



Golden rice is a biotech rice fortified with pro-vitamin A. This technology has been introduced to fight against Vitamin A deficiency which is a major public health issue and the most significant cause of child mortality and blindness globally. The Golden Rice humanitarian project has also been recently recognized in the top-10 Biotech Projects, as one of the most influential projects of the past 50 years by Project Management Institute (PMI) in its 2019 Most Influential Projects list. Golden Rice is the only plant-based biotech project listed in the category.

The need for Golden rice is very crucial for the developing world and has been registered safe in Australia, Canada, New Zealand and USA. Now, Bangladesh is set to take a decision on the release of the golden rice. This development came to light recently when the 1993 Medicine Nobel winner Sir Richard Roberts was visiting Dhaka and enquired about the Golden Rice release development with the organizers of 'Regional Seminar on GMO Crops: Policy and Practices in South Asia' at North-South University, Dhaka. This move immediately prompted the Agriculture Minister, who was also present at the seminar, to call up the Environment Minister and set up an impromptu meeting. Several hours later, as Sir Richard Roberts returned to the seminar venue after holding his meeting with the ministers, he spoke at the concluding session and informed that a final decision on Golden Rice will be taken by November 15.

Both Bangladesh and Philippines are on the final stages of releasing the golden rice. According to the World Health Organization's global Vitamin A Deficiency (VAD) database, one in every five pre-school children in Bangladesh is vitamin A-deficient. Among pregnant women, 23.7% suffer from VAD. With the successful release of the golden rice by Bangladesh in a few days to go, it will herald a new era for our neighbours and the scientific community could not be prouder to have served their purpose towards securing the humanity.



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

['Agri biotech can help unleash second Green Revolution'](#)

(The Sunday Guardian)

A high-powered working group constituted under the aegis of the Union Government's Department of Biotechnology has, in its strategy document dated July 2019 and titled "Agriculture Biotechnology for Human Welfare", sought a robust, time bound, flexible and transparent regulatory system for harnessing agro-biotechnology for injecting new life in India's farmlands. They are pressing for a strong policy framework for development and commercial release of agro-biotech products. The government's support in adopting various genome technologies and genetic modifications including gene editing would, besides contributing greatly to the national food and nutrition security, also enhance farm incomes significantly, the report emphasises. They have also prevailed on the powers-that-be to modify appropriately the long pending Biotechnology Regulatory Authority of India (BRAI) Bill.

[Indian-origin professor Neena wins major award in Australia](#)

(The Siasat Daily)

Nina Mitter, an Indian-origin professor, an agricultural biotechnologist based at The University of Queensland, has been named the winner of Australia India Science, Research and Development category at the 2019 India Australia Business and Community Awards (IABCA). Professor Mitter is the Director of the Centre for Horticultural Studies at the varsity. Her work includes an avocado research project that has the potential to revolutionise the industry worldwide. Professor Mitter has been involved in the field of molecular biology and biotechnology in Australia for over 20 years. She currently works as part of the Queensland Alliance for Agriculture and Food Innovation (QAAFI), based at the university.

[Bangladesh close to releasing Golden Rice](#)

(Dhaka Tribune)

Bangladesh will take a decision on the release of the world's first Vitamin-A enriched rice variety by November 15. Visiting Nobel Laureate Sir Richard John Roberts made the announcement at a regional seminar in Dhaka after he held an impromptu meeting with the ministers of agriculture and environment. Vitamin A enriched rice, popularly known as Golden Rice, has been in the regulatory approval process since November 2017 and the Ministry of Agriculture has long been pushing the Environment Ministry for its seal of approval.

[Agri-genomics Yields a Next-Gen Cornucopia](#)

(Gen)

Gene editing technology takes agricultural biotechnology beyond transgenic technology, which transfers "as is" genes from one species to another. Essentially, gene editing is more refined than transgenesis. Now that gene editing tools are available to crop scientists, the engineering of improved plants is becoming faster and easier. For example, CRISPR tools are accelerating development because they are economical and provide advanced capabilities such as multiplexing. In fact, gene editing is democratizing the development of engineered plants. Not only is the technology being adopted by large, established players such as Syngenta, Bayer, BASF, and Corteva, it is driving the emergence of small companies such as Calyxt and Pairwise Plants. Other emerging industry players, like Ontera, are developing robust tools that enable the elucidation of disease and resistance mechanisms and the fast and precise molecular identification of therapeutic targets.

