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News

GLOBAL

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UPWARD TREND IN ASIAN PUBLICATIONS ON TRANSGENIC TECHNOLOGY

There are an increasing number of publications from Asian scientists on transgenic technology, reports Philippe Vain of the John Innes Centre in the United Kingdom. He studied global trends in the development of the technology using literature statistics obtained from a set of 4,545 bibliographic records from the past 30 years.

Vain stated that the number of publications focusing on the development of transgenic technology slowed down from 1980 to mid-1990. Except in Asia, there is an evident stagnation or regression in the volume of publications particularly in Western Europe and North America. The researcher cautions that the slowdown likely corresponds to overall technological weakening that will probably negatively affect plant transgenic science as a whole in most countries.

The bibliographic records were analyzed with respect to economic zones, countries, plant species, and DNA delivery

method. Among the plants, tobacco was found to be the most often used model for the analysis of transgene integration and stability. It is followed by rice, wheat, maize and *Arabidopsis*. Among the DNA delivery methods, *Agrobacterium* remains the favored method for the transformation of plants.

The paper published by the Plant Biotechnology Journal, can be accessed by subscribers at <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-7652.2006.00225.x>.

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DUPONT TO INCREASE INVESTMENT FOR SEED PRODUCT DEVELOPMENT

Dupont will execute a \$100 million reinvestment plan to increase its speed-to-market for new seed products. "The global demand for agricultural crops is very strong," said William S. Niebur, vice president of DuPont Crop Genetics Research and Development. "We have the science to help farmers and others across the value chain meet the growing demand".

The research investment is the largest year-to-year increase in the 81-year history of Pioneer, a unit of the Dupont Agriculture and Nutrition platform. Aside from increasing investment in plant genetics, biotechnology and other high-value growth opportunities, it will expand research and development efforts at 67 of its research centers worldwide.

Read the complete press release at <http://www.pioneer.com/web/site/portal/menuitem.42d3be822101324084a62fe5d10093a0/>

AFRICA

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ADOPT BIOTECH CROPS TO STEM FOOD CRISIS -KENYAN TRADE MINISTER

Kenya's Trade Minister Mukisa Kituyi has urged the country to embrace biotech crops to help boost food production. This will cushion the impact of the increased demand for food crops such as maize, now used in manufacturing biofuels.

In a speech during the visit of the US trade mission to Kenya, the Minister said over the next five years, the world is likely to give greater attention to balancing food security and biofuels production. He warned that the relief maize from the US to Kenya may soon be unavailable as the demand for biofuels increases.

The US trade official, Mike Yost, said the demand for biofuels in America, Europe and Asia has created opportunities that countries in Africa should exploit. One way is through the use of agricultural technologies that will help obtain biotech crops that are better yielding.

Kenya is yet to commercialize biotech crops, although the government has already approved a national policy for biotechnology development and a national biosafety bill.

For more information contact Daniel Otunge of ISAAA *Afri*Center at d.otunge@cgiar.org.

AMERICAS

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WHY NOT ALL CORN IN 2007?

The projected increase in the demand for corn in the United States makes more American farmers eager to plant corn again after a previous corn crop. An analysis done by the FarmDoc project at the University of Illinois indicates that there are many risks on growing corn continuously.

Among the risks of the all corn strategy include possible lower returns due to different price and yield scenarios. Alternating soybean with corn may allow farmers to derive returns on soybeans especially when it exceeds \$9.61 per bushel and/or yields goes above 66 bushels per acre. Lower returns on continuously growing corn can also happen when corn yields fall below 146 bushels per acre, or corn prices drops below \$3.27 per bushel.

When more corn is planted, several other concerns also arise. These include problems related to pests and diseases where a larger area is affected, and more lengthy harvesting time which may result to yield losses. There is also evidence that higher profitability can be obtained for corn-after-soybeans. This will not be realized in 2008 when corn is planted after corn this year.

The complete report is at http://www.farmdoc.uiuc.edu/manage/newsletters/fefo07_03/fefo07_03.html

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USDA EXTENDS PUBLIC COMMENT PERIOD ON DEREGULATION OF GE CORN

The United States Department of Agriculture Animal and Plant Health Services (USDA-APHIS) has extended until March 12 the public comment period for a petition to deregulate MIR604, a corn genetically engineered (GE) to be resistant to corn rootworm insects. The petition for deregulation was submitted by Syngenta Seeds, Inc., in accordance with APHIS' regulations concerning the introduction of GE organisms and products. APHIS prepared a draft environmental assessment to determine whether deregulating the corn could have a significant impact on the environment.

