November 13, 2013

Global

FAO: Less People are Starving in 2013

According to the Food and Agriculture Organization's (FAO) 2013 report on Food Insecurity, the number of people estimated to be suffering from chronic hunger that hinders active life has decreased from 868 million in 2010-2012 to 842 million in 2011-2013. The FAO added that the total number of undernourished has fallen by 17 percent since 1990–92.

Despite overall progress, however, FAO stressed that marked differences across regions still persist. Sub-Saharan Africa remains the region with the highest prevalence of undernourishment, with modest progress in recent years; Western Asia shows no progress; while Southern Asia and Northern Africa show slow progress .

FAO added that long-term commitment to mainstreaming food security and nutrition in public policies and programmes is key to hunger reduction. Keeping food security and agriculture high on the development agenda, through comprehensive reforms, improvements in the investment climate, supported by sustained social protection, is crucial for achieving major reductions in poverty and undernourishment.

See FAO's full report at http://www.fao.org/docrep/018/i3434e/i3434e.pdf. The report's executive summary is available at http://www.fao.org/docrep/018/i3458e/i3458e.pdf.

Agricultural Organizations Launch Global Open Data for Agriculture and Nutrition

A consortium of more than 50 organizations has launched the Global Open Data for Agriculture and Nutrition (GODAN) initiative at the Open Government Partnership Summit in London. This initiative seeks to support global efforts to make agricultural and nutritionally relevant data available, accessible, and usable for unrestricted use worldwide. The initiative focuses on building high-level policy and public and private institutional support for open data. The initiative encourages collaboration and cooperation among existing agriculture and open data activities, without duplication, and brings together all stakeholders to solve long-standing global problems.

For more information, visit http://www.godan.info/.

Africa

Bringing Perennial Grain Crops to Africa

Michigan State University (MSU) is studying the potential benefits of introducing perennial grains to African farms. MSU scientist Sieg Snapp leads the research project that will span five African nations identified as "priority countries" by the U.S. Agency for International Development: Ghana, Mali, Malawi, Tanzania, and Ethiopia.

Snapp's work will test the viability of perennial grain growth across varied African ecosystems. The research team will examine perennial grains' ability to reduce soil erosion and farm labor, improve water quality and increase the storage of organic matter in soil. It will also assess the potential risk of introducing a plant species into a new environment to ensure the grains do not damage the African ecology. "This is something I've wanted to do all my life – to bring new options to farmers in Africa," Snapp said.

For more information, read the MSU news release available at: http://msutoday.msu.edu/news/2013/bringing-perennial-grain-crops-to-africa/.

New Rice Research Hub Set Up in Burundi

With the assistance of the International Rice Research Institute (IRRI), the government of Burundi has established a regional rice research and development hub to improve food security in Eastern and Southern Africa. The new regional office will focus on developing and testing new rice varieties matched to the different rice production ecologies across Eastern and Southern Africa. Key government officials of Burundi, IRRI, and AfricaRice Center attended the inauguration of the regional office that was held on 30 October 2013, as part of the IRRI Board of Trustees meeting in Bujumbura, Burundi.

See IRRI's news release at http://irri.org/index.php?option=com_k2&view=item&id=12689:more-rice-for-africa-target-of-new-research-hub&lang=en.

Steering Committees of CGIAR Research Programs on Dryland Cereals and on Grain Legumes Meet in Kenya

Members of the Steering Committees of the CGIAR Research Programs on Dryland Cereals and on Grain Legumes have met for the second time in Nairobi on 1 and 2 November. The steering committees provide overall strategic direction, inputs for

enhancement of operation and building strategic alliances with partners, and monitor the progress of the programs. Its members include the Director Generals (or designates) of the CGIAR centers, donor representatives, and other partners.

The committees discussed the importance of baseline data and the critical analyses of existing projects and activities in setting targets for the Intermediate Development Outcomes (IDO) of the programs. Geospatial analytical and gender research capabilities and plans were also discussed, as were strategies for synergistic interactions between the CGIAR Research Programs. The members also had an opportunity to see how the research programs engage with partner organizations for up-and out-scaling during their joint visit to local partners and enterprises involved in the seed supply chain – Kenya Agriculture Research Institute (KARI)-Katumani Research Station, KARI Seed Unit; Dryland Seed Limited in Machakos; and Smart Logistics Solutions Ltd.

See ICRISAT's news release at http://www.icrisat.org/newsroom/latest-news/happenings/happenings1596.htm?utm_source=dlvr.it&utm_medium=twitter#5.

