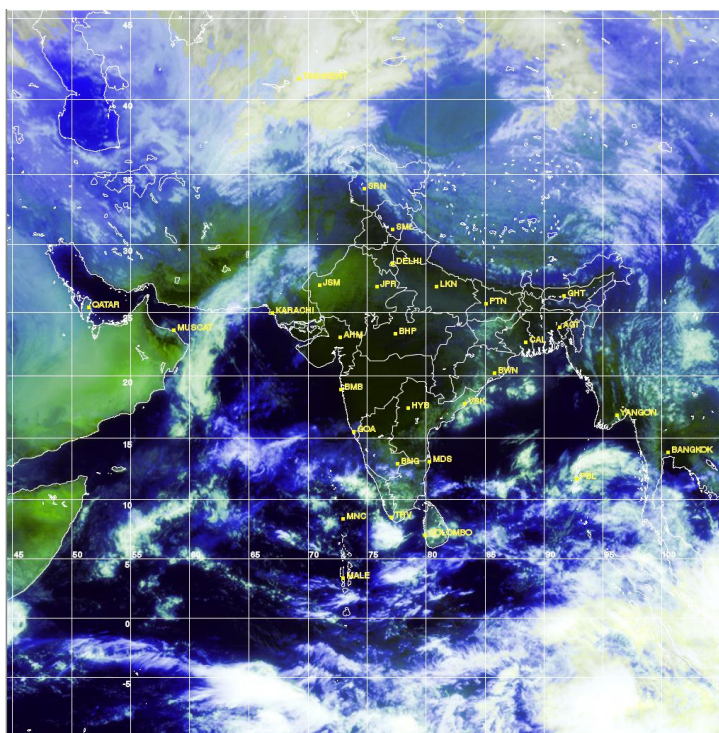




National Agromet Advisory Bulletin

Thursday, 1st December, 2011

(For the period 1st to 5th December, 2011)



Satellite image 0600 UTC dated 2nd 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

Widespread rainfall occurred over all the districts in Tamil Nadu, Uttar Kannada district in Coastal Karnataka, Kolar and Mandya districts in South Interior Karnataka, Alappuzha, Idukki, Kollam, Kottayam Pathanamthitta and Thiruvananthapuram districts in Kerala, Cuddapah district in Rayalaseema and Nellore district in Coastal Andhra Pradesh during last week. Rainfall also occurred in some other districts of Kerala and South Interior Karnataka. Dry weather prevailed over remaining parts of the country.

Farmers in flood affected areas of Thanjavur, Nagappattinam, Trichy and Thiruvarur districts of the Cauvery Delta Zone of Tamil Nadu are advised to maintain optimum plant population in *Samba* and *Thaladi* rice fields, undertaking gap filling by using same variety seedlings or seedlings obtained by thinning in the same field and apply top dressing of 22 kg urea + 18 kg gypsum + 4 kg neem cake mixed with 17 kg MOP to avoid nutrient deficiency after drainage. As excess rainfall has been received in all the districts, waterlogging is reported. Farmers are advised to drainout excess water to avoid crop damage.

Farmers in all the regions of Andhra Pradesh are advised to sow irrigated maize and sunflower as alternative crops to irrigated rice as the ground water may become scarce due to prevailing dry condition; also undertake sowing of *rabi* crops like rice fallow black gram and rice fallow maize. Take up sowing of rice nurseries with short duration varieties. Undertake sowing of *rabi* groundnut in Rayalaseema utilizing realized rainfall during last week.

Dry weather is also likely to prevail over the country except scattered / isolated rainfall in Tamil Nadu and Kerala. In view of realized excess rainfall in Tamil Nadu, farmers are advised to arrange for adequate drainage facilities to avoid water stagnation.

Farmers are advised to undertake sowing of *rabi* crops like wheat, gram and maize in Madhya Pradesh, mustard in Chattisgarh, *rabi* maize in Bihar, sowing of linseed, gram, coriander, cauliflower, cabbage, onion, garlic and planting of 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 maize, potato, wheat, coriander and cumin in Gujarat, sowing of barley, oat, lentil, sarson, gram, safflower, linseed, pea, rajmah and wheat and planting of potato in Uttar Pradesh, planting of *rabi* onion in Nagaland and sowing of lentil in Mizoram. Farmers are advised to complete sowing of long duration varieties of wheat, lentil and *desi* gram and *kabuli* gram in Punjab and Haryana and wheat in Himachal Pradesh.

