GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 3950
TO BE ANSWERED ON WEDNESDAY, 22ND DECEMBER, 2021

EXTREME WEATHER EVENTS

3950. DR. AMAR SINGH:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the details of studies, if any, conducted by the Government, in the past three years, on the impact of extreme weather events, on the Indian crops and farmers from various topographies of the country, year-wise;
(b) whether the country has an updated system for predicting extreme weather events for the benefit of farmers, throughout the country, if so, the details thereof;
(c) whether the Ministry maintains a dynamic record of the various agro-climatic zones of the country at the disposal for farmers, if so, the details thereof; and
(d) whether the Government proposes to introduce schemes, to encourage farming practices based on upgraded weather forecasting, if so, the details thereof?

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

(a) Recent studies report that, extreme weather events are emerging as a potential threat to food security and farmers livelihoods. Extreme precipitation (both flood and drought) and temperature are crucial in causing detrimental impact on crop yield and production.The impacts of extreme events such as extended dry periods, floods, hailstorms, cyclonic rains and winds etc. will be more in rainfed agriculture in terms of crop yield and yield quality.There has been observed increase in natural disasters like severe cyclones and floods in the country during recent years. The number of Cyclones and Number of stations reported heavy and extremely heavy rainfall events since 2016 is given below. It can be seen that during recent years' frequency of severe cyclones and stations reporting very heavy and extremely heavy rainfall has increased. However, Ministry of Earth Sciences has not conducted any study in regard to impact of extreme weather events, on the Indian crops and farmers from various topographies of the country.

YEAR	**Number of Cyclones**		**Number of stations Reported during SW Monsoon season (June to September)**	
	TOTAL	**Severe Cyclone**	**V. Heavy Rainfall**	**Extremely Heavy Rainfall**
2016	4	1	1864	226
2017	3	2	1824	261
2018	7	6	2181	321
2019	8	6	3056	554
2020	5	4	1912	341
2021(till Dec 10, 2021)	5	4	1653	281

(b)-(d) Operational Agromet Advisory Services (AAS) were initially started at state level and subsequently at agroclimatic zone level. But from 2008 onwards, AAS is rendered at district-level for providing more specific information about weather forecast and related agromet advisories to the end users.

GraminKrishiMausamSewa (GKMS) scheme, rendered by IMD jointly with ICAR and State Agricultural Universities, is a step towards weather-based crop and livestock management strategies and operations for the benefit of farming community in the country. Under the scheme, medium range weather forecast at district and block level is generated and based on the forecast, Agromet Advisories are prepared and communicated by the Agromet Field Units (AMFUs) located in State Agricultural Universities, ICAR Institutes, IITs etc. and District Agromet Units (DAMUs) at KVKs under ICAR network to the farmers on every Tuesday and Friday. These forecasts and agromet advisories help farmers to take decision on day-to-day agricultural operations, which can further optimize the application of input resources at farm level during deficient rainfall situation and extreme weather events to reduce monetary loss and maximize crop yield.

Agromet Advisories are disseminated to the farmers through multichannel dissemination system like print and electronic media, Door Darshan, radio, internet etc. including SMS using mobile phones through Kisan Portal launched by Ministry of Agriculture and Farmers' Welfare and also through private companies under Public Private Partnership (PPP) mode. KrishiVigyanKendras (KVKs) of ICAR have also given link to the respective district level advisory in their web portal.

IMD also monitors rainfall situation & weather aberrations and issues alerts & warnings to the farmers time to time under GKMS scheme. SMS-based alerts and warnings for extreme weather events along with suitable remedial measures are issued to take timely operations by the farmers. Such alerts and warnings are also shared with State Department of Agriculture for the effective management of calamity.

Moreover, in 2020, India Meteorological Department had developed mobile App '**MAUSAM**' for weather forecasting, '**Meghdoot**' for Agromet advisory dissemination and '**Damini**' for lightning alert.

As per the classification done under National Agricultural Research Project (NARP) by Indian Council of Agricultural Research (ICAR), the country has divided into 127 agroclimatic zones. Operational Agromet Advisory Services (AAS) were initially started at state level and subsequently at agroclimatic zone level. But from 2008 onwards, AAS is rendered at district-level for providing more specific information about weather forecast and related agromet advisories to the end users.

Farmers access the weather information including alerts and related agromet advisories specific to their districts through the mobile App viz., 'Meghdoot' launched by Ministry of Earth Sciences, Government of India. These weather forecasts are also accessible by farmers through another App 'KisanSuvidha', launched by Ministry of Agriculture & Farmers Welfare. Also, a few AMFUs have developed mobile Apps to facilitate quick dissemination of agromet advisories to the farmers of their region. Social media is also used for quicker dissemination of forecast and advisories to the farmers.

After successful implementation of district level AAS, DAMUs are being established at KrishiVigyanKendras (KVKs) in collaboration with ICAR to implement block level Agromet Advisory Services (AAS). Block level weather forecast and Agromet Advisories will aid the farmers in taking decision on day-to-day agricultural operations at micro-level.

*****