



## Biotech-KISAN Programme

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### Why in News

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The **Ministry of Science and Technology** has issued a **Special Call for the NorthEast Region** as a part of its **Mission Programme “Biotech-Krishi Innovation Science Application Network (Biotech-KISAN)”**.

### Key Points

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- **About:**
  - It is a **scientist-farmer partnership** scheme **launched in 2017**.
  - It is a **pan-India program**, following a **hub-and-spoke model** and stimulates entrepreneurship and innovation in farmers and empowers women farmers.
  - The **Biotech-KISAN** hubs are expected to fulfil the technology required to generate agriculture and bio-resource related jobs and better livelihood ensuring biotechnological benefits to small and marginal farmers.
  - Farmers are also **exposed to best global farm management and practices**.
- **Ministry:**

This is a farmer-centric scheme developed by and with farmers under the **Department of Biotechnology, Ministry of Science and Technology**.
- **Objective:**

It was **launched for agriculture innovation** with an objective to connect science laboratories with the farmers to find out innovative solutions and technologies to be applied at farm level.
- **Progress:**
  - **146 Biotech-KISAN Hubs** have been established covering all 15 agroclimatic zones and 110 **Aspirational Districts** in the country.
  - The scheme has benefitted **over two lakhs farmers** so far by increasing their agriculture output and income. **Over 200 entrepreneurs** have also been developed in rural areas.

- **About the Present Call:**

- The present call specifically focuses on the **North East Region (NER)** as it is predominantly agrarian **with 70% of its workforce** engaged in agriculture and allied sector for livelihood.
- The region produces **merely 1.5 %** of the country's food grain and continues to be a **net importer of food grains** even for its domestic consumption.
- The **NER has untapped potential** to enhance the income of the farming population by promotion of location specific crops, horticultural and plantation crops, fisheries and livestock production.
- The **Biotech-KISAN Hubs in NER** will collaborate with the top scientific institutions across the country as well as State Agricultural Universities (SAUs)/**Krishi Vigyan Kendras (KVKs)**/existing state agriculture extension services/system in the NER for demonstrations of technologies and training of farmers.

## **Biotechnology in Agriculture**

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- **Agricultural Biotechnology:**

- Agricultural biotechnology is a **range of tools**, including traditional breeding techniques, that **alter living organisms, or parts of organisms**, to make or modify products; improve plants or animals; or develop microorganisms for specific agricultural uses.
- Modern biotechnology today includes the tools of **genetic engineering**.

- **Examples:**

- **Genetically Modified Organisms (GMO):** These are plants, bacteria, fungi and animals whose genes have been altered by manipulation. **GM plants** (Bt Cotton) have been useful in many ways.
- **Biopesticide: Bacillus thuringiensis** is a naturally occurring soil bacterium that causes disease on insect pests. It is **accepted in organic farming and is considered ideal for pest management** due to its low cost, ease of application, high virulence and narrow host specificity.

- **Benefits:**

- GMO leads to a number of advantages in the crops which include -there is **less loss after harvest**, the crops **can be modified to have additional nutrients value** for human welfare.
- The use of some of these crops **can simplify work and improve safety for farmers**. This allows farmers to spend less of their time managing their crops and **more time on other profitable activities**.

- **Disadvantages:**

- **Antibiotic Resistance:** There is a concern that new **antibiotic-resistant bacteria** could emerge which would be difficult to tackle with conventional antibiotics.
- **Potential of 'superweeds':** The transgenic plants could pollinate with the unwanted plants (weeds) and thereby relay the gene of herbicide-resistance or pesticide-resistance into them, thereby converting them into '**superweeds**'.
- **Loss of Biodiversity in Organisms:** The extensive use of agritech varieties of seeds have made some agriculturists fearful as this may hurt the biodiversity of plant species.

The extensive use of GMO varieties is because of the fact that they are more profitable and drought resistant which has made farmers abandon their traditional varieties of plants.

**Source: PIB**