



In This Issue

June 29, 2007

NEWS

Global

[American Food Scientist is 2007 World Food Prize Awardee](#)
[Pollen and Pollinators Vital to Crop Diversity](#)
[Future Biotech Products to Make a Difference](#)

Africa

[Farmers in Kenya Happy with Positive Selection](#)

Americas

[Modified Mushrooms for Biopharmaceuticals?](#)
[Ethanol Byproducts Now in Pellet Form](#)
[Pioneer Expands Seed Quality Facility in Tipton, Indiana](#)
[NSF to Fund Research on Biology and Society](#)

Asia and the Pacific

[Biotech Now a Big Industry in India](#)
[Syngenta to Collaborate With China on Biotech](#)
[Andhra Pradesh Plans to Control Bt Cotton Seed Prices](#)

Europe

[Study Says Swedes Can Benefit From GM Crops](#)
[EU Fails to Find Qualified Majority for Approvals of New GM Maize](#)
[EU Faces Possible Collapse in GM Soy Imports in 2009/2010](#)
[Evogene and Sungene to Develop Tools for GM Crops](#)

RESEARCH

[Bacterial Flavoprotein Can Increase Plant Tolerance to Iron Starvation](#)
[Genomics Closer to Conventional Breeding than GE, Says Consumers](#)
[Development of a West African Yam Core Collection](#)

ANNOUNCEMENTS

Biofuels Supplement (15 Dec 2007 Issue) [\[Read latest news\]](#)

NEWS AND TRENDS

[Glycerine By-Product from Biodiesel Production Can be Converted to Ethanol](#)
[Green Chemistry Takes Root in Ethiopia with the Help of University of Nottingham Scientists](#)

ENERGY CROPS AND FEEDSTOCKS FOR BIOFUELS PRODUCTION

[Wheat Straw for Biobutanol Production](#)
[United States Department of Energy Invests in Research on the Poplar Tree as a Model Biomass Crop for Future Bioenergy Applications](#)

BIOFUELS PROCESSING

[Biofuels for Jet and Military Fuel Markets to be Produced from Animal Fat and Vegetable Oils](#)
[Scientists Develop Cheaper Alternative to Distillation for Separating Ethanol from Fermentation Broths](#)

BIOFUELS POLICY AND ECONOMICS

[G8 Summit Declaration Includes Biofuels](#)
[Swiss Federal Laboratories for Materials Testing and Research \(Empa\) Releases Life Cycle Assessment Report on Biofuels](#)

<< [Previous Issue](#) |

[[Print PDF](#) | [Archive](#) | [Translations](#) | [Subscribe](#) | [RSS](#)]

News

GLOBAL

[Top]

AMERICAN FOOD SCIENTIST IS 2007 WORLD FOOD PRIZE AWARDEE

Dr. Philip Nelson, an agriculture professor at Purdue University in Indiana, is this year's recipient of the World Food Prize, an award given to individuals who have made significant contributions to improving the quality, quantity and availability of food in the world.

Nelson was cited for developing post-harvest technologies that allowed the large-scale storage, packaging and transportation of fruit and vegetable products. His "pioneering work" has made it possible to package and ship to other countries large quantities of food without losing nutritional value or taste, Kenneth Quinn, president of the World Food Prize Foundation, said at a June 18 ceremony at the U.S. State Department.

Nelson's research led to the discovery of methods and equipment to sterilize perishable food without the use of chemicals and preserve it at safe temperatures. He also developed a technology for preserving and shipping smaller quantities of food.

Read the press release at

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=June&x=20070618165621AKllennoCcM0.1270716>.

[Top]

POLLEN AND POLLINATORS VITAL TO CROP DIVERSITY

In the recent International Pollination Symposium in Ames, Iowa, USA, Dr. Jan Engels, a senior scientist at Bioversity International, and Dr. Ehsan Dulloo suggested storing pollen as well as seeds for crop diversity conservation. Pollen is a good form in which genetic diversity can be transported safely around the world, because few diseases are transmitted through pollen. Though it can be difficult to collect and it carries only the male part of the genome, its benefits for rational conservation of crop diversity are great. "The other area where we really need pollen is *in-situ* conservation and the conservation of crop wild relatives," adds Engels. "But really, it is the pollinators we need."

In-situ conservation takes place in farmers' fields and surrounding areas. It allows plants to continue to interact with their environment and thus allows their genes to continue evolving and adapting to changed circumstances. However, without the right pollinators, crops and wild relatives are not going to make nearly as many seeds, threatening their survival, according to Engels. "We have to maintain a diversity of other plants in the vicinity to provide pollinators with alternative food sources and other requirements."

