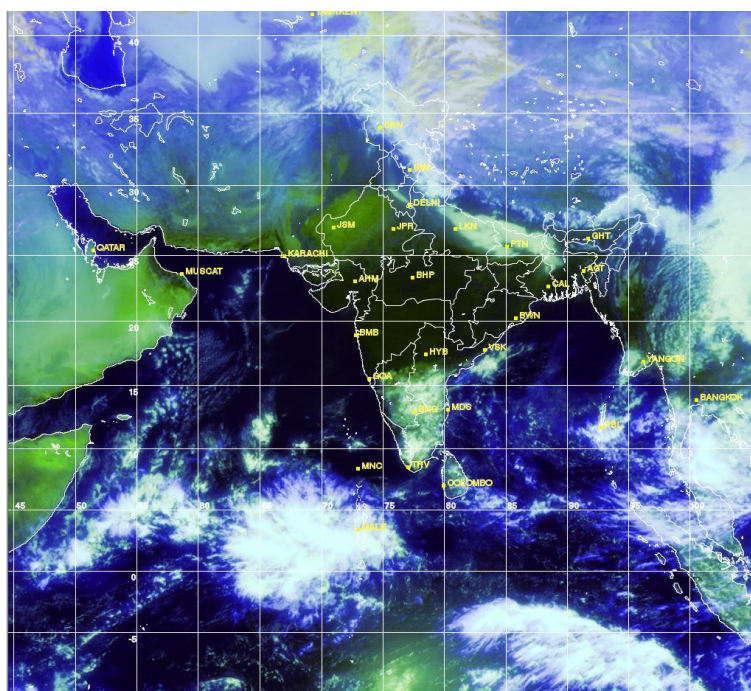




National Agromet Advisory Bulletin

Thursday, 8th December, 2011

(For the period 8th to 12th December, 2011)



Satellite image 0600 UTC dated 9th December, 2011

Issued by

National Agrometeorological Advisory Service Centre

Agricultural Meteorology Division

India Meteorological Department, Shivajinagar, Pune.

The bulletin is also displayed in the website (<http://www.imdagrimet.gov.in>) of the Division

Executive Summary

Rainfall occurred in some districts of Tamil Nadu and Kerala during last week. No significant rain occurred or dry weather prevailed over remaining parts of the country. Due to excess rainfall during last week of November in Tamil Nadu, some areas under rice and horticultural crops have been submerged in Tamil Nadu especially in Kanchipuram, Thiruvallur, Villupuram, Cuddalore, Nagapattinam, Thanjavur, Thiruvarur, Tirunelveli and Kanyakumari districts. Due to continuous submergence of rain water and excess water released through dams, growth of rice crops is likely to be adversely affected in these areas. Farmers in flood affected areas of Thanjavur, Nagapattinam and Thiruvarur districts of the Cauvery Delta Zone of Tamil Nadu are advised to undertake top dressing of 22 kg urea, 18 gypsum and 4 kg neem cake mixed with 17 kg MOP to avoid nutrient deficiency.

As rain / snowfall would occur at many places over Jammu & Kashmir and Himachal Pradesh during next 24 hours, farmers are advised to postpone irrigation to the standing crops in these States. No significant rainfall will occur or dry or mainly dry weather is likely to prevail over the remaining parts of the country. In view of realized excess rainfall in Alappuzha, Kollam and Pathanamthitta districts in Kerala, farmers are advised to postpone irrigation to the standing crops. As mainly dry weather prevailed over most parts of the country, farmers are advised to apply irrigation to the crops in these regions.

Farmers are advised to undertake sowing of late wheat and transplanting of onion, tomato, cauliflower, cabbage, knolkhol and broccoli in Delhi, sowing of late wheat, cumin, fenugreek, palak, coriander, carrot, radish, turnip and beet, transplanting of tomato and planting of garlic and onion in Uttar Pradesh, nursery sowing of apricot and apple in Jammu & Kashmir, sowing late wheat, pea, carrot and radish and planting of garlic in Madhya Pradesh, sowing of wheat, gram, pea, moong, sunflower, mustard and planting of potato in Chattisgarh, sowing of linseed, gram, coriander, transplanting of cauliflower and cabbage and planting of onion, garlic and potato in Orissa, sowing of wheat, barley, linseed, gram, pea and lentil and planting of potato in Jharkhand, planting of potato and transplanting of cabbage and cauliflower in West Bengal, sowing of late wheat, maize and planting of potato in Gujarat and sowing of lentil and pea as *paira* crops in fields ready for harvesting of *aman* rice in Tripura.

Due to prevailing weather, incidences of woolly aphids in sugarcane and pod fly in red gram in Karnataka, bacterial leaf blight, bacterial leaf streak and leaf folder in *samba* rice in Tamil Nadu, pseudo stem weevil and leaf folder in rice in Kerala, *Heliothis* in red gram, *Fusarium* wilt in Bengal gram, aphids in safflower, thrips, mites, die-back, and powdery mildew in vegetables and fruits and powdery mildew in coriander in Andhra Pradesh, leaf eating insects and powdery mildew in pea in Jharkhand and semilooper in cauliflower in Madhya Pradesh are noticed below economic threshold levels. Farmers are advised to undertake appropriate plant protection measures to control the pests and diseases.

Distribution of rainfall of the country during week ending on 07.12.11

State/Districts	Actual (mm)	% Dep.						
Karnataka			Kannur	1	-95	Tiruvallur	0	-100
Coastal Karnataka			Ernakulam	25	115	Tiruvannamalai	0	-100
Dakshin Kannada	0.0	-100	Idukki	15	-7	Tiruvarur	0.7	-99
Udupi	0.1	-98	Kasaragod	0.4	-94	Toothukudi	12.7	-59
Uttar Kannada	0.0	-100	Kollam	55	187	Trichy	4.2	-85
North Interior Karnataka			Kottayam	42	233	Vellore	0	-100
Bagalkote	0.0	-100	Kozhikode	5	-53	Villupuram	0	-100
Belgaum	0.0	-100	Malappuram	2	-77	Virudhunagar	11.6	-40
Bidar	0.0	-100	Palakkad	6	-38	Andhra Pradesh		
Bijapur	0.0	-100	Pathanamthitta	60	202	Coastal Andhra Pradesh		
Dharwad	0.0	-100	Thiruvananthapuram	15	-32	East Godavari	0	-100
Gadag	0.0	-100	Thrissur	2	-80	Guntur	0	-100
Gulbarga	0.0	-100	Wyanad	7	-4	Krishna	0	-99
Haveri	0.0	-100	Tamil Nadu			Nellore	0	-100
Koppal	0.0	-100	Chennai	0	-100	Prakasam	0	-100
Raichur	0.0	-100	Coimbatore	3.7	-78	Sirkakulam	0.6	-49
Yadgir	0.0	-100	Cuddalore	4.6	-94	Visakhapatnam	3	280
South Interior Karnataka			Dharmapuri	0	-100	Vizianagram	1	-49
Bangalore Rural	0.0	-100	Dindigul	1.7	-94	West Godavari	0	-100
Bangalore Urban	0.0	-100	Erode	0.9	-95	Telangana		
Bellary	0.0	-100	Kanchipuram	0	-100	Adilabad	0	-100
Chamarajnar	0.0	-100	Kanyakumari	26	27	Hyderabad	0	-100
Chichballapur	0.1	-98	Karur	0.1	-99	Karimnagar	0	-100
Chickmagalur	0.0	-100	Krishnagiri	0	-100	Khammam	0	-100
Chitradurga	0.0	-100	Madurai	12.2	-34	Mehabubnagar	0	-100
Davangere	0.0	-100	Nagapattinam	3.1	-97	Medak	0	-100
Hassan	0.0	-100	Namakkal	1.7	-89	Nalgonda	0	-100
Kodagu	0.1	-98	Nilgiris	0.9	-97	Nizamabad	0	-100
Kolar	0.0	-100	Perambalur	1.5	-95	Rangareddy	0	-100
Mandya	0.0	-100	Puducherry	0	-100	Warangal	0	-100
Mysore	0.0	-100	Pudukottai	6.4	-83	Rayalaseema		
Ramnagara	0.0	-100	Ramanathapuram	17.6	-59	Anantapur	0	-100
Shimoga	0.0	-100	Salem	0.6	-97	Chittoor	0.1	-99
Tumkur	0.0	-100	Sivaganga	10.7	-62	Cuddapah	0	-100
Kerala			Thanjavur	4.6	-92	Kurnool	0	-100
Alappuzha	53	168	Theni	29.4	89			
			Tirunelveli	41.8	48			