Americas

GM Food Labeling Rejected in Washington State

Washington voters rejected Initiative 522 (I-522), an initiative that would have required foods containing genetically engineered (GE) ingredients to be labeled. The vote was 54.8% opposed to labeling and 45.2% in favor of it. I-522 was brought to the Washington state ballot this year by anti-GMO (genetically modified organisms) activists to ban foods derived from GE crops. The initiative was opposed by a broad coalition of family farmers, scientists, doctors, consumers, and businesses from across the state.

"This is a clear victory for Washington consumers, taxpayers and family farmers across our state," said Dana Bieber, spokesperson for "No" on 522. The food industry claims that the initiative would have provided consumers with inaccurate and misleading information about the foods they buy, while increasing grocery costs to working families by hundreds of dollars per year.

More information about I-522 is available at http://www.factsabout522.com/.

APHIS Seeks Comments on Assessment of GE Apples

The USDA Animal and Plant Health Inspection Service (APHIS) announced at the Federal Register that the public comment on the plant pest risk assessment (PPRA) and draft environmental assessment (EA) of genetically engineered apples that resist browning (events GD743 and GS784) is now open until 9 December 2013. APHIS received a petition from Okanagan Specialty Fruits, Inc., (Okanagan) of British Columbia, Canada, seeking a determination of nonregulated status of the apples. After reviewing and evaluating the comments on the draft EA and PPRA and other information, APHIS will revise the PPRA as necessary and prepare a final EA. Based on the final EA, APHIS will prepare a National Environmental Policy Act decision document.

Comments may be submitted at http://www.regulations.gov/#!home. For more information, visit https://www.federalregister.gov/articles/2013/11/08/2013-26792/okanagan-specialty-fruits-inc-availability-of-plant-pest-risk-assessment-and-environmental.

Rutgers Study Americans' Perceptions on GM Food Labeling

Most Americans pay little attention to GM foods, according to a survey on public perceptions of GM food labeling conducted by researchers at Rudgers School of Environmental and Biological Sciences. More than half (53%) of the respondents said that they have limited knowledge about GM foods, and about 25 percent said that they are not aware of GM foods.

To better understand current consumer attitudes, the researchers asked questions about labeling in different ways. When asked about what they want to see in food labels that is not already there, only 7 percent said about GM food on their own. But when asked directly if they want GM foods to be labeled, 73 percent said yes. Majority (59%) of the respondents said that GM food labeling is important, which is about the same number of respondents who indicated that they want information about using hormones (63%), pesticides (62%), or antibiotics (61%), whether it was grown or raised in the United States (60%), and whether the product contains allergens (59%).

The working paper of the study is available at http://humeco.rutgers.edu/documents_PDF/news/GMlabelingperceptions.pdf.

Asia and the Pacific

Long Term Toxicity Study of GM Rice with Two Insect Resistant Genes Shows No Adverse Health Effects

A long term study conducted by China's National Institute for Nutrition and Food Safety showed that genetically modified rice does not cause adverse health effects when fed to rats. The authors of the study randomly selected 180 rats and split them into three groups: the first group was fed rice containing two genes, Cry1Ac and sck, that give rise to insecticidal proteins. The second was given non-GM rice, and the third was fed a control diet. The authors monitored the rats' body weight, food consumption and blood chemistry. After 78 weeks, the rats consuming the GM rice expressed no adverse health effects, the authors conclude.

The results of the study are published in the journal Food and Chemical Toxicology, available at: http://dx.doi.org/10.1016/j.fct.2013.10.035.

Review on Adoption and Performance of Bt Cotton in India

Agro-Economic Research Centre Director Dr. S.S. Kalamar reviewed the adoption and performance of Bt cotton in India. According to his article published at SAGE, the commercialization of Bt cotton in India in 2002 led to the beginning of 'gene revolution' in India. At present, almost 90 percent of the cotton area in the country is occupied by Bt cotton, indicating a rapid adoption of the technology among farmers. Studies on the impact of Bt cotton on different parameters were found to be varying. Thus, Kalamar concluded that the benefits of Bt cotton cannot be generalized to all farmers, areas, and time frames.

Read the abstract at http://mla.sagepub.com/content/4/2/211.short.

Gene that Makes the Roots of Plants Grow Downward Discovered

A research team led by the National Institute of Agrobiological Sciences (NIAS) in Japan, which includes scientists from the International Center for Tropical Agriculture (CIAT), has discovered the DEEPER ROOTING 1 (DRO1) gene that makes the roots of rice plants grow downward instead of outward. This allows the plants to reach water held deeper in

the soil. Plants withDRO1 can continue to grow and produce grain even under extreme water stress.