Due to prevailing weather, incidences of pod borer in early sown gram in Karnataka, blast in rice in Tamil Nadu, pseudo stem weevil, *Heliothis* in red gram, wilt in Bengal gram and aphids in safflower in Andhra Pradesh, leaf spot disease in banana in Kerala, rust in sugarcane in Andhra Pradesh and wilt in Bengal gram in Madhya Pradesh are noticed. 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 30.11.11

State/Districts	Actual (mm)	% Dep.
Maharashtra		
Konkan & Goa		
Goa	20.8	673
Mumbai	0	-100
Raigad	0	-100
Ratnagiri	6.2	138
Sindhudurg	36.1	1800
Thane	0	-100
Karnataka		
Coastal Karnataka		
Dakshin Kannada	2.5	-69
Udupi	7.5	-18
Uttar Kannada	36.0	521
North Interior Karnataka		
Bagalkote	0.0	-100
Belgaum	5.1	44
Bidar	0.0	-100
Bijapur	0.0	-100
Dharwad	3.6	-43
Gadag	0.6	-88
Gulbarga	0.0	-99
Haveri	14.4	188
Koppal	2.0	-21
Raichur	1.2	-59
Yadgir	0.1	-98
South Interior Karnataka		
Bangalore Rural	8.2	-3
Bangalore Urban	12.8	66
Bellary	4.1	17
Chamarajnaragar	39.8	746
Chichballapur	13.8	57
Chickmagalur	10.3	77
Chitradurga	11.9	239
Davangere	6.8	31
Hassan	19.5	297
Kodagu	5.0	-33
Kolar	34.6	298
Mandya	37.2	1063

Mysore	17.6	432
Ramnagara	6.8	-4
Shimoga	28.5	419
Tumkur	5.3	-26
Kerala		
Alappuzha	54.8	147
Kannur	5.5	-46
Ernakulam	18.9	15
Idukki	42.1	158
Kasaragod	8.8	14
Kollam	111.7	417
Kottayam	48.1	121
Kozhikode	3.9	-66
Malappuram	6.6	-53
Palakkad	14.5	2
Pathanamthitta	50.6	210
Thiruvananthapuram	153.7	577
Thrissur	18.7	80
Wyanad	16.6	80
Tamil Nadu		
Chennai	209.3	228
Coimbatore	64	321
Cuddalore	273.7	430
Dharmapuri	62.8	333
Dindigul	172.5	794
Erode	80.1	497
Kanchipuram	228.7	355
Kanyakumari	170.8	583
Karur	162	1057
Krishnagiri	49.1	367
Madurai	133.4	744
Nagapattinam	247.1	197
Namakkal	74.6	537
Nilgiris	124.2	397
Perambalur	137.6	496
Puducherry	176.2	132
Pudukottai	191.8	730
Ramanathapuram	182.2	480
Salem	98.6	448

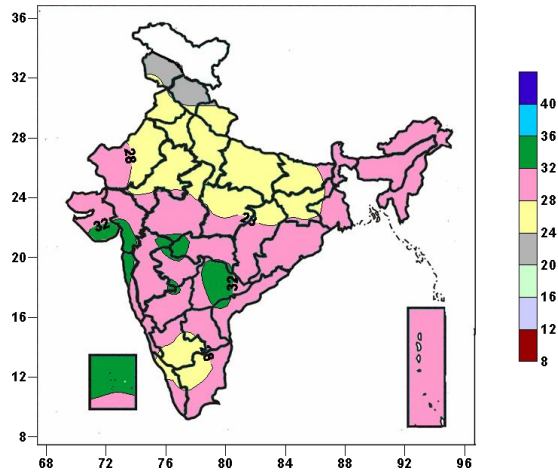
Sivaganga	142.3	574
Thanjavur	194.8	392
Theni	105.5	572
Tirunelveli	171.2	430
Tiruvallur	239.4	433
Tiruvannamalai	143.3	487
Tiruvarur	258	316
Toothukudi	135.4	348
Trichy	140.7	682
Vellore	101.1	359
Villupuram	180.8	458
Virudhunagar	120.9	408
Andhra Pradesh		
Coastal Andhra Pradesh		
East Godavari	0	-100
Guntur	0	-100
Krishna	0	-100
Nellore	182	352
Prakasam	3.9	-71
Sirkakulam	0	-100
Visakhapatnam	0	-100
Vizianagram	0	-100
West Godavari	0	-100
Telangana		
Adilabad	0	-100
Hyderabad	0	-100
Karimnagar	0.4	-81
Khammam	0	-100
Mehabubnagar	0	-100
Medak	0	-100
Nalgonda	0	-100
Nizamabad	0	-100
Rangareddy	0	-100
Warangal	0	-100
Royalaseema		
Anantapur	11.1	132
Chittoor	113	396
Cuddapah	51.3	423
Kurnool	13.9	210