['Blood on their hands'—Greens' resistance to biotechnology blocks sustainable agriculture, climate change innovation, says GLP's Jon Entine](#)

(Genetic Literacy Project)

Green advocacy groups, mostly based in Europe, are the single biggest impediment to sustainable agriculture, said Genetic Literacy Project executive director Jon Entine. CRISPR and other gene-editing and New Breeding Techniques are fast being adopted around the world, although many 'environmental activist' groups are doing their best to frighten the public and intimidate legislators into erecting insurmountable regulatory barriers. They have been largely successful in Europe, which

is blocking gene-edited crops under legislation passed in the pre-CRISPR era in 2001, Entine said, but the rest of the world is more open to the innovations.

[Young scientists urge New Zealand's Green Party to embrace CRISPR for 'sake of the climate'](#)

(Stuff)

Recently, there has been a shift in society's view of genetic modification and its potential applications in the fight against climate change. This has led to a call for changes in our current policies from farmers and MPs alike. However, due to the Green Party's current stance on this topic, New Zealand is unable to utilise genetic modification for anything that is not laboratory-based. The goal is not to be carelessly modifying organisms for the benefit of a few - it is to utilise knowledge and technology so that as a country we can take a step forward. New Zealand is a world leader in green agricultural technologies. As a forward-thinking country, let's break the stigma surrounding genetic modification and create a better future for ourselves and the generations to come.

[Budding Biomanufacturing Sector](#)

(Industry Global News)

The Australian biotech scene has been evolving and has been revolutionizing the different aspects of the industries, such as agriculture, which has seen some significant changes with the advanced biotech. The Australian Biotech scene has helped the agriculture in the nation thrive as it has developed some engineered crops and also many other reforms. The biotechnology scene of the nation has long helped the agricultural sector and also the biomanufacturing that is an integral part of the biotech sector. Biotechnology will be improving agricultural crop resilience and yield, and the other on designing, building, and scaling new biological systems for commercial application, including converting agrarian biomass.

[New genetically modified corn produces up to 10% more than similar types](#)

(Science Mag)

Supporters of genetic engineering have long promised it will help meet the world's growing demand for food. But despite the creation of many genetically modified (GM) pest- and herbicide-resistant crops, scientists haven't had much success with boosting crop growth. Now, researchers have for the first time conclusively shown they can increase corn yields up to 10% by changing a gene that increases plant growth—regardless of whether growing conditions are poor or optimal.

[Nigeria first to approve Bt cowpea, Ghana may follow](#)

(Down to Earth)

According to a report by the International Service for the Acquisition of Agri-biotech Applications, Nigeria has become the first country to approve open cultivation of genetically modified (GM) Bt cowpea. Pests, particularly pod borer (*Maruca vitrata*), have hampered production of cowpea, the most important legume in the west African country. It has to import about 500,000 tonnes annually to meet its demand. Mohammad Ishayaku, who was associated with the research that led to the move, had said Bt cowpea was pest-resistant and needed just two sprays while current varieties need eight. It could potentially increase yield by 20 per cent. The GM food crop can also help combat malnutrition rates, especially in children.

[Podcast: The untold story of Edith Rebecca Saunders—'mother of British plant genetics'](#)

(Genetic Literacy Project)

Throughout the late 19th and early 20th century, renowned geneticist William Bateson worked closely with Edith Rebecca Saunders—one of the first women to pursue a scientific education and research career at Cambridge University in an era when women were excluded from formal lectures and prevented from graduating. Rather than a mere research assistant, which was the best that most scientifically minded women could hope for at the time, Saunders was an equal colleague with Bateson. She was a formidable teacher and researcher, eventually becoming director of the Balfour Biological Laboratory for Women in Cambridge and made important contributions to genetics through her meticulous plant-breeding experiments. Saunders was also a key member of many scientific societies and co-founded The Genetics Society together with Bateson in 1919.

[Over £20 million government award marks Midlands' bio-economy strengths](#)

(University of Birmingham)

A consortium of Midlands research-active universities has been awarded research studentships worth over £20 million to build on the Midlands' significant bioeconomy and success in life sciences and agricultural research. The funding comes from the Biotechnology and Biological Sciences Research Council arm of the Government's UK Research and Innovation (UKRI) funding organisation. This award will be matched by the universities in the partnership to fund a total of 245 doctoral students (59 per year) over the next 5 years.

