

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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NEWS

ANNUAL REVIEW SHOWS GM PROGRESS

It has been a decade since biotech crops were first commercialized, and since then, the global area planted to them has soared by more than fifty-fold, from 1.7 million hectares in six countries, to 90 million hectares in 21 countries in 2005. This is according to a report released by Dr. Clive James, chairman and founder of the International Service for the Acquisition of Agri-biotech Applications (ISAAA).

Also in 2005, four new countries and a quarter million more farmers planted biotech crops. The year also marked a significant milestone as the billionth cumulative acre, or 400 millionth hectare, of biotech crops was planted. Other indicators of continuing growth of the technology are China's expected near-term adoption of biotech rice; more nutritional biotech food and feed; and the anticipated introduction of novel crop products used as renewable resources for more sustainable and affordable production of biofuels.

Fourteen of the 21 countries growing biotech crops achieved "mega-country" status by planting 50,000 hectares or more in 2005. These countries include the United States, Argentina, Brazil, Canada, China, Paraguay, India, South Africa, Uruguay, Australia, Mexico, Romania, the Philippines, and Spain.

The Executive Summary and Press Release are available in languages other than English, such as French, Spanish, Chinese, Portuguese, Vietnamese, Arabic, Bangla, Hindi, Japanese, Bahasa Indonesia, Thai, Swahili, and Afrikaans. Visit <http://www.isaaa.org> to download these documents.

ETHICS CODE FOR SCIENTISTS PROPOSED

"Rigor, Respect and Responsibility: A Universal Ethical Code for Scientists" is the product of a small working group in Britain, which had been convened to consider the issues around developing a universal ethical code of conduct for scientists. Recently, the same country's Council for Science and Technology (CST) wrote out widely across universities, professional bodies, research funders, industry bodies, schools and colleges, and trade unions, in order to seek feedback on the proposed code.

Respondents remarked, among others, that 1) The code might be a catalyst for a more in-depth consideration of the issues rather than the management of research ethics; 2) As an educational tool, the code may be effective in introducing future scientists to ethical concerns; and 3) Occupations in science, or that use science, are wide ranging, as are the organizations that employ scientists, so that for the Code to be universal it must be applicable to all scientists wherever they work.

The Universal Ethical Code of Conduct for scientists may be launched early this year in time for Britain's National Science Week.

The consultation letter is available at <http://www.cst.gov.uk/cst/business/files/ethical-code-letter.doc>, while the summary of responses may be downloaded at <http://www.cst.gov.uk/cst/reports/files/ethical-code/summaryofresponses.doc>. For more information, visit <http://www.cst.gov.uk/cst/reports/#11>.

EC ORDERS GREECE TO LIFT GM BAN

The European Commission (EC) has ordered Greece to lift its ban on genetically modified (GM) corn seeds. Greece has imposed the ban on the basis that the corn poses health risks. Their claims, however, have not been substantiated by scientific evidence or documentation, according to a report which the EC will soon release.

The EC has since authorized the planting and sale of 17 different strains of GM maize in the European Union (EU). The Greek government banned the seeds in 2005; however, under EU rules, the EC has the unilateral power to insist that Greece allow the GM seeds into its market.

From Joel Clark and William Echikson of Dow Jones Newswires. For more information, write to william.echikson@dowjones.com. Read the complete article at <http://www.marketwatch.com/news/story.asp?guid=%7B7B6FB0B1-D931-4A26-86D8-B0CB2E8459CB%7D>.

EC PROPOSES NEW POLICES FOR AGRI PRODUCTS

Europe boasts of a plethora of foods and food products, some of which are in competition with products which pass themselves off as the genuine article and take the same name – a rather unfair phenomenon common in the global market. The European market thus needs protection in order to encourage diverse agricultural production, protect product names from misuse and imitation, and help consumers by giving them information concerning the specific character of the products.

