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Global

### EU and FAO Help Six Countries Achieve Millennium Development Goal on Hunger

The European Union and the Food and Agriculture Organization of the United Nations formed a partnership in agricultural development to assist two million people in six countries. Countries which will be benefited include Burundi, Burkina Faso, Gambia, Haiti, Madagascar, and Mozambique. The project worth nearly €60 million came from the €1 billion EU initiative to enhance progress towards the Millennium Development Goals.

The initiative strongly promotes partnerships with UN agencies, governments and civil society to ensure that key goals, including improved nutrition and the support for agricultural policies, can be attained.

"So close to the deadline, when there is still so much to do, this good investment in agriculture will enable FAO to increase its efforts to eradicate hunger and do even more to help countries halve the proportion of hungry people by 2015," said FAO's Director-General José Graziano da Silva at a special event on the Millennium Development Goals during the UN General Assembly.

For more on this news, see <http://www.fao.org/news/story/en/item/198122/icode/>.

Africa

### Global Leaders Seek Support for Nigeria's Agricultural Transformation

During the meeting of Eminent Persons Group that happened in New York, USA, global leaders in business, knowledge management, and government encouraged the ministries,

departments, and agencies of Nigeria, to support the work of Pres. Goodluck Jonathan and Agri Minister Dr. Akinwumi Adesina on the Agricultural Transformation Agenda (ATA). The leaders, including past Secretary General of the United Nations, Mr. Kofi Annan; President of Bill and Melinda Gates Foundation, Mr. Bill Gates; and President of the International Fund for Agricultural Development (IFAD), Dr. Kanayo Nwanze, gave their recommendations to the President on how to move agricultural transformation forward.

Mr. Annan said that science should be part of the transformation. He explained that the debate on genetically modified (GM) crops going on between European Union and U.S. has considerable influence on Africa on whether or not to adopt the crops. Thus, he advised the Nigerian government to make decisions and come up with policies favorable for the adoption of GM crops.

Read the original article at <http://www.thisdaylive.com/articles/global-leaders-seek-support-for-nigeria-s-agric-transformation/160297/>.

#### Agri Losses Can Be Addressed with Biotech, says Nigerian Official

The Permanent Secretary Federal Ministry of Science and Technology, Hajiya Rabi S. Jimeta, has said that agricultural losses can be addressed through the application of agricultural biotechnology. She made these remarks in a speech read on his behalf by the Director, Physical and Life Sciences of the Federal Ministry of Science and Technology, Dr. Manasseh Gwaza, at the last Open Forum on Agricultural Biotechnology (OFAB). The event was held at the Federal Ministry of Science and Technology Conference Hall in Abuja on 26th September 2013. The Permanent Secretary said that agricultural losses through insect infestation and low quality crop production have posed a very big challenge to food security in the country, adding that the application of biotechnology will not only reverse this trend but can also increase production of food crops with desirable traits.

Dr. Manasseh took the opportunity to acknowledge OFAB's efforts in building the capacity of the ministry's scientific officers in the area of biotechnology and at the same time sensitizing them on current trends which can enable them to discuss effectively and offer solutions for agricultural development.

For more information on the Open Forum On Agricultural Biotechnology events in Nigeria, contact Prof. Solomon Bamidele, Director General of Nigeria's National Biotechnology Development Agency (NABDA) and chair of OFAB-Nigeria at [omoogbe@gmail.com](mailto:omoogbe@gmail.com).

Americas

#### APHIS Approves Non Regulated Status of HT Corn, Male Sterile Corn and HT Canola

The United States Animal and Plant Health Inspection has deregulated three genetically modified events in corn and canola in three separate directives. Herbicide tolerant corn event VCO-O1981-5 developed by Genective was evaluated under the Plant Pest Risk Assessment which concluded that it is unlikely to pose a plant pest risk and should no longer be subject to regulations. The full text of the APHIS decision can be viewed at [http://www.aphis.usda.gov/brs/aphisdocs/11\\_34201p\\_det.pdf](http://www.aphis.usda.gov/brs/aphisdocs/11_34201p_det.pdf).

