



Mains Practice Question

Q. Genetically Modified crops play a significant role in enhancing productivity, fight against hunger and malnutrition. Critically analyze? (250 words)

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Approach

- Introduce by briefly explaining GM crops.
- Discuss its beneficial role in increasing productivity and reducing malnutrition.
- Discuss various challenges of GM crops.
- Conclude accordingly.

Introduction

- Genetically Modified Organisms (GMO) are defined as organisms including plants, animals, and micro-organisms in which the genetic material (DNA) is altered in a way that does not occur naturally by mating or natural recombination.
- **Body**
- **Benefits of GM crops in increasing agricultural output and removing hunger, malnutrition**
 - **Climate resilient:** Sometimes it is necessary to develop crops that can sustain in adverse climatic conditions. This will enable farmer to save himself from losses that occur due to crop losses. Ex: Water resistant paddy can tackle incessant rain.
 - **Increase farm output:** New crops developed using biotechnology have the capacity to produce more output per area compared to conventional species. This means that **more production from small land** and subsequent increase in profits.
 - **Increase nutrient value of crops:** The GM crops are **drought tolerant** and can develop **nutrient efficient varieties**. Further, it can help produce foods with better shelf life, taste and **texture**.
 - Further, crops can even be engineered to be **more nutritious**, providing critical vitamins to populations that struggle to get specific nutrients needed for healthy living.
 - **Reduce pesticides:** Pests are major threat to farm economy than other sources. To eliminate major threats to crops, scientists have come up with innovative methods using biotechnology to help in elimination of pests.
- **Challenges of GM crops**
 - **Allergic Reactions:** It states that **genetic modification often adds or mixes proteins** that were not indigenous to the original animal or plant, which might cause new allergic reactions in our body.
 - **Cross-pollination:** Cross-pollination can cover quite large distances, **where new genes can be included in the offspring of organic, traditional plants or crops that are miles away**. This can result in difficulty in distinguishing which crop fields are organic and which are not, posing a problem to the task of properly labeling non-GMO food products.
 - **Potential adverse impact on human health:** The impact of growing GMO crops like GM mustard on the health of the population, the environment (the soil on which it is grown), the food chain, the groundwater, etc., is still unknown.

Conclusion

- GM crops can help India to improve their living standards which will reflect in human development. It will also help India to ensure food security, decreasing hunger and malnutrition to fulfill its international obligation of achieving sustainable development goals and increase farmer's income and agricultural export, but there is need for proper research on its adverse impact on human and environment health on the basis of scientific evidence. Therefore, there is a need for participatory approach in order to bring together all stakeholders to develop regulatory protocols.

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