In 1992, the European Union (EU) created systems known as the Protected Designation of Origin (PDO), which describes foods which are produced, processed, and prepared in a given geographical area using recognized know-how; Protected Geographical Indication (PGI); and Traditional Speciality Guaranteed (TSG), which highlights traditional character, either in the composition or means of production of the food product.

The European Commission (EC) has recently adopted two proposals to streamline rules for all three systems. Since the registration process for the systems is complicated, the EC aims to make it more efficient by simplifying registration procedures and clarifying the roles of EU Member States. The EC also aims to make a well-defined single document which will contain all the necessary information for food producers and processors who wish to register their products.

Read more at http://europa.eu.int/comm/agriculture/foodqual/quali1_en.htm.
Read the complete article at
<http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/2&format=HTML&aged=0&language=EN&guiLanguage=en>.

EU COUNTRIES LACK INNOVATION

The European Innovation Scoreboard (EIS) notes that some European countries will take more than 50 years to catch up to the level of the United States innovation performance. These countries include Slovenia, Hungary, Portugal, Czech Republic, Lithuania, Latvia, Greece, Cyprus, and Malta, as well as Estonia, Spain, Bulgaria, Poland, Slovakia, Romania, and Turkey.

Leading countries in terms of performance are Switzerland, Finland, Sweden, Denmark, and Germany, while those categorized as having average performance are France, Luxembourg, Ireland, the UK, Netherlands, Belgium, Austria, Norway, Italy, and Iceland.

The EIS uses a list of indicators and methodology developed with the Commission's Joint Research Centre. One of the key developments is an input/output approach which considers education and investment in research and development and the resulting innovation returns, including business turnover from new products, employment in high tech sectors, and patents.

More on the 2005 European Innovation Scoreboard at
<http://trendchart.cordis.lu/scoreboards/scoreboard2005/index.cfm> or at
http://icadc.cordis.lu/fep-cgi/srchidadb?CALLER=EN_NEWS&ACTION=D&SESSION=&RCN=25039.

VIETNAM TO BUILD BIOTECH CENTER

The Vietnam News Agency reports that a 23-hectare (57-acre) biotechnology center will be built in Ho Chi Minh City, Vietnam to conduct research on and facilitate the application of genetic technology in the production of vaccines and pharma-biological products. Dr Duong Hoa Xo, the center's director, said that the facility will conduct basic and applied research into health, environmental, and agricultural biotechnology.

The center will receive and transfer, as well as provide, consulting services related to modern biotechnology to produce biological products, train human resources, and commercialize products related to biotechnology. The first phase of construction is scheduled to be completed in 2008, while the second phase will be finished by 2010.

For the complete article, visit <http://www.agbiotech.com.vn/en/?mnu=preview&key=388>. For more information, contact Le Hien of the Vietnam BIC at hienbiotechvn@gmail.com.

INDIA CONFERENCE HIGHLIGHTS BIOTECH

There is a need to improve the nutrient quality of the largely vegetarian diet of people in [Indian] villages, Minister for Agriculture K. Srinivasa Gowda said, as he inaugurated a three-day international conference on “Biotechnology Approaches for Alleviating Malnutrition.” The conference was held at the University of Agricultural Sciences, Bangalore, India.

The Minister exhorted scientists to raise the awareness of local farmers regarding the benefits of biotechnology which, he said, has the potential to reduce nutritional deficiencies among the poor. The adoption of biotechnology requires an understanding of benefits and potential risks by educators, policy makers, and farmers, he added.

Dr. V Prakash, Director of the Central Food Technological Research Institute, delivered the keynote address. Lectures were likewise given at the event, on topics which included the industry perspective on how modern biotechnology could enhance desired plant traits, designing crops for human health benefits, genetic engineering for increased shelf-life and quality improvement in tomato, better quality foods through transgenics, and partnerships to improve nutrition and food security in rural Sub-Saharan Africa.

Find out more about the conference at http://www.nutritionforall.org/downloads/programm_schedule.doc, and the program at <http://www.nutritionforall.org/index1.html>. Read the news article at <http://www.thehindu.com/2006/01/10/stories/2006011002630400.htm>.