(20% or more) excess rainfall
 (-19 to +19%) normal rainfall
 (-20 to -59%) deficient rainfall

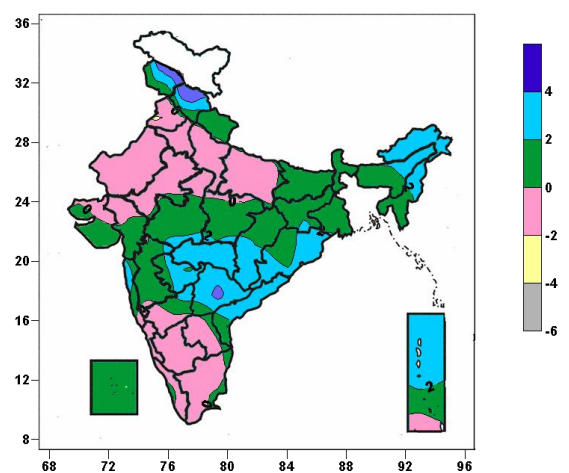
(-60 to -99 %) scanty rainfall
 (-100%) no rainfall
 ** Data not available

Contour maps for Mean Maximum, Minimum Temperature and their anomaly for the week ending on 30.11.2011

Actual Mean Maximum Temperature ($^{\circ}\text{C}$) in India for the week ending 30.11.11



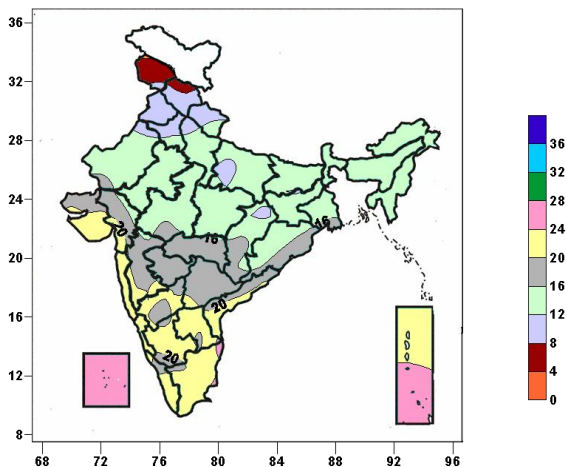
Maximum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 30.11.11



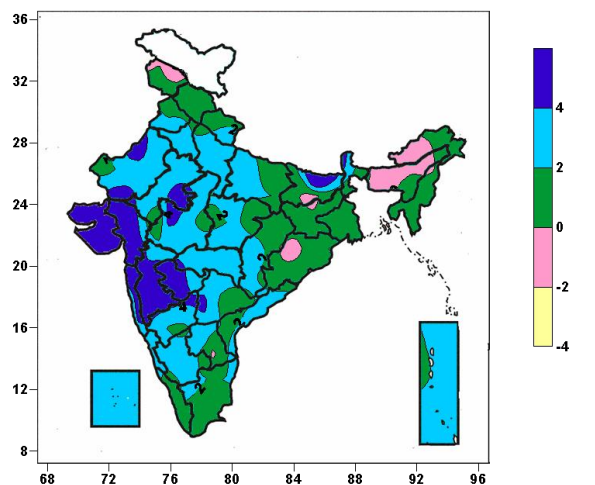
Actual Mean Maximum temperature ranged between 32°C to 36°C over most parts of Telangana, Lakshadweep Islands, some parts of Gujarat, Saurashtra & Kutch, Maharashtra, Coastal Andhra Pradesh, North Interior Karnataka, 24°C to 28°C over most parts of Rajasthan, Uttarakhand, Punjab, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, some parts of Chattisgarh, Madhya Pradesh, Coastal & South Interior Karnataka, Kerala, Tamil Nadu, 20°C to 24°C over most parts of Jammu & Kashmir, Himachal Pradesh, 28°C to 32°C over remaining parts of the country.

