GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION No. - 33
ANSWERED ON 20/07/2023

EL NINO EFFECT DURING MONSOON

33. DR. PRASHANTA NANDA:

Will the Minister of **EARTH SCIENCES** be pleased to state:

(a) details of El Nino effect during this monsoon in the country;
(b) whether it is a fact that monsoon may slow down in the month of July;
(c) the details of Government's advisory issued to the farm sector; and
(d) the details of the Indian Meteorological Department's prediction regarding low rain fall this year, State-wise?

ANSWER
THE MINISTER OF EARTH SCIENCES
(SHRI KIREN RIJIJU)

(a) In general, during the El Nino event, Indian summer monsoon is weaker than normal and the intensity of the event also decides the amount of impact on the monsoon. Out of the fifteen El Nino years during the period 1951-2015, El Nino is associated with below normal to deficient rainfall in the monsoon season in 9 out of 15 years (60% of years), the remaining 6 years experienced normal to excess rainfall**.** Also, there is strong inverse relationship between El Nino and rainfall during latter half of the monsoon season (particularly with September rainfall). However, it is important to note that El Niño is not the only factor that decides the performance of monsoon over India. Other relevant climate drivers like the Indian Ocean Dipole (IOD), the Tropical Atlantic Sea Surface Temperature (SST) Dipole, Eurasian land heating etc. are also important in deciding the performance of the southwest monsoon rainfall. The relative impact of all these parameters altogether decides the state of the monsoon over India.

The latest forecast from global models indicates high probabilities for the development El Niño conditions during the middle of the monsoon season and continue till the first quarter of 2024. Also, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean and the latest forecast from MMCFS and other global climate models indicates the development of positive IOD conditions over the Indian ocean during the monsoon season.

(b) On 30th June 2023, IMD issued monthly rainfall outlook for July 2023. As per this outlook, the monthly rainfall over the country as a whole during July 2023 is most likely to be normal (94 to 106% of Long Period Average (LPA)) and most probably within positive side of the normal. The spatial distribution suggests that normal to above normal rainfall is most likely over most areas of central India and adjoining south peninsular and east India and some areas of Northeast and Northwest India. Below normal rainfall is most likely over many areas of northwest, northeast and southeast peninsular India. As on 11th July, the rainfall is 26% above the normal rainfall of July.

(c) IMD runs an operational Agrometeorological Advisory Services (AAS) *viz.*, GraminKrishiMausamSewa (GKMS) scheme for the benefit of farming community in the country. Under the scheme, medium range weather forecast at district and block level for next five days is generated and based on the forecast, 130 Agromet Field Units (AMFUs), located at State Agricultural Universities, institutes of Indian Council of Agricultural Research (ICAR) and Indian Institute of Technology (IIT) etc., prepare Agromet Advisories on every Tuesday and Friday for the districts under their jurisdiction and for the blocks of the district of their location and communicate to the farmers to take decision on day-to-day agricultural operations. AAS rendered by IMD is a step towards weather-based crop and livestock management strategies and operations dedicated to enhancing crop production and food security besides reducing crop damage and loss due to unusual weather. In order to facilitate the services199 District Agromet Units (DAMUs) have been established at KrishiVigyanKendras (KVKs) in collaboration with ICAR to implement block level AAS. These DAMUs prepare district and block level Agromet Advisories based on district and block level weather forecasts for their respective districts and communicate to the farmers on every Tuesday and Friday. Block level weather forecast and Agromet Advisories aid the farmers in taking decision on day-to-day agricultural operations at micro-level.

Along with the biweekly bulletins, daily weather forecast and nowcast information are also disseminated to the farmers by Regional Meteorological Centres (RMCs) and Meteorological Centres (MCs) of IMD. Impact based forecast (IBF) for agriculture are also being prepared by AMFUs and DAMUs based on the severe weather warnings for different districts of various States and UTs across the country.

