

Communicating the value and potential of a technology has always been challenging for the scientists and technology developers. This is primarily due to a wide gap between the aspects of technology that appeal to developers and those that are relevant to the public. This negatively impacts the perspective of the consumers and public in general, leading to doubts and low acceptance of the technology.

The seed industry in its quest of improving the efficiency of plant breeding has been utilizing gene editing technology to harness available allelic variation as well as increasing variation. The task of creating awareness regarding the technology, also falls upon us. Alliance for Agri-Innovation collaborated with international partners to develop a short video describing the Gene editing technology, its efficiency and potential benefits for farmers and consumers.

The video describes the advent of plant breeding by selection of plants that were tastier, nutritious and stronger. Followed by Gregor Mendel laying the foundation of genetics that progressed in the 20th Century and formed the basis of new plant breeding technologies.

The video has been developed in multiple languages ([English](#), [Hindi](#), [Marathi](#) and [Telugu](#)) and is shared on our YouTube channel. We will be subsequently sharing it through our social media handles. This is another effort by AAI for creating awareness about gene editing besides our articles in the print media shared in this newsletter.

We have also captured interesting developments and research work from around the world in the agri industry. We hope you find it a good read.



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

[Alliance for Agri Innovation urges GOI to allow Bt Brinjal trials](#)

(Agri News Network)

Alliance for Agri Innovation (AAI), a special interest group of Federation of Seed Industry of India (FSII) urges the Central and State Governments to allow field trials of Bt Brinjal in India. A letter has been sent to the Ministry of Agriculture and Chief Ministers of Madhya Pradesh, Karnataka, Bihar, Chhattisgarh, Jharkhand, Tamil Nadu, Odisha and West Bengal to bring their attention to this matter. The current Bt Brinjal event which is going for field trials, which were approved by Genetic Engineering Appraisal Committee (GEAC) in May 2020, was developed by the National Institute of Plant Biotechnology under Indian Council of Agricultural Research (ICAR) and has been licensed to an Indian company for commercialization. This technology is different from the Bt Brinjal technology which despite approval by GEAC was put under moratorium in India but is being grown commercially by farmers in Bangladesh since 2014.

[Alliance for Agri Innovation celebrates 25 years of growing GM crops](#)

(BioVoice)

Alliance for Agri Innovation (AAI), a special interest group of Federation of Seed Industry of India (FSII) is celebrating 25 years of planting biotech crops globally. The first biotech crop was commercialized in 1996 and the initial planting was done in only 1.7 million hectares. The planting area grew to 191.7 million hectares by 2018 which is ~113-fold increase. As per a report by PG Economics, the net farm level economic benefit was just under \$19 billion (INR 14,279 crore) in 2018, equal to an average increase in income of \$103/hectare (INR 7740/hectare). From 1996 to 2018, the net global farm income benefit was \$225 billion (INR 1.7 lakh crore), equal to an average increase in income of \$96.7/hectare (INR 7267/hectare).

[The HT Bt mess needs to be cleaned up swiftly](#)

(The Hindu Business Line)

Bt1 Cotton was approved in 2002, while Bt2 was approved in 2006. An Indian company, Mahyco, brought it to India, in collaboration with Monsanto. Over the past 18 years, Bt Cotton technology has covered over 95 per cent of the country's cotton. About 70 lakh cotton farmers derived phenomenal benefits, as did the country. Around 2007, several State governments placed a cap on the Maximum Retail Price of Bt Cotton seeds. In 2016, the Ministry of Agriculture sounded the death knell by fixing the prices of Bt cotton seeds at Rs 800 per packet, including a payment of Rs 49 to the technology provider, which over the past five years has been reduced to "zero". The current MRP is Rs 730.

[Conducive Regulation for Adoption of New Plant Breeding Technologies](#)

(Business World)

Adoption of science and technology in all aspects of life has been the hallmark of modern civilization. We expect technology to address challenges and make our lives easier, the same holds true for technological intervention in farming. The farmers use technology to smoothen the process of field preparation by mechanization and improve efficiency of farm inputs, be it pesticide or bio stimulant coated seeds, controlled irrigation and nutrient inputs or fertigation. Field monitoring and data analysis, done onsite or remotely, can also help in managing a healthy crop using appropriate nutrient supplements and pest control methods as and when required.