Actual Mean Maximum temperature 4°C above over some parts of Jammu & Kashmir, Himachal Pradesh, Telangana, 2°C to 4°C over most parts of Arunachal Pradesh, Nagaland, Coastal Andhra Pradesh, Telangana, Vidarbha, Marathwada, Andaman & Nicobar Islands, some parts of Jammu & Kashmir, Himachal Pradesh, Assam & Meghalaya, Manipur, Orissa, Chattisgarh, Konkan, Madhya Pradesh, North Interior Karnataka, -2°C to 0°C over most parts of Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh, Rayalaseema, Tamil Nadu, Kerala, Karnataka, some parts of Madhya Pradesh, Gujarat, Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra, Andaman & Nicobar Islands, 0°C to 2°C over remaining parts of the country.

Actual Mean Minimum Temperature ($^{\circ}\text{C}$) in India for the week ending 30.11.11



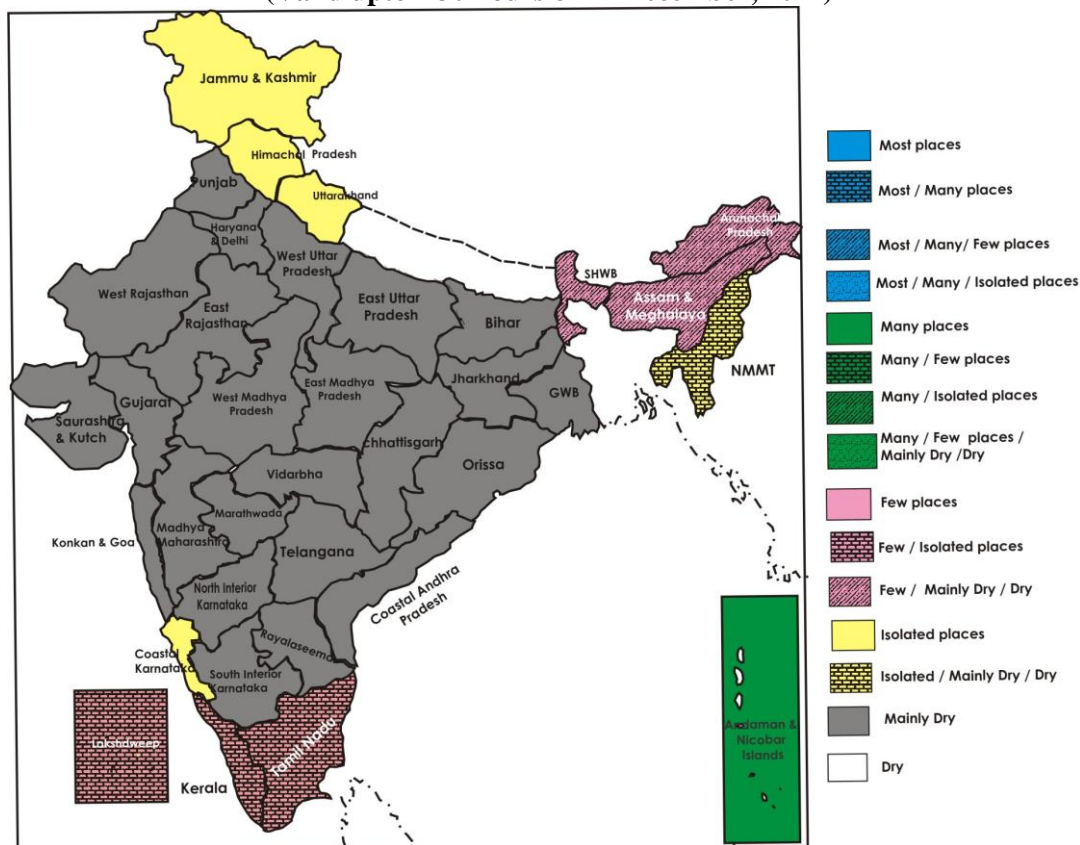
Minimum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 30.11.11