Read the complete news release at <http://www.aphis.usda.gov/newsroom/content/2007/02/extgecorn.shtml>.

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FARMS PRODUCE BIOFUELS FROM TROPICAL ENERGY CROPS

Imagine a small-scale farmer using coffee pulp to produce fuel. This is a near possibility, says the International Center for Tropical Agriculture (CIAT), which is conducting a pilot-scale project in several areas of Colombia that mainly aims to develop low-cost innovative systems to produce bioethanol, biodiesel, and pure vegetable oil.

The project team leader, CIAT researcher John Loke, believes that it is possible to produce biofuels by tapping numerous energy crops of the tropics, such as physic nut and castor bean. Small-scale producers will be involved such that they produce raw alcohol as input to refineries that produce high-quality fuel alcohol. The Federation of Plantain Producers of Colombia (Fedeplátano), which takes part in this project, has already initiated the pre-market production of bioethanol based on coffee wastes in the country's coffee-growing region.

Read the news article at http://www.ciat.cgiar.org/newsroom/release_23.htm.

MONSANTO PROVIDES FREE ACCESS TO SOYBEAN PEST MARKER TECHNOLOGY

Academic researchers and public institutions who request access to Monsanto's soybean cyst nematode marker technology will now be given a royalty-free license, according to the company. Scientists and soybean breeders are expected to use this technology to effectively develop new soybean varieties aimed at resisting the yield-robbing cyst nematode.

The United States Department of Agriculture reported that soybean cyst nematode has threatened the U.S. crop since the 1950s, reducing returns to soybean producers by \$500 million each year and reducing yields by as much as 75 percent.

"During the past seven years we have been investigating ways to identify cyst nematode resistant traits in soybeans using genetic markers. By sharing what we know, researchers around the world will be able to more accurately identify resistant soybeans and breed for them," said Bob Reiter, Vice President of Breeding Technology for Monsanto.

The press release is available at <http://monsanto.mediaroom.com/index.php?s=43&item=458>.

UNIQUE TOMATOES TOPS IN DISEASE-FIGHTING ANTIOXIDANTS [\[Top\]](#)

The distinctive red color of tomatoes is due to lycopene, a member of the carotenoids family, which is thought to have a number of health benefits, such as reducing the risk of developing cancer, cardiovascular disease and macular degeneration. A new study, however, suggests that a special variety of orange-colored tomatoes provide a different form of lycopene, *cis*-lycopene, which our bodies may more readily use. Researchers at the Ohio State University (OSU) found that eating spaghetti covered in sauce made from these orange tomatoes, called Tangerine tomatoes, caused a noticeable boost in *cis*-lycopene in participants' blood.

"While red tomatoes contain far more lycopene than orange tomatoes, most of it is in a form that the body doesn't absorb well," said Steven Schwartz, the study's lead author and a professor of food science and technology at OSU. Lycopene absorption from the tangerine tomatoes was 2.5 times higher than that absorbed from the beta carotene-rich tomatoes. While these special tomatoes were grown just for this study, the researchers have pre-commercial lines of both varieties available.

The news release is available at <http://researchnews.osu.edu/archive/goodtom.htm>.

AMERICAN PEANUT COUNCIL OKS GM PEANUT RESEARCH

The Board of Directors of the American Peanut Council, the trade association representing all segments of the United States (US) peanut industry, recommended that the US peanut industry develop peanut varieties through genetic engineering. No GM peanut varieties are currently available in the US. The Board cautioned however, that research in this area should proceed with due diligence. The Peanut Foundation is the coordinating body for the project.

The Council says that bioengineering can lead to peanuts that yield more oil for biofuel production, are more drought resistant, grow more efficiently and have built-in herbicide and pest resistance. Many of these traits have already been engineered into major crops such as soybeans, cotton, corn, and canola. Consumers may expect peanuts with

enhanced flavor and nutritional benefits, and possibly even nuts that are less likely to trigger allergic reactions.