[GMO crops are safe and nutritious. India needs them to feed itself](#)

(GLP)

The need to increase agricultural productivity without increasing the area under cultivation to support our increasing demand for quality food remains a challenge for the Indian farmers. The erratic and severe weather changes have also added to the farmers' woes, such that their inputs costs have to be reduced to assure some profit. With multiple variables impacting farm yields, we cannot go back to traditional ways for increasing productivity and farm profits. We must adopt new technologies to keep up with the challenges of safeguarding our environment and resources. Agricultural biotechnology is a part of the package of solutions that we need to use in this endeavour. As is true of any new technology, safety plays a crucial role in adoption of the technology.

[132 research institutes press Europe to embrace CRISPR crops](#)

(ISAAA)

The European Sustainable Agriculture through Genome Editing (EU-SAGE) network and its members from 132 European research institutes and associations urge the European Council, European Parliament, and the European Commission to reconsider their stance on genome editing, which is one of the tools needed to achieve the Sustainable Development Goals. In an open statement, the EU-SAGE network said that developing new crop varieties need tools that are safe, easy, and fast, and the latest addition to these tools is precision breeding or genome editing.

[Crop biotech innovation isn't enough to shut down the anti-GMO propaganda machine](#)

(GLP)

Drawing on my scientist informants, and going back to them repeatedly, I did my best to record over many pages exactly what these scientists had done, why, and how. And that is how I came upon those precious moments when the scientific spirit showed itself. I learned that fundamental research, the quest for knowledge, can lead to unexpectedly useful developments; and that people harnessed together by a shared set of goals can accomplish much more than people working alone and afraid that someone will steal their data. But when these scientists' planned gift to the world, and especially to the poorest on the planet, became patent-protected products, commercialized by Monsanto and other big agricultural companies with powerful marketing networks, things changed.

[China could crack down on fall armyworm pest invasion with GMO insect resistant Bt corn](#)

(Science Direct)

Globally, FAW has been found to be resistant to over 30 active ingredients of insecticides from all major classes. Moreover, genome-wide sequencing analysis revealed that FAW populations invading China already carry resistance to organophosphate and pyrethroid insecticides. Another strategy is to use genetically engineered (GE) corn that is resistant to FAW. GE crop varieties producing insecticidal crystalline (Cry) proteins and/or vegetative insecticidal proteins (Vip) derived from Bt that are selectively toxic to different insect species, are planted in many parts of the world to manage caterpillar pests, often reaching more than 80% adoption levels.

[Plants Have Hormones, Too, and Tweaking Them Could Improve Food Supply](#)

(Scientific American)

Researchers at the Institute of Network Biology in Germany and their colleagues may have found a way to help. In early July they published a study in Nature showing that plants communicate with the environment in more complex ways than previously thought. The investigation revealed that the information-processing network, driven by hormones, in one genus of plants is carried out by more than 2,000 protein interactions, hundreds of which had not been discovered before. "We're going to need a second green revolution," says Shelley Lumba, a plant biologist at the University of Toronto, who was not involved in the study. "These would be good leads to test."

[Gene editing consultation is a 'positive step' towards breeding future crops, say farmers](#)

(Eastern Daily Press)

The announcement of a public consultation on the post-Brexit regulation of precision plant breeding techniques including gene editing has been welcomed as a "positive step" for farmers. Unlike traditional genetic modification (GM) – which may involve insertion of foreign DNA into an organism – gene editing is a group of technologies which allow scientists and breeders to target and control specific genes already present in a plant species.