Weather based Agromet Advisories are disseminated to the farmers through multichannel dissemination systems like print and electronic media, Door Darshan, radio, internet etc. including SMS through Kisan Portal and also through private companies under Public Private Partnership (PPP) mode. At present, SMS through m-Kisan Portal launched by Ministry of Agriculture and Farmers' Welfare (MoA&FW) are being sent during extreme weather events like cyclone, deep depression etc. However, SMS to the farmers through private companies is continued as earlier.

With the advancement of ICT, Farmers access weather information including alerts and related agromet advisories specific to their districts through the mobile App *viz.*, 'Meghdoot' launched by the Ministry of Earth Sciences, Government of India. These weather details are also accessible to farmers through 'KisanSuvidha' App launched by MoA&FW. Also, a few AMFUs have developed their own mobile Apps to facilitate quick dissemination of agromet advisories to the farmers of their region.

Social media like 'WhatsApp' is also used for quicker dissemination of weather forecasts and agromet advisories. WhatsApp groups of farmers have been created by various AMFUs and DAMUs to disseminate agromet services. These groups also include District and Block level officials from State Agriculture Departments. Continuous efforts are being made to increase the number of farmers and villages covered to disseminate Agromet advisories using WhatsApp.

In addition to above, advisories are also being circulated through a number of Facebook pages created by AMFUs and DAMUs. Initiative on collaboration with State Government has also been taken up for integration of weather forecast and Agromet advisories with state government mobile apps and websites. The integration has been completed for Bihar, Chhattisgarh, Gujarat, Haryana, Kerala, Madhya Pradesh, Meghalaya, Nagaland, Odisha, Rajasthan, Tamil Nadu and Uttarakhand for the benefit of the farmers of these states.

IMD is also taking continuous efforts to popularize the services among the farming community by organising Farmers' Awareness Programmes (FAPs) through AMFUs and DAMUs in various parts of the country. During 2022-23, 1296 FAPs have been conducted and 59324 farmers attended the programme. This year (April 2023-Till date), 112 FAPs have been conducted and 4567 farmers attended the programme. IMD along with the experts from AMFUs and DAMUs also participate in KisanMelas, Farmers' Day etc. to create awareness about the services, so that more farmers get benefitted.

(d) IMD issued the 1st Stage Long Range Forecast (LRF) for Southwest Monsoon 2023 on 11th April 2023 and it's update (2nd Stage LRF) was issued on 26th May 2023. The highlights of the updated LRF issued on 26th May are given below.

1) Southwest monsoon seasonal (June to September) rainfall over the country as a whole is most likely to be **normal (96 to 104% of Long Period Average (LPA))**. The LPA of the seasonal rainfall over the country as a whole for the period **1971-2020 is 87 cm**.
2) Quantitatively, the southwest monsoon seasonal (June to September) rainfall over the country as a whole is likely to be **96% of the LPA with a model error of ± 4%.**
3) Region wise, the southwest monsoon seasonal rainfall is most likely to be below normal over Northwest India (<92% of LPA) and normal over other three broad homogeneous regions; central India (94-106% of LPA), North East India (94-106% of LPA) and South Peninsular India (94-106% of LPA).
4) The southwest monsoon seasonal rainfall over the monsoon core zone consisting of most of the rain fed agriculture areas in the country is most likely to be Normal (94-106% of LPA).
5) In respect of spatial distribution of the monsoon seasonal rainfall, normal to above normal rainfall is likely over the most areas of south peninsular India, some areas of east central India and many areas of northeast and extreme north India. However, normal to below normal rainfall is likely over many areas of northwest India and adjoining west central India, northern parts of the peninsular India and along the foothills of Himalayas.
6) In June, below normal monthly rainfall is expected over most parts of the country except some areas of south peninsular India, northwest India, extreme north India and some isolated pockets of northeast India, where above normal rainfall is expected.
7) The latest global model forecasts indicate high probabilities for the development of El Niño conditions over the equatorial Pacific Ocean and positive Indian Ocean Dipole (IOD) conditions over the Indian Ocean during the upcoming monsoon season.

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