(20% or more) excess rainfall

(-19 to +19%) normal rainfall

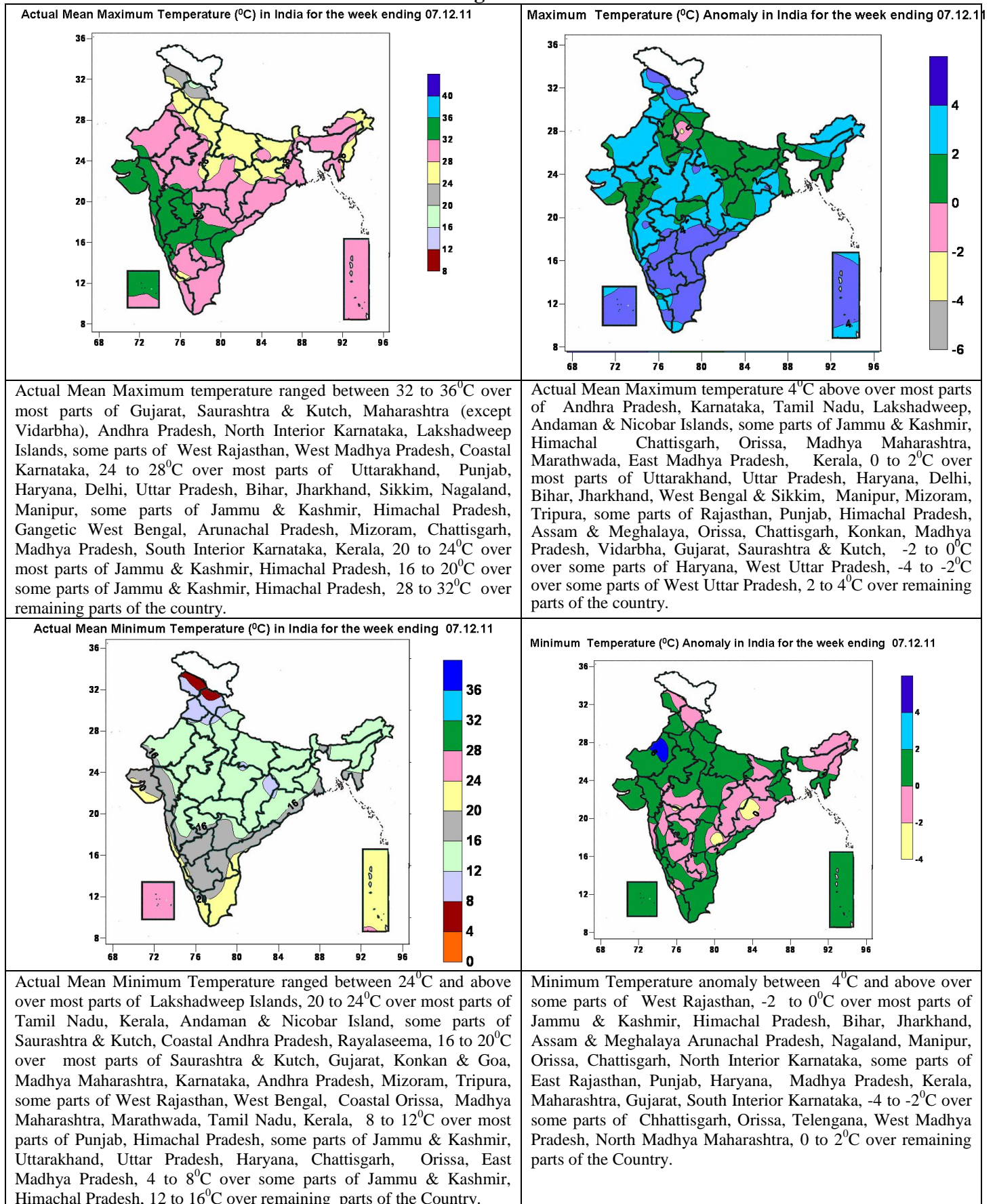
(-20 to -59%) deficient rainfall

(-60 to -99 %) scanty rainfall

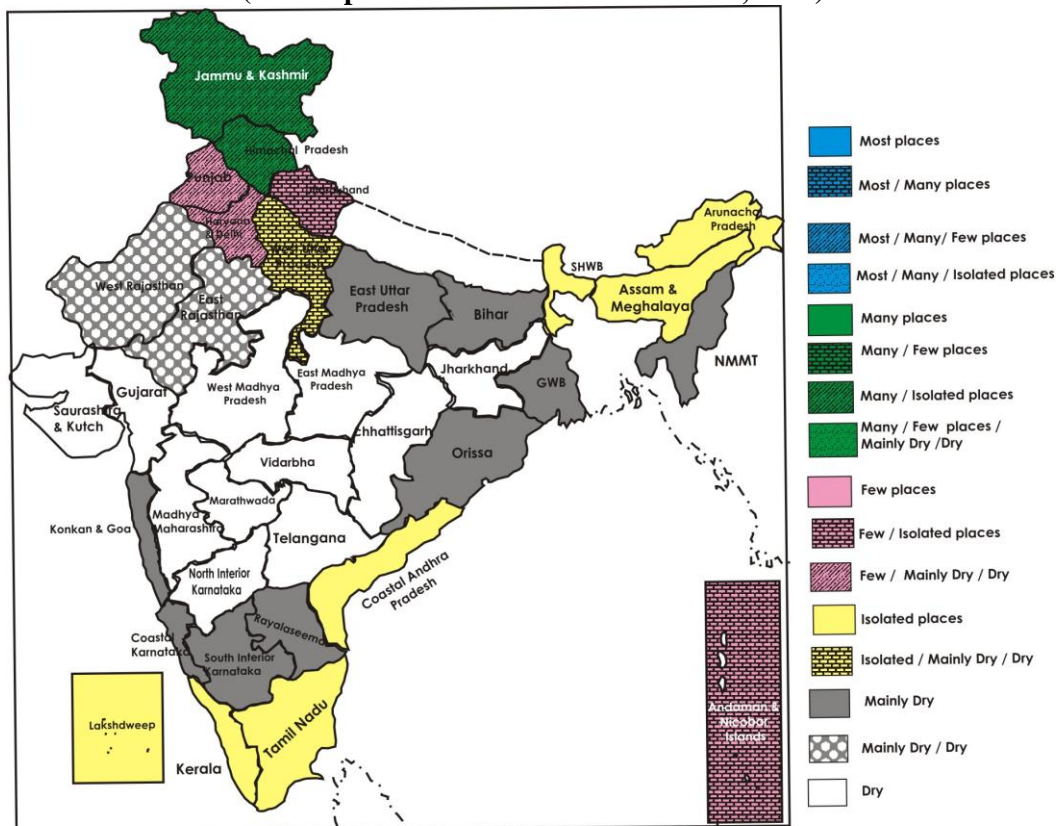
(-100%) no rainfall

** Data not available

Contour maps for Mean Maximum, Minimum Temperature and their anomaly for the week ending on 07.12.2011



Weather Forecast (Valid upto 1430 hours of 11th December, 2011)



Major Feature of Weather Forecast upto 1430 hours IST of 11th December, 2011

- Very dense fog (visibility 50 m or less) would occur over many parts of Bihar, Uttar Pradesh and dense fog (visibility 200 m or less) over parts of Haryana, Delhi and Punjab in the morning / early morning hours during next 24 hours.
- Rain/snowfall would occur at many places over Jammu & Kashmir and Himachal Pradesh during next 24 hours and decrease thereafter. Rain/snowfall would occur at a few places over Uttarakhand during next 48 hours and decrease thereafter.
- Light rain/thundershowers would occur at a few places over Punjab and north Haryana and at one or two places over south Haryana and west Uttar Pradesh during next 24 hours and mainly dry thereafter.
- Rain/thundershowers would occur at one or two places over SubHimalayan West Bengal & Sikkim, Assam, Arunachal Pradesh and south peninsular India during next 48 hours and increase thereafter.
- Rain/thundershowers would occur at one or two places over Andaman & Nicobar Islands during next 24 hours and increase thereafter.
- Mainly dry weather would prevail over remaining parts of the country.
- No significant change in minimum temperatures over northwest and central India during next 24 hours and fall by 34°C thereafter.
- Fog condition over Indo-Gangetic plains will improve from 10th onwards due to strong & dry northwesterly wind flow.

Weather Warning

- Visibility would reduce to 50 m or less in the morning/early morning hours over many parts of Uttar Pradesh and Bihar in very dense fog during next 24 hours.
- Visibility would reduce to 200 m or less in the morning/early morning hours over some parts of Haryana, Delhi and Punjab in dense fog during next 24 hours.

Weather Outlook up to 1430 hours IST of 13th December, 2011

- Rain/snow would occur at one or two places over western Himalayan region.
- Rain/thundershowers would occur at a few places over coastal Tamilnadu and northeastern states.

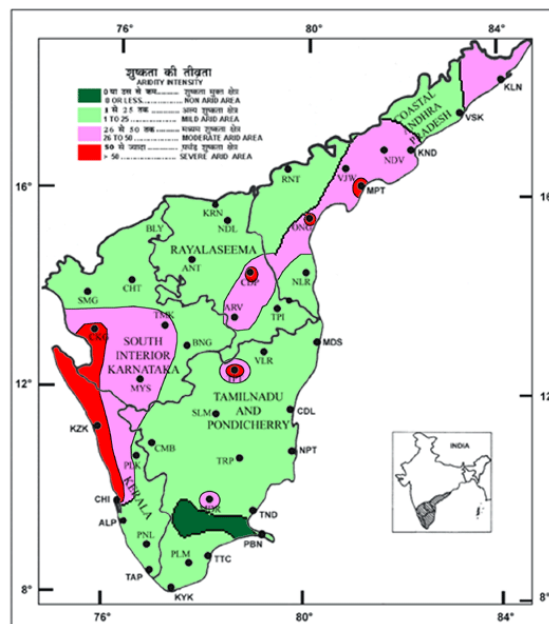
Aridity Anomaly Chart (Northeast Monsoon season) Period from (03.12.11 to 09.12.11)

भारत मौसम विज्ञान विभाग
अनावृष्टि अनुसंधान अनुभाग - पुणे
शुष्कता विरूपित चित्र
(उत्तर पूर्व मानसून ऋतु)
अवधि - दिनांक से दिनांक तक

INDIA METEOROLOGICAL DEPARTMENT
DROUGHT RESEARCH UNIT - PUNE
WEEKLY ARIDITY ANOMALY CHART
(NORTHEAST MONSOON SEASON)
PERIOD - FROM 03.12.2011 TO 09.12.2011

तटीय आंध्रप्रदेश, रायलसीमा, दक्षिण आंतरिक कर्नाटका,
केरल, तमिलनाडु और पॉन्डिचेरी के लिए

FOR
COASTAL ANDHRA PRADESH, RAYALASEEMA, SOUTH INTERIOR KARNATAKA,
KERALA, TAMIL NADU AND PONDICHERRY



Areas having severe and moderate arid conditions are indicated below:

- **Areas affected by severe arid conditions:**
South Western part of South Interior Karnataka and adjoining north western part of Kerala.
Isolated areas around Machilipatnam, Ongole (Coastal Andhra Pradesh), Cuddapah (Rayalaseema) and Tirupattur (Tamil Nadu).
- **Areas affected by moderate arid conditions:**
Northern and central part of Coastal Andhra Pradesh, adjoining southern part of Rayalaseema and southern part of South Interior Karnataka.
Isolated area around Madurai (Tamil Nadu).

Zonewise Agromet Advisories

NORTHEAST INDIA [ARUNACHAL PRADESH, NMM&T, ASSAM, MEGHALAYA]

- **Realised Rainfall:** No significant rain occurred over the States of the region during last week.
- **Rainfall Forecast:** Rain / thundershowers would occur at one or two places over Assam and Arunachal Pradesh during the period. Mainly dry weather is likely to prevail over the remaining States of the region during the period.
- **Advisories**
 - As there was no significant rain during last few weeks in most of the districts of the States of the region and no significant rain is likely to occur during the period, farmers are advised to apply irrigation to the standing crops.
 - In Assam, farmers are advised to complete sowing of potato, onion, garlic, tomato, radish, *rabi* pulses etc. Continue sowing of niger, wheat, rapeseed and mustard etc.
 - Farmers in Assam are also advised to continue harvesting of matured *sali* rice and advised to continue preparation of nursery beds for *boro* rice.
 - In the Hill Zone of Assam, farmers are advised to continue harvesting of matured *sali* rice and continue planting of potato.
 - Farmers in Upper Brahmaputra Valley Zone of Assam are advised to continue preparation of nursery beds for *boro* rice, sowing of tomato, rapeseed and mustard and planting of potato. Farmers in are also advised to undertake land preparation and sowing of *rabi* pulses like lentil, rajmah, pea, lathyrus etc.
 - As dry weather is prevailing, farmers in Barak Valley Zone of Assam are advised to undertake regular intercultural operation and irrigation in cauliflower, onion and garlic and to continue transplanting 4 to 6 weeks old tomato seedlings in the main field. Avoid water stress situation at head formation stage of early sown cabbage and knolkhol crops.
 - Farmers in Arunachal Pradesh are advised to undertake sowing of *rabi* crops like pea, mustard etc. and transplanting of vegetables like cabbage, cauliflower, knolkhol and other cole crops.
 - Farmers in Mid Tropical Plain Zone of Tripura are advised to undertake planting of potato. Taking the advantage of dry weather, also undertake harvesting of *aman* rice. Farmers also also advised to sow short duration legume crops like lenil, peas in between harvesting of *aman* rice and sowing of *boro* rice which also help to protect the soil health of the field by conserving nitrogen.
 - Farmers in Temperate Sub Alpine Zone of Meghalaya are advised to continue nursery bed preparation and sowing of *boro* rice, potato and *rabi* onion.
 - Farmers of Sub tropical Plain Zone of Manipur are advised to complete transplanting of tomato, onion, cabbage, cauliflower etc., sowing of pea, broccoli, rapeseed and mustard and planting of potato.
 - Farmers in Mizoram are advised sowing of lentil after harvesting of rice under zero tillage operation for utilization of residual soil moisture. Continue sowing of cole crops and tomato.
 - Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
 - In Mid Tropical Plain Zone of Tripura, due to prevailing weather there is infestation of pseudo stem weevils on banana. Farmers are advised for killing of weevils and removal of dried leaves. There is also chance of attack of aphids in toria due to prevailing cloudy weather condition. Farmers are advised to monitor the crops and spray Monocrotophos @ 2 ml per liter of water to control the attack.

