



Agri Innovation Post

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Southern Asia is one of the wettest regions in the world and it is estimated that 20 million hectares of the world's rice-growing area is at risk of flooding in places such as India, Bangladesh, and China. This corroborates with the current instances across India. Floods in Assam submerged 145 villages, damaging 2 lakh hectares of crop land. In Punjab, a breach in Ghaggar river following torrential rains caused flooding in Rajpur, Ghanaur, Shutrana, Sangrur and Moonk damaging 50,000 acres of crop and much alike is the case in North Bihar where 12 districts have been flooded. However, on the contrary, states like Jharkhand and Maharashtra are hit by drought. In Jharkhand, most of the districts have received 50% less than normal rainfall this year.

The worst hit by these consequences are farmers and allied industries who are largely dependent on agriculture but produces food for rapidly growing population. To safeguard food supplies and develop sustainable food systems, adoption of flood and drought-resistant crops along with rapid innovations are required to make crops more resilient to climate change.

The planet is headed for extreme climatic conditions which will not allow us to grow the required amount of food we need. Globally, various organisations have recognised the crisis and are working towards securing the impending danger that lies ahead. For instance, the International Center for Tropical Agriculture has been working on finding heat and drought-beating genes that can be bred into bean varieties in vulnerable areas with rising temperatures. Interestingly, 400 million people rely on bean varieties for nutrition and climate change is threatening to reduce their growing area by up to 50 percent by 2050.

While India has introduced index-based flood insurance (IBFI) system for quicker compensation payouts to farmers in times of crop failure, it is pertinent to introduce stress-resistant crops to make farmers self-sustainable and help them support food security rather than depending on schemes, insurance or subsidies.



Shivendra Bajaj
Executive Director
Federation of Seed Industry of India-Alliance for Agri innovation

AgBiotech News

[No scientific evidence GM crops unsafe: Govt](#)

(The Hindu Business Line)

Answering a question on the safety of GM crops, Shri Babul Supriyo, Minister of State for Environment, Forest and Climate Change in a written reply said the Ministry has directed all States to constitute and strengthen the State Biotechnology Coordination Committees and District Level Committees to monitor illegal cultivation of GM crops. However, he also said that the Centre has no scientific evidence to prove that GM crops are unsafe.

[India's GM regulatory model needs a complete overhaul](#)

(The Times of India)

The Indian regulatory regime for GM crops must be recast on the lines of America's largely self-regulatory regime. Any regulation beyond that level ends up harming farmers, scientists, and – most importantly – the consumers, who are deprived of better and cheaper food.

[GMOs: Let's take a balanced view](#)

(Deccan Herald)

Conventional plant breeding is too slow to cope with changes in the environment including famines, evolving pests and increasing food demand. Further, GM is a more precise technology to arrive at the desired trait whereas plant breeding can introduce many other changes in the plant. GM can also be used to introduce traits which could never be achieved through traditional plant breeding.

[India's pro-GMO cotton farmers make case for relaxed biotech crop rules to prime minister](#)

(Genetic Literacy Project)

Farmers who want to grow GM crops have met senior ministers of the government of India to represent their case. A senior minister said that the government would want farmers to have access to better and latest technology. A section of cotton farmers, headed by Maharashtra's Shetkari Sanghatana, and a group of farmers' organizations, some of them non-governmental bodies (NGOs), earlier had planted HTBT (herbicide-tolerant Bacillus Thuringiensis) in some parts of the country.

[Genome editing to help cope with food demand](#)

(The Times of India)

To fulfil the burgeoning demand for food and nutrition, the yield and nutritional value of food crops need to be enhanced, that too, with limited agricultural land. During the past few decades, crop food productivity has been increased through genetic modifications (GM) utilising GMO technology. However, due to the huge controversy over the acceptance of GM crops, there is an urgent need to use alternative biotechnological techniques. The better alternative of GM crops can be genome editing.