For further information, contact the American Peanut Council at info@peanutsusa.com or read its press release at http://www.peanutsusa.com/index.cfm?fuseaction=NewsRelease.NewsReleaseDetail&news_release_id=270.

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\$25M GRANT TO DANFORTH CENTER FOR RENEWABLE FUELS INSTITUTE

The Donald Danforth Plant Science Center in Missouri, USA is the recipient of a \$25 million grant to set up the Enterprise Rent-A-Car Institute for Renewable Fuels. The grant was given by Jack and Susan Taylor of the Taylor family that founded the company which carries the name of the Institute.

The Enterprise Rent-A-Car Institute, according to the Danforth Center, will expand scientific expertise to speed up development of plant-based renewable biofuels. The grant complements Enterprise's pledge to underwrite the planting of 50 million trees in national forests over the next 50 years.

Read more on the grant at <http://www.danforthcenter.org/newsmedia/NewsDetail.asp?nid=127>

ASIA AND THE PACIFIC

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GM SUGARCANE PRODUCES TWO-FOLD SUGAR CONTENT

Scientists from the University of Queensland in Brisbane, Australia recently developed transgenic lines of sugarcane with increased total sugar content. The transgenic lines called 'Sugarbooster', produce the high-value sugar isomaltulose (IM) through the introduction of vacuole-targeted sucrose isomerase (SI) gene. The IM accumulates in storage tissues of sugarcane without any decrease in stored sucrose concentration. This resulted in up to two-fold increase in the total sugar yield in the harvested juice.

The transgenic sugarcane lines were found to be morphologically similar to non-transformed controls of the same sugarcane cultivar. However, delayed leaf senescence, increased photosynthetic activity, and enhanced sucrose transport were observed in the transgenics.

The abstract in the Plant Biotechnology Journal, with links to the complete paper for subscribers, can be accessed at <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-7652.2006.00224.x>

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POPPIES FOR PHARMA DEVELOPMENT

Poppies are famous for opium, a narcotic that contains the alkaloids morphine, codeine and thebaine. Morphine and codeine are used directly for pain control while thebaine is used as the starting point in the synthesis of other pharmaceuticals. Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) Plant Industry is studying poppies and its alkaloids for legal production of pharmaceuticals to boost the Tasmanian industry.

Researchers at CSIRO have already identified several genes whose activity can be increased to elevate the morphine, codeine and thebaine contents. In addition other genes have been silenced to produce poppies accumulating alternative products. The opium poppy also produces a good yield of seed with high oil content. CSIRO is investigating the potential of opium-less mutants being used as a source of biodiesel or a platform for plant-based production of valuable industrial feedstocks.

Read the article at <http://www.csiro.au/science/psi3.html>.

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ICRISAT REINTRODUCES PIGEONPEA IN CHINA

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has reintroduced the cultivation of the perennial legume pigeonpea in China. From only 50 hectares in 1999 in two provinces, cultivation has spread to 100,000 hectares in 12 provinces in 2006.

The partnership between ICRISAT and China has shown very encouraging results and the pigeonpea crop can be seen growing under diverse geographical conditions. This quality has been used to a great extent in southern China, where more than 90 percent of the area is hilly.

Dr KB Saxena, ICRISAT's principal pigeonpea breeder, says that the Institute's improved varieties have restarted cultivation which stopped in recent decades. Interestingly, Chinese farmers have also found diverse uses for the crop - prevention of soil erosion, crop diversification, fodder for cattle, feed for fishes, as a substrate for mushroom cultivation and lac production, as a vegetable, and for the preparation of food products.

For further information, contact Dr KB Saxena at k.saxena@cgiar.org.

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INDONESIAN AWARDED UNESCO-L'OREAL FELLOWSHIP

Fenny Martha Dwivany, a lecturer and scientist of the Bandung Institute of Technology (ITB) in Indonesia was granted a "For Women in Science UNESCO-L'oreal Fellowship to enable her to do research on molecular biology.

Dwivany's research entitled "Construction of Binary Vector ACS Regulates ACC Sintase Gene as an Alternative to Control Ripening of Banana Fruit variety Ambon" aims to delay the ripening process of banana fruit and other climacteric fruits through genetic manipulation.

The complete press release in Bahasa Indonesia is at <http://www.tempointeraktif.com/hg/nasional/2007/02/22/brk,20070222-94007,id.html>.

