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News

GLOBAL

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UN ANNOUNCES FORMATION OF INTERNATIONAL BIOFUELS FORUM

The United Nations (UN) recently announced the launch of the International Biofuels Forum, a project aimed at promoting the sustained use and production of biofuels on an international scale. Initiated by Brazil, the European Union, the United States, India and China, the project is expected to "help countries with agricultural potential to become major suppliers of alternative fuels". The forum, according to the UN, would contribute toward the creation of an "alternative fuels market" which will bring economic, social and environmental benefits for both developed and developing countries. The forum will also have regular meetings, to "help set industry standards, and eventually work toward the commodization of biofuels".

For more information visit any of the following links:

[http://www.un.org/radio/news/RS/nnF/nnFRIItems.asp?id=8487&title=March%20%20-%20International%20Biofuels%20Forum%20Announced%20at%20UN%20News%20Conference](http://www.un.org/radio/news/RS/nnF/nnFRIItems.asp?id=8487&title=March%20%20-%20International%20Biofuels%20Forum%20Announced%20at%20UN%20News%20Conference;); <http://biopact.com/2007/03/rationale-behind-international-biofuels.html>;
<http://english.cri.cn/4026/2007/03/04/1241@201626.htm>.

The **Biofuels Supplement** of the Crop Biotech Update has more articles on biofuels. Visit <http://www.isaaa.org/kc/cropbiotechupdate/biofuels/news/2007/03/09.html>

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UNDERSTANDING PLANT SEX CHROMOSOMES THROUGH GENOMICS

Several species of plants have male and female individuals. Among these plants include papaya, white campion, and asparagus. The use of genomics to study sex chromosomes of these dioecious species may help unravel mechanism of sex determination, says Ray Ming of the University of Illinois and Paul Moore of the Pacific Basin Agricultural Research Center in the US.

Knowing the mechanism of sex determination will help plant breeding and crop production by being able to generate true breeding male individuals or hermaphrodite lines. One approach being proposed by the researchers is to find and clone male-specific or female-specific regions in the sex chromosomes. Once the sequences in these regions are available, sex reversal mutants might play a role in pinpointing sex-determining genes in plants.

The review article was published in the journal *Current Opinion in Plant Biology* and can be accessed by subscribers at <http://dx.doi.org/10.1016/j.pbi.2007.01.013>.

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MAIZE MAYBE USEFUL IN IDENTIFYING ORGAN DEVELOPMENT GENES AMONG GRASSES

Synteny or homology between genomes of maize and other grasses may allow the identification of genes responsible for controlling the development of plant organs, suggested Esteban Bortiri and Sarah Hake in a review paper in the *Journal of Experimental Botany*.

The researchers at the Plant Gene Expression Center in the United States also stated that maize would be an ideal species for such research because the development of inflorescence in the crop was shown to be influenced by both determinate and indeterminate meristems.

Maize also has a rich genetic history, and a large collection of genetic mutants are available for research. Investigations on the species may further shed light on other development pathways such as sex determination in plants, said the researchers.

The full paper can be accessed by journal subscribers at <http://jxb.oxfordjournals.org/cgi/content/abstract/erm015v1>.

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USDA-APHIS HOLD CLEARFIELD CL131 RICE SEED DISTRIBUTION

Ron DeHaven, Administrator of the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) recently released a statement regarding APHIS hold on Clearfield CL131 rice seed. Tests on the long-

grain rice seed revealed the possible presence of trace levels of genetic material not yet approved for commercialization.

APHIS has already issued emergency action notifications (EANs) to inform distributors that the seed, which is scheduled for planting this spring, must be held until APHIS can verify and identify the presence of additional genetic material. "APHIS is taking this action because the genetic material detected in Clearfield CL131 seed might be regulated, in which case it would not be approved for commercial use," said DeHaven. Clearfield is a registered trademark of BASF. Clearfield CL131 was not developed as a genetically engineered product. The company and its licensed seed distributor of Clearfield CL131, Horizon Ag, are fully cooperating with APHIS.

Read the complete statement from APHIS at http://www.aphis.usda.gov/newsroom/content/2007/03/ge_riceseed_statement.shtml.