Male sterile corn event MON87427 developed by Monsanto has likewise been given a certificate of deregulation by APHIS and the full text can be seen at [http://www.aphis.usda.gov/brs/aphisdocs/10\\_28101p\\_det.pdf](http://www.aphis.usda.gov/brs/aphisdocs/10_28101p_det.pdf).

Similarly, glyphosate tolerant canola MON88302 was given a non regulated status by APHIS after thorough risk assessment. Full details can be seen at [http://www.aphis.usda.gov/brs/aphisdocs/11\\_34201p\\_det.pdf](http://www.aphis.usda.gov/brs/aphisdocs/11_34201p_det.pdf).

#### Genetic Discovery Offers Bio-solution to Severe Canola Crop Losses

An international team led by researchers from the University of Calgary (UC) has made a genetic discovery that offers solution to canola's "green seed problem." The researchers have uncovered a plant gene regulatory network that could be genetically enhanced to prevent green seeds from occurring in mature canola.

According to team leader Marcus Samuel, every year, light frost damages crop quality and causes severe canola losses. Although frost does not kill the plants, it fixes the green color in the seeds, affecting oil quality and producing unpleasant flavor and odor, and reducing the oil's shelf life. The research team investigated the de-greening process using a mutant strain of Arabidopsis that produces mature green seeds, and performed genetic analyses that uncovered a pathway required for seed development and removal of unwanted chlorophyll during seed maturation. They found that a protein called ABI3 regulated expression of a gene controlling chlorophyll degradation and showed that a higher expression of ABI3 in Arabidopsis led to seeds that were able to de-green normally to produce mature brown-black seeds, despite harsh cold treatments.

For more about this research, read the news release at <http://www.ucalgary.ca/utoday/issue/2013-09-24/discovery-offers-bio-solution-severe-canola-crop-losses>.

### UC Davis Study Offers Hope to Stop Incurable Citrus Greening

While the devastating disease Huanglongbing (HLB), or citrus greening threatens to wipe out the citrus industry in the United States, a team of plant scientists in the University of California, Davis (UC Davis) and the U.S. Department of Agriculture worked on a research study that will offer new hope to treating the disease. HLB is caused by three species of the *Candidatus Liberibacter* bacteria, including *Candidatus Liberibacter asiaticus*, also known as CaLas. These bacteria are carried from tree to tree by two species of the citrus psyllid, a winged insect that attaches itself to the underside of the trees' leaves.

In their study, the researchers studied four categories of healthy and diseased citrus trees, to better understand how HLB affects trees during the very early stages of infection. Their analysis confirmed that in infected trees, HLB disease caused starch to accumulate in the leaves, blocking nutrient transport through the phloem and decreasing photosynthesis. They also found that normal metabolism of sucrose, a sugar also key to photosynthesis, was disrupted. The researchers also discovered that HLB interfered with the regulation of hormones such as salicylic acid, jasmonic acid, and ethylene, which are "the backbone" of plant immune response. They also found that infected trees had changes in the metabolism of important amino acids that serve as a reservoir for organic nitrogen required to stimulate plant immune response in many plants. The team anticipates that their discoveries will lead the way to new tests for detecting the bacteria and the presence of HLB in orchard trees.

They also suggest that it may be possible to develop several short-term treatments for infected trees.

For more details about this research, read the news release available at [http://news.ucdavis.edu/search/news\\_detail.lasso?id=10701](http://news.ucdavis.edu/search/news_detail.lasso?id=10701).