Read the press release at <http://news.bioversityinternational.org/index.php?itemid=1826>.

[Top]

FUTURE BIOTECH PRODUCTS WILL CONTINUE TO MAKE A DIFFERENCE

Biotechnology will continue to make a difference in improving farmer productivity, contributing to healthier food, and increasing environmental sustainability. It will continue to accelerate the research and development process, allowing ways to bring improved products to the market faster. This was stressed by Michelle Waber of Dupont subsidiary Pioneer Hi-Bred International, Inc. in "Biotechnology: Delivering in the present, looking to the future" published in the magazine AgroLinks of CropLife Asia.

Waber says that the following products are worth looking forward to:

- Corn with improved tolerance to heat and drought
- More new, consumer-friendly products using building blocks for polymers from fermentation processes, thereby creating materials with performance-enhancing features
- Food quality improvements including: corn that allows for increased absorption of iron, thereby reducing the need for iron supplements; soybean oils with more cooking stability and health value; and better tasting soybean that performs better as an ingredient.

Read the full article in the June issue of AgroLinks. The entire magazine can be downloaded at http://www.croplifeasia.org/ref_library/croplifeAsia/AgroLinksJun2007.pdf.

AFRICA

[Top]

FARMERS IN KENYA HAPPY WITH POSITIVE SELECTION

Potato farmers in Kenya, as well as potato thieves, are reaping the rewards of positive selection, a technology that is simple to adopt and requires only sticks and labor. Farmers increased their potato production by 30 percent simply by using tubers from selected healthy-looking plants as seed. The International Potato Center (CIP), the Kenya Agricultural Research Institute (KARI) and the Ministry of Agriculture of Kenya have trained extension agents and farmer trainers in positive selection, who in turn trained over 70 farmer groups involving more than 1000 farmers since 2004.

Farmer groups are being trained on distinguishing between sick and healthy plants. Healthy looking plants are pegged before flowering and monitored up to harvesting. Pegged plants are harvested one by one and a final seed potato selection is made based on the number, size and quality of the tubers. By repeating this process over a few seasons, potato yields can be gradually increased.

The success of positive selection is seen from unlikely indicators – potato thieves. "My last crop looked so good that thieves came during the night to harvest it," said Peter Kinyae from the Kenya Agricultural Research Institute in Tigoni. "Interestingly we have seen several cases of theft from fields where groups had planted positive selected seed. This is a good indicator that the technology works."

The press release is available at http://www.cipotato.org/pressroom/press_releases_detail.asp?cod=38.

AMERICAS

[Top]

GM MUSHROOMS FOR PRODUCING BIOPHARMACEUTICALS?

Scientists are now tinkering with mushrooms as potential vehicles of various beneficial human drugs, or biopharmaceuticals. Charles Peter Romaine and his colleague, Xi Chen, of Penn State University have developed a technique to genetically modify *Agaricus bisporus*, the button variety of mushroom.

To create transgenic mushrooms, researchers attached a gene that confers resistance to hygromycin, an antibiotic, to circular pieces of bacterial DNA called plasmids. The researchers then snipped small pieces off the mushroom's gill tissue and added it to a flask containing the altered bacterium. As the bacterium goes through its lifecycle, it transfers a portion of its plasmid out of its cell right into the mushroom cell, and integrates the introduced gene into the mushroom. When the researchers exposed the mushroom cells to hygromycin, the antibiotic kills all the normal cells, separating out those that have been genetically altered for resistance.

The test demonstrates that if a second gene, insulin for example, were to be patched in the plasmid, that gene would be expressed as well. Researchers point out that the process of producing biopharmaceuticals is potentially faster and cheaper with mushrooms than conventional technologies because of shorter growth cycles and easy storage.

Read the news release at <http://live.psu.edu/story/24823>.

[Top]

ETHANOL BYPRODUCTS NOW IN PELLET FORM

Scientists and cooperators at the U.S. Department of Agriculture's Agricultural Research Service (ARS) have discovered a way to pelletize one hundred percent of distiller's dried grains with solubles (DDGS) without adding a binding agent or anything else. The researchers have turned DDGS from corn-based ethanol production into high-quality pellets using processing equipment at a commercial feed mill. The heating used in pelletizing did not harm the high-protein, low-starch nutrient content. DDGS is primarily used as livestock feed. Pelletizing hopes to prevent DDGS deterioration during shipping and storage.

Read the news article at <http://www.ars.usda.gov/is/pr/2007/070625.htm>.