- In Kolasib region of Mizoram, decrease in sunshine hours with fluctuation of humidity is congenial for attack of the aphids in cole crops, tomato, pea and beans; farmers are suggested to take appropriate measures. Due to prevailing weather, there is chance of fruit fly and powdery mildew attack on cucurbits; to control powdery mildew on cucurbits, spray Karathane 0.5% or Carbendazim 0.1%. Spray molasses (10 %), insecticide (0.2 %) and yeast hydrolysate (0.1 %) against fruit fly. In green house weather is congenial for infestation of leaf miner on cole crops and tomato; spray Monocrotophos 1 ml / litre of water to control the attack. Weather is also congenial for attack of the aphids; to control the attack spray tobacco decoction or dust wood ash.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
 - The farmers in Upper Bramhaputra Valley Zone and North Bank Plain Zone of Assam and Kolasib region of Mizoram are advised to vaccinate cattle, goat and pigs against BQ, HS, foot and mouth disease and anthrax disease.
 - The farmers in Lower Bramhaputra Valley Zone of Assam are advised to protect poultry birds (Broiler) from cold by using electric bulb (300 Watt for 100 sq. feet) to prevent Coryza disease. In case of lacrimation and swelling of the head, treat the fowl with Sulphar drugs. Poultry birds in general should be regularly observed and fed with antibiotics and vitamins after consulting veterinary doctors.
 - The farmers in Central and Lower Bramhaputra Valley Zone of Assam are advised to vaccinate poultry birds against Ranikhet disease.
 - In Manipur, cattle farmers are advised to deworm and vaccinate cattle against B.Q. and H.S.; vaccinate pigs and goats against Endoparasites, Ectoparasites etc.
 - The farmers in Arunachal Pradesh are advised to provide wooden sleeping box or wooden dry floor at night, as wet bedding and cold weather may cause pneumonia. Farmers are also advised to deworm goats.
 - The poultry farmers in Nagaland are advised to provide ample quantity of clean drinking water, avoid feeding of mouldy feed and overcrowding.
 - Poultry farmers in Tripura are advised to vaccinate the birds against Ranikhet disease and Fowl pox. Pigs can be infected with a number of worms, which results in poor weight gain in adults. In young pigs, infection with roundworms can cause diarrhea, weight loss, lung problems and death. Hence, the piglets should be dewormed at regular interval.

EAST INDIA [JHARKHAND, BIHAR, ORISSA, WEST BENGAL &SIKKIM]

- **Realised Rainfall:** Mainly dry weather prevailed over the States of the region during last week.
- **Rainfall Forecast:** Rain / thundershowers would occur at one or two places over Sub-Himalayan West Bengal & Sikkim during the period. Mainly dry weather is likely to prevail over the remaining States of the region during the period.
- **Advisories:**
 - As there was no significant rain during last few weeks in most of the districts of the States of the region and no significant rain is likely to occur during the period, farmers are advised to apply irrigation to the standing crops.
 - Undertake sowing of oilseed crops like mustard, groundnut etc. in Western Undulating Zone, East and South Eastern Coastal Plain Zone and North Central Plateau Zone of Orissa.
 - Farmers in Western Undulating Zone of Orissa are advised to undertake transplanting of onion. In view of prevailing dry weather condition, farmers are also advised to apply irrigation to oilseed crops.

- Farmers in North Central Plateau Zone of Orissa are advised to prepare land and undertake sowing of wheat, mustard, groundnut, pea etc. Farmers are also advised to undertake transplanting of onion, cabbage and cauliflower and sowing of carrot and radish.
- Farmers in North Central Plateau Zone of Orissa are advised to harvest low land rice and undertake sowing of linseed, gram, coriander, cauliflower, cabbage, onion, garlic and planting of potato.
- Farmers in North Eastern Coastal Plain Zone of Orissa are advised to undertake sowing of mustard, rapeseed, tomato, cauliflower, cabbage, knolkhol, broccoli, radish, marigold, groundnut etc.
- Farmers in East and South Eastern Coastal Plain Zone of Orissa are advised to complete sowing of pluses, mustard, fodder oat, coriander, sunflower and planting of potato and banana. Farmers are also advised to undertake harvesting of rice crops taking the advantage of prevailing dry weather.
- Farmers in the districts of North Bihar are advised to undertake sowing of irrigated wheat. As dry weather is prevailing, farmers are advised to apply light irrigation in the potato crops, which are in 10-20 days stage for proper germination of tubers and better crop growth and yield.
- Farmers in the districts of North Bihar are advised to apply irrigation in wheat wherever crops are at crown root initiation stage and undertake planting of late varieties of cauliflower and late and medium varieties of cabbage. Farmers are also advised to complete sowing of *rabi* maize.
- Farmers in the districts of South Bihar Alluvial Zone are advised to undertake planting of potato and sowing of irrigated wheat, other *rabi* crops and green fodder. Crops like cauliflower, cabbage, chilies, tomato, palak, carrot, radish, knol-khol, turnip, beet, garlic and other vegetable crops and spice crops such as coriander, fenugreek and Mangrailla should also be sown as early as possible. Also sow the seeds of onion in prepared nursery.
- Farmers in the districts of South Bihar Alluvial Zone are also advised to harvest the rice crops and undertake sowing of pulses.
- Farmers in Central, Western and North Eastern Plateau Zone of Jharkhand are advised to undertake sowing of wheat, barley, linseed, gram, pea, lentil and planting of potato.
- Farmers in Central Plateau Zone of Jharkhand are also advised to sow onion, African marigold or French marigold.
- In Western Plateau Zone of Jharkhand, farmers are advised to sow mustard after harvesting of *kharif* crops. It is also the time for sowing of winter vegetables like cauliflower, cabbage, chilli, tomato etc.
- Farmers in South Eastern Plateau Zone of Jharkhand are advised to undertake sowing of wheat, pigeon pea, chick pea and raising seedlings of winter season vegetables like onion, brinjal, cabbage, cauliflower, tomato, capsicum etc.
- Farmers in New Alluvial Zone and Red and Lateritic Zone of West Bengal are advised to undertake thinning and other intercultural operation in wheat. Also undertake nursery sowing of *boro* rice and planting of potato in New Alluvial Zone.
- Farmers in Old Alluvial Zone and Hill Zone of West Bengal are advised to undertake sowing of wheat, mustard, tomato and planting of potato.
- Sowing of radish, carrot, and other leafy vegetables and transplanting of broccoli in Hill Zone of West Bengal should also be undertaken. Farmers are also advised to undertake harvesting of Ginger and Kodo Millet and complete the harvesting of soybean, black gram and rice bean. Also undertake transplanting of late varieties of cabbage and cauliflower.

- Farmers in Coastal Saline Zone of West Bengal are advised to undertake sowing of Sunflower and planting of potato. Complete harvesting of *Kharif* rice as soon as possible.
- Farmers in Terai Zone of West Bengal are advised to undertake transplanting of marigold.
- Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
- Due to cool and humid weather, infestation of leaf eating insects and powdery mildew in pea is noticed in South Eastern Plateau Zone of Jharkhand; spray concentrated neem or tobacco leaf extract diluted in the ratio of 1:10 liters or neem oil @ 5 ml per liter of water.
- In Western Plateau Zone of Jharkhand, pea crop may be attacked by powdery mildew disease; spray Karathen @ 1 ml per litre of water or Sulfex @ 3 g per litre of water.
- Cutworm is found in rice in Kendrapara district of Orissa; spray 2 ml Chloropyriphos in 1 litre water during afternoon. Apply Chloropyriphos dust around the bund to prevent the entry of caterpillar to the unaffected fields in early morning.
- In North Eastern Coastal Plain Zone of Orissa, due to use of overage seedlings, the crop is susceptible to blast disease. It may be effectively controlled by application of Tricyclazole @ 0.5 g / litre of water or Kasugamycin @ 1.5 g / litre of water.
- Due to cloudy weather in Terai Zone, there may be the chance of infestation of early blight in Potato. To prevent the attack, farmers are advised to spray Mancozeb @ 2 g / litre of water or Blitox @ 4 g / litre of water alternately at 10-12 days interval by completely wetting the leaves.
- Due to fluctuation of temperature and cloudy weather in Laterite and Red Soil Zone of West Bengal, white fly can attack the winter crops. Spray Asaterp @ 2 g per litre of water. For the fruit borer, use Spinosat @ 1 ml per litre of water.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
 - In North Eastern Plateau Zone of Orissa, as the winter is initiated, there is a possibility of “EUS” disease in fish. Farmers are advised to apply ‘Cifax’ @ 400 ml mixed with 40 litre of water in one acre pond area as a preventive measure.
 - In North Eastern Plateau Zone of Orissa, due to the climatic conditions, the liver flukes infestations are common in animals, which reduces the milk yield and fertility; to prevent from this infestation, undertake deworming in animals. In the present weather conditions the ticks and mites may affect the animals; spray Butox @ 2 ml / litre of water at skin.
 - The weather is favourable for attack of F.M.D. in milch animals in Western Plateau Zone of Jharkhand; farmers are advised to take preventive measures to control this disease and animals should be vaccinated twice in a year.
 - To prevent goat from pneumonia in Western Plateau Zone of Jharkhand, kids should be given tetracycline medicine in water and vaccinated as per recommendation of Veterinary Doctor.
 - Newly born baby goat should be prevented from morning and evening cold in South Eastern Plateau Zone of Jharkhand. Deworming should be done to all animals and birds. Supplementary minerals should be added to feed of lactating animals for healthy offsprings and better yielding of milk.