[GMOs: No time for argument](#)

(The Nation)

An aged farmer from Katsina State Alhaji Salmanu, Chairman, Nigeria Ginners Association recently stunned an audience at a debate on whether Nigerians should allow Genetically Modified Organisms (GMOs) or not when he said that the hungry man has no choice of where the food is coming from." It has become obvious that Nigeria is one of the countries in Sub-Saharan Africa that have the challenges of food security. It is estimated that more than 50 million Nigerians go to bed without food. This is because in the past few years, the United Nations Food and Agricultural Organisation has predicted

that there would be severe starvation due to Nigeria's inability to produce what the citizens need. The problem is further exacerbated by an over-reliance on rain-fed agriculture, conflicts that displace farmers and lack of technology.

[UK anti-GMO groups aim to block relaxed CRISPR crop rules gaining bipartisan support in Parliament](#) (Feed Navigator)

A new Agriculture Bill is making its way through the UK Parliament, and an amendment has been tabled that would give the current UK Secretary of State for the Environment, Food and Rural Affairs, George Eustice, the power to change the definition of a GMO and re-classify many forms of genome editing as non-GM, they say. That would mean that those techniques were no longer regulated and could be used on UK farms or in its food without the public's knowledge or consent, claim Beyond GM, GM Freeze and GMWatch. The campaigners argue that a "key and worrying aspect" of the amendment, tabled by Lords Cameron, Krebs and Rooker and Baroness Hayman, is that it proposes to give the UK Secretary of State the power to alter the definition of GMOs in the Environmental Protection Act 1990, without the need for debate or parliamentary scrutiny.

[Dr Jacqueline Rowarth: Are regenerative and organic farming really that climate-friendly?](#) (NZ Herald)

Producing food has an impact on the environment. Whatever the food, whatever the system, there is an impact. Land requirement can be reduced by growing tomatoes in greenhouses, but the trade-off is building materials and energy, with greenhouse gas (GHG) implications. Moving hens from outside into barns improves air quality and improves longevity, but again requires facilities. Growing apples instead of pasture for cows reduces methane but increases requirements for pest and disease control, with consequent GHG associated. Anything that increases fossil fuel use increases GHG, the impact of which lasts for centuries. This means that the current focus on uncoupling food production from impacts is fraught with difficulties.

[Science Communication As Tonic For Agricultural Biotechnology](#) (Leadership)

Experts in the biotechnology sector agree that the role of science communication in informing, educating and sensitizing the public on new innovative technological tools such as agricultural biotechnology is very vital. She said effective science communication and awareness to debunk unscientific myths about agricultural biotech and its tools had moved away from being urgent to an emergency, adding many poor countries that agricultural biotech was supposed to benefit the most were being deprived due to false information.

[Adoption of biotechnology tool necessary to enable Nigeria attain food security](#) (The Nation)

Adoption of agricultural biotechnology tool, among other tools is necessary to enabling Nigeria attain food security. Speaking at a virtual Media Summit on Status of Agricultural Biotechnology Research in Nigeria, Country Coordinator, Open Forum on Agricultural Biotechnology (OFAB), Dr Rose Gidado, noted that the application of deliberate efforts that will encourage stakeholders to participate in science-based decision is crucial and necessary for the acceptance and adoption of the innovative technology. Dr Gidado noted that the Sustainable Development Goal (SDG) of Zero hunger by 2030 is fundamental for national development and wellbeing of Nigeria, adding that the facilitation of adequate understanding of the several ways Nigeria can achieve the goal is very fundamental.

[Why do Filipino Farmers and Scientists Support Biotech Crops?](#) (ISAAA)

For the last 22 years, biotech crops have been planted and adopted by 70 countries. In 2018, 470,500 Filipino farmers planted 630,000 hectares of biotech corn, attesting to the benefits that biotech crops continue to offer: yield increases, higher income, peace of mind, and improved quality of life. As more Filipino farmers embrace the technology, more and more scientists are convinced that biotechnology is key to improving global agriculture and achieving food security.