[Top]

PIONEER EXPANDS SEED QUALITY FACILITY IN INDIANA

Pioneer Hi-Bred recently announced the completion of a 10,000 square foot expansion of its seed quality facility in Tipton, Indiana. With the additional space, the facility will be able to handle up to 125,000 germination, vigor and purity tests for corn, soybean, wheat, and sorghum seed per year. "Staying ahead of the growing demand for superior yielding Pioneer® brand seed is a challenge, but it is a great challenge to have," says Tom Bockhaus, Pioneer director of supply planning and logistics. "With the completion of this expansion, we will be able to move samples quickly among labs to help balance our testing needs more efficiently around the world." Pioneer's existing seed quality facility has been in operation since 1982. Another large expansion project was completed in 1988.

Read the press release <http://www.pioneer.com/web/site/portal/menuitem.b7da489de94b8a35a3869fd2d10093a0/>.

[Top]

NSF TO FUND RESEARCH ON BIOLOGY AND SOCIETY

The U.S. National Science Foundation (NSF) is giving research awards to address current issues, trends and questions relevant to the impacts of biology on society, and vice versa. "Science and scientists don't operate in isolation," said Paul Farel, program director in NSF's directorate for biological sciences. "Their research can have profound

implications for the wider world. This program emphasizes that science is an integral part of our social and cultural context."

Part of the Science and Society Program, the awards will seek to better understand the interactions of the biological sciences with society. For example, scientists will study how definitions and concepts of diversity--ecological diversity and biodiversity--have changed over time. This study will lead to a better understanding of the context and cultural origins of these terms, which should help conservationists resolve disputes among stakeholders.

Read more on the awards at

http://www.nsf.gov/news/news_summ.jsp?cntn_id=109629&org=olpa&from=news.

ASIA AND THE PACIFIC

[Top]

BIOTECH NOW A BIG INDUSTRY IN INDIA

A survey conducted by the BioSpectrum-ABLE in 2006-07 reveals that the biotech sector in India has exceeded US\$2 billion with the industry registering nearly 31 percent growth over 2005-06.

The following table shows the growth in several sectors during the last five years. The agricultural biotech (BioAgri) sector grew from \$26.82 million in 2002-03 to \$225.85 million in 2006-07 with highest year on year growth in the last half decade. It grew 54.85 percent in 2006-07 over 2005-06 with 95 percent revenue generated from the domestic market. The entire biotech sector generated 58 percent revenues from the export market.

Five Indian seed companies are now among the top 20 biotech companies in the country, with Bt cotton seeds becoming a revenue market due to farmer acceptance of the product.

Biotech Sector in India (2002-07) (Figures in Million Dollars)

Sector/Year	2002-03	2003-04	2004-05	2005-06	2006-07
BioInformatics	18.29	19.51	24.39	29.26	35.36
BioIndustrial	57.31	58.00	78.05	91.46	96.34
BioAgri	26.82	31.70	80.49	145.85	225.85
BioServices	32.92	67.10	103.66	175.61	268.78
BioPharma	436.58	671.22	870.73	1148.30	1456.83
Total	571.95	847.56	1115.85	1590.49	2083.17

For more information visit <http://www.biospectrumindia.com> or email Bhagirath Choudhary of ISAAA South Asia Center at b.choudhary@isaaa.org.

[Top]

SYNGENTA TO COLLABORATE WITH CHINA ON BIOTECH

Syngenta and the Institute of Genetics and Development Biology (IGDB) in Beijing, China have agreed on five-year research collaboration. They will be working on the identification and development of novel agronomic traits including drought tolerance for key crops, including corn, soybean, wheat, sugar beet and sugar cane. IGDB forms part of the Chinese Academy of Sciences in Beijing and is one of China's leading biotechnology research institutes.

Both agencies agreed that traits will not only be developed for the Chinese seed market but also for the global agriculture markets. Syngenta will have the rights to commercialize developed traits in the agreed range of field crops.

See <http://www.syngenta.com/en/media/press/2007/06-25.htm> for the news report.

[Top]

ANDHRA PRADESH PLANS TO CONTROL BT COTTON SEED PRICES

The Andhra Pradesh government has decided to regulate the prices of Bt cotton seed in the state to become the first and only state to plan for the executive order to control the Bt cotton seed prices. The proposed ordinance will restrict the price as fixed by the controller of Bt seed, who is expected to be appointed by the government." The ordinance also provides penal provisions including imprisonment and/or fine for violations such as selling the cotton seed at higher price over and above the amount set by the controller.