[Fungi could reduce reliance on fertilisers for crops, study shows](#)

(FDI)

A new study has shown that introducing fungi to wheat could lead to new 'climate smart' varieties of crops. Researchers at the University of Leeds have demonstrated a partnership between wheat and soil fungi that could be utilised to develop new food crops and farming systems which are less reliant on fertilisers, reducing their contribution to the escalating climate crisis. It is the first time the fungi, which form partnerships with plant roots, have been shown to provide significant amounts of phosphorous and nitrogen to a cereal crop. The fungi continued to provide nutrients under higher levels of carbon dioxide (CO₂) predicted for 2100, which has important implications for future food security.

[Purdue scientists find efficient ways to turn woody biomass into fuels](#)

(Purdue University)

Increasing production of second-generation biofuels — those made from non-food biomass such as switchgrass, biomass sorghum, and corn stover — would lessen the reliance on burning fossil fuels, which contributes to climate change. Lignin, a complex compound in cell walls, blocks access to plant carbohydrates that could be cleaved into sugars and then fermented into biofuels. A team led by Purdue University has built on success in removing the lignin barrier to solve other cellular obstacles. Their findings, reported in journals, offer opportunities to significantly increase renewable biofuel production from crop waste products and bio feedstocks that could be grown on marginal lands.

[Block on GM rice 'has cost millions of lives and led to child blindness'](#)

(The Guardian)

Stifling international regulations have been blamed for delaying the approval of a food that could have helped save millions of lives this century. The claim is made in a new investigation of the controversy surrounding the development of Golden Rice by a team of international scientists. Golden Rice has not been made available to those for whom it was intended in the 20 years since it was created, stated the science writer Ed Regis. He further added that had it been allowed to grow in these nations, millions of lives would not have been lost to malnutrition, and millions of children would not have gone blind.

[Genetic engineering, CRISPR and food: What the 'revolution' will bring in the near future](#)

(Genetic Literacy Project)

Europe is one of the largest importers of GMO feed in the world. Most of the meat consumed, cattle, sheep, goats, chickens, turkeys, pigs and fish farms are fed genetically modified corn, soybeans and alfalfa. And the overwhelming majority of cheeses are made with an enzyme produced by GM microbes and some beers and wines are made with genetically engineered yeast. GM soybeans are used to make tofu, miso, soybean meal, soy ice cream, soy flour and soymilk. GM corn is processed into corn starch and corn syrup and is used to make whiskey. Much of our sugar is derived from GM sugar beets and GE sugarcane is on the horizon. Over 90 percent of the papaya grown in Hawaii has been genetically modified to make it resistant to the ringspot virus. Some of the squash eaten in the US is made from GM disease-resistant seeds and developing countries are field testing GM disease-resistant cassava.

[Golden Rice Named Among Project Management Institute's Most Influential Projects of the Last 50 Years](#)

(Golden Rice)

The Golden Rice humanitarian project has been recognized by Project Management Institute (PMI) as one of the Most Influential Projects of the past 50 years. It has the distinction of being the only plant-

based biotech project in the list of honourees. Golden Rice is a not-for-profit project, which means that individuals and organizations involved in its development have no financial stakes in the crop. The technology was donated by its inventors, Professors Ingo Potrykus and Peter Beyer in 2000 to aid resource-poor countries and address the global concern of Vitamin A deficiency. To date, Golden Rice has been declared safe in Australia, Canada, New Zealand, and the USA.

[Niger Parliament passes country's National Biosafety Law](#)

(News Diary)

The Republic of Niger has taken a bold step in passing the Biosafety Law on October 17, 2019 in Niamey. The country has a population of approximately 23.5 million people and the need to guarantee food security is key for their government. The new law will provide safety measures in research and development with respect to modern biotechnology and for transboundary movement of living modified organisms (LMOs) as well as products thereof. Adoption of biotechnology also positions the country to benefit from the fast-growing technology by addressing health and environmental safety concerns of its citizens.

New Research

[A crop that feeds billions freed from blight by CRISPR](#)

(Nature)

Genome editing has made one of the world's most important crops resistant to a devastating bacterial infection. Seeking to lessen the bacterial blight's impact on rice, Ricardo Oliva at the International Rice Research Institute in Manila and his colleagues studied Xoo genes that code for proteins called TALEs. Xoo use these proteins to turn on the plant's SWEET genes, which produce sugar-transporting molecules. This gives the bacteria access to nutrients in the plants' leaves. The team's analysis of 63 Xoo strains revealed that each strain has one or more TALE variants. Each variant can activate at least one of three SWEET genes. The researchers used CRISPR-Cas9 gene editing to modify three SWEET genes found in rice varieties that are grown across Asia and Africa. Bacterial TALE proteins could no longer activate the edited genes, and the team found that rice plants with these engineered genes were resistant to at least 95 Xoo strains.

