



The advances made in agriculture through research and development by using gene editing is well established. But how far has the needle moved in consumer acceptance? In a first of a kind study conducted by Iowa State University gauges public acceptance of gene edited foods with a nationally representative sample of 2,000 US residents. The researchers surveyed participants to understand if they would eat or actively avoid gene-edited foods and to understand what are the factors that shape their decisions.

The researchers found that a person's preference of eating or avoiding gene-edited food is primarily driven by their social values and how much they trust government, industry and environmental groups. Researchers further say that though food industry experts tend to believe that people select food based on the cost, appearance, taste and nutritional content. But the study shows that when there is a new technology that people are not familiar with, other factors play a much bigger role - which is people's social and ethical values, and whether they trust government and industry to protect them.

The study further reveals that people who are more willing to eat raw or processed gene-edited foods generally view science and technology as a primary means to solve society's problems. They place a high level of trust in government food regulators and the agriculture biotechnology industry and generally do not have strong beliefs about how food should be produced. These tend to be younger (Generation Z and millennials under 30 years of age) with higher levels of education and household incomes.

By contrast, the people who are more likely to avoid eating raw or processed gene-edited foods are more skeptical of science and technology. They place greater value on the way their food is produced, saying ethics play an important role, and rely more on their own personal beliefs or environmental groups rather than government and industry. People in this group also tend to have lower incomes and be more religious, older and female.

The researchers plan to repeat the survey every two years for the next decade to track how public attitudes on gene-edited foods will shift as more products come onto the market.

The study shows that sensitisation on the safety of food and right information about new technologies is essential to build trust and public acceptance. FSII is working towards this goal by conducting gene editing workshops across the country. Through these workshops we have taken a task of sensitising Government officials, academicians, scientists, students and

general public about the safety of gene editing technology and global regulatory landscape. These workshops have been successfully conducted in Hyderabad, Bangalore, Ludhiana and Lucknow till date and a couple of workshops are also in the pipeline.

We have also covered news around several important developments on agriculture across India, globally and in the area of research in this newsletter. We hope you find it a good read!



Shivendra Bajaj
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News from India and Around the World

[Karnataka poultry, livestock breeders up demand for GM crop feed](#)

(The Times of India)

Citing that over 80% of poultry and livestock in Europe are fed genetically modified crops, breeders in Karnataka plan to strengthen their pitch for procuring the same kind of feed for reared animals in India by taking their concerns to the Centre. While it has been a year since the meat production industry experienced notable challenges in procurement of maize and soybean to feed animals fit for human consumption, the demand for GM crops has been louder.

[‘Optimizing nature’ — How gene editing can help grow crops in unstable climates using less water](#)

(GLP)

As global policy conversations continue to shine the spotlight on sustainability, the scope of these discussions also focusses on agriculture, particularly on how to transform food systems with more sustainable methods of production. The growing demand to produce enough food to feed billions of people, is a challenge that producers will continue to face in the coming years, especially with looming threats triggered by climate change. Furthermore, there is a growing expectation that these substantial increases in yield be achieved through sustainable farming practices that optimise the use of natural resources like soil and water, using less agricultural inputs, while preserving the environment and extracting the most out of existing agricultural land.

[Ghanaian journalists tour GMO cowpea fields](#)

(Alliance for Science)

About 30 journalists from all parts of Ghana visited the country’s pod borer-resistant (PBR) cowpea field trial site in Nyankpala to gain a better understand genetically modified (GM) crops. The insect-resistant cowpea, or beans, will be the country’s first GM crop if the National Biosafety Authority green lights their environmental release, which means the seeds can be grown by farmers. The print and broadcast journalists seized the opportunity to see GM cowpea plants and their end product for the first time. They also had an opportunity to meet the Ghanaian scientists who developed the crop and farmers who want to grow it. If approved, the seeds could be available to farmers by the start of the next planting season.

[To help cotton survive climate change, scientists are breeding better genes](#)

(Fast Company)

Products derived from the cotton plant show up in many items that people use daily, including blue jeans, bedsheets, paper, candles, and peanut butter. In the U.S., cotton is a \$7 billion annual crop grown in 17 states from Virginia to California. Today, however, it's at risk. Cotton plants from fields in India, China, and the U.S.—the world's top three producers—all grow, flower, and produce cotton fiber very similarly. That's because they are genetically very similar. This can be a good thing, since breeders select the best-performing plants and crossbreed them to produce better cotton every generation. If one variety produces the best-quality fiber that sells for the best price, growers will plant that type exclusively. But after many years of this cycle, cultivated cotton all starts to look the same: high-yielding and easy for farmers to harvest using machines, but wildly underprepared to fight disease, drought, or insect-borne pathogens.