## Scientists Uncover First Step in Reducing Plant Need for Nitrogen

A recent discovery by a team of University of Missouri researchers could be the first step to helping crops use less nitrogen. Gary Stacey, professor of plant sciences at the University of Missouri, found that crops, such as corn, are "confused" when confronted with an invasive, but beneficial, bacteria known as rhizobia. When the bacteria interact correctly with a crop, the bacteria receive some food from the plant and, simultaneously, produce nitrogen that most plants need. However, Stacey found that many other crops recognize the bacteria, but do not attempt to interact closely with them.

Stacey and his team treated corn, soybeans, tomatoes and other plants to see how they responded when exposed to the chemical signal from the rhizobia bacteria. They found that the plants did receive the signal and, like legumes, inhibited the normal plant immune system. However, soybeans, corn and these other plants don't complete the extra step of forming nodules to allow the bacteria to thrive. "The important finding was that these other plants didn't just ignore the rhizobia bacteria. They recognized it, but just activated a different mechanism. Our next step is to determine how we can make the plants understand that this is a beneficial relationship and get them to activate a different mechanism that will produce the nodules that attract the bacteria instead of trying to fight them." Stacey said.

For more information about this research, read the news release at: <http://cafnrnews.com/2013/09/a-little-less-nitrogen/>.

Asia and the Pacific

Farmers First: Feedback from the Farm

ISAAA releases the latest addition to the Biotech Communication Series titled Farmers First: Feedback from the Farm. It is a collection of farmers' testimonies from China, India, and the Philippines, about how they started adopting biotech crops, how they benefited from the technology, and why they continue planting biotech crops. Farmers are considered as the primary beneficiaries of crop biotechnology, and thus, their testimonies are highly valuable in the process of creating awareness and acceptance towards the technology.

Download the publication for free at

[http://www.isaaa.org/resources/publications/farmers\\_first/download/default.asp](http://www.isaaa.org/resources/publications/farmers_first/download/default.asp).

#### Workshop on Biotech Potato for Indonesian Biosafety Commission Technical Team

A workshop on biotech potato for the Indonesian Biosafety Commission technical team, farmers, and agricultural officers was held on 24 September 2013 in Bogor, Indonesia. Topics on potato variety improvement through conventional breeding and biotechnology application for late blight resistant potato were discussed by Ir. Kusmana of Indonesian Vegetables Research Institute and speakers from ICABIOGRAD, respectively.

The results of a public perception survey on biotech potato which was recently conducted by IndoBIC in collaboration with ABSPII was also presented. The study concludes that farmers are willing to adopt a new seed if they are completely certain about the success. This requires the presence of demonstration plots near the local farmers if any of a new superior seed will be introduced.

Several recommendations regarding the adoption were raised by Ir. Dahri Tanjung that include: a) dissemination of the biotech potato be conducted continuously prior to commercialization; b) demonstration plots need to be made at farmer level so the farmers could compare the new variety with conventional variety; c) farmer meetings need to be held where research results could be presented to farmers intensively; and d) provide incentives to farmers who buy a certain amount of certified potato seed.

For details, contact Dewi Suryani of IndoBIC at [cattleyavanda@gmail.com](mailto:cattleyavanda@gmail.com).

## US-Vietnam Sixth Annual Conference on Agri-biotech in Hanoi

The sixth annual conference entitled "Vietnam Biotech: Growing the Future" was co-hosted by the US Embassy and the Ministry of Agriculture and Rural Development in Hanoi on September 24. The event brings together researchers, policy makers, and students to discuss the benefits of agricultural biotechnology for Vietnam's food security, health care, and climate change adaptation. Addressing the opening ceremony, Deputy Chief of the US Mission in Vietnam Claire Pierangelo expressed her hope that the gathering will help Vietnamese policymakers devise effective plans of applying biotechnology in agriculture to cope with the country's climate change challenges.