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US LOCAL NEWS PRESENTS DIVERSE VIEWS ON AGBIOTECH THAN NATIONAL NEWS

In the United States, agricultural biotechnology is still one of the chief issues debated at the local level in some geographical areas. To understand how local newspapers frame news stories on the issue, an exploratory survey was conducted by Catherine Crawley as part of her research at the University of Tennessee.

Crawley considered a total of 1,134 news articles on agbiotechnology published by newspapers in Missouri and 508 news articles from newspapers in Northern California from 1992 to 2004. News stories were analyzed by considering the presence or absence of specified keywords, common phrases, images, sources of information and the connections among them.

Results of the study gave quantitative evidence that local newspaper coverage of genetic-engineering issues in selected US states is framed in diverse and complex ways. Among Crawley's conclusions include the lack of the so-called 'source-generated probiotechnology bias' in local news stories on biotechnology.

The abstract, with links to the full paper for subscribers to the journal Science Communication, can be accessed at <http://scx.sagepub.com/cgi/content/abstract/28/3/314>.

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ADDING MORE "OOMPH" TO CUCUMBER DNA

Jack Staub, a plant geneticist with the United States Department of Agriculture's Agricultural Research Service is trying to add more spice to the genetic makeup of the cucumber. Apparently, the cucumber suffers from an overly narrow genetic base, which makes it vulnerable to plant pathogens and natural diseases.

Staub's strategy is to infuse the cucumber's DNA with more wild character. He and a cooperating Chinese scientist have already successfully crossed an unusual wild cucumber species from China with a domestic one. This wild cucumber possesses resistance to gummy stem blight and, possibly, to nematodes and certain viruses. Staub is also eyeing wild melons, a cousin of cucumber, as a source of valuable genes for drought resistance and other traits.

Read the news article at <http://www.ars.usda.gov/is/pr/2007/070302.htm>.

CELLULOSIC ETHANOL PROJECTS RECEIVE GRANTS FROM US DOE [\[Top\]](#)

The United States Department of Energy (DOE) recently announced that it would provide up to \$383 million to support six biorefineries that will extract fuel from materials such as wheat straw, wood chips, grass clippings, and even orange peels. The projects are meant to help achieve President Bush's goal of using 35 billion gallons a year of ethanol and other alternative fuels by 2017.

Each of the six projects takes a different approach. Some use corn stalks and cobs as fuel, others use rice husks, wood chips or clippings from municipal waste. The technologies range from ripping up the woody cellulose with enzymes, to chewing it up with acids, to gasifying it. The resulting sugars or gas will be forged into ethanol. Some facilities will also produce other products such as ammonia or methanol.

The full article is available to subscribers of the journal Nature at <http://www.nature.com/news/2007/070226/full/070226-15.html>.

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NEW TWIST IN ENGINEERING PLANT OILS

Researchers at the United States Department of Energy Brookhaven National Laboratory have taken advantage of genetic manipulation to modify the activity of a plant enzyme. The process will help convert an unsaturated oil in the seeds of a temperate plant to the more saturated kind usually found in tropical plants. The engineered oils could be used to produce feedstocks for industrial processes in place of those currently obtained from petrochemicals.

The researchers focused on an enzyme known as KASII that normally elongates fatty acid chains by adding two carbon atoms. The longer 18-carbon chains are more likely to be acted on by enzymes that desaturate the fat. To decrease the likelihood of desaturation and increase the level of saturated fats in the plant seeds, the Brookhaven team prevented the chain lengthening by reducing the levels of KASII with the use of RNA-interference (RNAi). The genetic manipulations that reduced KASII activity resulted in a seven-fold increase in 16-carbon unsaturated fatty acids in temperate *Arabidopsis* plant seed oils.

The news article is available at http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=07-24. The original paper can be accessed at <http://www.pnas.org/cgi/content/abstract/0611141104v1>.