NORTHWEST INDIA [JAMMU & KASHMIR, HIMACHAL PRADESH, UTTARAKHAND, PUNJAB, HARYANA, DELHI, UTTAR PRADESH & RAJASTHAN]

- **Realised Rainfall:** Mainly dry weather prevailed over the region during last week.
- **Rainfall Forecast:** Rain/snowfall is likely to occur at many places over Jammu & Kashmir and Himachal Pradesh during next 24 hours and at a few places over Uttarakhand during next 48 hours and decrease thereafter. Light rain/thundershowers would occur at a few places over Punjab and north Haryana and at one or two places over south Haryana and west Uttar Pradesh during next 24 hours and mainly dry thereafter. Mainly dry weather is likely over the rest period and rest part of the region.
- **Advisory:**
 - As there was no significant rainfall in most of the districts over the region during last week in Punjab, Haryana, Delhi, Rajasthan, Uttar Pradesh and Uttarakhand, apply irrigation to the standing crops. Rain/snowfall would occur at many places over Jammu & Kashmir and Himachal Pradesh during next 24 hours, farmers are advised to postpone irrigation to the standing crops.
 - In view of present weather farmers in Delhi are advised to sow late wheat and apply irrigation to timely sown wheat which is at CRI stage (about 21-25 days) and mustard. Apply second dose of fertilizer 3-4 days after irrigation to wheat. Harvest mature pigeon pea crop and transplant onion, tomato, cauliflower, cabbage, knolkhol and broccoli in the raised beds.
 - Farmers in Punjab and Haryana are advised apply need based irrigation to sugarcane and timely sown gram crop. Complete transplanting of seedlings of tomato. Complete the harvesting of toria. Give second irrigation to raya crop at flowering stage to save the crop from frost if necessary.
 - In Sub Tropical Zone of Jammu & Kashmir, farmers are advised to continue sowing of barley, wheat under rainfed and irrigated areas with available soil moisture. Farmers are also advised to continue sowing of oats, vegetable crops like radish, carrot, turnip, garlic, spinach, methi and berseem without any further delay and undertake nursery sowing of tomato, chilli and brinjal and raising cucurbits in polythene bags under protection. In lower belts of cold arid zone of Leh, farmers are advised to go for nursery sowing of Apricot & Apple and to undertake harvesting of Chinese cabbage, lettuce and Beet. Farmers are advised to harvest toria crop if pods turn yellow.
 - In Sub Tropical Zone of Jammu & Kashmir, due to decrease in minimum temperature, farmers are advised to provide cover to young fruit plants with thatches prepared from sarkanda or any other material, however the eastern side should be open for sunshine and air for the plants.
 - Farmers in Himachal Pradesh are advised to complete sowing of wheat, vegetables (raddish, turnip, coriander, cabbage, knol khol, broccoli, parsley, lettuce, fennel, cauliflower, onion, potato) and sarson. It is optimum time for raising the nursery of winter flowers like Calendula, arctotis, dog flowers, sweet pea, dianthus, petunia, stock and flox in fields. Farmers in Mid Hills and Sub Humid region of Himachal Pradesh are advised to complete the sowing peas and cabbage.
 - In Uttar Pradesh, farmers are advised to complete sowing of onion, carrot, radish, turnip, beet, tomato, berseem, oat for green fodder, garlic, coriander, palak, sauf, mangarail, fenugreek and cumin etc.
 - In Bundelkhand zone of Uttar Pradesh, farmers are advised to apply light irrigation and top dressing in already sown wheat, pea, toria, etc. Farmers are advised to sow late sown improved varieties mentioned in Annexure I.
 - In Bhabar & Terai zone, Pantanagar of Uttarakhand, farmers having irrigation facilities are advised to give first irrigation to wheat crop at CRI stage. Due to expected dry

weather condition and fall in temperature, farmers are advised to continue sowing of lentil from this week. Undertake weeding & thinning operations in other standing crops like pea, chickpea, rajmash etc. for their better growth and apply grass mulching in between rows to conserve soil moisture.

- Farmers in Sub humid sub tropic in Uttarakhand are advised to continue sowing of potato, wheat, also advised to irrigate all *rabi* vegetables like coriander, fenugreek, tomato, spinach, radish and carrot.
 - In hill zone of Uttarakhand, farmers are advised to give light irrigation to timely sown irrigated wheat crop and continue sowing irrigated and non-irrigated wheat, masoor, green pea, gram, sarson and fodder makka.
 - Farmers in Rajasthan are advised to complete land preparation and sowing of wheat, barley, potato, cumin, isabgol, ajwain, mustard, gram, lentil, oat, fenugreek, berseem, lucerne, toria, taramira, linseed (alsi), opium poppy, coriander and vegetables viz. tomato, brinjal, radish, chilli etc., transplanting cauliflower, cabbage, *rabi* onion, and undertake plucking citrus fruits late during afternoon hours.
 - In Bhabar & Terai zone, pantanagar of Uttarakhand, under dry weather conditions and fall in temperature, white rust in pea crop is possible. If the symptoms of white rust are seen, then farmers are advised to spray 0.5 % solution of Carbendazim at an interval of 10 days.
 - In Bhabar & Terai zone, pantanagar of Uttarakhand, under the foggy weather conditions, there are chances of incidence of aphids in toria and mustard crop at flowering & pod formation stage. If the aphids are seen in 10 % population per leaf or pod, then spray 200 SL Emidachlorepid @ 3 ml per 10 liter of water.
 - In Sub tropical zone of Jammu & Kashmir, weather is congenial for saw fly or flea beetle in mustard crop under such situations farmers are advised to go for spray the crop with Malathion 50EC @ 0.05% or Carbaryl 50WP @ 0.1%.
 - In Sub tropical zone of Jammu & Kashmir, farmers are advised to control damping off in cabbage, cauliflower, knol-khol, blight in spinach, wilt and root rot in peas and blotch in onion by treating seed before sowing with thiram/captan @ 3g/kg or carbendazim @ 2g/kg of seed.
 - In Semi-Arid Eastern Plain Zone of Rajasthan, pod borer attack may be seen in the prevailing weather in pea crop at pod formation stage, farmers are advised to spray Malathion 50 EC @ 1.0 ml per litre water to control pod borer attack.
 - In Bundelkhand zone of Uttar Pradesh, due to prevailing weather, there are chances of incidence of caterpillar in gram. Farmers are advised to spray solution of Fenvelrate 0.4 % or Fenthioate 2.0 % @ 5 kg / acre if 1-2 caterpillar per meter is noticed.
 - Stages of major crops are mentioned in Annexure I.
- **Animal Husbandary**
 - In semi-arid western plain zone of Rajasthan, Himachal Pradesh, in view of falling night temperature, livestock farmers are advised to protect their infant animals from pink cold. They are also suggested for deworming of animals except pregnant animals and deworming medicines like Albendazol, Fenbendazol may be given to animals under the guidance.
 - In Semi-Arid Eastern Plain Zone of Jaipur in Rajasthan, farmers are advised to cover the door of animal house, wrap jute bag around animal back and keep litter dry every day to protect milch & infant animals from cold.
 - In Bhabar & Tarai zone of Uttarakhand, due to expected cold conditions during this week in the night, farmers are advised to keep all types of animals inside the shed during night time. Put rice straw at the place of sitting of animals for their better

comfort. Keep down curtains in Poultry farm in the night for safety of birds from these cold weather conditions. Vaccinate the animals for various diseases as they are more prone to diseases in this weather. For the control of cough use piperazine citrate @50-30 ml/animal.

- In Uttar Pradesh, in bundelkhand zone (Bharari) and also in western plain zone (Modipuram), it is advised to tie young cattle in closed shelter and feed them with big cardamom, ajwain and jaggery, keep cattle shelter clean and take special care of young ones to protect from cold in this season.

SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP, ANDAMAN & NICOBAR ISLANDS]

- **Realised Rainfall:** Theni and Tirunelveli in Tamil Nadu, Alappuzha, Ernakulam, Kollam, Kottayam and Pathananhitta in Kerala received good rainfall during last week. No significant rainfall occurred in the remaining states of the region.
- **Rainfall Forecast:** Rain/thundershowers would occur at one or two places over Kerala, Tamil Nadu and coastal Andhra Pradesh. Either dry or mainly dry weather would occur over remaining parts of the region.
- **Advisories:**
 - As there was sufficient rainfall in the districts of Theni and Tirunelveli in Tamil Nadu, Alappuzha, Ernakulam, Kollam, Kottayam and Pathananhitta in Kerala, postpone irrigation to the crops. Apply irrigation to the crops in the remaining parts of the region.
 - Farmers in all the Southern Telangana Zone of Andhra Pradesh are advised to raise irrigated dry crops like maize and sunflower as an alternative to irrigated rice under wells as the ground water is going to be scarce due to drought, take up sowing of *rabi* crops like maize and sunflower under irrigated dry conditions. Take up sowing of rice nurseries with short duration varieties, duly treating the seed with Carbendazim @ 1 g per kg seed.
 - As there is no forecast for rain in the North Coastal Zone of Andhra Pradesh, farmers are advised to go in for harvesting of crops, if the crop is matured.
 - Farmers in the Scarce Rainfall Zone of Rayalaseema in Andhra Pradesh are advised to undertake sowing of *rabi* groundnut up to December 15th.
 - Farmers in the Eastern Dry Zone of Karnataka are advised to sow sunflower, groundnut and watermelon, tomato, potato and carrot etc. As rainfall is not expected in the next coming four to five days, farmers are advised to harvest matured crops like ragi, paddy, groundnut, onion and others, keep harvested crops in dry place.
 - Farmers in the North Transition Zone of Karnataka are advised to irrigate wheat, jowar, sunflower, black gram and maize to avoid moisture stress, due to dry weather and undertake plant protection measures.
 - Farmers in the Southern Dry Zone of Karnataka are advised to harvest paddy crop, dry the grains of the harvested crops properly and drain out excess water from the paddy field one week before harvesting of paddy.
 - Farmers in the Cauvery Delta Zone of Tamil Nadu are advised to give top dressing to *thaladi* rice (22 kg urea + 18 gypsum + 4 kg neem cake mixed well and keep it overnight and add 17 kg MOP before top dressing) to avoid nutrient deficiency after drainage.
 - Farmers in the North Eastern Zone of Tamil Nadu are advised to undertake field preparation for the paddy nursery. Also advised to avoid water stagnation in the recently sown groundnut field.
 - Farmers in the High Altitude Zone of Kerala are advised to rogue out the off types from paddy field before harvest for seed purpose, plough the field after the harvest for

taking next crop and allow the stubbles to decay, select short duration varieties for the summer crop, test their soils before the next crop and undertake plant protection measures.

- Since light rainfall is forecasted in the Problem Area Zone of Kerala, farmers are advised to undertake sowing of rice, thinning and gap filling of areas where crop is at 25-30 days after sowing and drain the field to enhance plant population in areas where crop intensity is sparse. Undertake plant protection measures to protect crops from diseases.
- Farmers in the Central Zone of Kerala are advised to give propping to bunched rain fed banana, since speed of easterly winds is increasing. Priority should be given for propping for banana which faces the easterly side.
- Leaf folder attack is seen in isolated places in the Northern Zone of Kerala. Farmers are advised to unfold the leaves by rolling thorny wires/twigs over the canopy. If the attack is severe, spot spraying of carbaryl 85MS @ 4g/litre of water. Since high humidity prevailing in the zone is conducive for fungal multiplication and other disease occurrence and iron toxicity is found in paddy fields of midland lateritic belts of Kerala, farmers are advised to undertake plant protection measures.
- To prevent the attack of leaf folder and stem borer in paddy, farmers in the Problem Area Zone of Kerala are advised to keep trichocards in the fields after 15 days of sowing
- Incidence of *Helicoverpa* is observed in red gram, fusarium wilt in Bengal gram, aphids in safflower, diamond back moth, thrips, mites, die-back, gemini virus and powdery mildew is noticed in vegetables and fruits, and powdery mildew in coriander in the Southern Telangana Zone of Andhra Pradesh. Farmers are advised to undertake plant protection measures to prevent attack of these pests and diseases and also monitor for the incidence of *Spodoptera* in groundnut.
- Bacterial leaf blight, bacterial leaf streak and leaf folder incidences are noticed in samba paddy in the Cauvery Delta Zone of Tamil Nadu due to prevailing weather condition. To control bacterial leaf blight and bacterial leaf streak, farmers are advised to spray streptomycin 18 g + Copper oxy chloride 500 g mixture/acre or copper hydroxide at 500 g/ac in 200 litre of water and apply cartop hydrochloride 4 G at 6 kg/acre mixed with equal quantity of sand or spray chloropyriphos 400 ml/acre to control leaf folder.
- Blast incidence is observed in paddy field in the Western Zone of Tamil Nadu. Farmers are advised to take proper plant protection measures (after observing initial infection of the disease, spray Edifenphos 50 EC @ 500 ml/ha) and avoid excess application of nitrogen fertilizer in the field.
- There is chances of incidence of fusarium wilt in cotton in the South Zone of Tamil Nadu. Farmers are advised to drench cotton with bavistin 1 g / l and monitor the incidence of *Spodoptera* and sphingid in pulses and follow appropriate plant protection measures.
- Farmers in the High Altitude Hilly Zone of Tamil Nadu are advised to adopt measure to manage blister blight in tea.
- Incidence of Wooly aphid was noticed in sugarcane and pod fly damage in pigeon pea in the North East Transition Zone of Karnataka. Farmers are advised to remove the infested leaves and burn them, spray 6 kg of phorate granules mixed in 20 kg of sand for one acre and spread this mixture uniformly on the soil to control wooly aphid and spray rogor (Dimethoate) 2 ml per liter of water to avoid the pod fly damage.
- Incidence of Wooly aphid was noticed in sugarcane in the North Dry Zone of Karnataka. Farmers are advised to remove the infested leaves and burn them, spray 6