[Centre's indecision on GM crops leaves field open for black market operators](#) (The Hindu Business Line)

The Centre needs to take a concrete stand on Genetically Modified (GM) crops, say environmentalists and pro-GM seed farmers' organisations who have locked horns over the safety of GM crops. Anil Ghanwat, President of the Shetkari Sanghatana, which supports GM technology said HT cotton, Bt brinjal, and HT soya seeds are available in the black market and farmers are already cultivating GM crops. The government must take a call and allow GM crop cultivation that will stop the black marketing of HT seeds and help farmers to enhance the yield with minimum cost.

Research

[Newly discovered plant gene could boost phosphorus intake](#)

(The Crop Site)

Researchers from the University of Copenhagen have discovered an important gene in plants that could help agricultural crops collaborate better with underground fungi—providing them with wider root networks and helping them to absorb phosphorus. The discovery has the potential to increase agricultural efficiency and benefit the environment. Quid pro quo—that's how one might describe the "food community" that the majority of plants have with mycorrhizal fungi. Plants allow fungi to live among their roots, while feeding them fat and sugar. And in return, fungi use their far-reaching hypha (filamentous branches) to capture vital soil nutrients for plants, including the important mineral phosphorus.

[Can ICRISAT help revive hybrid pigeon pea breeding?](#)

(The Financial Express)

In a development that could perhaps help in commercialisation of pigeon pea (tur) hybrids, researchers at ICRISAT have discovered why certain lines of the plant alternate between male sterility and male fertility with a change in temperature. They have identified the responsible gene. They have found that if the temperature drops below 24 degrees Celsius during certain stages of pollen development, a male sterile plant becomes male fertile. And, that the external application of a naturally occurring growth hormone can reverse male sterility even if the temperature is higher than the threshold.

[Returning to farming's roots in the battle against the 'billion-dollar beetle'](#)

(Phys.Org)

Nicknamed the "billion-dollar beetle" for its enormous economic costs to growers in the United States each year, the western corn rootworm is one of the most devastating pests farmers face. "They are quite insidious. They're in the soil gnawing away at the roots and cutting off the terminal ends of the roots—the lifeblood of corn," said Bruce Tabashnik, Regents Professor and head of the University of Arizona Department of Entomology. "And if they're damaging enough, the corn plants actually fall over." Genetically modified crops have been an important tool in the battle against pests such as these, increasing yields while reducing farmers' reliance on broad-spectrum insecticides that can be harmful to people and the environment.

[Ghana: Selective Breeding - A Way to Protect Crop Yields](#)

(All Africa)

The practice of selective seed breeding is not a recent development. Since time immemorial, farmers have known this practice of selecting the best type of their seeds for re-planting. Since the birthing of farming, farmers would take seeds from the biggest and strongest plants and grow them, improving the quality of crops over time. This practice is known as selective breeding. The idea behind this practice is to enable farmers have good yields as a result of planting the best seeds of their saved seeds from their previous growing season. Selective breeding or artificial selection simply refers to a process when humans breed plants and animals for particular genetic or desirable characteristics. Breeders select two parents that have beneficial phenotypic traits to reproduce, yielding offspring with those desired traits.

[Nitrogen-Fixing Corn Seed Treatment in the Pipeline](#)

(Agro Professional)

Researchers are working on a solution for corn to help the grass start fixing its own nitrogen, much like soybean. "There has always been a natural symbiotic relationship between leguminous plants

(peas and beans) and nitrogen-fixing microbes,” says Marcus Meadows, CEO of BioConsortia. “We’re looking at nitrogen fixation for corn, wheat and other non-leguminous crops. We’ve identified a range of microbes that naturally fix nitrogen.” Using gene editing platforms, they’re perfecting these microbes for use in corn as a seed treatment. When it’s all said and done, they’ll create a natural microbe through gene editing that provides a continuous, or over, expression of nitrogen fixation. “We’re not going to totally eliminate the need to apply nitrogen,” Meadows says. “Our target is to reduce nitrogen by 30%, or if a grower chooses to keep their nitrogen application at current levels, they’ll see better utilization of the nitrogen and higher yielding crops.”

