



drishti

EU Ruling on Gene Editing Technology

 drishtiias.com/printpdf/eu-ruling-on-gene-editing-technology

The European Court of Justice has ruled that altering living things using the relatively new technique of genome editing counts as genetic engineering.

- It ruled that the gene editing technology (also called mutagenesis) would follow the same stringent guidelines as conventionally genetically modified organisms (GMO).
- Genetic modification involves the introduction of foreign DNA into an organism, while gene editing involves editing of the organism's native genome.
- The best-known genome-editing technique, known as CRISPR-Cas9, involves cutting strands of DNA with molecular "scissors". When the organism's natural repair systems kick in to repair the break, it presents scientists with the opportunity to insert the DNA sequence of their choosing - essentially rewriting the blueprint for life.
- Scientists studying the effects of CRISPR/Cas9 said it could cause unexpected genetic damage which could lead to dangerous changes in some cells.

What EU court ruled

- The Court of Justice said that organisms obtained by mutagenesis are GMOs within the meaning of the GMO Directive because the techniques and methods of mutagenesis alter the genetic material of an organism in a way that does not occur naturally.
- It, however, leaves out other mutagenesis techniques like irradiation. It has observed that these have a proven track record and need not be considered under the same bracket.
- All products made through gene editing to be regulated, assessed for their health and environmental impacts, and labelled.

Note:

Irradiation is a physical treatment of food with high-energy ionising radiation to:

- Destroy microorganisms, viruses, bacteria or insects
- Prevent germination and sprouting of potatoes, onions and garlic
- Slow down ripening and ageing of fruit and vegetables
- Prolong the shelf life and prevent food-borne diseases in meat, poultry and seafood

Arguments of Scientists

- Scientists had hoped that gene editing technologies would find wider acceptance than GM, considering that gene editing does not involve introducing a foreign element into the plant's genetic code.
- With gene editing, under appropriate regulations and policy, product development would be faster.
- Gene editing has the potential to make hardier and more nutritious crops as well as offering drug companies a new way to fight human disease.
- These techniques can be used to introduce new traits into a crop variety, for example, to make a plant resistant to herbicides. Yet the court ruling means that herbicide resistant crops produced through conventional breeding can be used freely, while crops produced using newer approaches must be subjected to intense scrutiny.

Arguments of Environmentalist

- Environmental organization have applauded the court's decision and they have called for all products made through gene editing to be regulated, assessed for their health and environmental impacts, and labelled.
- Environmentalists, anti-GM groups and farmers concerned about the potential environmental and health impacts of all genetically engineered products said allowing gene editing would have ushered in a new era of "GMO 2.0" via the backdoor.
- These genetic engineering techniques have the potential to radically change the food system, threatening non-GMO and organic agriculture and the livelihoods that depend on it.
- The gene editing technology is not yet proven safe—an argument that may have gained weight after research suggested gene editing can cause risky collateral DNA damage.

Indian Scenario

- In India, as in the EU, GM crops have faced resistance from farmers and environmental groups that have called for proper study and labelling.
- India does not have any regulations on CRISPR as it does on GMO crops.