Actual Mean Minimum Temperature ranged between 24°C and above over most parts of Lakshadweep, Andaman & Nicobar Islands, 20°C to 24°C over most parts of Saurashtra & Kutch, Konkan & Goa, Karnataka, Coastal Andhra Pradesh, Rayalaseema, Kerala, Tamil Nadu, some parts of Gujarat, Telangana, Madhya Maharashtra, Andaman & Nicobar Islands, 16°C to 20°C over most parts of Gujarat, Madhya Maharashtra, Marathwada, Vidarbha, Telangana, some parts of West Rajasthan, Saurashtra & Kutch, Chattisgarh, Coastal Orissa, Gangetic West Bengal, West Madhya Pradesh, Karnataka, Coastal Andhra Pradesh, Tamil Nadu, Kerala, 8°C to 12°C over most parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, some parts of West Rajasthan, Uttar Pradesh, Chattisgarh, 12°C to 16°C over remaining parts of the Country.

Minimum Temperature anomaly between 4°C and above over most parts of Gujarat, Saurashtra & Kutch, Konkan, Madhya Maharashtra, Marathwada, some parts of Rajasthan, Bihar, Sub-Himalayan West Bengal, Sikkim, Telangana, 0°C to 2°C over most parts of Himachal Pradesh, Uttarakhand, Bihar, Jharkhand, West Bengal, Nagaland, Manipur, Mizoram, Tripura, Orissa, Tamil Nadu, Kerala, some parts of Jammu & Kashmir, Rajasthan, Punjab, Haryana, Uttar Pradesh, Arunachal Pradesh, Assam & Meghalaya, Chattisgarh, Madhya Pradesh, Andhra Pradesh, Andaman & Nicobar Islands, -2°C to 0°C over most parts of Arunachal Pradesh, Assam & Meghalaya, some parts of Jammu & Kashmir, Bihar, Jharkhand, Orissa, Nagaland, 2°C to 4°C over remaining parts of the Country.

Weather Forecast (Valid upto 1430 hours of 4th December, 2011)



Major Feature of Weather Forecast upto 1430 hours IST of 4th December, 2011

- Rain/snowfall would occur at one or two places over western Himalayan region.
- Rain/thundershowers would occur at many places over Andaman & Nicobar Islands.
- Rain/thundershowers would occur at a few places over Tamilnadu, Kerala and Lakshadweep during next 24 hours and at one or two places thereafter.
- Mainly dry weather would prevail over remaining parts of the country.
- Shallow fog may occur in morning / early morning hours over isolated pockets of Indo-Gangetic Plains during next 12 days.
- No significant change in minimum temperatures over Indo-Gangetic plains and adjoining central India during next 2-3 days.

Weather Warning

Nil

Weather Outlook up to 1430 hours IST of 6th December, 2011

- A fresh feeble western disturbance would affect western Himalayan region.
- Rainfall would occur at many places over Andaman & Nicobar islands; at a few places over Sub-Himalayan West Bengal & Sikkim and north-eastern states and at one or two places over south peninsular India and Lakshadweep.
- Weather would be mainly dry over remaining parts of the country.

Zonewise Agromet Advisories

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

- **Realised Rainfall:** Mainly dry weather prevailed over the States of the region during last week.
- **Rainfall Forecast:** Mainly dry weather is likely to prevail over the States 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 mainly dry weather is likely to prevail 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 etc. Continue sowing of niger, wheat, rapeseed and mustard, *rabi* pulses etc.
 - In Hill Zone and Upper Brahmaputra Valley Zone of Assam, farmers are advised to harvest matured *sali* rice and undertake 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. Land preparation and sowing may be started for *rabi* pulses like lentil, rajmah, pea, lathyrus etc.
 - As dry weather is prevailing, farmers in Upper Barak Valley Zone of Assam are advised to undertake regular intercultural operation and irrigation in cauliflower, onion and garlic.
 - In Central Brahmaputra Valley Zone in Assam, farmers are advised to continue the harvesting and threshing of *sali* rice and subsequently sow pea.
 - Farmers in Arunachal Pradesh are advised to undertake land preparation and sowing of *rabi* crops like maize, 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 land preparation and planting of potato. Taking the advantage of dry weather, also start harvesting of *aman* rice.
 - Farmers in Mid Tropical Hill Zone in Nagaland are advised to avoid sowing of pea in December. White powdery patches form on leaves and pods and dry weather favours the spread of the disease.
 - Farmers in Temperate Sub Alpine Zone of Meghalaya are advised to start nursery bed preparation and sowing of *boro* rice and *rabi* onion. Also undertake land preparation and sowing of wheat.
 - 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 residue soil moisture.
 - Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
 - In Mid Tropical Plain Zone of Tripura and in Kolasib region of Mizoram infestation of pseudo stem weevils are reported. Killing of weevils and removal of dried and diseased leaves are advised. Also there is chance of attack of aphids in toria in Mid Tropical Plain Zone of Tripura due to prevailing cloudy weather condition. 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.
- 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. and apply 2 ml of Butox in 1 litre of water while brushing against skin diseases; vaccinate pigs and goats against Endoparasites, Ectoparasites etc.
 - The farmers in Arunachal Pradesh are advised to provide anti-stress powder with drinking water for chickens, also provide adequate heat source (particularly at night) for the chicks and piglets. Farmers are also advised to vaccinate goat against enterotoxaemia.