[CRISPR-edited wheat cuts immune response in 'gluten-sensitive' patients by 85%, new study shows](#)

(Europabio)

Scientists at the Institute for Sustainable Agriculture (IAS-CSIC) have tried to reduce gliadin in wheat in two ways. First by using a technique called RNA interference and later by gene editing with CRISPR/Cas9. These techniques have delivered results that show a decrease in the intensity of the immune response by 95% and 85% respectively. Approximately one person in 100 has celiac disease, which means for them eating gluten is risking diarrhea, vomiting, malnutrition, and even brain damage and gut cancer. If one adds gluten sensitive people, one will get 7% of the population avoiding foods that contain gluten. It is the class of gliadin proteins that triggers the autoimmune response that damages the gut lining, causing the dire consequences for gluten-intolerant people. If these proteins could be specifically removed, it would result in bread and other products consumable by people with celiac disease while leaving much of the characteristic taste and structure intact. This is in contrast with gluten-free breads made from rice or potato flour.

[Research may lessen frost risk for canola](#)

(The Western Producer)

The research team led by Marcus Samuel at the University of Calgary have developed a canola trait that reduces green seed count and allow seeds to continue de-greening after a frost. Seeds from his genetically modified lines of canola contained 50 to 60 percent less chlorophyll than control varieties after being exposed to non-lethal -4 C temperatures for six hours. Samuel said that green seed costs growers an estimated \$150 million annually. He hopes the trait will be on the market in the next four or five years if everything goes as planned.

[Researchers double sorghum grain yield to improve food supply](#)

(Cold Spring Harbour Laboratory)

Plant scientists at Cold Spring Harbor Laboratory (CSHL) and USDA's Agricultural Research Service (ARS), in their search for solutions to global food production challenges, have doubled the amount of grains that a sorghum plant can yield. Sorghum, one of the world's most important sources of food, animal feed, and biofuel, is considered a model crop for research because it has a high tolerance to drought, heat, and high-salt conditions. Increasing the grain yield has become even more important to plant breeders, farmers, and researchers as they try to address and overcome food security issues related to climate change, growing populations, and land and water shortages.

[New grant will help scientists' study how cover crops affect plant disease](#)

(EurekAlert)

A multi-state experiment that recently received a major grant will examine how planting cover crops on farm fields affects plant disease, pests and weeds. Alison Robertson, a professor of plant pathology and microbiology at Iowa State University, will lead a portion of the experiments as part of a much larger project awarded a \$10 million grant from the U.S. Department of Agriculture's Agriculture and Food Research Initiative. The overall project includes around 100 scientists at 35 institutions and will seek to develop new tools to improve sustainability, profitability and efficiency in agriculture by enhancing the effectiveness of cover crop-conservation tillage systems for commodity crops such as corn, soybeans and cotton.

[Harvesting genes to improve watermelons](#)

(Phys.org)

Researchers have now taken a comprehensive look at the genomes of all seven species of watermelon, creating a resource that could help plant breeders find wild watermelon genes that provide resistance to pests, diseases, drought and other hardships, and further improve fruit quality. Introducing these genes into cultivated watermelon could yield high-quality sweet watermelons that are able to grow in more diverse climates, which will be especially important as climate change increasingly challenges farmers.

[New 'prime' genome editor could surpass CRISPR](#)

(Science Mag)

A new-fangled CRISPR, dubbed "prime editing," could make it possible to insert or delete specific sequences at genome targets with less collateral damage. "Prime editors offer more targeting flexibility and greater editing precision," says David Liu, a chemist at the Broad Institute in Cambridge, Massachusetts, whose lab led the new study and earlier invented a popular CRISPR refinement called base editing.

[Researchers call for responsible development of synthetic biology](#)

(Science Daily)

Engineering biology is already transforming technology and science, and a consortium of researchers across many disciplines in the international Genome Project-write is calling for more discussion among scientists, policy makers and the general public to shepherd future development. In a policy forum article published in the October 18 issue of Science, the authors outline the technological advances needed to secure the transformative future of synthetic biology and express their concerns that the implementation of the relatively new discipline remains safe and responsible.

[Researchers map the evolutionary history of oaks](#)

(Phys.org)

The study provides the most detailed account to date of the evolutionary history of the world's oaks. Investigating which parts of the oak genome distinguish species from one another, researchers at The Morton Arboretum, in collaboration with 17 institutions around the world, discovered that each gene or stretch of DNA in the genome has the potential to record multiple histories; each section bears the history of speciation of one oak lineage, but it may record the history of hybridization for a different lineage. In other words, there is no one region of the genome that defines oaks: it is the patchwork of histories embedded in the genome that characterize the history of oak evolution.