Read the news article at http://www.financialexpress.com/fe_full_story.php?content_id=167920.

EUROPE

[Top]

STUDY SAYS SWEDES CAN BENEFIT FROM GM CROPS

Swedish farmers can earn a profit from planting genetically modified (GM) crops. This is a conclusion of a study conducted by the Swedish Institute for Food and Agricultural Economics (SLI). The report makes the following projections after comparing the production of GM crops and conventionally grown crops in Sweden:

- A production change to herbicide resistant spring rape would have three major effects: an increase in hectares harvested, higher costs of seeds for sowing and lower costs of herbicides. These three factors are estimated to improve the profitability of production at a rate of 4 to 8 percent of the production price.
- Production of herbicide resistant corn for feed would mainly affect profitability through higher costs of seeds for sowing and lower costs of herbicides.
- Blight resistant potatoes show an increase in profitability of between 6 and 12 percent when compared to conventional potatoes. A decrease in the use of herbicides also reduces the negative effects on the environment caused by conventionally grown potatoes.
- A change in sugar beet production from conventional to herbicide resistant varieties would increase the cost of seeds for sowing but reduce the cost of herbicides. The net effect is about 10 percent of the production price in 2006 prices.

An English abstract and the full version in Swedish are available at http://www.sli.lu.se/eng_item_detail.asp?activity_id=112.

[Top]

EU FAILS TO FIND QUALIFIED MAJORITY FOR APPROVALS OF NEW GM MAIZE

Biotech experts in the European Union have failed to find a qualified majority for the approvals of two new GM maize varieties: MON810/NK603 by Monsanto and 1507/NK603 by Pioneer Hi-Bred and Mycogen Seeds. The two maize types are designed to resist certain field pests such as the European corn borer and corn rootworm and specific herbicides. The European Council of Ministers now must assume responsibility for a decision. If the ministers fail to find qualified majorities, the European Commission eventually may be forced to decide.

The news article is available at <http://www.gmo-compass.org/eng/news/messages/200706.docu.html#129>.

[Top]

EU FACES POSSIBLE COLLAPSE IN GM SOY IMPORTS IN 2009/2010

The European Union would be facing a collapse in GM soy imports from the United States, Argentina, and Brazil if the three countries adopt the new Roundup Ready 2 soybean by 2009 to 2010. This is the likely effect of "asynchronous authorization" such as in cases of GM maize approved in the USA but not in the EU.

In the worst-case scenario, the EU would be experiencing an import deficit of 32 million tons, of which only approximately 20 percent could be substituted by increased local production. Due to the importance of soy as feed in the farming of pigs and poultry, extreme changes in the EU meat sector are predicted in an internal DG Agriculture report. Production of pork and of poultry may fall by as much as 34.7 percent and 43.9 percent, respectively, while beef production is expected to remain nearly unchanged at 97.9 percent of present levels.

The news article is available at <http://www.gmo-compass.org/eng/news/messages/200706.docu.html#127>.

[Top]

EVOGENE AND SUNGENE TO DEVELOP TOOLS FOR GM CROPS

Evogene Ltd., a plant biotechnology company in Israel, and SunGene GmbH, a BASF Plant Science company, will collaborate on developing next generation enabling technologies for the precise bioengineering of crops. This project, according to Evogene will "enable the introduction of target genes into plant DNA in a new way by using integration sites that are especially suitable for the insertion of new genes. This will further increase efficiency in plant biotech research and development by reducing the number of plants that have to be analyzed". The current method of introducing target genes involves analyzing a high number of plants.

See Evogene's press release at http://www.evogene.com/news.asp?new_id=34.

Research

[Top]

BACTERIAL FLAVOPROTEIN CAN INCREASE PLANT TOLERANCE TO IRON STARVATION

Iron starvation in plants is a major concern in agriculture. It causes the decline of many photosynthetic activities and is manifested by chlorotic symptoms in young leaves and poor root formation. This ultimately leads to growth retardation, stasis, and death when disregarded.

To investigate whether plants can have an increased tolerance to iron deficiency, researchers engineered tobacco plants with bacterial flavodoxin (Fld). Fld is a flavin mononucleotide containing protein that is not found in plants. The compound was shown to counter the symptoms of iron deficit and can restore normal rates of growth and reproduction.

Results of the study indicate that transgenic tobacco plants expressing Fld in their chloroplasts grew normally on iron deficient media and did not show decline of photosynthetic components. Previous research has shown that plants with Fld have generalized tolerance to various sources of oxidative and environmental stresses. The researchers explained that the increased tolerance to iron starvation was because Fld permitted the redistribution of the limited amount of available iron to other demanding metabolic pathways, thereby helping the organism.