[How is Rwanda faring in agricultural bio-technology?](#)

(The New Times)

According to the recent publication “Plant biotechnology: A key tool to improve crop production in Rwanda” published in African Journal of Biotechnology by Leonce Dusengemungu, Clement Igiraneza and Sonia Uwimbabazi, intensive and appealing discussions about agriculture economic importance, production of improved crops and the use of all necessary resources to ameliorate agricultural production need more attention. The trio said that the use of biotechnology tools to protect seed distributed among farmers, biological control agents and testing varieties of seed identity and purity before their distribution are primary tools that can benefit African farmers. “In this context, it is recommended for developing African countries to start thinking about pursuing gene transfer to breed-disease and introduction of pest resistant varieties in order to meet the future food's needs,” they recommended. The modern agriculture biotechnology, they said, is needed as the conventional agricultural research does not keep an equal distribution between the high demand of food and the supply chain.

[Dhaka's nod likely for Indian firm's Bt cotton](#)

(The Financial Express)

With Bangladesh likely to approve commercial cultivation of genetically modified (GM) Bt cotton varieties sourced from an Indian company soon, seed manufacturers in the country have urged for regulatory approval of the new generation of herbicide-tolerant Bt (HTBt) cotton varieties whose application is pending with Genetic Engineering Appraisal Committee (GEAC). According to Ram Kaundinya, director general, Federation of Seed Industry for India, the government has to go ahead with deployment of modern GM technology urgently to cut down on rising cost of pesticides and labour in cotton cultivation

[Nigeria is ready to meet strong farmer demand for GMO cowpea seeds](#)

(GLP)

Nigerian farmers should have ample access to insect-resistant genetically modified (GM) cowpea seeds for this summer's planting season, scientists say. Though last year's demand outstripped the supply, the public sector scientists who developed Nigeria's first GM food crop — the pod borer-resistant (PBR) cowpea, or SAMPEA 20T — say they have gone to great measures to make sure farmers can obtain certified seeds this season. Some 2,000 farmers planted the improved seeds in 2021 — a number expected to triple this year, said Prof. Mohammad Ishiyaku, executive director of Institute for Agricultural Research (IAR) and principal investigator of the PBR project in Nigeria. In response, researchers are expanding seed production eight-fold from the 10,000 tonnes available last year.

[Biotech will mitigate food insecurity – OFAB](#)

(NNN)

Open Forum on Agricultural bio-technology, Nigeria (OFAB), an International Organisation, has urged Nigerians to embrace bio-technology to mitigate issues around climate change and ensure food security in the country. Dr Rose Gidado, Country Director, OFAB Nigeria, said this at the sideline of the science hangout, organised by the Alliance for Science Nigeria (ASN). She said the meeting was to discuss “the status of genetically modified food” and how best to deploy bio-technology to ensure food security in Nigeria. Gidado explained that conventional Agriculture might be failing due to a lot of reasons related to climate change, including incessant high rise in temperature, gully erosion and

desert encroachment. “Also, we have other environmental reasons why conventional agriculture is failing, the oil spillage, insecurities on our farms and a lot more. “Bio-technology has been adopted in Nigeria, a seed launch was held last year in Kano and farmers are testifying to greater yields and one of the economic benefits is 20 per cent yields increase per hectare.

[GMOs in the Philippines](#)

(Business Mirror)

Genetically Modified Organisms (GMOs) in the Philippines have been controversial, with a number of people around the world saying they have negative impacts on the environment, can cause “genetic pollution” and are not good for human consumption. However, amidst the controversies surrounding this biotechnological development, more than 110 Nobel laureates and over 3,500 scientists all over the world have signed a letter addressing and urging Greenpeace International “to re-examine the experience of farmers and consumers worldwide with crops and foods improved through biotechnology; recognize the findings of authoritative scientific bodies and regulatory agencies; and abandon their campaign against GMOs, in general, and Golden Rice, in particular.”

[Explaining genetic modification research](#)

(Phys.org)

What do bananas and cavoodles have in common? They're both lovely, yellowy and have been produced by genetic manipulation. If we went back in time a few hundred years, bananas and cavoodles would look very different—if they even existed at all! That's because their genetic code has changed from what it is today.

[Who trusts gene-edited foods? New study gauges public acceptance](#)

(IOWA State University)

A new study from Iowa State University is the first to gauge public acceptance of gene-edited foods using a nationally representative sample of 2,000 U.S. residents. The researchers surveyed participants to understand if they would eat or actively avoid gene-edited foods; and to understand the factors that shape their decisions. The researchers plan to repeat the survey every two years for the next decade to track how public attitudes on gene-edited foods will shift as more products come onto the market. The researchers found a person’s likelihood of eating or avoiding gene-edited foods is primarily driven by their social values and how much they trust government, industry and environmental groups. “Food industry experts tend to have the mindset that people make decisions about food based on the cost, appearance, taste and nutritional content. But our study shows that when you have a new technology that people are not familiar with, other factors play a much bigger role, especially people’s social and ethical values, and whether they trust government and industry to protect them,” said Peters. The study reveals people who are more willing to eat raw or processed gene-edited foods generally view science and technology as a primary means to solve society’s problems. They place a high level of trust in government food regulators and the agriculture biotechnology industry and generally do not have strong beliefs about how food should be produced. They also tend to be younger (Generation Z and millennials under 30 years of age) with higher levels of education and household incomes.