[Tolerance to ozone might impose restrictions to plant disease management in tomato](#)

(Online Library)

Researchers from Universidad de Buenos Aires, Argentina examined two cultivars of tomato to investigate the effects of elevated O₃ on the severity of bacterial disease. Results showed that ozone increased the severity of the bacterial disease by up to 40 percent in both tomato cultivars. In the more tolerant cultivar, exposure to ozone increased disease intensity, even after applying a product to enhance resistance. In the more susceptible cultivar, level of disease attained depended on the oxidative balance that resulted from other stress factors. The researchers concluded that the antioxidant capacity of the plant during infection is vital in controlling the progression of the disease. Development of O₃ tolerance in commercial crops might impose a penalty cost in terms of disease management under projected higher O₃ concentrations.

[Development of dwarfish and yield-effective GM maize through passivation of bioactive gibberellin](#) (Springer)

Chinese researchers transformed Arabidopsis AtGA2ox1 gene into maize with the goal of developing a height-reduced GM maize. Dwarf cultivars of wheat and rice have helped increase global production, thus, developing dwarf maize could be a promising strategy to boost production. The most direct and effective dwarfing technique used was controlling gibberellin (GA) levels of crops. The results showed that the transgenic maize plants with the most reduced plant height had 74% reduction in GA level, and by approximately two-fold increases in both chlorophyll content and root/shoot ratio compared to the non-transformed plants. Furthermore, the stem cells of the GM maize were found to be condensed, with deformed vascular bundles. Two-season field trials showed improved harvest index (9-7%) and grain yield (10-14%) compared to the non-GM maize.

[Soybean plants expressing the Bacillus thuringiensis cry8-like gene show resistance to Holotrichia parallela](#)

(BMC Biotechnology)

Scientists from Jilin Agricultural University, China and University of Camerino, Italy, tested if cry8-like from Bacillus thuringiensis (Bt) can be introduced to soybeans to confer resistance to dark black chafer (Holotrichia parallela), a destructive pest of soybeans. The results suggest that transgenic soybean plants expressing the cry8-like genes are more resistant to the pest, indicating that cry8-like gene may be a potential tool in developing soybean plants with better pest resistance.

Upcoming Events

November 2019

Sustainable Agriculture Conference

Date: November 01 – November 03, 2019

Venue: Durham, USA

International Conference on Sustainable Agriculture Technologies

Date: November 01 – November 03, 2019

Venue: Kaohsiung, Taiwan

Plant Genomics & Gene Editing Congress

Date: November 04 – November 05, 2019

Venue: The StateView Hotel, Autograph Collection, Raleigh, USA

International Society for Biological and Environmental Repositories Regional Meeting

Date: November 04 – November 05, 2019

Venue: Renaissance Minneapolis Hotel, The Depot, Minneapolis, USA

International Conference on Molecular Biology and Genetic Engineering

Date: November 07 – November 08, 2019

Venue: Melbourne, Australia

International Conference Agricultural Engineering**Date:** November 08 – November 09, 2019**Venue:** Deutsche Messe AG, Hanover, Germany**Asian Seed Congress****Date:** November 25-29, 2019**Venue:** Kuala Lumpur, Malaysia**December 2019****Agricultural Excellence Conference****Date:** December 02 – December 04, 2019**Venue:** Fredericton Convention Centre, Fredericton, Canada**AgriBusiness Global Trade Summit Southeast Asia****Date:** December 03 – December 04, 2019**Venue:** Jakarta, Indonesia**Women in Food & Agriculture summit****Date:** December 03 – December 04, 2019**Venue:** NH Collection Grand Hotel Krasnapolsky, Amsterdam, Netherlands**Grow Canada Conference****Date:** December 03 – December 05, 2019**Venue:** Hyatt Regency Calgary, Calgary, Canada**Global Plant-Based Food Summit Asia****Date:** December 05 – December 06, 2019**Venue:** Crowne Plaza Hotel Fudan Shanghai, Shanghai, China**International Conference on Agriculture and Biotechnology****Date:** December 28 – December 30, 2019**Venue:** Patong Merlin Hotel, Kathu, Thailand**January, 2020****107th Indian Science Congress****Date:** January 03 – January 07, 2019**Venue:** University of Agricultural Sciences, GKVK Campus, Bangalore**Global Forum for Food and Agriculture****Date:** January 16 – January 18, 2019**Venue:** Berlin