The paper published in the Proceedings of the National Academy of Sciences (USA) can be accessed at <http://www.pnas.org/cgi/content/abstract/0704553104v1>.

[Top]

GENOMICS CLOSER TO CONVENTIONAL BREEDING THAN GENETIC ENGINEERING, SAYS CONSUMERS

Consumers view genomics closer to conventional breeding than genetic engineering. A group of researchers at the University of Wageningen made the observation after analyzing consumer images from several focus groups. Consumer images refer to models that portray possible future consumer preferences and behavior. These images are considered important and may indicate consumer decisions -whether to buy or consume a certain product, said the researchers.

The individuals in the focus groups have ages between 18 to 79 years old and have completed varying levels of education. The researchers used age and education level as categories to form the homogeneous groups. They noted that detailed elaboration of the descriptions of the three technologies when given can change the consumers' images. This was most evident in the change of the position of genomics in relation to conventional breeding and genetic engineering.

Details can be found in the paper published in Euphytica. It is available to subscribers at <http://www.springerlink.com/content/bgx711056t6t33k4/>.

[Top]

DEVELOPMENT OF A WEST AFRICAN YAM CORE COLLECTION

Dioscorea yams are important food crops in many parts of West Africa. Yam tubers are boiled, roasted, fried or processed into flour that is used to prepare other dishes. There are germplasm collections of yams in various genebanks, but one of the largest collections is in the International Institute of Tropical Agriculture (IITA). IITA conserves about 3,000 accessions of eight species of West African yams.

To better utilize the IITA yam collection, V. Mahalakshmi and colleagues analyzed the variation in the entire West African collection using pre-defined descriptor sets. The researchers reported that data using 99 botanical descriptors were gathered and analyzed to define a core sub-set. Core collections can serve as valuable entry points to the entire germplasm collection for research or use by plant breeders.

Mahalakshmi and colleagues have identified 391 yam accessions (13% of entire collection) to best represent the IITA collection. The group discussed that the number of accessions in the core sub-set will help simplify the management and enhance the utilization of West African yam germplasm in their collection.

The paper was published in Genetic Resources and Crop Evolution and available to subscribers at <http://www.springerlink.com/content/18406q5729776442/>.

Announcements

[Top]

INFO SHARING PROJECT FOR AGRICULTURAL ORGANIZATIONS

The Forum on Agricultural Research (GFAR), in collaboration with the Food and Agriculture Organization (FAO) and Wageningen International, will launch a collaborative project for managing decentralized information on agricultural research and development organizations. Through the project, participating organizations will be able to access updated and reliable information on other organizations and institutions, their expertise, projects and projects outputs. The project will start in July 2007.

For more information, contact EGFAR-webmaster@fao.org or visit <http://www.egfar.org/egfar/website/new/newspage?contentId=1662&languageId=0>.

NEW FARA WEBSITE LAUNCHED

The executive secretary of the Forum for Agricultural Research in Africa (FARA), Dr. Monty Jones, announced the new FARA website at its 4th General Assembly in Johannesburg. This web portal has been developed as part of the FARA's Regional Agricultural Information and Learning System (RAILS) project and is to play a central role in achieving one of FARA's networking functions on access to knowledge and technologies. The website also contains extensive information on FARA, its networks and partners.

For more information please contact mwopereispura@fara-africa.org or visit <http://www.egfar.org/egfar/website/new/newspage?contentId=1702&languageId=0>.

DISTANCE LEARNING COURSE ON BIOSAFETY IN PLANT BIOTECH

Biosciences Eastern and Central Africa (BecANet) in collaboration with the United Nations Industrial Development Organization (UNIDO) is organizing post graduate distance learning courses - Biosafety in Plant Biotechnology leading to a Post-Graduate Certificate Diploma at Ghent University (Belgium) and a Diploma at Ancona Marche Polytechnic University (Italy). The program aims to help participants acquire information on current and potential future developments in biotechnology. It will also help them get familiar with national and international norms and regulations, and the conduct of risk assessment and management in biotechnology.

Visit <http://knowledge.cta.int/en/content/view/full/4661> for additional information on the course.

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

To stop receiving this newsletter, please send an e-mail message to knowledge.center@isaaa.org and write, "unsubscribe newsletter" in the subject box.

Please visit CropBiotech Net web pages (<http://www.isaaa.org/kc>) to view previous issues of this newsletter and see other available resources for download.

Copyright © 2007 ISAAA
[Editorial Policy](#)