

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

RAJYA SABHA
UNSTARRED QUESTION NO. 1441
TO BE ANSWERED ON 15/12/2023

INITIATIVES FOR PROMOTION OF CLIMATE RESILIENT CROPS

1441. SHRI S. KALYANASUNDARAM:

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

- (a) whether the Ministry has taken any initiatives to promote and develop crop varieties that are more resilient to the impact of global warming and erratic weather conditions;
- (b) if so, the details regarding such initiatives, and if not, the reasons therefor;
- (c) whether Government has invested in Research and Development (R&D) of global warming resilient crops;
- (d) if so, the details of funds earmarked for R&D efforts for increasing the adaptive capacity of crops with respect to global warming; and
- (e) if not, the reasons therefor?

ANSWER

THE MINISTER OF AGRICULTURE & FARMERS WELFARE
(SHRI ARJUN MUNDA)

(a) & (b): Yes, Sir. Since 2014 onwards, National Agricultural Research System under the aegis of Indian Council of Agricultural Research (ICAR) has released 2380 varieties of different field crops of which 1971 varieties of cereals (913), oilseeds (335), pulses (364), forages crops (106), fibre crops (189), sugarcane (54) and potential (underutilized) crops (10) are climate-resilient with tolerance to one or more biotic and/or abiotic stresses. Among these, 429 field crop varieties are highly tolerant to extreme abiotic stresses including drought/ moisture stress (240); waterlogging/ submergence (72); salinity/ alkalinity/sodic soils (58); heat stress (42) and Cold/ Frost (17). During the same period, 487 varieties of horticultural crops have also been released which include 22 climate resilient varieties including 6 for high temperature tolerance (2 each of potato and tomato and 1 each of spinach and radish); 12 for drought tolerance (4 of cassava, 3 of coconut; 2 of taro and 1 each of greater yam, white yam and sweet potato); 3 of potato for water use efficiency and 1 of cassava for salinity tolerance.

Efforts are made to include the newly released climate resilient varieties in the seed chain as a result Varietal Replacement Rate (<10 years old varieties) has been enhanced significantly in major crops including rice (69%), wheat (92%), pigeonpea (97%), chickpea (91%), mungbean (94%), urdbean (91%), lentil (99%), soybean (78%), groundnut (70%) and mustard (82%). The deployment of climate resilient varieties has led to enhanced production even during two consecutive bad years.

Under National Food Security Mission (NFSM), assistance is given through State/ Union Territory to the farmers for interventions like cluster demonstrations on improved package of practices, demonstrations on cropping system, seed production, distribution of High Yielding Climate Resilient Varieties (HYVs)/ hybrids, cropping system-based trainings etc. Under NFSM, States/ ICAR Institutes/ State Agricultural Universities/ Krishi Vigyan Kendras are organizing latest crop production technology demonstrations/ Cluster Frontline Demonstrations/ Front Line Demonstrations on newly released varieties including climate resilient varieties. During the breeder seed indent finalization, the states are encouraged to produce and distribute seeds of climate resilient varieties. Further under NFSM total 210 seed hubs of pulses (150), oilseeds (35) and millets (25) have been established for breeder and quality seed production of newly released climate resilient varieties.

(c) to (e): Fifty seven Institutes of ICAR are working on development of climate resilient varieties of crops and technologies for increasing the adaptive capacity of crops with respect to global warming. Total funds allotted to the Institutes involved for research and development of varieties during 2020-21 to 2023-24 is Rs. 3456.11 crores. ICAR launched a flagship network project viz., National Innovations in Climate Resilient Agriculture in 2011 for developing the climate resilient varieties and technologies for various abiotic stresses. Since 2019-20 to 2023-24, a total budget of Rs.219.98 crores has been allocated for this scheme. Total 68 climate Resilient technologies/ techniques have been demonstrated in 454 villages at 1585 of farmers' fields during 2014-2023. A National Phenomics Facility has been established with a total cost of Rs. 43.83 crores at ICAR-Indian Agricultural Research Institute, New Delhi for precisely screening the material for drought and heat tolerance for their further use in breeding of climate resilient varieties.

ICAR initiated the research on genome editing in rice during 2018-22 with a total funding of Rs. 6.71 crores CRISPR Crop Network (ICAR) on "Targeted improvement of stress tolerance, nutritional quality and yield of crops using genome editing" has been launched with a total funding of Rs. 7.4 crores during 2022-25. In addition, during the Budget Announcement (2024), Rs. 500 crores have been allotted to ICAR for "Enhancing climate resilience and ensuring food security with Genome Editing tools" during 2023-26 in major field and horticultural crops.