Among the noted speakers include Dr. Paul Teng, Dean of Office of Graduate Studies at Singapore National Institute of Education who made a presentation on the role of biotechnology to address climate change effects on Vietnam's food security. Dr. Dang Trong Luong, Vice Director of the Agriculture Genetics Institute talked about the research and application of biotechnology in Vietnam agriculture, stressing the results of field trials and risk assessments of several corn varieties such as Bt11, MON89034, TC1507, MIR162, GA21, NK603, MON89034x NK63 and Bt11xGA21 in the country.

For more information, pls contact Mr. Le Duc Linh –Agbiotechvietnam at [ldlinh@gmail.com](mailto:ldlinh@gmail.com)

## Biotechnology Prioritized in Science and Technology Development in Vietnam

The National Workshop on Biotechnology with the theme Research, Development and Application of Biotechnology was held on September 27 in Hanoi. Addressing the event, Minister of Science and Technology Nguyen Quan said biotechnology has practically contributed to improving the quality of scientific and technological advances in agriculture, health care, and the environment. He further opined that biotechnology is developing quickly in the right direction in Vietnam, but faces many difficulties and challenges ahead. Minister Quan hopes the workshop will contribute significant and practical scientific research to national development.

The event was attended by researchers and research managers who reviewed the achievements in biotechnology over the past five years. The workshop was organized by the Ministry of Science and Technology and the Institute of Biotechnology, Vietnam Academy of Science and Technology.

See the original article at: <http://en.vietnamplus.vn/Home/Biotechnology-prioritised-in-science-tech-development/20139/39463.vnplus>

### Workshop on Biotech Potato for Farmers and Agricultural Officers Concludes in Bengkulu, Indonesia

A Workshop on "The role of biotechnology in potato breeding and its regulations in Indonesia" for farmers and government officials was officially opened by the Head of Agricultural Bureau of Bengkulu Province on 17 September 2013. The topics covered include: potato variety improvement through conventional breeding by Ir. Kusmana of Indonesian Vegetables Research Institute; biotechnology applications in potato trait improvement; and biotechnology products and its regulations in Indonesia by Dr. Dinar Ambarwati and Prof. M. Herman of ICABIOGRAD, respectively. Ir. Edi Nevian, Head of Agricultural Bau of Bengkulu welcomed the participants and emphasized that biotechnology is necessary especially in Bengkulu. They have a red potato variety which is expected to be one of the primary products in Indonesia once new traits are incorporated to increase its productivity.

The participants also expressed their enthusiasm toward the application of biotech crops. Farmer participants fully supported the idea that biotechnology can be a tool to help them improve potato yield and increase their income. They are hoping that biotech crops especially biotech potato could be commercialized in the near future. The workshop brought together 45 farmers and agricultural officials from three regencies in Bengkulu Province through the support of the Agricultural Biotechnology Support Project (ABSP II) in collaboration with IndoBIC and ICABIOGRAD, ISAAA, and SEAMEO BIOTROP.

For details, contact Dewi Suryani of IndoBIC at [cattleyavanda@gmail.com](mailto:cattleyavanda@gmail.com).

Europe

## Chief EU Scientist Backs Damning Report Urging GMO 'Rethink'

European Union's chief scientific advisor Anne Glover fully supported the report published by the European Academies Science Advisory Council (EASAC). The Report concluded of the "grave scientific, economic and social consequences of current European Union policy towards GM crops." It also says that European countries should "rethink" their widespread rejection of the technology. Glover said she fully endorsed the EASAC statement.

"There is no evidence that GM technologies are any riskier than conventional breeding technologies and this has been confirmed by thousands of research projects. In my view, consumers can believe in the overwhelming amount of evidence demonstrating that GM technology is not any riskier than conventional plant breeding technology. The EASAC Report is a major contribution to this debate as it reflects the view of Europe's most eminent scientists."

The study received backing from the national academies of all EU member states, plus Norway and Switzerland.

Details of this news can be seen at <http://www.euractiv.com/science-policymaking/chief-eu-scientist-backs-damning-news-530693>.