[Farmers from Madhya Pradesh Benefit from Project SAFFAL](#)

(ISAAA)

Smallholder maize farmers, extension and agriculture department officials, and retailers joined Farmers Awareness Program on Fall Armyworm, a mega farmer's awareness campaign at Chhindwara, Madhya Pradesh. Use of pheromone traps and safety kits were demonstrated to help the farmers manage fall armyworm. During the event, South Asia Biotechnology Center (SABC) displayed samples of major insect pests of maize, including Spodoptera frugiperda (fall armyworm), *S. litura* (leaf-eating caterpillar), *Chilo partellus* (white stem borer), and *Sesamia inferens* (pink stem borer) with the help of Dr. Sharanabassappa of UAHS, Shivamogga.

[Strategic research collaboration by Netherlands based crop innovation company](#)

(The Economic Times)

A Netherlands based crop innovation company and India based agri solutions company have come together for a multi-year strategic research collaboration for key field crops. The collaboration will ensure crop resistance to abiotic stresses such as drought & heat, and biotic stresses like pests and diseases.

Ag Biotech News Around the World

USDA Probes Detection of GE Wheat in US Agri Fields

(ISAAA)

The United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) discovered genetically engineered (GE) wheat in an unfarmed agricultural field in Washington, USA. Upon thorough investigation, the USDA determined that the GE wheat were glyphosate resistant. The varieties detected were MON 71300 and MON 71800. Previous voluntary food and feed safety evaluation conducted by the Food and Drug Administration (FDA) confirmed that MON 71800 was as safe as non-GE wheat currently on the market. Similarly, the FDA concluded that there would have no safety concerns in the unlikely event that low levels of MON 71300 wheat or MON 71800 wheat were present in the food supply. MON 71300 has the same glyphosate-resistant gene as MON 71800.

GM Crops Aid Transition of Pakistan from Subsistence to Commercial Farming

(ISAAA)

At a recent CropLife Pakistan Association event, local farmers expressed their support for GM crops as the performance of GM maize hybrids in the field was displayed. They demonstrated their sentiments about biotechnology, particularly how it helped improve their profitability through reduced input cost and improved yields. The National Uniform Yield Trials (NUYT) conducted by the Pakistan Agriculture Research Council (PARC) showed the improvements of biotech maize hybrids in terms of yield increasing from 10 to 45 percent as compared to conventional hybrids.

Experts Assess the Impact of Risk Assessment on Public Acceptance of Gene-edited Crops

(ISAAA)

Experts from DowDuPont published a review on how government regulations of gene-edited crops and public acceptance of these crops affect each other. The paper concluded that separating the goal of regulating technologies to protect public safety from the goal of attaining public acceptance may help avoid the risk of meeting neither goals. The authors also emphasized that education and outreach are a better use of government resources to gain public acceptance of beneficial technologies. However, it also noted that these efforts will be maximized if aimed at an audience who are willing to consider new information instead of an audience who already believes that they know everything about the technology. Factual communications from trusted and reliable sources were also highlighted to oppose misinformation commonly spread through social media.

Four Companies Receive Permit to Import GM Products in Zambia

(ISAAA)

The National Biosafety Authority (NBA) of Zambia released permits to four companies to import products that may contain genetically modified crops. The permits were granted to Gatbro Distributors, Pick n Pay, Southern National Import and Export Limited and Choppies Super Stores market. The NBA Scientific Advisory Committee conducted risk assessments and found that the products that may contain GM crops are safe for human consumption.

Government Spokespersons Impressed by Progress in Agri-biotech Research in Uganda

(ISAAA)

Over 60 spokespersons from various government ministries, departments and agencies (MDAs) were excited by the scale of progress made in agricultural research in Uganda. The spokespersons attended an engagement organized by National Agricultural Research Organization (NARO) through its information-sharing hub, the Uganda Biosciences Information Center (UBIC), at the National Crops Resources Research Institute (NaCRRI) at Namulonge. Impressed by the progress, the Government spokespersons requested that NARO creates a glossary and FAQs on agricultural biotechnology and have these widely disseminated during various fora and on online platforms to facilitate sensitization efforts on agricultural biotechnology.