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GIVING VEGETABLES MORE FLAVOR, NUTRIENTS, AND COLOR

The magazine of the US Department of Agriculture's Agricultural Research Service features carrots, potatoes, and onions that are getting a boost from scientists. Yellow, red, deep-orange, purple, and even white carrots are being developed at Vegetable Crops Research Unit in Madison, Wisconsin. Researchers aim to create a multi-pigmented carrot that naturally contains several antioxidants, such as lycopene, lutein, and anthocyanin.

Factors like potato variety, production site, and production method, are being investigated on how these influence the taste of baked potatoes. Research is directed at creating a baked potato which needs less seasoning. Scientists are also working on potatoes that are loaded with more potassium and antioxidants, including phenolic compounds such as chlorogenic and caffeic acid—and salicylic and p-coumaric acids.

Researchers are pinpointing the genetic differences between sweet onions and carbohydrate-dense ones to eventually

come up with onions that are mild in taste but full of these heart-healthy nutrients.

Read the full article published in the March 2007 issue of Agricultural Research magazine at <http://www.ars.usda.gov/is/AR/archive/mar07/veggies0307.htm>.

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PEW, MICHIGAN STATE RELEASE REPORT ON MORAL, ETHICAL ISSUES ON GE ANIMALS

In October 2006, the Pew Initiative on Food and Biotechnology (PIFB) and Michigan State University (MSU) invited representatives from different stakeholder groups to consider the options available for continuing discussions regarding the moral and ethical aspects and the future of genetically engineering and cloning food animals. Some of the key points that emerged from the workshop include:

- The observation that ethics discussions should take place in numerous institutions by a wide variety of people and should engender public trust and confidence.
- Factors such as the scope of ethics discussion, the product, and the amount of transparency involved that will affect the credibility and legitimacy of the discussions and any conclusions that might arise from them.

Institutional options considered by participants included:

- The establishment of a national accreditation body that would oversee Institutional Animal Care and Use Committees; and
- The creation of a quasi-autonomous nongovernmental organization (QUANGO) funded by government and other organizations, which would serve as a source of information and recommendations and a mediator on controversial issues.

An overview of the conference agenda and with link to the full workshop report, entitled "Options for Future Discussions on Genetically Modified and Cloned Animals", can be viewed at: <http://pewagbiotech.org/events/1019/>.

For more information contact Kara Flynn at kflynn@pewagbiotech.org.

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CORNERSTONE PAPER FOR AMENDED GENE TECH ACT GETS APPROVAL

The German Federal Cabinet approved last February the amended gene technology act that includes the following key points from the Federal Minister of Agriculture, Horst Seehofer.

- The research in the area of the plant biotechnology should be promoted.
- The suppliers and the consumers must have the freedom to choose between non-engineered and genetically engineered products.
- For the cultivation of genetically modified (GM) maize, a distance of 150 meters between GM and conventional plants will be required in the future. Farmers growing GM plants will be subject to special guidelines of Good Farming Practice and will be responsible for economic losses resulting from non-adherence to these rules.
- All cultivation sites of GM plants should be entered in the site register of the German Federal Bureau for Consumer Protection, BVL.

Read the news article at <http://www.gmo-compass.org/eng/home/> and the complete press release (in German) by the Ministry of Food, Agriculture and Consumer Protection at http://www.bmelv.de/clin_044/nn_754188/DE/04-

[Landwirtschaft/Gentechnik/KabinettsbeschlussGentechnik.html_nnn=true](#).

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SCIENTISTS EXPRESS CONCERN ON EUROPE'S TIGHT GM REGULATIONS

Europe is "damaging countries in the developing world by imposing its standards to regulate genetic modified (GM) crops. The current regulatory policy is damaging the prospects of public sector biotech to the point where most of its contributions are stalled." This concern was forwarded by prominent scientists from South Africa, China and Brazil during a forum organized by the European Action of Global Life Sciences in Ghent, Belgium.

Examples of the concerns towards the European over-regulation include whether "this may prevent, or severely delay, the approval of plants that are desperately needed by poor Africans", and also "China's failure to approve the commercial release of GM rice due to concerns over future exports."

For more on the forum, contact Em. Prof. Marc Van Montagu at mamon@psb.Ugent.be.