EUROPE

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BIOTECH ORNAMENTALS TO BLOOM

The ornamental market will undergo substantial development in the coming decade with the development of transgenic ornamental plants, says the CEO of Ornamental Bioscience, a biotechnology company specializing in product development and marketing of such plants. The company is working on drought, cold and frost tolerance, and disease resistance in petunias, poinsettias, New Guinea impatiens and geraniums. Based in Stuttgart, Germany, the company is a joint venture between Germany-based Selecta Klemm and US-based Mendel Biotechnology.

Visit Ornamental Bioscience at <http://www.ornamental-bioscience.com/start.htm>

Read the press release from Mendel at <http://www.mendelbio.com/news/#p>

Research

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GENETIC STUDIES REVEAL QTL FOR ONION PUNGENCY

Candidate genes for onion pungency have been reportedly identified by researchers in New Zealand and the United States. The pungent flavor and aroma of onions have long been attributed to organosulfur compounds, but this is the first report of the identification of genomic regions affecting the trait that have no pleiotropic effects on bulb solids content.

The group of John McCallum analyzed progenies from a cross between onion varieties 'W202A' and 'Texas Grano 438'. The researchers have identified a major quantitative trait locus (QTL) within two closely linked sulfur assimilation genes, named ferredoxin-sulfate reductase (SiR) and plastidic ATP sulfurylase (ATPS). These genes were found to control 30-50% of genetic variation in the storage and sweet onion pedigrees that they have analyzed.

McCallum and colleagues stated that the association of the two genes with pungency suggests that mutations in one of these genes may influence the observed variation. They further recommend that molecular markers within these pungency loci may provide a practical means to select for onions with lower pungency.

The abstract, with links to the full paper for subscribers, can be accessed at <http://www.springerlink.com/content/u13n67u3037531uk/>.

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MOLECULAR TOOLS FOR HARNESSING CEREAL DIVERSITY

Cereal species, such as wheat, maize and rice, are important to support the burgeoning world population who depend on these species for food. Starting from the Green Revolution in the 1960s, cereal breeding programs have continuously maintained rates of increased productivity at about 1 to 3% per annum as a result of genetic gain. The development of varieties have in the past years been helped by marker-assisted selection and related marker-based strategies.

Researchers at the University of Adelaide in Australia believe that cereal improvement programs could also benefit much from genomics technologies. Their review published by the journal Trends in Plant Science presented several molecular tools for gene discovery and techniques for capturing diversity that can be used in cereal breeding programs. The genomics tools, which include allele mining, transformation, and Targeted Induced Local Lesions In Genomes (TILLING) techniques will further assist plant breeders to develop better crops in a shorter period of time, said the Australian researchers.

Another useful development for cereal researchers are physical maps. Comparative genetics allowed researchers to

unravel previously unknown genic regions in their cereal or grass of choice. It also allowed the identification of several agriculturally important genes by determining macro level co-linearity between cereal species.

Subscribers can be access the complete review paper at <http://dx.doi.org/10.1016/j.tplants.2006.12.002>.

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BT TOXIN VARIABILITY IN GM COTTON

GM cotton has been one of the most rapidly adopted transgenic crops. It is very effective in controlling target pests, and the benefits to the consumer and the environment have been well reviewed. There has been no report of product failures, but there are observations indicating that the efficacy of the transgenic to target lepidopteran pests may not be consistent during the growing season, said H. Dong and W. Li of the Cotton Research Center in China.

The researchers reviewed that the efficacy against target pests depends upon the expression of the *Cry* genes inserted in the cotton genome. The *Cry* genes may produce varying levels of the insecticidal Bt toxin depending on the plant age, plant structure or under certain environmental stresses - such as high temperature, salinity, or water and nitrogen deficiency. In instances where reduced insecticidal protein is observed, it may have been caused either by post translational regulation or due to methylation of the gene promoter.

Though all current Bt cotton cultivars are still effective in controlling target pests, Dong and Li suggest that developing new varieties with more powerful resistance, applying certain plant growth regulators, enhancing intra-plant defensive capability, and maintenance of general health of the transgenic crop are important in realizing the full potential of the crop.

The article was published by the Journal of Agronomy and Crop Science. Its abstract, with links to the full paper, can be accessed by subscribers at <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1439-037X.2006.00240.x>.