## EFSA Declines GM Maize MON810 Market Prohibition in Italy

In response to Italy's request prohibiting the placing on the market of genetically modified maize MON810, the European Commission requested EFSA on May 29, 2013 to assess the documents submitted by Italy. The EFSA GMO Panel considered the relevance of concerns raised by Italy in the light of the most recent and relevant scientific data published in the scientific literature.

According to EFSA, all concerns related to human and animal health or environment raised by Italy were already addressed in previous scientific opinions of the EFSA GMO Panel on

maize MON810. Thus, there is no specific evidence on risk to human and animal health or the environment, that would support the notification of an emergency measure under Article 34 of Regulation (EC) No 1829/2003 and that would invalidate its previous risk assessments of maize MON810.

For more details, see <http://www.efsa.europa.eu/en/efsajournal/pub/3371.htm>.

### Half a Century of Undue Delays in the EU Approvals of GM Products

A document issued by the Court of Justice of the European Union (ECJ) declaring that "the European Commission has failed to fulfill its obligations under EU laws on the deliberate release into the environment of genetically modified organisms and by failing to submit to the Council a proposal relating to the measures to be taken in laying down the procedure for the exercise of implementing powers conferred on the Commission."

According to EuropaBio, to date, 50 GM crop products still need to be assessed by the European Food Safety Association, and 21 are awaiting Commission and Member State Action. Delays are not considered due to issues on safety since most of the crop and event applications have already undergone risk assessment in the EU and have been approved in a number of other countries. Hence, EU needs a science-based, predictable and workable system for GM approvals in compliance with EU law.

See the original news at <http://www.europabio.org/positions/half-century-undue-delays-eu-approval-gm-products>. Original document from ECJ can be seen at <http://curia.europa.eu/juris/document/document.jsf?doclang=EN&text=&pageIndex=1&part=1&mode=req&docid=142241&occ=first&dir=&cid=905564>.

### Research Team Discovers How Temperature Affects Flowering Time

An international team of researchers under the leadership of the Max Planck Institute for Developmental Biology in Tübingen and Wageningen UR has studied two key genes that regulate flowering time in response to ambient temperature. The research team focused on

two genes, FLM (FLOWERING LOCUS M) and SVP (SHORT VEGETATIVE PHASE). The FLM gene can give rise to several different protein variants by a process called alternative splicing. After an mRNA copy of the gene has been produced, this pre-mRNA is not directly translated into protein; instead, one or several pieces are spliced out. In genes subject to alternative splicing, this can be done in different ways, producing different mature mRNA-molecules and finally various proteins.

In the case of the Arabidopsis FLM gene, there are mainly two splice products, referred to as FLM- $\beta$  and FLM- $\delta$ . Experiments at Tübingen showed that FLM-activity at low temperatures results mainly in the production of FLM- $\beta$ . As temperature rises, levels of FLM- $\beta$  gradually decrease in favor of the expression of FLM- $\delta$ . David Posé, first author of the study said "When heated from 16°C to 27°C, the ratio of FLM-variants adjusts within 24 hours."

For more details about this research, read the joint press release at <http://www.wageningenur.nl/en/show/To-bloom-or-not-to-bloom-Max-Planck-researchers-discover-how-flowering-time-is-affected-by-temperature.htm>.

## Research

### Biotech Tomato Expressing AtDREB1A/CBF3 Confers Tolerance to Water Deficit

A study shows that biotech tomatoes over-expressing the transcription factor encoding gene AtDREB1A/CBF3 from Arabidopsis thaliana showed significantly higher activities of important antioxidant enzymes when exposed to drought conditions.

The biotech tomato plants exposed to water deficit had lower concentrations of hydrogen peroxide and superoxide anion formation, compared to non-biotech plants, which implies lessening of reactive oxygen species. The researchers recorded a significant increase in the activities of the following antioxidant enzymes: superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX), glutathione reductase (GR), dehydroascorbate reductase (DHAR), and monodehydroascorbate reductase (MDHAR). There was also higher concentrations of ascorbic acid and glutathione in the biotech tomato plants. The results of the study imply that the biotech tomato lines can thrive in drought conditions indicated by lower oxidative stress due to activation of the antioxidant response.

