

National

Gene editing crucial for food security and environmental sustainability



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World's population is growing rapidly, and it is creating an array of challenges for food security. Fast-shrinking green cover to make ways for agriculture production has raised concerns in the wake of climate change showing its effects. There needs to be a viable and sustainable a mechanism that ensures adequate food production as well as reduces the stress on the ecosystem. We need to look for advancements in plant breeding that can support sustainability. Through various research done by scientists globally, gene editing technology has proven its usefulness in helping farmers conserve water, reducing crop inputs even as ensuring optimum and even higher crop output. I believe, Gene editing is crucial for food security and environmental sustainability.

Gene editing is most efficient since precise tweak to a living organism's existing DNA can be made. There is no addition of foreign material.

Moreover, the tweaks are indistinguishable from naturally occurring mutations. CRISPR is a gene editing technique that allows changes to a specific “target” site in the genome. It was introduced in 2012, and since then it has transformed biotechnology. CRISPR technique holds huge potential to meet the existing and new agricultural challenges.

CRISPR technique facilitate scientists to get the desired outcomes, which would take years or decades otherwise using the traditional plant breeding technologies. It helps enhance genetic variability. The capabilities of CRISPR technology are beyond food crops as it can also be used to improve forest, restore biodiversity and cure various diseases. It can complement the applied biotechnology and transform our agriculture in a big way. It can shorten breeding cycles, accelerate crop research, and achieve the target results quite fast compared to conventional methods. In Gene editing, techniques such as TALENs and CRISPR rules out introduction of foreign DNA.

People, activists, policymakers can rely on gene editing technology as it has shown that it has not only helped produced high-yielding varieties sustainability but also brought positive changes on human health.

GABA tomato that is developed using CRISPR-Cas9 gene editing technology can help lower blood pressure and promote relaxation. Japan has allowed sale of this tomato in commercial markets. There have been undue apprehensions about food crops that are produced through gene editing.

There is sense of unanimity among researchers and scientists about the gene edited products being safe. However, general population needs to be provided more information on the technology. People seek naturalness in the food they eat, which make them avoid novelty or additives. However, little do

they know that the food we eat today has been selected for genetic changes for decades and are far from their ancestors.

The global population is expected to touch 10 billion- figure by 2050. Urbanisation, pollution, and climate change are making things difficult for agriculture production. Farmers cannot fight crop loss and huge expenses on crop input. Genome editing can help us make crop disease-resistant, drought and flood-resistant, high-yielding. This increases climate-resilience of agriculture, shields farmers from losses, and allows farmers to get safe and nutrient food. The problem of malnutrition in different parts of the world, can be addressed by bio-fortifying crops using gene editing. Gene editing allows important manipulations in plant species that results in higher and nutrient-rich yield as well as improved and sustainable future species. Gene editing provides solutions to many of problems faced by the humankind as it helps bring forth desirable traits with safe genetic changes.

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