kg of phorate granules mixed in 20 kg of sand for one acre and spread this mixture uniformly on the soil to control, if the height of the crop is suitable. If the height of the crop is not suitable to spray the pesticide, then for an area of one acre, mix 6 kg of phorate granules in 20 kg of sand and spread this mixture uniformly on the soil and then give light irrigation.

- Due to prevailing, sucking pest problem is noticed in cotton in the North Transition Zone of Karnataka. Farmers are advised to spray one month old cotton crop with 1.7 ml Dimethioate 30 EC or 2.0 ml methyl demeton in one liter of water to control sucking insects.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Dry weather prevailed over the States of the region during last week.
- **Rainfall Forecast:** Dry or mainly dry weather is likely to prevail over the States during the period.
- **Advisories:**
 - As there was no significant rain during last few weeks and mainly dry weather is likely during the period over the States, farmers are advised to apply irrigation to the standing crops.
 - As mainly dry weather would prevail during the period, farmers in Madhya Maharashtra, Marathwada and Vidarbha are advised to continue third picking of fully opened cotton bolls.
 - Farmers in Konkan region of Maharashtra are advised to complete sowing of *rabi* sunflower and mustard. Undertake sowing of short duration crops like cowpea, wal, kulthi etc. utilizing residual soil moisture in the harvested rice field. Also undertake preparatory tillage for nursery sowing of summer rice and sowing of summer groundnut.
 - Present weather is suitable for planting of *kande* bag banana in Madhya Maharashtra and Marathwada.
 - Considering the prevailing minimum temperature farmers in Madhya Maharashtra are advised to undertake sowing of late varieties of wheat with seed rate 125 Kg per hectare. As there is no possibility of rain, apply 160 kg Nitrogen, 85 kg Phosphorous and 85 kg Potash per hectare to *adsali* sugarcane at the time of final earthing up after 16 to 20 weeks from planting followed by irrigation. Undertake sowing of lucerne and berseem grass for animal fodder purpose.
 - Farmers in Middle Gujarat Zone are advised to undertake sowing of late varieties of wheat. Carry out sowing of *rabi* maize and planting of potato tuber.
 - In view of prevailing dry weather, farmers in Middle Gujarat Zone are advised to apply irrigation to timely sown wheat at crown root initiation stage and to gram at branching stage.
 - Taking the advantage of dry weather, in Bhal and Coastal Zone and North Gujarat Zone of Gujarat, farmers are advised to undertake picking of cotton during morning hours.
 - In North West Zone of Gujarat, farmers are advised to complete sowing of wheat crop. Give light Irrigation to the cumin crop and care should be taken that there is no water logging in the plots of cumin.
 - Farmers in South Gujarat Zone and South Gujarat Heavy Rainfall Zone are advised to undertake inter crops like groundnut and mung in between the sugarcane.
 - Farmers in South Saurashtra Zone of Gujarat and South Gujarat Heavy Rainfall Zone are also advised to undertake sowing of wheat.

- In view of prevailing dry weather, farmers in South Saurashtra Zone of Gujarat and South Gujarat Heavy Rainfall Zone are advised to apply irrigation in cotton, castor and carry out picking of cotton.
- Farmers in North Gujarat Zone are advised to carry out sowing of cumin.
- As dry weather is prevailing, farmers in North Gujarat Zone are advised to carry out weeding, inter cultural operation and earthing up operations in transplanted *rabi* fennel and in vegetables like brinjal, chilli, tomato, cabbage and cauliflower. For effective control of weed in recently sown field of potato, spray herbicide like Metribuzin @ 400 g in 600 litres of water as a pre emergence or after emergence.
- Farmers in North Saurashtra Zone of Gujarat are advised to carry out sowing of wheat, coriander and cumin.
- Suitable varieties of the crops for sowing are mentioned in Annexure II.
- Due to cloudy weather during last week in Madhya Maharashtra, there may be incidence of pod borer on gram; spray 5% Neemark followed by Heliokill 500 ml per hectare after 10-15 days.
- Prevailing weather is congenial for infestation of blight and thrips in onion in Madhya Maharashtra; spray Mancozeb @ 25 g or Carbendazim @ 10 g + Carbosulphan @ 10 ml or Deltamethrin + sticker 10 ml in 10 litres of water.
- Prevailing weather is favourable for infestation of aphids in jowar in Madhya Maharashtra; spray Dimethoate 34% @ 500 ml or Methyl Dimeton 25% @ 500 ml per hectare in 500 litres of water.
- There may be incidence of white woolly aphids in sugarcane in Kolhapur division of Maharashtra; apply Thimet @ 4 kg per acre followed by light irrigation.
- Due to fall in minimum temperature there may be incidence of thrips in mango in Konkan region of Maharashtra; spray Stinosad @ 45 ml per 10 litres of water. Also there may be incidence of tea mosquito bug and thrips on new vegetative shoots of cashew; spray Monocrotophos 36% (15 ml in 10 litres of water) or Profenophos 15% (10 ml in 10 litres of water) or Lambda cyhellothrin 5% (6 ml in 10 litres of water).
- Due to formation dew, there is a possibility of outbreak of Ramullaria blight in the fennel crop in North Gujarat Zone; farmers are advised to spray Mancozeb 0.2% @ 25 g plus 25 ml of concentrated desi soap solution in 10 litres of water.
- Stages of major crops are mentioned in Annexure I.

Animal Husbandry

- In North West Zone of Gujarat, farmers are advised to clean udder of milking animals properly with insecticide. Farmers are also advised to cut the beaks of birds in the poultry under age of 15 weeks.
- Farmers in South Gujarat Heavy Rainfall Zone are advised to clean animal byres and spray Neon insecticide 1 to 1.5 ml per liter of water for controlling ecto-parasites in animal house.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Dry weather prevailed over the region.
- **Rainfall Forecast:** Dry weather is likely to prevail over the region.
- **Advisories:**
 - Farmers in Kymore Plateau and Satpura Hill Zones of Madhya Pradesh are advised to prepare field for sowing wheat crops in both rainfed and irrigated conditions, potato and fenugreek and also prepare nursery for cauliflower and cabbage. Intercultural operation may be undertaken controlling weeds in crops like mustard, toria, chickpea, and lentil.
 - Farmers in Jhabua Hills Zone of Madhya Pradesh are advised to give first irrigation to wheat crop after 21 DAS (fully irrigated) and 30-35 DAS (semi-irrigated condition). Apply remaining ½ nitrogen dose by broadcasting to wheat. As cotton crop is at boll opening stage keep the field weed free and maintain proper moisture by irrigating the field.
 - Farmers in Gird Zone and Satpura Plateau regions of Madhya Pradesh are advised for sowing of wheat and also give irrigation to mustard crop.
 - Farmers in Malwa Plateau Zone of Madhya Pradesh are advised for sowing of wheat and transplanting of onion, brinjal, chilli and tomato may be done. Mulching may be done to conserve the soil moisture.
 - Farmers in Vindhyan Plateau of Madhya Pradesh are advised to transplant chilli, brinjal, tomato, onion and cauliflower, give irrigation to fruit plants.
 - Farmers in Central Narmada Zone of Madhya Pradesh are advised to prepare field for irrigated wheat, sowing of pea, garlic, potato, carrot and radish may be done also weed control may done in rabi crops like chickpea, lentil and linseed.
 - Farmers in Satpura Plateau of Madhya Pradesh are advised to prepare nursery for vegetable crops like cauliflower and cabbage and transplanting of seedling in main field at optimum moisture level may be done. Sowing of potato and pea may be done.
 - Farmers in Nimar Valley of Madhya Pradesh are advised to sow wheat and gram after proper seed treatment.
 - Farmers in Bundelkhand region of Madhya Pradesh are advised to sow wheat (late varieties) crop @120kg/ha seeds, treat the seed with fungicide thirum @ 2.5g/kg before sowing and also do hoeing and weeding in early sown *rabi* crops.
 - Farmers in Central Narmada region of Madhya Pradesh are advised to prepare land for irrigated wheat and sugarcane crop. Sow vegetables like pea, garlic, carrot and radish; also control weeds in *rabi* crops like chickpea, lentil and linseed.
 - Farmers in Chattisgarh Plain Zone are advised for the sowing of *rabi* crops specially wheat, gram, pea, *rabi* moong, sunflower, mustard due to favourable weather conditions for sowing of potato and autumn sugarcane.
 - Due to prevailing weather condition in the past few days infestation of insects in vegetable crops may occur. Hence, farmers are advised to monitor these crops and if the infestation is above normal spray the insecticides in Chattisgarh Plain Zone.
 - Due to mainly dry weather condition, farmers are advised for proper sun drying and post harvest operations of rice crops and farmers who have sown *Utera* crops are advised to shift the harvested produce of rice from their field for the better growth of the crops in the field.
 - Farmers in Bastar Plateau Zone of Chhatisgarh are advised to prepare field for sowing of wheat, gram, mustard, linseed and lentil crops and sowing should be completed as early as possible. Sugarcane planting should be completed at the earliest and earlier

planted sugarcane should be irrigated. Mustard sowing should be completed at the earliest.

