55 journalists from both Kannada and English media attended the workshop throughout the day. The registered participants included 35 Kannada writing reporters from the field across various parts of Karnataka, and 20 Kannada and English writing journalists from Bangalore.

For more information, contact Bhagirath Choudhary of the ISAAA South Asia Office at b.choudhary@isaaa.org.

ANNOUNCEMENTS

INRA CALLS FOR PROPOSALS

The (INRA) is launching a call for proposals of research projects for scientists who work in the areas of food, environment, and agriculture in relation with INRA teams. The selection of the best projects will be based on 2 criteria: excellence and scientific originality. The criteria will focus on the excellence of the host team at INRA; the excellence of the candidate, without any restriction on nationality; the quality of the scientific environment; and of the conditions within the host team. Regarding both the host team and the candidate, the level of publications and the future of the doctoral students involved in the project will enable to define these criteria. The innovative nature and the originality of the proposed work will also be studied. The deadline for submitting applications is October 31st, 2006. For further information and the application form, contact vissac@paris.inra.fr.

FAO TO CONDUCT WORKSHOPS ON AGRI

A workshop on “Enabling Environments for Agribusiness and Agro-industry Development in Eastern Europe and Central Asia will be held from the 30th of November to the 2nd of December, 2006 in Budapest, Hungary. Organized by the Food and Agricultural Organization of the United Nations, the workshop aims to identify, characterize, and assess the set of policies, institutions, and support services that constitute the enabling environment for agribusiness and agroindustrial development in the region; and identify lessons and best practices from induced changes in policies, institutions, and support services that have led to increased investments and improved competitive performance in specific agribusiness and agro-industry sub-sectors. Read the complete release at http://www.fao.ORG/regional/SEUR/EE_CA.pdf.

MONSANTO ARGENTINA OFFERS FREE ONLINE BIOTECH COURSES

Monsanto Argentina is offering three online electronic biotechnology courses free of charge open to anyone wishing to know more about biotechnology. The first course, Basic Biotechnology, offers an overview of biotechnology today, explains terms and definitions, and describes the regulation and requirements necessary for the commercialization of biotech crops. Two additional courses, Bt Maize and herbicide resistant Maize (RR Maize), are open to those who have completed the basic course. The courses are in Spanish and have an average duration of one month.

Visit: http://www.monsanto.com.ar/h/cursos.php for more information.

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