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:** Mainly dry weather is likely to prevail over the States of the region.
- **Advisories:**
 - As there was no significant rain during last few weeks in most of the districts of the States of the region and mainly dry weather is likely to prevail 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 Western Undulating Zone of Orissa are advised to harvest medium land rice.
 - 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 medium and 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 medium duration 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 are advised to complete harvesting and threshing of rice crop and carry out land preparation and sowing of other *rabi* crops in these districts. Farmers are also advised to undertake transplanting of Autumn season sugarcane.
- 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 timely irrigated wheat, other *rabi* crops and green fodder. Crops like cauliflower, cabbage, chilies, tomato, palak, carrot, radish, khnol-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 advised to harvest the matured 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 and chick pea.
- Farmers in New Alluvial Zone and Red and Lateritic Zone of West Bengal are advised to undertake land preparation and sowing of wheat and planting of potato. Also start nursery bed preparation of *boro* rice 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 should also be started. 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 mustard and planting of potato. Complete harvesting of *Kharif* rice as soon as possible.
- Farmers in Terai Zone of West Bengal are advised to start transplanting of marigold.
- Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
- 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.
- As the weather condition is warm day and cool night, there is a possibility of downy mildew in cucumber in Terai Zone of West Bengal. To manage the disease spray Mancozeb @ 2 g / litre or Metalaxyl 8% and Mancozeb 64% @ 1-1.5 g / litre of water. Due to cloudy weather in coming 2 days, 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.

- 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.
 - 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.
 - Newly born baby goat should be prevented from morning and evening cold waves 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 offspring's 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:** Rainfall / snowfall is likely at isolated places in Jammu & Kashmir, Himachal Pradesh, Uttarakhand and mainly dry weather is likely over the rest of the region.
- **Advisory:**
 - As there was no significant rainfall in most of the districts over the region during last week, apply irrigation to the standing crops.
 - In view of present weather farmers in Delhi are advised to sow late wheat and give irrigation to timely sown wheat and mustard crop. 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 to complete the sowing of long duration varieties of wheat and lentil crop. and irrigate timely sown wheat crop. Undertake sowing of radish, turnip and carrot and transplanting of 4 to 6 week old seedlings of cabbage, tomato and late season cauliflower. Irrigate methi, palak and onion crop once a week. Farmers are advised to withhold the irrigation right now to deciduous fruits such as pear, peach, grapes to enter dormancy and become sufficiently hardened to withstand cool weather. Irrigate the fruit bearing ber trees. As dry weather is expected in coming days, farmers can apply irrigation to sugarcane crop during these days.
 - 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 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, it is advised to undertake transplanting of cauliflower, knol khol, broccoli, winter lettuce, chinese cabbage, onion and beet in green house and to plough their field to retain more moisture during the winter months. It will also help in the uprooting of the weeds and decomposition of crop residues. 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 barley, oat, masur, sarson, gram, safflower, linseed, potato, chickpea, pea, rajmash and wheat. Farmers are also advised to continue sowing of onion, carrot, radish, turnip, beet and tomato. Sowing of berseem and oat for green fodder, garlic, coriander, palak, sauf, mangarail, fenugreek, cumin etc. is also advised. In Bundelkhand zone of Uttar Pradesh, farmers are advised to apply light irrigation and top dressing in already sown pea, toria, etc.
- In Bhabar & Terai zone, pantanagar of Uttarakhand, farmers having irrigation facilities are advised to give first irrigation in standing crop and late sown wheat crop at Crown Root Initiation stage. Also advised to do weeding and thinning of standing crops.
- Farmers in Sub humid sub tropic in Uttarakhand are advised to sow 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 continue land preparation for sowing of wheat, barley, potato, cumin, isabgol, ajwain, raising nursery for seedling of autumn vegetables viz. tomato, brinjal, radish, etc., transplanting cauliflower, cabbage, *rabi* onion, plucking citrus fruits late during afternoon hours, sowing of mustard, gram, lentil, oat, fenugreek, berseem, lucerne, toria, taramira, linseed (alsi), opium poppy and coriander. They are also advised to undertake harvesting of matured cotton and castor in arid western plain zone.
- 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, 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 pea crop at pod formation stage. Mustard crop may be affected with white rust & stem rot, farmers are advised to spray Malathion 50 EC @ 1.0 ml per litre water and to spray fungicide Bavistin @ 1.0 gm per litre water to control pod borer attack.
- In eastern plain zone (Faizabad) in Uttar Pradesh, there are chances of saw fly on toria, farmers are advised to monitor and spray solution of Malatheon 50 EC, 2 lit. or Monochrotophos 36 S.L. 600-800 ml in 600-800 lit. water. There are chances of fruit borer in early tomato crop, farmers are advised to spray solution of D.D.V.P.-76 E.C. 750 ml or 50 E.C.2 lit. in 600-800 lit. of water per ha. There are also chances of fruit fly or fruit borer in early arhar, spray solution of Imidachlorpid 1 ml in 1 lit. of water.
- Due to high relative humidity, infection of early blight may occur in potato and tomato in Delhi. Farmers are advised to monitor the crop and take proper plant protection measures. Also weather is favourable for attack of painted bug on mustard crop, spray Carbaryl (Sevin) 2g per litre of water.