RESEARCH

NEW TECHNIQUE DEVELOPED TO ANALYZE TOMATO GENES

Agrobacterium-mediated gene transfer has long been the tool of choice by scientists interested in the function of genes. The technique, however, takes a long time to perform. With this in mind, Diego Orases, of the Universidad Politécnica de Valencia, and colleagues carry out “Agroinjection of Tomato Fruits: A Tool for Rapid Functional Analysis of Transgenes Directly in Fruit.” Their article appears in the latest issue of Plant Physiology.

The researchers found that injection of *Agrobacterium* cultures through the fruit stylar apex of tomatoes resulted in complete fruit infiltration, and allowed tomato cells to express a foreign gene. The method, named fruit agroinjection, was efficient when used in heat-shock regulation of an *Arabidopsis* promoter, production of recombinant antibodies for molecular farming, and virus-induced gene silencing of the carotene biosynthesis pathway.

With the appropriate controls, researchers surmise that the technique will be a useful tool in fruit biology, as it may be helpful when assaying fruit gene constructs that may interfere with plant developmental processes. Subscribers to Plant Physiology can access the complete article at <http://www.plantphysiol.org/cgi/content/full/140/1/3>. Other readers may look at the abstract at <http://www.plantphysiol.org/cgi/content/abstract/140/1/3>.

WHEAT DEFENSE-RESPONSE GENES INVESTIGATED

Subhashree Subramanyam, of Purdue University, and colleagues track the “Expression of two wheat defense-response genes, Hfr-1 and Wci-1, under biotic and abiotic stresses.” Their work appears in the latest issue of the Journal of Plant Science.

Researchers used wheat plants to see how well either gene was expressed when plants were placed under biotic (infestation by Hessian fly or aphids, or viral infection) and abiotic (mechanical wounding, water deficit) stresses. The expression patterns were also determined for plants treated with signaling molecules such as salicylic acid, methyl jasmonate, and abscisic acid.

Researchers found, among others, that: 1) Hessian fly infestation, as well as treatment with salicylic acid, increased the expression of both Hfr-1 and Wci-1; 2) infestation by bird cherry-oat aphids, as well as treatment with methyl jasmonate and abscisic acid, resulted in greater expression of Wci-1; and 3) water-deficit stress increased expression of Hfr-1. All this shows that Wci-1 is employed by the plant as a general defense-response gene to counter both biotic and abiotic stresses.

Subscribers to the Journal of Plant Science may view the article at <http://dx.doi.org/10.1016/j.plantsci.2005.08.006>

UGT GENES STRENGTHEN TOMATO IMMUNE SYSTEM

Plant molecules called glycosyltransferases (UGTs) are produced during an infection, and are associated with cell death at the diseased site of the plant. This localization restricts the spread of the pathogen, and can serve to protect the rest of the plant from being destroyed. How these UGTs work, however, and which of them are most important in a plant's immune response, is not well studied.

By investigating several UGT genes and their expression patterns during plant infection, Mathilde Langlois-Meurinne and colleagues of Institut de Biotechnologie des Plantes, France find that "Pathogen-Responsive Expression of Glycosyltransferase Genes UGT73B3 and UGT73B5 Is Necessary for Resistance to *Pseudomonas syringae* pv tomato in Arabidopsis." Their work appears in the December issue of Plant Physiology.

The researchers report that the genes UGT73B3 and UGT73B5 "appear to be highly responsive to pathogens and therefore are good candidates for playing an effective role in defense responses." They further stress the importance of the UGTs themselves, and how they can contribute to understanding plant-pathogen interactions.

Subscribers to Plant Physiology can read the complete article at <http://www.plantphysiol.org/cgi/reprint/139/4/1890>. Other readers may access the abstract at <http://www.plantphysiol.org/cgi/content/abstract/139/4/1890>.