Announcements

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BBSRC CALL FOR EXPRESSIONS OF INTEREST FOR AWARDS IN BIOENERGY RESEARCH

The British Biological Science Research Center (BBSRC) invites expressions of interest from universities, BBSRC institutes and eligible independent research organizations to establish activities intended to develop UK research capacity and promote high quality end-user relevant research in the area of bioenergy. Activity supported under this initiative will be expected to take account of, be complementary to, and where appropriate integrated with other ongoing UK activity in the bioenergy area in the public and private sectors.

For more information, visit <http://www.bbsrc.ac.uk/science/initiatives/bioenergy.html>.

9th ASIAN BIOETHICS CONFERENCE

First held in 1995, the Asian Bioethics Conference serves as an important venue for scholars and professionals from a large variety of disciplines to meet and share their insights on topics related to bioethics and to those disciplines that deal with science, society and culture. This year's 9th Asian Bioethics Conference will be held on 19-23 March, 2007 in Bangkok, Thailand. The theme for the conference will be "Biotechnology, Culture, and Human Values in Asia and

Beyond". For more information please visit <http://www.stc.arts.chula.ac.th/ABC2007>.

CONGRESS ON MOLECULAR MACHINES

The Federation of European Biochemical Societies (FEBS) constituent society in Austria, the Austrian Society for Biochemistry and Molecular Biology (ÖGBM), will hold its FEBS2007 Congress on 7-12 July, 2007 in Vienna, Austria. The major theme of congress is "Molecular Machines and their Dynamics in Fundamental Cellular Functions". FEBS2007 will highlight interdisciplinary science, and will enable participants to be aware of the latest achievements in the fields of biochemistry, molecular and cellular biology. More info at <http://www.febs2007.org>.

4th INTERNATIONAL RICE BLAST CONFERENCE

The 4th International Rice Blast Conference is to be held on 9-14 October, 2007 in Hunan, China. Rice blast, caused by the fungal pathogen *Magnaporthe grisea*, is one of the most destructive rice diseases worldwide. The scheduled conference will review the recent progress and discuss future research directions aiming at better control of this rice disease. More information at <http://www.4thirbc.org>.

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Document Reminders

TWO NEW UNEP-GEF BIOSAFETY PUBLICATIONS ONLINE

The United Nations Environment Programme's Global Environment Facility (UNEP-GEF) Biosafety Unit has just released two new publications online. The first, "A comparative analysis of experiences and lessons from the UNEP-GEF biosafety projects", is a study looking at the 124 countries that participated in the UNEP-GEF Project for Development of National Biosafety Frameworks (NBF). The 49-page study focuses on a comparative analysis of their experiences in order to draw out lessons and best practices applicable to other global initiatives for implementation of multilateral environmental agreements. The second publication is a 4-page brief entitled "Building biosafety capacity: The role of UNEP and the Biosafety Unit".

The publications are available at http://www.unep.ch/biosafety/development/devdocuments/UNEPGEFBiosafety_comp_analysisDec2006.pdf and http://www.unep.ch/biosafety/development/devdocuments/UNEPGEFBiosafety_BrochureDec2006.pdf. For more information, contact biosafety@unep.ch.

OIE AD HOC GROUP ON BIOTECHNOLOGY REPORT

The report of the meeting of the World Organization for Animal Health (OIE) Biological Standards Commission (BSC) that took place on 13-15 September 2006 is now available on the web. The role of the BSC is to use current scientific information to study problems of epidemiology and the prevention and control of animal diseases, to develop and revise OIE's international standards and to address scientific and technical issues raised by Member Countries. The reports of Ad Hoc Groups working under the auspices of the BSC, including one on biotechnology, are included in the BSC meeting report.

Read the report at http://www.oie.int/download/SC/2006/A_BSC_2006S.pdf or contact scientific.dept@oie.int for more information.

FIRST AFRICA RICE CONGRESS PRESENTATIONS

Presentations from the first Africa Rice Congress held in Tanzania from 31 July to 4 August 2006 are now available online. Papers at the congress considered the issues of integrated pest management; socio-economics; natural resource management; technology transfer and rice breeding and crop improvement (including genomics and use of genetic markers).

The presentations are available at <http://www.warda.cgiar.org/africa-rice-congress/presentations.html> or contact warda@cgiar.org for more information.

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