- 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 Rajasthan, animals may be vaccinated against H.S. disease. It is also advised to keep teats of milch cow & buffalo clean before & after milking to protect them from the attack of Mastitis.
 - 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 everyday 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.
 - 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:** All the districts in Tamil Nadu, Uttar Kannada in Coastal Kannada, Kolar and Mandya in South Interior Karnataka, Alappuzha, Idukki, Kollam, Kottayam, Patananhitta and Thiruvananthapuram districts in Kerala, Cuddapah in Rayalaseema and Nellore in Coastal Andhra Pradesh received good rainfall during last week. No significant rainfall occurred in the remaining states of the region.
- **Rainfall Forecast:** Rain/thundershowers would occur at a few places over Tamil Nadu and Kerala during next 24 hours and isolated rainfall thereafter. Either isolated rainfall or mainly dry weather would occur over remaining parts of the region.
- **Advisories:**
 - Most of the area in the North East Dry Zone of Karnataka is under moisture deficit status because of no rainfall and crops like pigeon pea, cotton, sunflower, groundnuts are under loss due to stress. Most of the farmers lost over 50 per cent of their *khari* crops because of lesser rainfall under rainfed condition. More flower dropping is reported in red gram because of moisture stress and forced opening of cotton boll is also noticed. Most of the rabi area is under moisture stress condition, hence less rabi sowing area is reported. Because of shortage of rainfall, most of the *rabi* jowar area is unsown. Hence, there will be a possibility of fodder shortage for animals of this region.
 - As there was sufficient rainfall in all the districts in Tamil Nadu, Uttar Kannada in Coastal Kannada, Kolar and Mandya in South Interior Karnataka, Alappuzha, Idukki, Kollam, Kottayam, Pathanamthitta and Thiruvananthapuram in Kerala, Cuddapah in Rayalaseema and Nellore in Coastal Andhra Pradesh, postpone irrigation to the crops. Apply irrigation to the crops in the remaining parts of the region.

