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## Illegal Cultivation of Bt Brinjal

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The activists representing the **Coalition for a GM-Free India (CGFI)** have alleged that **Bt brinjal** is being cultivated **illegally in Haryana**.

- **Bacillus Thuringiensis Brinjal, popularly known as Bt brinjal**, has been at the centre of controversy in India.
- Bt brinjal, a genetically modified strain created by **India's seeds company Mahyco** in collaboration with **American multinational Monsanto**, claims to improve yields and help the agriculture sector.
- However, environment activists say the effect of GM (genetically modified) crops on rats have shown to be fatal for lungs and kidneys. It is **dangerous to introduce these experimental foods into the market** without proper research.
- It can be noted that recently, the **Genetic Engineering Appraisal Committee (GEAC)**, has sought **information about Bt brinjal from Bangladesh**, where farmers have been **growing the crop since 2013**.

## Bt Brinjal

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- Brinjal is prone to attack from insect pests and diseases, the most serious and destructive of which is the **fruit and shoot borer (FSB) Leucinodes orbonalis**.  
Since FSB larvae are concealed within shoots and fruits, the **pest normally escapes insecticide sprays**.
- Therefore, FSB-resistant brinjal or Bt brinjal was developed using a transformation process similar to the one used in the development of Bt cotton.
- According to **International Service for the Acquisition of Agri-biotech Applications (ISAAA)**, which works to promote bio-technology, Bt brinjal **incorporates the cry1Ac gene expressing insecticidal protein** which **creates resistance against fruit and shoot borer, a pest**.

## Genetically Modified Organisms

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- Genetically Modified Organisms (GMOs) can be defined as organisms (i.e. plants, animals or microorganisms) in which the **genetic material (DNA) has been altered in a way** that does not occur naturally by mating and/or natural recombination.
- The technology is called “**recombinant DNA technology**” or “**genetic engineering**”.
- It allows selected individual genes to be transferred from one organism into another and also between non-related species.
- GM crops are aimed at providing **increased level of crop protection** by introducing resistance against plant diseases caused by **insects, viruses and from herbicides**.
  - The **resistance against insects in GM crops** is achieved by incorporating into the food plant the gene for toxin production, which is currently used as a conventional insecticide in agriculture and is considered safe for human consumption.
  - **Virus resistance** is achieved through the introduction of a gene from certain viruses which cause disease in plants. Virus resistance makes plants less susceptible to diseases caused by such viruses, resulting in higher crop yields.
  - **Herbicide tolerance** is achieved through the introduction of a gene from a bacterium conveying resistance to some herbicides. In situations where weed pressure is high, the use of such crops has resulted in a reduction in the quantity of the herbicides used.