- Farmers in Kymore Plateau and Satpura Hill Zones and Satpura Plateau of Madhya Pradesh are advised that weather is congenial for insect attack in pigeon pea crop. For control spray Quinalphas at 2.0 ml. per litre also pheromone or light traps may be used for monitoring these pests.
- Farmers in Malwa Plateau Zone of Madhya Pradesh are advised to prune the newly planted plant for good erect growth. Apply fertilizer in fruit plants. In papaya if there is attack of yellow Mosaic disease than apply Rogar 30 EC @ 1-2 ml/liter or apply confodore @0.33 ml/lit.
- Farmers in Gird zone of Madhya Pradesh are advised, to control early blight of tomato and potato, two sprays of 2.5g mencozeb per litre of water should be done at the interval of ten days.
- Due to forecast of Humid and cloudy weather in Vindhyan Plateau of Madhya Pradesh farmers are advised that there is possibility of blight disease on gram. For control spray carbodenzim 1gm/litre or 1.5kg/Ha using sticky material.
- Chickpea is affected by wilt in some area of Bundelkhand region hence for its control; drench the crop with solution of bavistin @1.5 gm per liter of water. If irrigation facility is available then apply one irrigation for its management, also there is attack of semi looper in cauliflower crop, for control spray with Malathion 50 E.C. @ 2ml/l of water.
- In Bastar plateau zone of Chhattisgarh monitoring of Cashew Stem and Root Borer insect (CSRB) incidence may be done and apply pesticides if required.
- **Animal Husbandry & Poultry**
 - Farmers in Jhabua hills, Malwa Plateau Gird Zone regions of Madhya Pradesh are advised to vaccinate their animals to FMD, BQ, and HS via Raksha Triback vaccine. For control of Ranikhet disease in chicks vaccinate with F-1 or Lasota or R2B Strain vaccine.
 - Temperature is going to decrease in Kymore Plateau, Satpura Hill, Central Narmada and Bundelkhand zones of Madhya Pradesh therefore farmers are advised to provide 4 hour light in poultry houses during night otherwise, insufficient light may affect eggs production.
 - As humid weather condition is prevailing cattle should be kept in dry and clean places. Create neem leaves smoke in night to save them from mosquitoes and bees.

Annexure I

Major Crops

NORTHEAST INDIA [ARUNACHAL PRADESH, NMM&T, ASSAM, MEGHALAYA]

- Sugarcane (elongation), *sali* rice (harvesting), *boro* rice (nursery preparation / sowing / seedling / transplanting), wheat (sowing), tomato (transplanting / vegetative/flowering / fruiting), *rabi* pulses (sowing / seedling), cauliflower, cabbage and knoll khol (transplanting / vegetative / head formation), brinjal (early variety) (vegetative / flowering / fruiting), country bean (vegetative / flowering), winter vegetables, pea (sowing / transplanting / vegetative), onion, garlic (sowing / seedling / vegetative), khasi mandarin (fruit maturity / harvesting), niger and lentil (sowing/ seedling), potato (planting / vegetative / stolon formation), rapeseed and mustard (sowing / vegetative), and cole crops (transplanting / vegetative) in Assam.
- Rice (Mipun cultivar) (maturity / harvesting), Khampti variety of rice (maturity), cabbage, cauliflower, knolkhol etc. (vegetative / head formation), maize (sowing / vegetative) and pea, mustard (sowing / germination / vegetative) in Arunachal Pradesh.
- *Kharif* rice (maturity / harvesting), potato, pea (planting / sowing / vegetative), rapeseed / mustard (sowing / vegetative), tomato (transplanting / vegetative), cauliflower and cabbage (transplanting / vegetative / head formation), onion (nursery raising / transplanting / vegetative), broccoli (transplanting / vegetative), brinjal (flowering / fruiting) in Manipur.
- *Boro* rice (nursery sowing / seedling / transplanting), wheat, pea, garlic and lettuce (germination / seedling), *toria* (vegetative / pod formation / maturity), *rabi* onion (sowing), *kharif* onion (maturity), potato (planting / vegetative), Khasi mandarin (flowering / fruiting), banana (vegetative), lentil, mustard, rapeseed (vegetative / flowering / maturity), *rabi* onion (sowing / vegetative), winter vegetable (maturity), peach (vegetative) in Meghalaya.
- Ginger and turmeric (rhizome formation / maturity / harvesting), khasi mandarin (fruiting / harvesting), banana (vegetative / fruiting / maturity / harvesting), cucurbits (fruiting / harvesting), cole crops and tomato (transplanting / vegetative), pea, bean (vegetative) and lentil (sowing) in Mizoram.
- Okra (flowering / fruiting), lowland rice (harvesting), banana (vegetative / fruiting), cabbage (transplanting / vegetative), pea (early sown) (vegetative / flowering / pod formation / flowering), pea (germinating), pigeon pea (pod filling), rapeseed, mustard (sowing / vegetative), French bean (sowing), *rabi* crops (sowing), broccoli (transplanting / vegetative) and papaya (transplanting) in Nagaland.
- Low land rice (maturity / harvesting), *Aman* rice (harvesting), *boro* rice (sowing), cucurbits and other vegetables (flowering / fruiting), ginger and turmeric (rhizome formation / harvesting), banana (vegetative / fruiting / harvesting), *toria* (vegetative / flowering), cole crops (sowing / vegetative), potato (planting / vegetative) in Tripura.

EAST INDIA [JHARKHAND, BIHAR, ORISSA, WEST BENGAL &SIKKIM]

- Sugarcane (vegetative), rice (maturity / harvesting), *kharif* arhar (pod formation / seed formation), sorghum, jowar (harvesting), sesame (harvesting), lobia for green fodder (sowing), mishrikand (vegetative), onion, radish (sowing), cauliflower (sowing / transplanting / vegetative), fruit trees (transplanting), potato, sweet potato (planting / vegetative), mustard, wheat, vegetables, maize, pulses (sowing) in Bihar.

- Rice (harvesting), pigeon pea (pod formation / seed formation), pulses (urd bean, moong bean) (maturity / harvesting), turmeric and ginger (vegetative / rhizome formation), elephant foot yam (tuber elongation), potato (planting / vegetative / tuber formation), sweet potato (vegetative / stem elongation / tuber elongation / maturity / harvesting), mustard, linseed (sowing / vegetative), toria (flowering), green pea (sowing / vegetative), cauliflower, cabbage, chilli, tomato (transplanting / vegetative), wheat, niger (sowing), papaya (transplanting), gram, chick pea, onion, African or French marigold (sowing) in Jharkhand.
- Arhar (pod formation / seed formation), papaya, marigold, tuberose (planting), *kharif* vegetables (fruiting / harvesting), sugarcane (vegetative), *kharif* rice, *kharif* groundnut (maturity / harvesting), turmeric and ginger (planting / early vegetative), yam (sowing), Bengal gram, lentil, green pea, mustard (sowing / vegetative), wheat (sowing / crown root initiation), mango, banana, lemon, cashew nut, potato and marigold (planting), sunflower, garlic, groundnut (sowing) in Orissa.
- *Boro* rice (nursery bed preparation), mango, coconut, guava, banana (planting), *kharif* vegetables (harvesting), winter vegetables (sowing / transplanting / vegetative), wheat, mustard (sowing / vegetative), potato (planting / vegetative) in West Bengal.
- Large cardamom (new) (transplanting of suckers from nursery), large cardamom (old) (capsule formation / seed maturity / harvesting), *rabi* vegetables (vegetative), orange (fruit maturity / harvesting), ginger (maturity / harvesting), rice (maturity / harvesting), wheat (sowing / seedling / crown root initiation), mustard (sowing / germination / vegetative) in Sikkim.

NORTHWEST INDIA [JAMMU & KASHMIR, HIMACHAL PRADESH, UTTARAKHAND, PUNJAB, HARYANA, DELHI, UTTAR PRADESH & RAJASTHAN]

- Wheat (sowing), lentil (pod formation), sugarcane (planting), *rabi* onion, cauliflower, cabbage, broccoli, tomato, knolkhol (transplanting), radish, spinach, coriander (vegetative / fruiting) in Delhi.
- Wheat (sowing/emergence), vegetables (sowing), garlic, ginger (planting), bhindi, cucurbits (sowing), Khira, summer squash, bitter gourd, tur, brinjal, Shimla mirch, and tomato (sowing / transplanting), Apple (maturity), pomegranate (fruit development), strawberry (land preparation), arbi, amaranthus, turmeric, rice, maize, barley, raddish, onion, pea, garlic, coriander, cabbage, knol khol, parsley, lettuce, fennel, cauliflower, broccoli (sowing / planting) in Himachal Pradesh.
- Wheat (sowing / emergence / tillering), early/normal sown barley (CRI stage), late sown barley (sowing / emergence), onion (seed bed preparation), winter vegetable crops viz. potato, radish, carrot, turnip, garlic, spinach, methi (various stages i.e. sowing / vegetative), cole crops viz. early cauliflower, cabbage, knoll khol, broccoli (nursery sowing / transplanting), *Rabi* oilseeds i.e. toria (reproductive / physiological maturity), gobi sarson, mustard normal sown (vegetative) and early sown (flowering), late sown (sowing / emergence), brown sarson (rosette stage), *rabi* pulses i.e. lentil (sowing / emergence-(germination)/ vegetative), gram (vegetative), pea (sowing / emergence (germination) / vegetative)], fodder crops like oats (sowing / emergence / tillering), berseem (vegetative (1st cutting)), Apricot, Apple (nursery sowing), early Chinese cabbage, lettuce (transplanting / vegetative / maturity / harvesting), beet root (planting / vegetative / maturity / harvesting in green house) in Jammu & Kashmir.
- Chilli, capsicum, cauliflower, broccolli (transplanting), lahi (flowering / fruiting), sugarcane (planting), rice (maturity/harvesting), litchi, loquat, peach, citrus (flowering

/ fruiting), mango (early varieties) (flowering), foxtail millet, okhra, bottle gourd, bitter gourd, ginger, turmeric, (germination / vegetative), mustard, toria (flowering/pod formation), papaya (planting), sorghum, pigeon pea (vegetative), vegetable pea (vegetative/pod maturity/ harvesting), urd, potato, and pearl millets (germination), barley, fodder barseem, sarson (germination/ vegetative), onion (nursery sowing), wheat (germination/crown root initiation), lentil (sowing) in Uttarakhand.

- Rice (harvesting), wheat (sowing/emergence/crown root initiation), winter sugarcane (vegetative growth), summer sugarcane (grand growth), cucurbits like gourd, bitter gourd, cucumber, etc. and another vegetables like lady's finger, tomato, brinjal, chilli etc. (flowering/fruiting), arhar, toria (flowering/seed formation), tomato, brinjal, bhindi (vegetative / fruiting), cabbage, garlic, cauliflower (flowering / fruiting), barley, gram, alsi, maize, rai, mustard, berseem, potato, sarson, masoor, pea and chick pea (sowing/ germination) in Uttar Pradesh.
- Spring sugarcane (sprouting), berseem (vegetative), sugarcane (maturity / harvesting), Sugarcane autumn (planting), cotton (boll maturity/picking), fodder lucerne, oats (sowing), gram, potato, peas (sowing), radish, carrot, turnip, cauliflower (sowing/ transplanting), rape seed, mustard (sowing / emergence), barley, lentil (sowing/emergence), wheat (sowing) in Punjab.
- Sugarcane (spring season) (planting/emergence/early vegetative), barseem (vegetative), pulses, moong, mash, pigeon pea (vegetative), cauliflower, cabbage, carrot, potato (transplanting), mustard (sowing / vegetative), sarson, raya, radish, turnip (sowing), wheat (sowing) in Haryana.
- Wheat (sowing / germination), sweet potato, chilli and cluster bean (vegetative), mustard (vegetative/ flowering), gram (sowing / germination), coriander (sowing / germination), barley, oats, lentil, lucerne, taramira, linseed (alsi), opium poppy, vegetables (potato, fenugreek, tomato, brinjal, radish, chilli, carrot, phalak, green pea, berseem, cumin, isabgol, ajwain, garlic (land preparation/sowing), cauliflower, cabbage, *rabi* onion (transplanting) in Rajasthan.

SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP, ANDAMAN & NICOBAR ISLANDS]

- Rice - Samba (tillering/panicle initiation stage), Rice-Thaladi (tillering), cotton (vegetative/boll formation), vegetables (flowering / fruiting), sugarcane (vegetative/ grand growth/maturity), maize (vegetative/ harvest), millets (vegetative/ harvest), sorghum (vegetative/harvest), bengal gram (sowing), groundnut (flowering/harvest) and pulses (vegetative/pod formation/flowering) in Tamil Nadu.
- Sugarcane (vegetative), cotton (flowering/boll opening), maize (harvesting), ragi, sunflower (heading/sowing), bengal gram (flowering/fruiting), red gram (pod formation/ maturiy), *rabi* jowar (sowing), late planted paddy (harvest), *rabi* sorghum, wheat (sowing/vegetative) and safflower (sowing), pigeon pea (pod filling) and horticultural crops (vegetative growth/ flowering/ fruit development) in Karnataka.
- Groundnut (sowing), Bengal gram (vegetative), red gram (pod development), green gram (flowering), castor (development of third spikelet), sunflower (vegetative), paddy (grain hardening/ harvesting), cotton (boll formation) in Andhra Pradesh.
- Rice (harvesting), arecanut (harvesting), pepper (maturity), ginger (maturity), cardamom (harvesting), nutmeg (maturity), vegetables (planting/seedling), banana (planting), mundakan paddy (tillering / panicle initiation) in Kerala.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- Sugarcane (*Adsali*) (grand growth), sugarcane pre-seasonal (elongation / cane maturity), sugarcane (*suru*) (elongation), sugarcane (new *adsali*) (early vegetative), sugarcane (new pre-seasonal) (sprouting / early tillering), cotton (boll maturity / picking), red gram (pod development / pod maturity), *rabi* jowar (vegetative / flag leaf initiation / ear head emergence), safflower (vegetative), irrigated gram (branching / flowering), wheat (sowing / crown root initiation / early tillering), sunflower, maize (early vegetative) in Maharashtra.
- Wheat (sowing / crown root initiation), gram (sowing / early vegetative / branching), *rabi* maize (sowing), *kharif* vegetables (fruiting / harvesting), sugarcane (planting / vegetative), jowar (seedling), cotton (maturity / picking) , castor (capsule formation / spike initiation), mustard (vegetative), cluster bean, cauliflower, cabbage, sweet corn (sowing / vegetative), potato (planting / emergence) and spices (sowing) in Gujarat.

CENTRAL INDIA [M.P., CHHATTISGARH]

- Sugarcane(vegetative),vegetables(flowering/fruiting), Mustard (branching/flowering), wheat, maize, gram, toria (sowing/early vegetative/tillering), onion, garlic, tomato, brinjal, chilli (sowing/transplanting) cotton (boll development / maturity) in Madhya Pradesh.
- Rice (Harvesting), sugarcane (planting), groundnut, arhar, green gram and sesame (vegetative), ginger, turmeric, papaya, mango and guava (vegetative) cauliflower, potato (sowing), tomato, brinjal, chilli, niger, horsegram, ramtil, toria, cauliflower, cabbage, niger, kulthi and wheat (sowing) in Chhattisgarh.

Annexure II

List of Varieties

Assam

Boro rice: Boro 1, Boro 2, Mashuri, Proagro-6444, KRH-2, IR-50, Bishnuprasad, Jyotiprasad, Kanaklata, Cauvery, Banglami, Joymati and Dinanath.

Wheat: Sonalika, UP 262, K 7410, WH 291, HDR-77, DBW-14, HUW - 468.

Lentil: B-77, L-9-12, PL 406 and PL 81-4.

Tomato: Punjab Suhara, Avinash, Pusa Ruby, Arka Alok, Sioux, Punjab Keshri, Arka Abhijit, BT-1.

Onion: Pusa Red, Pusa Ratnar, Pusa White, N-53.

Garlic: Eknalio, T-56-4 and other local varieties.

Rapeseed and mustard: M-27, TS-36, TS-38 and TS-46.

Potato: Kufri Chandramukhi, Kufri Jyoti, Kufri Sindhuri.

Niger: NG-1, GA-5.

Manipur

Pea: Arkel, Azad, Rachana.

Potato: Kufri Megha, Kufri Jyoti.

Rapeseed / mustard: M-27.

Tripura

Cauliflower: CFL-4048, Pusa Early Synthetic, Kamaya, Suhasi.

Cabbage: BC-76, Pusa Drum Head, Pusa Synthetic.

Broccoli: Everest, Ayeshwaria.

Mizoram

Cabbage: Golden Acre, Ryozeke, Harnil; late varieties – Pusa Drumhead, Drumhead Late.

Broccoli: Pushpa, Pusa Broccoli, Aishwarya and Fiesta.

Cauliflower: Snowball -16, Pusa Early Synthetic-1 and 2, Pusa Shubhra, Pant Gobhi – 2 and Patna Ageti.

Meghalaya

Boro rice: NEH Megha Rice-1, NEH Megha Rice-2.

Potato: Kufri Chandramukhi, Kufri Jyoti, Kufri Megha, Kufri Badshah, Kufri Sindhuri.

Orissa

Sunflower: Morden, Sunrise, Surya and Hybrid varieties like KBSH-1, KBSH-3 and MSFH.

Groundnut: Smruti, TAG-27, TAG – 24, JL-24, AK-12-24 and TMV-2.

Wheat: Sonalika, Kalyansona, UP-262, HD 2733, HD 2824, PBW 343, PBW 443, UP 262, RW 346, HP 1761, HP 1731, K 9107.

Mustard: Parbhat, Anuradha, TS-294, M-27, Pusa Jaikisan, Pusa Bold.

Green pea: Rachana, Arkel, T-163.

Onion: Nasik Red, Patna Red, Pune Red, Bellary Red, Pusa Ratnar, Pusa Madhavi, Arka Niketan, Arka Pragati, Agri found Light Red, Agrifound Dark, Punjab Selection, Patna White, Bombay White, Pusa White Round, PKM-1.

Banana: Cavendish and Robusta.

Potato: Kufri Chandramukhi, Chamatkar, Kufri Jyoti, Kufri Sinduri and Kufri Alankar.

Bengal gram: Gourav, Annegiri, Radhey.

West Bengal

Banana: Mortoman, Chapa, Kathali, Singapuri.

Cauliflower: Pusa Dipali, Pusa Chetaki.

Tomato: Baisali, Indam 1116, Akash.

Mustard: Sita, Vagirathi, Baruna, Agrani, Panchali, Sarama, B-54, M-27, Sanjukta etc.

Boro Rice: Supriya, Jamini, Bhupen, IET-2233.

Wheat: PBW-343, K-307, UP-262, Janak, C-306, Raj-911.

Potato: Kufri Jyoti.

Sunflower: Morden, Sidhesor (80-85 days), Pack-36 (104 Days), M.F.S.H.-17 (104 Days), Sungin-85 (80-90 days), B.S.H.-1 (85-90 days).

Jharkhand

Lentil: P.L.-406, P.L.- 639, D.P.L.- 15, D.P.I.-62 etc.

Green Pea: Swarn Rekha, Arkel, Azad Pea, Kashi Nandini, PE-6, Birsa Matar, Rachna, D.D.R. etc.

Potato:

Short duration: Kufri Ashoka and Kufri Pukhraj.

Long duration: Kufri Surya and Kufri Puskar.

Niger: Birsa Niger-1, Birsa Niger-2.

Tomato: Pusa Ruby, Swarna Sampda, Swarn Lalima.

Cabbage: Golden Acre, Pride of India, Early Drum Head.

Cauliflower: Pusa Deepali, Patna Early, Hazipur Extra Early, Pusa Ketki.

Papaya: Pusa Giant, Pusa Dwarf, Honey Dew, Pusa Majesty.

Mustard: Shivani, Pusa Jaikisan, Pusa Bold, Vardan.

African marigold: Pusa Narangi, Pusa Basanti.

French marigold: Petite Orange, Petite Yellow, Rusty Red, Lemmon Drop.

Onion: Pusa Red, Pusa Ratnar, N-53, Arka Niketan, Arka Kalyan, Agrifound Dark Red.

Chick Pea: Birsa Chana – 3, B.G. – 372, B.G. – 256, K.W.R. – 108, Pant G. – 108, 114 and Kabuli type varieties like B.G. 1053, 1003, H.K.-94-134 and Kak 2.

Linseed: Shubhra, T. – 397, Sweta.

Wheat:

Irrigated varieties: K-9107, HUW-468, HD-2733 and Birsa Genhu-3.

Unirrigated varieties: H.D.R.-77, K.-8027, C.-306, K.-8962, K.-8027etc.

Bihar

Cauliflower: Aghani, Pusa Dipali, Pusi, Patna Main, Pusa Shuvra, **Late variety** - Maghi, Snow King, Pusa Snow King 1, Pusa 2, Pusa Snow ball 16.

Cabbage: Late Drum Head and Pusa Drum Head.

Rapeseed: RAUTS-17, PT-303, Panchali and Bhawani.

Mustard: Rajendra Sarson-1 and Swarna.

Potato: Kufri Lalima, Kufri Kuber, Kufri Alankaar, Kufri Jyoti, Kufri Chandramukhi, Ranjendra Aloo 1, 2 and 3, Kufri Badshah.

Gram: Rajendra Chana, Uday, Pusa 256, RAU 52, SG2.

Lentil: BR 25, Pant L406, 639, Malika, Arun.

Peas: Ratna, Arpana, Harbhajan, Malbai, Malviyamator 15, Pusa Prabhat.

Maize: Saktiman 1, 2, 3, 4; Laxmi, Rajendra Shankar Makka 1 and 2, Ganga 11, Deoki, Safed Laxmi, Suwan Peela.

Rai: Baruna, Pusa Bold and Kranti.

Sunflower: Morden, Surya, Paradovic, KBSH 1, 44.

Delhi

Wheat (Late sown): P.B.W.373, WR-544, U.P.2338, U.P.2425.

Himachal Pradesh

Lettuce: Iceberg

Brinjal : Arka Nidhi, PPC

Ageti bhindi : P-8, Prabhini kranti, Arka anamika

Frenchbean : Contender

Pepper : Surjmukhi

Broccoli: Palam Samridhi

Rajmash : Triloki, Jwala, baspa Kailash

Raddish : japani white and early mino white.

Turnip :PTWG-1.

Cabbage, coriander: Snow ball K-1 Palam uphar, golden acre.

Knol khol : White Bina.

Cauliflower : Pride of India

Jammu & Kashmir

Wheat: VL-738, PBW-396, PBW-175, IWP-72 and RSP-81 (jitto) for rain fed areas and VL-804 and HS-240, HD2428, HD2329 and CPAN3004 under rainfed and irrigated area PBW-550, PBW-343, Raj-3077, RSP-303, DBW17, PBW 502, HD2687 and WH 542) under irrigated areas and PBW 175, PBW 396 and RSP81

Barley : var. Ratna, Jyoti and Sonu

Mustard: RSPR-01, RLM-514, RLM-619, Pusa-Basant, Pusa-Bahar, Kranti, Varuna, RH –30 and RL 1359.