MODEL PROPOSED TO PREDICT TRANSGENE JUMP

Insect resistance (IR) genes introduced into plants protect the same crops from herbivory, or predation by insect pests. Some parties, however, are concerned that these genes may escape from the transgenic plant and into nature. Such a transgene "take over" is explored in "Risk Assessment for Insect Resistance Transgenes," an article by Colleen K. Kelly in the latest issue of the Information Systems for Biotechnology newsletter.

Kelly and colleagues come up with an analytical model targeting the interaction between IR-transformed and untransformed plants in the field. Their model looks at the risks posed by a particular transgene, and recognizes that "temporal fluctuations are the central character of the ecological dynamic: year to year variability in herbivory is the rule in both natural and agricultural systems."

The researchers found, among others, that co-existence and the ability of an IR transgene to escape depend on 1) the relative frequency of good and bad conditions (high and low herbivory), 2) the relative advantage the IR transgene

gives a transformed plant, and 3) the relative disadvantage, if any, the IR transgene carries with it.

Read more at <http://www.isb.vt.edu/news/2006/news06.Jan.htm>. For more information, contact Colleen K. Kelly at colleen.kelly@zoo.ox.ac.uk.

DOCUMENT REMINDERS

PLANT GENETIC RESOURCES DOCUMENTS UP FOR DOWNLOAD

The documents of the First Meeting of the Open-Ended Working Group on the Rules of Procedure and the Financial Rules of the Governing Body, Compliance, and the Funding Strategy are now available. The meeting, which took place in Rome, Italy in December 2005, generated several working documents, among them draft rules of procedure for the governing body of the International Treaty on Plant Genetic Resources for food and agriculture. Documents are available in English, Spanish, and French at <http://www.fao.org/ag/cgrfa/ico1.htm>.

IRENA RELEASES REPORT

A document released by Indicator Reporting on the Integration of Environmental Concerns into Agriculture Policy (IRENA) is now available for download. The indicator report is the product of a project created to develop a set of agri-environmental indicators for monitoring progress towards the integration of environmental concerns into the EU Common Agricultural Policy (CAP). The indicators help to summarize and illustrate complex agri-environment relationships, and to communicate them to those involved in the development and implementation of policies, as well as to the broader public. The whole report and the indicator fact sheets can be found on the IRENA website: <http://webpubs.eea.eu.int/content/irena/index.htm>.

ANNOUNCEMENTS

FORUM SLATED FOR FEB 2006

The 2006 Agricultural Outlook Forum will be held on February 16-17, 2006 at the Crystal Gateway Marriott Hotel, Arlington, Virginia, USA. Topics include bio-fuel & alternative energy, broadband commerce, demand for skilled workers, next generation of farmers, community-supported agriculture, and regional innovation. The forum offers networking opportunities for producers, agri-business, and government leaders. For more information, contact Stacey Harley at

sharley@oce.usda.gov. Media persons should contact Brenda Chapin at bchapin@oce.usda.gov. To get updates on the meeting, send your e-mail and postal address to agforum@oce.usda.gov.

FP7 PROMPTS WORKSHOP

A half-day EuropaBio workshop will be held on the 7th of March 2006 at the Conference Centre Varembeé, Geneva, Switzerland. The workshop aims to train CEOs and Business Development managers on how to prepare for the new European Union (EU) Research Framework programme known as Framework 7 (FP7). To register, visit <http://www.events.europabio.org/website.asp?langue=en&website=237&pass=europabioevents>.

BIOTECH, FINANCE FORUM TO BE HELD

A Biotech and Finance Forum will be held on the 8th of May 2006 in Munich, Germany. Supported by the European Commission and the Bavarian Ministry of Economic Affairs, Infrastructure, Transport, and Technology, the Forum aims to facilitate networking between Europe's private fast-growing biotech companies and investors and corporate contacts all looking for partnerships and possibilities of cooperation. For more information please contact Europe Unlimited, Anneli Prohaska at anneli@e-unlimited.com.

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:
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