Scientists found the DRO1 gene in a deep-rooting upland rice variety from the Philippines locally known as Kinandang Patong. Joe Tohme, director of CIAT's Agrobiodiversity Research Area, said that the discovery of the DRO1 gene is a significant breakthrough in research to adapt food crops to water stress, especially as farmers around the world begin to feel the pressure of climate change on water availability.

For more information, visit http://irri.org/index.php?option=com_k2&view=item&id=12667:the-revolution-underground&lang=en.

Agricultural Experts to Farmers: Hybrid Seeds Boost Crop Productivity

During a field visit in Islamabad organized by Monsanto Pakistan on November 9, agricultural experts suggested to farmers to use best quality corn hybrid seeds to increase their production. The experts said that after the introduction of hybrid maize in the 1990s, farmers have gradually shifted to hybrid maize from traditional/open pollinated varieties (OPVs) as hybrid maize has increased production from 30 maunds/acre to 80-120 maunds/acre. The experts also said that the adoption of best quality hybrids is important because the weather patterns are changing and farmers need seeds that will cope with harsh weather conditions, fit in changing crop rotations and most importantly provide the much-needed economic benefits to the farmers.

Around 500 corn farmers from different areas in Punjab, including Faisalabad, Gojra, Deepalpur, Mian Channu, Sahiwal and Okara, participated in the field visit. The event aimed to educate the farmers on best agronomic practices. Monsanto's representative Mr. Atif Majeed told the farmers that grains of some of Monsanto's new hybrids are bigger and their resistance against diseases is also high.

For more information, visit the Pakistan Biotechnology Information Center website at: http://www.pabic.com.pk/Agricultural%20Experts%20advised%20farmers%20to%20use%20hybrid%20seeds%20to%20boost%20their%20Crop%E2%80%99s%20productivity.html.

Europe

GM Crops and their Importance for Swiss Agriculture

A fact sheet on the importance of GM crops in Swiss agriculture was published by Swiss Academy of Sciences. According to the report, Swiss agriculture is in need of increasing its production while maintaining the same quality and reducing environmental impact. New techniques used in agriculture such as genetic modification can help achieve these objectives. However, the use of GM crops in research and food production is currently impeded by legal constraints. The report suggested the following possible courses of action to improve Swiss agriculture:

- further strengthening of public plant research
- basing the approval procedure of GM plants on the product
- enabling and scientifically supporting coexistence.

Download the fact sheet at
http://www.geneticresearch.ch/downloads/Factsheet_GrueneGentechnik_e.

Scientists Discover Genetic Mechanisms that Allow Insect Adaptation to New Host Plant

Rothamsted Research scientists, in collaboration with researchers from the Liverpool School of Tropical Medicine and Bayer CropScience AG in Germany, have identified novel genetic changes that underlie an insect host shift and the emergence of a new subspecies of crop pest with natural resistance to pesticides.

A subspecies of peach potato aphid (Myzus percicae nicotianae) has evolved to feed and survive on tobacco plants. This subspecies has reduced sensitivity to the secondary metabolite nicotine (tobacco plants produce this as a potent natural insecticide) and neonicotinoids, a class of synthetic insecticides. Study leader Dr. Chris Bass and his team identified genetic mutations involved in the initial steps of the host shift of peach potato aphid to tobacco. They found that a detoxification enzyme CYP6CY3, naturally present in all aphids, is responsible for the metabolism of nicotine to less toxic compounds. However,

for this process to occur at significant levels that allow survival of aphids feeding on tobacco plants, the gene producing this enzyme needs to be present in many more copies than the normal two copies, up to 100 copies in the most resistant aphids. Professor Lin Field of Rothamsted Research said "We now have further understanding of the molecular mechanisms that can drive insecticide resistance and this can be utilized when developing pest management strategies."

The study is published in the journal Proceedings of the National Academy of Sciences (PNAS) available at: 10.1073/pnas.1314122110. The news release can be read at http://www.rothamsted.ac.uk/news/emergence-new-crop-pests-genetics-action.

Vatican Encourages Dialogue among Stakeholders for Food Security

Cardinal Peter Turkson, President of the Vatican's Pontifical Council for Justice and Peace, presented during the World Food Prize Borlaug Dialogue International Symposium in Iowa on 17 October 2013. The Cardinal directly addressed the controversy of GM food and used the Catholic thought and Vatican II as his reference points. He quoted Pope John Paul II who said, "The findings of science must be put to use in order to ensure a high productivity of the land in such a way that the local population can secure food and sustenance without destroying nature."