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CALL FOR EUROPE'S PROACTIVE SUPPORT TO BIOTECHNOLOGY

The next frontier for research will be biotechnology that meets the needs of small farmers' in semi-tropical and tropical regions such that social and environmental benefits accrue to them. "But for that to occur, greater involvement of the research capacities of the regions such as Europe will be needed and in this the European Federation of Biotechnology (EFB) has a key role to play." This was stressed by Eduardo Trigo, Director of Grupo CEO, and scientific adviser to the International Directorate of Science, Technology and Innovation of the Argentine Government in an interview with EFB.

Using Argentina's positive experience in using biotechnology to improve agricultural productivity, Trigo said that "the lesson to be learned is: the sooner, the better." He explained that the products available during the first cycle of the technology were a perfect fit with the profile of Argentina's agricultural sector and other policies, and that international markets came together and made it feasible for the country to take advantage of this situation.

The transcript of the interview is at http://www.efb-central.org/index.php/Main/interview_with_dr_eduardo_trigo.

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EUROPEAN COMMISSION NOTIFIED OF SLOVENE ACT ON COEXISTENCE

The draft of the Slovene Act on the co-existence of genetically modified plants with other agricultural plants was sent for notification to the European Commission in December 2006. The draft Act lays down a legal framework for the regulation of the co-existence of different farming methods in Slovenia and establishes several new systems to ensure co-existence and to prevent the accidental presence of genetically modified organisms (GMOs) in other products. It also prescribes a system of monitoring of co-existence, establishes inspection and supervision of the implementation of the Act, and lays down penalties for violators. The Slovenian Government is yet to adopt technical

regulations that define more detailed measures for ensuring co-existence.

Read the full article at http://www.coextra.eu/country_reports/news811.html.

Research

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TOMATO BIOENGINEERED TO INCREASE FOLATE

Deficiency in folate, also known as Vitamin B9, may cause various diseases in humans such birth defects, anemia, cardiovascular diseases, and some cancers. Because of the importance of folate especially to pregnant women, food fortification programs are being implemented in many countries.

Researchers at the University of Florida explored a way to increase the amount of the micronutrient in tomato using metabolic engineering. The group of Rocio Diaz de la Garza produced a double transgenic tomato that produces folate levels equivalent to the adult recommended dietary allowance in a single standard serving. The tomato derived from crossing two lines that are overexpressing folate precursor compounds called 'GTP cyclohydrolase I' and 'aminodeoxychorismate synthase'.

Diaz de la Garza and colleagues have determined that the folate levels in the transgenic fruit increased continuously throughout ripening. The researchers also reported that folate levels in ethylene-treated fruits were very similar to those that were vine-ripened. The research demonstrated a double-gene approach for folate biofortification is feasible and the group recommends that the strategy be adopted to enhance folate production in other plant species.

The complete article can be accessed at <http://www.pnas.org/cgi/doi/10.1073/pnas.0700409104>. An editorial pointing to the significance of the research is also available at <http://www.pnas.org/cgi/doi/10.1073/pnas.0700640104>.

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BT EGGPLANT POSE NO IMPACT TO NON-TARGET ORGANISMS

A transgenic eggplant line expressing the Bt toxin Cry3Bb was found to have no effect on nontarget herbivores and insect predators. The conclusion of the group of Salvatore Arpaia was derived after observing arthropod species proliferating on both the transgenic line 9-8 and non transgenic eggplants in Southern Italy for three years.

Arpaia's group used six 200 m² plots per year to compare line 9-8 with a non-transgenic isoline. The researchers recorded the number of arthropods by pooling taxonomic groups into larger units that they called 'organismal taxonomic units'

By using three multivariate methods – correspondence analysis, multi-response permutation procedure (MRPP), and indicator species analysis (ISA) – the researchers found that there was comparable species assemblage between the transgenic and non-transgenic eggplant area. Their results provide useful information to help determine whether the GM crop has any potential ecological impact.

