

(c) whether Government has asked the agricultural scientists to study the impact of climate change on agriculture in the country; and

(d) if so, the details thereof and the steps taken to protect agriculture from climate change?

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE (SHRI NARENDRA SINGH TOMAR): (a) to (d) Yes, Sir. Agriculture sector in India is vulnerable to climate change. Higher temperatures tend to reduce crop yields and favour weed and pest proliferation. Climate change can have negative effects on irrigated crop yields across agro-ecological regions both due to temperature rise and changes in water availability. Rainfed agriculture will be primarily impacted due to rainfall variability and reduction in number of rainy days. Analysis of impact of climate change under National Innovations in Climate Resilient Agriculture (NICRA) project has found that climate change is expected to affect yields, particularly in crops like rice, wheat and maize.

Government of India has initiated various actions to mitigate affects of climate change:

- Varieties and cultivars tolerant to abiotic stresses are developed under strategic research component of NICRA.
- The technology demonstrations aim at enhancing the adaptive capacity of the farmers and also to cope with climate variability in the vulnerable districts to achieve climate resilient agriculture. Under NICRA, climate resilient technology demonstrations are implemented in 151 climatically vulnerable districts of the country.
- District Agriculture Contingency Plans have been prepared by ICAR-CRIDA, Hyderabad for 648 districts in the country to address the adverse weather conditions.

Conservation of water in agriculture

3038. PROF. M. V. RAJEEV GOWDA: Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

(a) the Ministry's plan and allocation of funds for specific horticulture crops which are water-use efficient and promote sustainable farming;

(b) the estimated amount of water that can be saved through farming of these crops in comparison to other agricultural crops;

(c) whether the Ministry has estimated the export demand of horticulture crops and the likely impacts on the agricultural economy; and

(d) if so, the manner in which the Ministry plans to employ similar techniques being used in Israel for conservation of water in agriculture?

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE (SHRI NARENDRA SINGH TOMAR): (a) Ministry of Agriculture & Farmers Welfare, is implementing Mission for Integrated Development of Horticulture (MIDH), a Centrally sponsored scheme for the holistic growth of the horticulture sector which also includes promotion of water-use efficient crops like Pomegranate, Aonla, Ber and Aromatic crops etc. through area based regionally differentiated strategies. However, States have the liberty to choose suitable water use efficient crops and promote sustainable farming according to their agro-climatic conditions as per MIDH guidelines. During 2018-19 ₹ 2004.85 crore was released against the allocated budget of ₹ 2546.24 crore to States for promotion of horticulture crops from planting material production to establishment of market infrastructure.

(b) The identified horticulture crops save water around 20-30% as compared to crops such as rice and sugarcane.

(c) Ministry of Commerce & Industry has projected the export demand of Horticulture crops having processable values for next 3 years under Agriculture Export Policy, 2018 to about 400 Million US dollars for dehydrated onion and other vegetables and about 600 Million dollars for processed fruits which would be beneficial for agricultural economy of the country. However, the export of agricultural products depends on several factors such as international and domestic demand and supply situation, international & domestic prices, quality concerns and food security concerns, sanitary and phyto-sanitary issues. Higher exports would lead to better incomes for our farmers and a more robust agricultural economy.

(d) Ministry of Agriculture & Farmers Welfare, is implementing Mission for Integrated Development of Horticulture (MIDH) to promote production of Horticulture crops through advanced technologies including water saving technologies through 28 Centre of Excellence which are established in various States with the cooperation of

Israel. These centres demonstrate water use efficient techniques like Hi-tech green house, Creation of irrigation facilities-Water storage tank/water pond, Overhead drip irrigation system, Mini-sprinklers, Automation, fertigation/irrigation unit etc. In addition, 22 Precision Farming Development Centers, located across the country, are also promoting water saving technologies under MIDH through demonstrations and trainings.

Role of cooperatives in agriculture sector

3039. SHRI SYED NASIR HUSSAIN: Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

- (a) whether Government proposes to strengthen the role of cooperatives in agriculture sector;
- (b) if so, the steps taken by Government in this regard; and
- (c) the details of the performance of cooperatives in organic farming, milk production, poultry farming and fisheries in different States of the country?

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE (SHRI NARENDRA SINGH TOMAR): (a) and (b) Yes, Sir. Central Government through Central Sector Scheme on Agricultural Cooperation, has been promoting the role of cooperatives in the agriculture sector. Assistance is provided for providing training to farmers who are members and employees of various types of cooperative societies. Besides, loan assistance is provided by the National Cooperative Development Corporation (NCDC), which is a Statutory Corporation of the Govt. of India, for promoting, developing and financing post-harvest activities through cooperatives in agriculture sector. These comprise, *inter alia*, marketing, storage and processing of agricultural produce besides supply of agricultural inputs. Subsidy to the tune of 15% to 25% is provided to cooperatives depending on the category of states in addition to term loan. Government also provides guarantee for procurement operations of NAFED.

- (c) Such information is not being maintained by this Department.

Increasing private expenditure in agricultural sector

3040. SHRI SANJAY SINGH: Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

- (a) the current data of private and public expenditure in the agricultural sector;