Cardinal Turkson also said that it is right to celebrate the achievements of the scientists who were hailed as this year's WFP Laureates. He stressed that the Catholic church is not anti-science, nor it promotes biotechnology. He called for a meaningful dialogue amongst the stakeholders since all sides of the controversy are targeting overcoming hunger and sustainable agriculture. He said that through mutual and respectful listening with a genuine desire to learn from the other, will lead to better, enduring, and sustainable solutions towards world food security.

Read the complete transcript of Cardinal Turkson's presentation at http://ofwlaw.files.wordpress.com/2013/10/cardinal-turkson-at-world-food-prize-in-des-moines-10-17-2013.pdf.

Research

GmTMT2a Gene from Soybean Increases α-tocopherol Levels in Corn and Arabidopsis

Tocochromanol (vitamin E) is vital in human and animal nutrition. However, it is only produced by photosynthetic organisms. γ-Tocopherol methyltransferase (γ-TMT), a key enzyme in the tocopherol production in plants, has the role of transforming γ, δ-tocopherols into α-, β-tocopherols. Thus, Lan Zhang from Chinese Academy of Agricultural Sciences and colleagues investigated 15 soybean cultivars and isolated GmTMT2 gene from five varieties based on tocopherol content. GmTMT2a was expressed in E. coli and the purified protein effectively converted γ-tocopherol into α-tocopherol. Overexpression of GmTMT2a enhanced α-tocopherol content 4–6-fold in transgenic Arabidopsis, and α-tocopherol content increased 3–4.5-fold in transgenic maize seed, which correlated with the accumulation of GmTMT2a. Transgenic maize with high levels of α-tocopherol may be beneficial for animal health and growth.

Read the abstract at http://link.springer.com/article/10.1007/s11248-013-9713-8.

New LAMP System for Detection of GM Crops

Scientist Gurinder Jit Randhawa of the National Bureau of Plant Genetic Resources, India, and colleagues developed a new loop-mediated isothermal amplification (LAMP) system for screening GM crops. The optimized LAMP assays using designed primers, target commonly used promoters, such as Cauliflower Mosaic Virus 35S and Figwort Mosaic Virus promoter and marker genes aminoglycoside-3'-adenytransferase, neomycin phosphotransferase II and β-glucuronidase. The performance and specificity of the end-point and real-time LAMP assays were confirmed using 8 GE cotton events on four detection systems. LAMP assays on isothermal real-time system were found to be most sensitive, detecting up to four target copies, in just 35 minutes. Thus, the LAMP assays tested can be used for fast and cheep screening of GM status of a sample, regardless of the crop species of GM trait. These assays may be used with fast and simple DNA extraction technique for on-site GMO screening.

Read the research article at http://pubs.acs.org/doi/abs/10.1021/jf4030085.

Announcements

Plant Genomics Congress

What: 2nd Plant Genomics Congress USA

Where: Renaissance St. Louis Grand Hotel, 800 Washington Avenue, St. Louis, Missouri 63101 USA

When: 11-12 September 2014

For further information contact Steve Hambrook, Conference Director at steve@globalengage.co.uk or visit the conference website at: http://www.globalengage.co.uk/plantgenomicsusa.html.

Document Reminders

ICRISAT's New Online Tool Optimizes What Agricultural Research Can Do for Development

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has launched EXPLOREit, a new way of making valuable agricultural research accessible across the globe. This unique multi-navigational system will become the main source of agricultural information, with profiles of all topics, systems, crops, locations, and resources in the countries where ICRISAT works. The user can navigate in any way and still get to the same information. For example, the latest research on women farmer groups growing improved groundnut varieties in Mali will appear in the gender (topic), groundnut (crop) and Mali (country) profile. Regardless of which entry point is used, the information will be obtained due to the improved accessibility.

Visit the online tool's website at http://exploreit.icrisat.org/.

Video: Healthier Rice for Healthier People

Hidden hunger, or micronutrient deficiency, occurs when people don't get enough vitamins and minerals in their diet. Two billion people suffer from one or more micronutrient deficiencies and women and children are most at risk. The International Rice Research Institute (IRRI) is developing healthier rice varieties with more iron, zinc, and beta carotene (a source of vitamin A) to help reduce hidden hunger. Watch IRRI's new video titled Healthier Rice for Healthier People at https://www.youtube.com/watch?v=sumKpYiLKFM#t=153.