[Crops bio fortification to reduce malnutrition, says minister](#)

(Newvision)

Uganda's State Minister for Agriculture, Christopher Kibanzanga said that the government has come up with National Bio-fortification Technical working group to kick start a campaign to promote the production and consumption of biofortified crops varieties in a bid to improve the nutritional deficiency in the country.

[By Land and Air, Students to Detect Crop Diseases With Tech](#)

(Seed World)

A team of undergraduates in the College of Engineering, partnered with Michael Gore, Ph.D. '09, professor of molecular breeding and genetics for nutritional quality in the College of Agriculture and Life Sciences, is using the tools of digital agriculture to spot Northern leaf blight before it's too late. This will be done by a ground rover exploring the plants from below, in communication with an airborne drone observing them from above. The intent is to begin applying this in developing nations so that farmers can detect early outbreaks of plant diseases that they have been combating for generations. Robotics can be used to do this work with greater precision, greater accuracy, less time and less labor.

[How about CRISPR-edited Crops in Organic Agriculture?](#)

(ISAAA)

Amidst the debate whether genetically engineered crops are harmful or beneficial especially to farmers in developing countries, some people are joining in to decide if the new gene editing technology, CRISPR, is really just "GMO 2.0", or an advanced and helpful tool in speeding up the plant breeding process. In July, the European Union's Court of Justice decided that crops made with CRISPR are to be classified as genetically engineered, but in the US, the regulatory systems are considering distinctions between genetic engineering and specific uses of genome editing.

[To feed its 1.4 billion, China bets big on genome editing of crops](#)

(Science Mag)

Gao Caixia is a plant scientist working at the leading edge of crop improvement. Gao is one face of the Chinese government's bet that CRISPR can transform the country's food supply. A natural bacterial immune system, CRISPR was turned into a powerful genome editor just a few years ago in U.S. and European labs. Yet today, China publishes twice as many CRISPR-related agricultural papers as the second-place country, the United States. China may one day need CRISPR-modified plants to provide enough food for its massive population. Before the harvest of that effort can move from labs to farms and tables, however, China needs to resolve how it will regulate CRISPR-engineered crops—a divisive issue in many countries.

New Research

[Scientists make fundamental discovery to creating better crops](#)

(Science Daily)

A team of scientists led by the Department of Energy's Oak Ridge National Laboratory have discovered the specific gene that controls an important symbiotic relationship between plants and soil fungi, and successfully facilitated the symbiosis in a plant that typically resists it. The discovery could lead to the development of bioenergy and food crops that can withstand harsh growing conditions, resist pathogens and pests, require less chemical fertilizer and produce larger and more plentiful plants per acre.

[Scientists Decode DNA Secrets of World's Toughest Bean](#)

(ISAAA)

Scientists from the University of California Riverside (UC Riverside) have decoded the genome of black-eyed peas, a legume also known as cowpea. This is the first high-quality reference genome for cowpea. One of the cowpea's traits that the scientists are looking into is its remarkable ability to recover from drought stress.

[Gene Identified that Will Help Develop Plants to Fight Climate Change](#)

(ISAAA)

Underground networks of roots forage for nutrients and water for plants sustenance. Yet, the genetic and molecular mechanisms that govern which parts of the soil roots explore remain largely unknown. In a breakthrough that will help reduce atmospheric carbon from plants, researchers from Salk Institute have discovered a gene that determines the depth of root growth in the soil. The findings of this study will allow researchers to develop plants that can help combat climate change as part of Salk's Harnessing Plants Initiative.

[Zero-Waste Plants Being Developed](#)

(ISAAA)

Large proportions of crops are discarded during or after harvest, including plant parts containing proteins, fats, and fiber. Professor Luisa Trindade, professor at the Department of Plant Sciences at Wageningen University and Research (WUR) wants to change this. Trindade wants to increase the value of crop residues and is currently working on fiber crops, including miscanthus. Her research group has developed eight potential new hybrid varieties of miscanthus which have been planted in 10 different locations in Europe. Miscanthus has interesting properties such as high biomass yields and high CO2 capture which promotes soil quality.