The full paper is freely available at <http://docserver.esa.catchword.org/deliver/cw/pdf/esa/freepdfs/0046225x/v36n1s28.pdf>

PLANTS WITH MODIFIED LIGNIN DECOMPOSE AT SAME RATE AS WILD TYPES

When field trials of transgenic poplars were initiated, there have been concerns that the extent of decomposition between field-grown wild-type and lignin-modified transgenic poplar wood may be different. Lignin is a biopolymer found in cell walls of plants and an important component of wood. Some argue that a lignin modified poplar wood may decompose faster and cause an increase in carbon dioxide emission to the atmosphere.

Results from an 18-month study of scientists in Europe indicate that this is not likely. David Hopkins and colleagues demonstrated that the variation in decomposition rate between replicates of each genotype was greater than the variation between genotypes. The researchers suggest that "the changing environmental conditions during growth in the field have a greater influence on wood decomposition than the genetic modifications to lignin in these genotypes". The same observation was reported by the group on comparisons of decomposition between lignin-modified and unmodified tobacco plants.

The report can be accessed at <http://dx.doi.org/10.1038/nbt0207-168>.

Announcements

NETWORKING WEBSITE FOR SCIENTISTS

The Nature Publishing Group (NPG) recently launched a free online networking website for scientists worldwide, called "Nature Network". The website hopes to help scientists meet other researchers, hold online discussions, showcase their work via personal homepages, and share information. Nature Network can be accessed at <http://network.nature.com>. For the complete press release please visit http://www.nature.com/press_releases/Nature_Network_launches.pdf.

4TH ANNUAL BIGMAP SYMPOSIUM

The Biosafety Institute for Genetically Modified Agricultural Products (BIGMAP) at Iowa State University (ISU) has organized its 4th annual symposium to be held in Ames, Iowa, on 18 April 2007. This year's symposium is themed "Understanding the Risks and Benefits of Genetically Modified Agricultural Products." BIGMAP was established to provide public assessment and communication of the risks and benefits of the products of agricultural biotechnology.

More info at <http://www.ucs.iastate.edu/mnet/bigmap/home.html>.

2nd EPOBIO WORKSHOP

The EPOBIO, an international project funded through the European Union's Sixth Framework Programme (FP6) will be holding a workshop, "Products from Plants – from crops and forests to zero-waste biorefineries" on 15-17 May, 2007 in Athens, Greece. The workshop will focus on the development of second and third generation biorefineries using zero-waste feedstocks, producing multiple products from a crop and providing new opportunities for biochemicals and biomaterials. The workshop will also report the outputs of the EPOBIO project, specifically the optimization of industrial crop platforms for biofuels, biochemicals and biomaterials through the use of advanced biorefineries.

For more information, visit <http://www.epobio.net/workshop0705.htm>.

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Document Reminders

IFPRI STRATEGIC PRIORITIES FOR AGRICULTURAL DEVELOPMENT IN AFRICA

IFPRI Research Report No. 150, entitled "Strategic Priorities for Agricultural Development in Eastern and Central Africa", analyzed agricultural development priorities and investment patterns in East and Central Africa and their impact on growth and poverty rates. The report enumerates approaches such as tailoring agricultural production to meet demand within the region, encouraging a wide variety of agricultural production to match the diversity of national demands and capacities, and promoting regional cooperation in agricultural development.

The report can be accessed at <http://dx.doi.org/10.2499/9780896291584RR150>.

ONLINE GUIDE FOR IDENTIFYING FRUITS AND SEEDS

The United States Department of Agriculture-Agricultural Research Service (USDA-ARS) is providing a database to help identify the world's many fruits and seeds. The database, containing 418 families of seed plants, and more than 300 morphological characters, can be queried to obtain information about a particular family, a group of families, or the characters used.

To access the database please go to <http://nt.ars-grin.gov/sbmlweb/OnlineResources/frsdfam/Index.cfm>.

The complete press release is at <http://www.ars.usda.gov/is/pr/2007/070308.htm>.

DOCUMENT ANNOUNCEMENTS

Document announcements on UNEP-GEF Biosafety publications, OIE ad hoc group report, and Africa Rice Congress presentations in last week's issue of the Crop Biotech Update were sourced from <http://www.fao.org/biotech/index.asp>.

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