GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION

RAJYA SABHA
STARRED QUESTION NO. 150
ANSWERED ON 12.12.2025

AGRICULTURAL MACHINERY, EQUIPMENTS AND TECHNOLOGIES DEVELOPED BY ICAR

*150. SHRI SHAMBHU SHARAN PATEL:

Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

(a) the arrangements currently in place to make agricultural machinery, equipment and technologies developed by the Indian Council of Agricultural Research (ICAR) institutions accessible to farmers at the field level;
(b) whether any evaluation studies have been conducted to assess the impact of these technologies, if so, the details thereof;
(c) whether any dedicated centres, projects or collaborations have been established with States, private sector, Start-ups or educational/research institutions in this regard; and
(d) the steps being taken by Government to strengthen post-harvest management, stubble management/reduce residue burning and enhance technical capacity?

ANSWER

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE
(SHRI SHIVRAJ SINGH CHOUHAN)

(a) to (d): A statement is laid on the Table of the House.

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STATEMENT REFERRED TO IN REPLY TO PARTS (A) TO (D) IN RESPECT OF RAJYA SABHA STARRED QUESTION NO. 150 FOR REPLY ON 12.12.2025 REGARDING "AGRICULTURAL MACHINERY, EQUIPMENTS AND TECHNOLOGIES DEVELOPED BY ICAR" ASKED BY SHRI SHAMBHU SHARAN PATEL.

(a): The dissemination of agricultural machinery and technologies is carried out through activities such as Frontline Demonstrations (FLDs) on farmers' fields and prototype feasibility testing (PFT) of newly developed machinery to assess regional suitability. In addition, technology demonstration melas are organized every year for wider outreach. Demonstrations and extension activities are conducted through All India Coordinated Research Projects (AICRPs) centres located across all major states of India, ensuring that the technologies developed are effectively showcased and transferred to farmers at the field level. The activities during 2020-21 to 2024-25 are under:

- Prototype Feasibility Testing: 288 farm tools and equipment tested under field conditions.
- Frontline Demonstrations: 422 equipment and implements demonstrated on 16349 ha area.
- 62 radio/TV talks conducted.
- 15 Technologies developed & commercialized.

(b): Yes. The Indian Council of Agricultural Research (ICAR) assessed the impact of selected 19 technologies commercialized through licensing to manufacturers during 2012-2021. Five technologies namely tractor operated inclined plate planter, animal drawn seed-cum-fertilizer drill, manual cono-weeder, paddy drum seeder and power operated cleaner-cum-grader have been well adopted by the users and popular in number of states. The entrepreneurship programmes also helped in establishment and successful operation of more than 2000 farm machinery custom hiring centres and 250 soy-based food production enterprises.

The adoption of farm machinery varies with farmers' socioeconomic and geographic conditions as well as cropping pattern. Overall mechanization level of the country is about 47%. Seedbed preparation is the most mechanized operation (70%), while weeding, interculture & plant protection remain low (under 32%). Wheat has the highest mechanized sowing (65%), and planting/transplanting levels remain modest for sugarcane (25%) and rice (35%).

(c): Yes, there are 90 dedicated Centres under AICRPs in State Agricultural Universities (SAUs) and IITs for co-development and demonstration of technology/machines. Further, there is linkages with State Agricultural Engineering and Extension Departments. ICAR is also taking initiatives to develop partnerships with private sector entities for co-development and deployment of technologies and signed more than 150 MoUs in the last 5 years.

(d): To strengthen the post-harvest management, Institutes and AICRPs have developed around 120 technologies consisting of several equipment for food processing, structures for safe handling and shelf-life enhancement of farm produce, process protocols for value-added products. The technologies/protocols have been licensed to 126 entrepreneurs/end users for deployment. The Institutes along with AICRPs have helped in establishing 392 Agro Processing Centres (APCs) for the primary processing of agricultural commodities. The technologies/machines have been developed for *in-situ* management of crop residue especially rice straw management in rice-wheat cropping system and undertook extensive outreach and residue-management activities to provide technological solutions and its dissemination. The ICAR-KVKs have put massive effort for creating awareness among farmers to use machines for in-situ crop residue management through Information Education and Communication (IEC) activities in Punjab (22 KVKs), Haryana (15 KVKs) and Uttar Pradesh (23 KVKs). Burning events was monitored by multiple satellites with thermal sensors during the harvest period of paddy in the states of Punjab, Haryana and Uttar Pradesh and found significant reduction over the years. About 90% reduction in burning events observed in 2025 as compared to 2020 in Punjab, Haryana and Uttar Pradesh states. The Department of Agriculture & Farmers Welfare is implementing a Special Scheme Crop Residue Management Scheme from 2018-19 in order to support the efforts of the Governments of Punjab, Haryana, Uttar Pradesh, Madhya Pradesh and NCT of Delhi to address pollution and to subsidize machinery required for *in-situ* and *ex-situ* management of crop residue.

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