[ICRISAT brings new groundnut varieties](#)

(NuFFoods Spectrum)

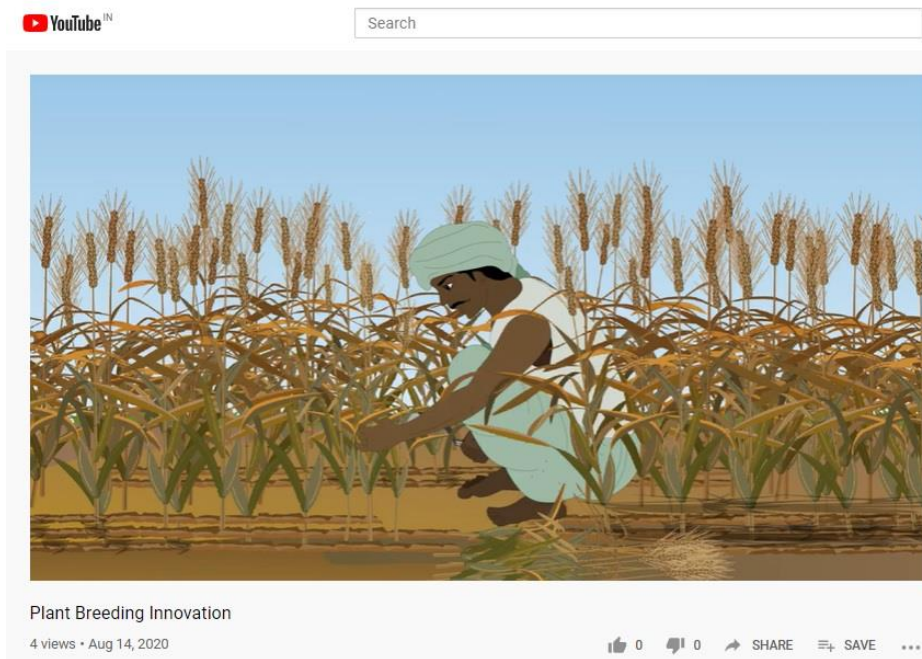
Two new groundnut varieties with high oleic acid content developed by Hyderabad based International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in association with the Indian Council of Agricultural Research-Directorate of Groundnut Research would be made available to the farming community in Telangana from the next season. This was stated by the Minister for Agriculture, Singireddy Niranjan Reddy, after a meeting with a team of scientists from ICRISAT. The Minister stated that the new varieties known as Girnar 4 (ICGV-15083) and Girnar 5 (ICGV-15090) would be most suitable for cultivation in the erstwhile Mahabubnagar, Rangareddy and Nalgonda districts. Niranjan Reddy said the new varieties could withstand moisture stress and Telangana state can produce high quality groundnuts. Groundnut is largely cultivated in Rabi season (post-rainy) in Telangana state under irrigation. The harvesting is done in dry months rendering the produce to be less prone to Aflatoxin contamination. This enables production of high quality and food safe groundnuts in Telangana state.

[MustGrow announces proof-of-concept of non-selective bio-herbicide](#)

(AgroSpectrum)

MustGrow Biologics Corp., announced successful proof-of-concept for its proprietary biological non-selective bio-herbicide, based on MustGrow’s signature mustard-derived approach to controlling unwanted pests and diseases. MustGrow’s bio-herbicide internal work has focused on the pre-plant application of our natural mustard-based technology on small weeds and weed seeds. Observations showed 100% kill of weeds, killing the plant from the roots up compared to the untreated control weeds – confirming previous third-party trials. The length of control was recorded and has potentially demonstrated control of the weed seeds themselves. This continues to validate MustGrow’s natural science-based approach, utilizing the mustard seed’s natural defence mechanism not only as a bio-pesticide, but now also as a bio-herbicide.

Video on Plant Breeding Innovation by Alliance for Agri Innovation (AAI)



Watch our new video - <https://www.youtube.com/watch?v=q9jvkxygdxM&t=38s>

A dedication to our farmers on the celebration of Indian Independence Day 2020



Watch the video - https://twitter.com/FSII_India/status/1294681865794629632