Gram : C-235, K-468, Gourav and PBG-1

Field pea : T-163, PG-2, Rachna, HFP-3

Vegetable crop like **radish** (var. Pusa chetki, Japanese white & Pusa reshmi), **carrot** (var. Pusa kesar), **turnip** (var PTWG), **garlic** (var. local, large segmented), **spinach** (prickly seeded) and **methi** (P.E.B.K methi), **Cauliflower** (var. Pusa Dipali), **knoll khol** (White Vienna), **Broccoli** (Early green).

Berseem : mascavi, pusa giant, BL-1.

Lentil: L-9/12, PL-406 and L-4147.

Punjab

Wheat: PBW 621, DBW 17, PBW 550, PBW 502, PBW 343, WH 542, PDW 291, PDW 274 and PDW 233

Gobhi sarson: GSC-5, GSL-1, GSL-2, PGSH-51, Hyola (PAC-401)

African sarson: PC-5,

Radish: Japanese White, white Icicle,

Turnip: Golden Ball,

Raya: PBR-210 and PBR 91 for South Western regions only. 23

Haryana

Wheat: PBW 621, DBW 17, PBW 550, PBW 502, PBW 343, WH 542, PDW 291, PDW 274 and PDW 233.

Barley: PL807, DWRUB52, VJM 205, PL 419 (Kandi Area), PL 426, PL 172

Gobhi sarson: GSC-5, GSL-1, GSL-2, PGSH-51, Hyola (PAC-401)

African sarson: PC-5,

Raya: PBR-210 and PBR 91 for South Western regions only.

Radish: Japanese White, white Icicle,

Turnip: L-1, Carrot: Selection 21 and PC-34

Sugarcane: CoJ85, CoJ64, CoJ83

Uttarkhand:

Barley: Jyoti, Vijaya, or Jagrati and Oat varieties like UPO-50, UPO-212, JHO-822, Kent etc.

Potato: Kufri Bahar, Kufri Jawahar, Kufri Ashok, Kufri Anand.

Wheat: UP-2338, UP-2425, UP-2526, PBW-373, UP-2565, UP2572, UP2584, UP1109, PBW343

Sarson: BLJ 56, 85, 01, Pant JS 01, Pant Masoor 4, 5, BL masoor 125, 126, BL matter 3, 7,

Potato: Kufri badshah, Kufri lalimaa, Kufri sindhuri, Kufri Sutlej and K. bahar

Chickpea: Avrodhi, Radhey, Pant G-114 or Uday

Pea : Pant Matar-5, Type-163 or Aparna ; for Rajmash PDR-14 or VL Jamash-63.

Uttar Pradesh:

Gram : K-850, Avarodhi, Radhey, Pant G-144, K.W.R.-108, K.D.G.-1168, Kabuli chana- Sadabahar, Pragati L-550, Pusa-267, 362, BG-244, C-214, Uday, GD1168, KWR108, JG315, Pusa-256, K-5, QR-108, Pragati, Pusa-267, L-550, Kabuli.

Linseed : T-397, Nilam, Heera, Garima, Sweta, Subhra, Kiran, Sheetal, Gourav, Padmini,

Lentil: 7, Narendra Masoor-1, K-75, Pant Masoor, 406, 4, L-4076, DPL-15, IPL-81,

Safflower: K-65, Malaviya-305

Pea: Rachana, Pant Matar-5, Aparna, Shikha, Malviya, Pea-15, KPMR-400, 522, Pant Pea-5, Sapna, Orkel, Azad-2, 3, P-3, Malviya Matar -2, 15, K.F.P.D.-103, Sapna

Jai : Kent U.P.O.-94, 50, O.S.-6, J.H.O.-822, 851, U.P.O.-212, 822, 851, bundle jai-99-2, FOS-1/29, Algerian.

Rabi Mustard:-Vaibhav, Varuna(Ta-59), Vardan, Kranti, Rohini, Pitambari

Berseem: Bundelkhand berseem(J.H.T.B.-146), Vardan, Meskavi, V.S.-1.

Sugarcane : KBHA-8436, 88230, 96268, 98231, KS-95436, 00235, 03234, 01235, KJ-64

Tomato-Azad type-5,6

Potato : Ku-Lalima, Ku- Chandramukhi, Ku-Ashok, Ku-Chipsona-1, 2, Ku- Bahar, Ku- Pokharaj, Ku- Ashoka

Wheat: Malviya – 234, UP-2338, PVW-373, UP-2425, Narendra wheat-2036, 1014, K-9533, K-9162, HD-2428, HD-2189, HD -2733, UP.-2425, PBW-343, HD-2428, Raj-3765, HI-1077, UP-2425, PBW-435

Barley : irrigated var. (Jyoti, Manjula, Preeti, Jagriti, NDV-940, R.S.-6, Narendra J-1,2,3), non-irrigated var.(K-144), Lakhan, Haritama, K-603, Gitanjali)

Garlic: Jeevan, G-50, 282, 41

Fodder berseem: JHDB-146.

Cumin : RS1,NC43

Rajasthan

Wheat: HD-2329, H.D. 2009 (Arjun), WH147, PBW502, Raj-3765, Raj-3077, Raj-3777, Raj.4037, Raj-3765, Raj-3077, Raj-4037, Raj-4083, Raj-4120, Raj-1482 & Lok-1 are improved varieties, WH-147, GW-190, GW-322 and GW-273.

Un-irrigated : Sujata, A.9-30-1, D.134, Mukta, H.W. 2004, H.D.4672, J.W.S. 17, HI-1500 and HI-1531

Barley: RD-2052, RD-2508, RD-2503, RD-2660, RD-2035, RD-2592, RD-2624, RD 2035, RD 2052, RD 2503, RD 2668, BL 2 & RD-2552 are improved varieties, **irrigated :** R.D.B. 1, R.D. 103, R.D. 57 unirrigated – R.D.-31 salted soil : B.L.2

Taramira :-T-27 and RTM-314,

Oat : kent,

Gram: GNG-663 (Vardan), GNG-469 (Samrat), GNG-1581 (Gangaur), GNG-1499 (Gauri), GNG-1292 (Kabuli), C-235,G130, GNG 16, RSG 44, C235, H 208, Dahod yellow ICCV 10, RSG 888 (Anubhav), RSG-963, RSG-973, CSJD-884 (Aakash), RSG-802, Pusa-209, B.G.256, Phule and Pratap chana 1, .

Onion: Pusa Red, Pusa Madhavi, Arka, Niketan, Local Red and Pusa white.

Raddish : Pusa Deshi, Japani white and Hill queen

Autumn vegetables : **Tomato:** Pusa Rubi, Pusa Earli and Vihar, **Brinjal:** Pusa Summer Prolific Round, Pusa Summer Prolific Long, Meghdoot and Arka Bahar, **Cauliflower:** Pusa Snowball 1 and Hissar 1, **Cabbage:** Pusa Drum Head and Hybrid 10, **Radish:** Japanese White and Hill Queen

Opium poppy : Chetak.

Karnataka

Green gram: PS-16

Black gram: T-9, TAU-1

Cow pea: C-152, TVX-944

Horse gram: PHG-9

Bengal gram: Annigeri 1 and JG-11, ICCV-10, GBS-964, ICCV-2(Kabuli)

Sunflower-KBSH-1, KBSH-42, KBSH-44.

Groundnut-ICGS-11, K-134, Chinthamani-2

Andhra Pradesh

Red gram: LRG-38,LRG-41,WRG-27,ICPL-84031,PRG-100,PRG-158

Green gram:LGG-407, LGG-410, LGG-450,TM-92,PU-31

Black gram: LBG-752, LBG-623, LBG-20,T-9

Bengal gram: JG-11, Annegiri, Jyothi, ICCV-2(Svetha), 10, 37, JG-130 and JAKI- 9218
Groundnut: Kadiri-3,4,5,6; Tirupati-4, Narayani, Vemana and Greeshma Kadiri-3,4,5,6; tirupati-4, Narayani, Vemana and Greeshma
Paddy: BPT-5204

Gujarat:

Wheat: GW- 496, 503, 273, 322, 190, 276, Lok-1.
Wheat (late sown): Lok-1, GW-120, GW-173, GW-405.
Rabi Maize: Ganga Safed-2.
Irrigated gram: Gujarat Chick pea-1, Dahod Pila, ICC-4.
Gram: Gujarat Chick pea-2 (for dry farming).
Cluster bean: GC-1, 2.
Cauliflower: Pusa Early, Pusa Dipali , Pusa Kartiki, Early Kuvvari, Pusa sythetic, Early Snowball, Jayayant Snowball, Pusa Snowball, Super Snowball, Snowball-13.
Cabbage: Kranti, Golden Acre, Pride of India, Coppen Market.
Onion: Pusa Red, Nashik Lal, N 53 and H 48.
Potato: Kufri Badsaha, Kufri Pokhraj, Kufri Lokar.
Spices: Methi kasuri or Pusa early branching (Fenugreek), Guj. Coriander 1 or 2 (Coriander), Guj. Cumin 1, 2, 3, 4 (Cumin).

Maharashtra:

Irrigated wheat: NIAW-34 (Sarbati) variety in Madhya Maharashtra for late sowing.
Rabi Sunflower: Modern, S.S.56, B.S.H-1 in Konkan.
Banana: Basrai, Shrimanti, Grandnaine.
Rabi tomato: Dhanashri, Bhagyashri, Phule Raja (hybrid).
Rabi groundnut: TG-26, TAG-24, TPG-41, Konkan Gaurav, Konkan Tapora.
Mustard: Pusa bold, Varuna.
Lucerne: R.L. 88, Sirsa-9, Anand-2.
Barseem: Vardan, J. B.-1, Meskawi.

Madhya Pradesh

Wheat- Early sown varieties: Sujatha, HW 2004 or HI 1500 HI -1500, HI-1531 and HD 2004, JWS-17, HD-4672. Jaki 9218 MP-1142, MP-4010, MP-1201, MP-1202, Lok-1 **Time Sown Varieties:** GW-173, GW-273, GW-322, GW-366, HI- 8498, HI -1418, HI, 1479, HI – 1544
Bengal gram -JG 1
Sugarcane- Jawahar-86141, Ko-Jawahar-86141, Ko-Jawahar-86572, Ko-Jawahar8632, Ko-6304, Ko-C-671
Garlic-G-283, G-1, G-41 or G-323
Gram-JG-14, JG-06, JG-63, JG-11, JG-11, JG-130, JG-16, JG-322 and JG-01
Mustard-Pusa Mahak, Pusa Agrani, Pusa Jaikisan, Pusa Bold, Jaggannath
Linseed-PKDL-21, JL-1, JL-3, Mallika, JLS-1, IPL-81
Lentil-JLS-03
Maize-JVM -421, JM-16
Pea- Jawahar pea1and 2

Chattisgarh

Wheat-GW-273
Potato-Kufari Lalima, Kufari Pukhra
Sugarcane- Co 86032, Co 86141

Annexure III
Contour maps for Relative Humidity, Cloud Amount and Wind speed for the week ending on 07.12.2011