[Partnership on track to give Bangladeshi and Indonesian farmers disease-resistant GMO potatoes](#)

(Alliance for Science)

Researchers will be testing genetically modified potatoes in Bangladesh and Indonesia this year in hopes of providing farmers with an alternative to spraying fungicides. Multiple confined field trials of GM late blight-resistant (LBR) potatoes will be conducted in both countries under a Feed the Future Global Biotech Potato Partnership. Potatoes are some of the most important crops grown in Indonesia and Bangladesh. Indonesia produces about 1.3 million metric tones of potatoes annually, while the tubers are the third most important food crop after rice and wheat in Bangladesh. But late blight disease is a serious problem in both countries, destroying 25 to 57 percent of the crop. Unlike other pathogens, late blight — or *Phytophthora infestans* — can be complicated to control once it has appeared and farmers can actually see it, said Janet Fierro, communication and advocacy global resource lead at the Feed the Future Global Biotech Potato Partnership.

New Research

[In 10 years, CRISPR transformed medicine. Can it now help us deal with climate change?](#)

(University of California)

Coming from a long line of Iowa farmers, David Savage always thought he would do research to improve crops. That dream died in college, when it became clear that any genetic tweak to a crop would take at least a year to test; for some perennials and trees, it could take five to 10 years. Faced with such slow progress, he chose to study the proteins in photosynthetic bacteria instead. But the advent of CRISPR changed all that. Savage is now pivoting to molecular crop breeding, hoping to find ways to improve their carbon uptake and the amount of carbon they return to the soil. And he hopes to see these improved crops in fields within his lifetime, helping to boost crop yields but also to draw down the excess carbon in the atmosphere that is warming the planet and stash it underground.

[Raquel Chan: Discovering the gene behind GM wheat](#)

(Alliance for Science)

The GM wheat journey started with Chan studying and analyzing sunflowers, which resulted in the discovery of the HB4 gene. Its patent was licensed to Bioceres Crop Solutions, the Argentinian company seeking to bring GM wheat to international markets. "We found that sunflower plants are very adaptable to variable external conditions. We decided to use it as a scientific model because, in addition to its performance in the initial research, we found that one, its 'no-watering' period is longer than other plants; two, there was a chance to receive funds to support the research due to its economic importance; and three, we already had access to the library of sunflower cDNA, thanks to IBMP-Strasbourg," Chan recalls. Once Chan and her team secured funding to continue their investigation, they started to study the sunflower's DNA and identified the function of fundamental genes.

[Cibus Expands its Extensive Patent Portfolio for Agricultural Crop Traits](#)

(Business Wire)

Cibus is granted a patent for its Pod Shatter Reduction (PSR) Trait. The PSR Trait, developed using the company's Rapid Trait Development System® (RTDS), strengthens the sheath that contains the Canola (oilseed rape) seeds and, in so doing, reduces pod shatter yield losses. Pod shatter refers to the pre-harvest release of oil seeds when the pod seam and connective tissue of the sheath that contains the Canola seeds breaks apart and releases the seeds. This occurs due to either a weakened pod seam or pod fracturing due to bad weather. Cibus' PSR Trait reduces these yield losses due to pod shatter. PSR is called a Productivity Trait because it is part of a class of agricultural traits that address productivity and sustainability in farming by improving crop yields and lowering costs like diesel, fertilizer, and crop protection chemicals.

[Researchers set out to engineer crops that absorb CO2 faster, longer](#)

(S&P Global)

A new research project is looking to genomics as a solution to decarbonization by genetically engineering plants to not only absorb more carbon from the atmosphere but hold on to it longer. Vegetation plays a natural role in the reversal of greenhouse gas emissions by taking in carbon dioxide and releasing oxygen. The Innovative Genomics Institute, or IGI, seeks to augment that process, backed by an \$11 million commitment from the Chan Zuckerberg Initiative. The project relies on the gene-editing tool CRISPR to give plants and soil microbes traits that improve their ability to capture and store carbon. CRISPR works at the molecular level like a pair of scissors, cutting the target DNA strand at a precise location where a new custom gene sequence can be inserted. "This technology has the potential to supercharge the natural abilities of plants, enabling them to pull more carbon out of the atmosphere and store more carbon in their roots and the surrounding soil — providing a new set of innovative tools to address climate change," Chan said.
