



# Biotech-KISAN Scheme

## Why in News?

The [Biotech-Krishi Innovation Science Application Network \(KISAN\) scheme](#) has been successful in providing benefits to over 1 lakh 60 thousand farmers in the last one year.

## What is Biotech-KISAN Scheme?

- **About:** Biotech-KISAN scheme is a **farmer-centric scheme for farmers**, launched in 2017, developed by and with farmers under the **Department of Biotechnology, Ministry of Science and Technology**.
  - It is a pan-India program, following a **hub-and-spoke model and stimulates entrepreneurship and innovation** in farmers and empowers women farmers.
  - It has a unique feature to identify and promote local farm leadership in both genders.
    - Such leadership helps to develop science-based farming besides facilitating the transfer of knowledge.
  - Biotech-KISAN Hubs have been established **covering all 15 agroclimatic zones and Aspirational Districts in the country**.
- **Aim:** The programme links available **science and technology** to the farm by first understanding the problem of the local farmer and then providing scientific solutions to those problems.
  - The Biotech-KISAN hubs are expected to fulfill the technology required to generate agriculture and bio-resource related jobs and better livelihood ensuring biotechnological benefits to small and marginal farmers.
- **Counseling and Demonstrations:**
  - Under the scheme farmers are provided counseling and demonstrations on improved **seed, planting stock of vegetable**, interventions for use of plant growth-promoting **rhizobacteria** (PGPR's)/bio-fertilizers, **irrigation** & protected cultivation technologies.
  - **Improved livestock** (goat, pig), **poultry and fishery** as well as health management of livestock/poultry are also covered under it.

## What is Biotechnology in Agriculture?

- **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**.

### UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. Other than resistance to pests, what are the prospects for which genetically engineered plants have been created? (2012)**

1. To enable them to withstand drought
2. To increase the nutritive value of the produce
3. To enable them to grow and do photosynthesis in spaceships and space stations
4. To increase their shelf life

**Select the correct answer using the codes given below:**

- (a)** 1 and 2 only
- (b)** 3 and 4 only
- (c)** 1, 2 and 4 only
- (d)** 1, 2, 3 and 4

**Ans: (c)**

**Exp:**

- Genetically modified crops (GM crops or biotech crops) are plants used in agriculture, the DNA of which has been modified using genetic engineering methods. In most cases, the aim is to introduce a new trait to the plant which does not occur naturally in the species.
  - Examples of traits in food crops include resistance to certain pests, diseases, environmental conditions, reduction of spoilage, resistance to chemical treatments (e.g., resistance to a herbicide), or improving the nutrient profile of the crop.
- Some potential applications of GM crop technology are: Nutritional enhancement -Higher vitamin content; more healthful fatty acid profiles; Hence, 2 is correct.
- Stress Tolerance - Tolerance to high and low temperatures, salinity, and drought; Hence, 1 is correct.
- There is no such prospect that enables GM crops to grow and do photosynthesis in spaceships and space stations. Hence, 3 is not correct.
- Scientists have been able to create certain genetically modified crops which stay fresh for a month longer than usual. Hence, 4 is correct.
- **Therefore, option (c) is the correct answer.**

**Source: PIB**

