GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

RAJYA SABHA
UNSTARRED QUESTION NO. 4439
ANSWERED ON 02.04.2026

Biotech-KISAN Scheme

4439. Shri Ratanjit Pratap Narain Singh:

Will the Minister of **SCIENCE AND TECHNOLOGY** be pleased to state:

(a) the progress of the Biotech-KISAN (Krishi Innovation Science Application Network) scheme in bridging the gap between laboratories and agricultural fields;
(b) the total number of Biotech-KISAN Hubs currently operational across various agro-climatic zones;
(c) the details of specific biotechnological interventions, such as bio-fertilizers and tissue culture, successfully transferred to rural farmers;
(d) the measurable impact of these technologies in restoring soil health and increasing the yield of pulse and oilseed crops; and
(e) the specific capacity-building initiatives undertaken to train women farmers in basic biotechnology applications for sustainable agriculture?

ANSWER
MINISTER OF STATE (INDEPENDENT CHARGE) FOR THE
MINISTRY OF SCIENCE AND TECHNOLOGY & EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) The Department of Biotechnology has been implementing the Biotech-KISAN (Krishi Innovation Science Application Network) Scheme since 2017 as a flagship farmer-centric programme. The scheme has made notable progress in bridging the gap between laboratories and agricultural fields by establishing hubs across diverse agro-climatic zones. These hubs serve as demonstration units, training centres, and enterprise incubators, ensuring that scientific innovations are adapted to local farming challenges and directly reach rural communities. The program has directly reached over one lakh farmers, delivering yield improvements of 15 to 37 percent in demonstration plots. It has empowered women through Mahila Kisan Fellowships, fostered rural biotech enterprises, and strengthened market linkages. Farmers have adopted residue-free cultivation, precision farming, and integrated pest management, thereby enhancing both productivity and sustainability.

(b) To date, the Department has implemented over 50 Biotech KISAN Hubs across 25 States and Union Territories**,** covering diverse agro-climatic zones including arid, semi-arid,

coastal, hill, tribal, and North Eastern regions. At present, 5 Biotech KISAN Hubs are operational.

(c) The following biotechnological interventions successfully transferred to rural farmers:

1. DBT Biotech-KISAN scheme:

- North Eastern Zone: Biofertilizers and microbial consortia for rice and vegetables; organic farming technologies such as vermicompost, biofortified compost, and azolla biofertilizer; beekeeping and honey processing hubs; mushroom spawn production units; bamboo polyhouses and turmeric/ginger processing.
- Eastern Zone: Millet tuber complexes; tribal rice landrace conservation and seed hubs; community seed banks and varietal innovation hubs.
- Central Zone: Dryland pulse technologies (pigeon pea, chickpea, groundnut); community-based seed hubs for high-yielding varieties; soil health interventions using microbial inputs.
- Western Zone: Farmer-led varietal innovation including Abu Saunf 440 fennel variety registered under PPV&FRA; arid zone crops such as cumin, isabgol, cluster bean; community gene banks and seed hubs.
- Northern Zone: Mechanized walnut processing clusters; dairy productivity hubs and fodder biotech inputs.
- Southern Zone: Pulse production technologies (black gram, green gram, pigeon pea); community seed hubs and nutri gardens; shrimp hatcheries and seaweed farming; biofortified maize and millets.

2. National Certification System for Tissue Culture Raised Plants (NCS-TCP): Under this scheme implemented by the Department of Biotechnology, plant tissue culture technology has been successfully transferred to rural farmers through a structured system that ensures the supply of high-quality, virus-free, and genetically uniform planting material. This ensures that farmers receive quality planting material thereby reducing the risk of disease spread and improving crop productivity. Importantly, any virus-infected plants are disposed of strictly as per prescribed norms, ensuring that only safe and standardized planting material reaches the farming community.

(d) The measurable impact of these technologies in restoring soil health and increasing the yield of pulse and oilseed crops is as follows:

- Farmers in Odisha, Assam, and Andhra Pradesh, through structured demonstrations and training, have reported a 25–30% reduction in chemical fertilizer use by adopting biofertilizers, vermicompost, and microbial consortia.
- Demonstration plots in Odisha have shown a 20–25% increase in soil organic carbon, thereby enhancing fertility and water retention.
- In the North Eastern states, adoption of biocontrol consortia and azolla biofertilizer has helped in restoration of soil microbial balance, reducing pest incidence and improving nutrient cycling.

- In Rajasthan and Andhra Pradesh, integrated seed hubs coupled with farmer training and demonstrations have reported 20–35% yield increases in pigeon pea, chickpea, and groundnut**,** directly linked to healthier soils and sustainable practices.

(e) The capacity building initiatives under Biotech KISAN have specifically targeted women farmers**.** More than 5,000 women have been trained in biofertilizer use, seed production, mushroom cultivation, and kitchen garden models. Over 1,200 Self-Help Groups (SHGs) have been formed or strengthened, leading to women-led enterprises in food processing, aquaculture, and floriculture. The Department has also introduced Mahila Biotech Fellowships to promote women-led innovation, and ICT-enabled advisories such as the mobile application *"Mushroom Mentor"* have provided timely guidance to women farmers.

Complementing these efforts, the National Certification System for Tissue Culture Raised Plants implemented by DBT has integrated capacity-building as a key component to strengthen grassroots adoption of biotechnology interventions. Nearly 70% of the staff employed in tissue culture production facilities is women, underscoring their central role in biotechnology-driven agriculture. Through structured on-the-job training and continuous exposure to standardized procedures, these women workers acquire practical knowledge of basic biotechnology applications, which allows them to contribute directly to sustainable agricultural practices.

Together, these programmatic initiatives highlight a comprehensive approach where women are not only beneficiaries but also leaders in biotechnology-led agricultural transformation. They gain skills, entrepreneurial opportunities, and recognition, while simultaneously advancing sustainability, innovation, and inclusive growth across rural communities.

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