Read the research article at

<http://www.sciencedirect.com/science/article/pii/S0981942813001617>.

### Scientists Develop EFSB Resistant Eggplant Using cry1Aa3 Gene

With the goal of developing eggplant shoot and fruit borer (EFSB) resistant eggplant, scientists from Indian Institute of Vegetable Research and Banaras Hindu University introduced cry1Aa3 gene into eggplant (cv. Kashi Taru) through *Agrobacterium tumefaciens* mediated transformation.

Polymerase chain reaction (PCR) and Southern blot analyses confirmed the presence of cry1Aa3 gene in the transformed plants. Furthermore, ELISA revealed the presence of Cry1Aa3 protein in the leaves and fruits of the transgenic plants. Expression of the Cry protein led to high mortality of EFSB in the shoot and fruit tissues of the transgenic eggplant lines. The authors of the study concluded that use of these resistant lines could decrease pesticide application to control EFSB, and thus contribute to a safer environment.

Read the abstract of the study at

<http://www.sciencedirect.com/science/article/pii/S026121941300152X>.

### Beyond Crop Biotech

#### Bt Protein Combats Intestinal Roundworm Infection

Scientists from USDA-Agricultural Research Service tested the efficacy of Cry5B, a protein from soil bacterium *Bacillus thuringiensis*, as an antihelminthic of large roundworm of pigs (*Ascaris suum*). Bt proteins are vertebrate-safe proteins used extensively and successfully on organic and conventional agriculture, in transgenic food and non-food crops, and in vector-control programs to kill insect pests.

The research showed that pig roundworm had intestinal receptors that bind to Cry5B and that the protein can kill larvae and adults in culture. Furthermore, oral administration of

Cry5B led to near complete elimination of the infection. Since *A. suum* is closely related to human intestinal roundworm (*A. lumbricoides*), then Cry5B is a potential protein that can be used to treat roundworm infections in humans.

Read more about the research at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3688533/>.

## Scientists Release Ash Tree Genome Assembly

The team of researchers at CLC bio and Queen Mary University of London (QMUL) have released a genome assembly of the European ash tree, *Fraxinus excelsior*, as part of the British Ash Tree Genome project. The release comes as populations of ash trees across Europe have been devastated by the ash dieback fungus, which spread to Denmark and to the UK in 2003 and 2012, respectively.

QMUL Senior Lecturer Dr. Richard Buggs, states, "We were very fortunate to sequence a tree that was the progeny of a self-pollination, produced ten years ago by David Boshier from the University of Oxford. The tree is now an invaluable resource, because its low heterozygosity enables a higher quality genome assembly than would have been possible in a more heterozygous tree."

The British Ash Tree Genome (BATG ) project started in January 2013. The latest assemblies are available for download on the BATG website at <http://www.ashgenome.org/>. For more information, read the news release at: <http://www.marketwatch.com/story/clc-bio-and-uk-scientists-assemble-ash-tree-genome-2013-09-26>.

## Document Reminders

### Translational Genomics for Crop Breeding Volumes I and II Now Available

Two volumes of the book *Translational Genomics for Crop Breeding* have been released by ICRISAT. Volume I: *Biotic Stress* focuses on genomic-assisted advances for improving

economically important crops against biotic stress factors, such as viruses, fungi, nematodes, and bacteria. Volume 2: Abiotic Stress, Quality and Yield Improvement focuses on advances in improving crop resistance to abiotic stresses such as extreme heat, drought, flooding as well as advances made in quality and yield improvement.

For more details about the two books, click on the following links:

<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470962909,descCd-tableOfContents.html> <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470962917,subjectCd-LS33,descCd-tableOfContents.html>.