[Hybrid Corn: High Yields and Nitrogen Efficient](#)

(ISAAA)

Purdue University in their study emphasized that over the past 70 years, yield and nitrogen efficiency of hybrid corn varieties have increased significantly. The study's purpose is to identify how corn plant utilized nitrogen throughout the years to guide breeders in their decision making involving future hybrids. According to Tony Vyn, a professor at Purdue's Department of Agronomy, they observed a "progressive improvement" in the nitrogen use efficiency in corn hybrids, which then results in higher yields as modern hybrids are able to absorb more of the nitrogen fertilizer applied. Results highlight that genetic improvements in corn hybrids have led to an 89 percent increase in grain yields and a 73 percent increase in nitrogen use efficiency from early hybrids up to the present.

[Argentina Successfully Develops Boll Weevil-Resistant Cotton](#)

(ISAAA)

Scientists from Argentina have developed a transgenic cotton resistant to the cotton boll weevil through gene silencing, minimizing the damage caused by the pest and allowing cotton plants to thrive. Cotton boll weevil (*Anthonomus grandis*) has plagued Argentina's cotton industry for years, causing significant losses during cotton production. This challenge drove the researchers from the National Institute of Agricultural Technology (INTA), to develop transgenic cotton resistant to the pest. The scientists aim to decrease the damage caused by the weevil to the cotton plant to help Argentina's cotton industry.



[APSA's](#) video on plant breeding innovation demonstrates how latest technologies are used by scientists and breeders to develop new varieties of crops

Upcoming Events

August 2019

International Agriculture & Horti Expo

Date: August 1-3, 2019

Venue: New Delhi, India

International Conference on Plant Tissue Culture and Plant Biotechnology

Date: August 1-2, 2019

Venue: Amsterdam, Netherlands

Milan International Conference on Agricultural, Biological and Environmental Sciences (MABES)

Date: August 5-7, 2019

Venue: Milan, Italy

International Conference on Agriculture and Food Security (AGROFOOD)

Date: August 8-9, 2019

Venue: Colombo, Sri Lanka

International Conference on Plant Science and Molecular Biology

Date: August 19-20, 2019

Venue: Osaka, Japan

The Seeds of Our Future: Innovating Global AgTech

Date: August 20-23, 2019

Venue: San Jose, USA

International Conference On Agriculture Biotechnology Science And Engineering (iCABSE)

Date: August 23-25, 2019

Venue: Ho Chi Minh, Vietnam

September 2019

International Sugar Cane Congress

Date: August 31- September 8, 2019

Venue: Cevil Redondo, Argentina

International Conference on Agriculture, Biological and Environmental Sciences (PABE)

Date: September 5-7, 2019

Venue: Paris, France

International EUCARPIA Meeting on Genetics and Breeding of Capsicum and Eggplant (CapsEgg)

Date: September 11-13, 2019

Venue: Avignon, France

CRISPR AgBio Congress

Date: September 25-26, 2019

Venue: London, UK

International Conference on Agro BigData and Decision Support Systems in Agriculture (BigDSSAgro)

Date: September 25-27, 2019

Venue: Viña del Mar, Chile

Nextgen Genomics, Biology, Bioinformatics and Technologies Conference (NGBT Conference)

Date: September 30 – October 2, 2019

Venue: Mumbai, India

October 2019

International Conference on Research of Agricultural and Food Technologies

Date: October 03 – October 05, 2019

Venue: Sheraton Grand Adana, Adana, Turkey

Global Summit on Plant Science

Date: October 07 – October 08, 2019

Venue: Hotel Silken Puerta Madrid, Madrid, Spain

Agriculture, Forest and Aquaculture Sciences Congress

Date: October 13 – October 14, 2019

Venue: Mirel Hotel, Ereğli, Turkey

International Conference on Agricultural Engineering for Sustainable Agriculture Production

Date: October 14 – October 15, 2019

Venue: IPB International Convention Center, Bogor, Indonesia

International Symposium on Agricultural Engineering

Date: October 31 – November 02, 2019

Venue: University of Belgrade, Belgrade, Serbia