- As there was excess rainfall in all the districts of Tamil Nadu, waterlogging is reported in the crop fields. Farmers are advised to monitor the situation and keep vigil to prevent from crop damage.
- Farmers in the Thanjavur, Nagappattinam, Trichy and Thiruvarur districts of the Cauvery Delta Zone of Tamil Nadu are advised to maintain optimum plant population in flood affected Samba and Thaladi paddy field, undertake gap filling by using same variety seedlings or seedlings obtained by thinning in the same field and top dressing to be done (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 all the regions 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 fallow black gram and rice fallow maize and rice nursery should be taken up such that the harvestings are completed by the end of March. Take up sowing of rice nurseries with short duration varieties.
- 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 from November 15th to December 15th, raise irrigated dry crops like maize and sunflower as an alternative to irrigated rice, as the ground water is going to be scarce due to drought. Undertake plant protection measures to protect major crops like paddy, sunflower, red and green gram and cotton from pests and diseases.
- As rain is expected in the next coming four to five days in the Eastern Dry Zone of Karnataka, farmers are advised to postpone harvesting of matured crops like ragi, paddy, groundnut, onion and others, keep harvested crops in dry place, protect them from rains, so that there is no discolouration or degradation of grains and undertake sowing of *rabi* crops like sunflower, groundnut and horticultural crops.
- Farmers in the North Dry Zone of Karnataka are advised to harvest onion, sunflower and maize, sundry the produce of sunflower and maize and undertake plant protection measures with utmost care and precaution since, there is possibility of very light and scattered rainfall at few places in the district during the coming five days.
- Farmers in the North Transition Zone of Karnataka are advised to continue sowing of wheat and chickpea in irrigated conditions and safflower and chickpea in rainfed conditions.
- Farmers in the North East Dry Zone of Karnataka are advised to go in for sowing of fodder maize, irrigate wherever possible, to overcome situation of the anticipated fodder shortage and prepare paddy nursery bed for summer cultivation preferably with short duration cultivars. Wherever *rabi* jowar sowings are over and germination is observed, thinning is advised to cope up moisture deficit conditions due to lack of rainfall.
- Farmers in the North Eastern Zone of Tamil Nadu are advised to undertake field preparation for the paddy nursery, provide seed treatment with carbendazim (0.05%) to protect against brown spot and fusarium root rot in nursery, undertake dual spraying of glyphosate 1% (post –emergence) 15 days prior to sowing followed by pre-emergence application of metalachlor @ 1 kg ai/ha on third day after sowing to control weeds efficiently, since light rainfall is expected in the coming days. They are also advised to avoid water stagnation in the recently sowed groundnut field.

- Farmers in the Western Zone of Tamil Nadu are advised to give proper irrigation to rice at active tillering time, since moisture stress due to inadequate water at rooting and tillering stage causes poor root growth leading to reduction in tillering, poor stand and low yield. They are also advised to take proper plant protection measures.
- Since light rainfall is forecasted in the Problem Area Zone of Kerala, farmers are advised to undertake sowing of paddy, 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 Northern Zone of Kerala are advised to undertake proper plant protection measures, 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.
- Incidence of pseudostem weevil is noticed in 3-4 months old banana in the High Altitude Zone of Kerala. Farmers are advised to remove the dry outer sheaths of the pseudostem of all infested and un-infested plants and spray carbaryl 50 WP 4gm/litre of water on pseudostem and leaf axils.
- Farmers in the Krishna Godavari Zone of Andhra Pradesh are advised to undertake plant protection measures to prevent attack of leaf folder, BPH, sheath blight, leaf blast and mites on rice, leaf folder, powdery mildew and cercospora leaf spot in green gram and black gram, since low temperature due to present weather conditions favour their attack.
- Incidence of helicoverpa is observed in red gram, fusarium wilt in bengal gram aphids in safflower, diamond back moth, thrips, mites, die-back 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.
- 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
- Farmers in the South Zone of Tamil Nadu are advised to monitor the incidence of sheath blight in rice, sucking pests in cotton and basal rot in onion 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.
- Due to low temperature during night followed by morning dew in the Hill Zone of Tamil Nadu, pod borer incidence was noticed in the pigeon pea crop. Farmers are advised to spray NPV 0.75 ml per liter of water, if the pod borer is big in size and if there is no control of the pest, spray 0.3 ml indoxcarb or 0.1 ml spinosad per litre of water. In early sown crop, powdery mildew has been noticed in sunflower. To manage this, take up spraying of 1 g. Carbandizeme dissolved in one liter of water.
- Pod borer incidence in pigeon pea crop and wooly aphid in sugar-cane was noticed in the North East Transition Zone of Karnataka, due to low temperature during night followed by morning dew. Farmers are advised to spray NPV 0.75 ml per liter of water, if the pod borer is in big size and 0.3 ml Indoxcarb or 0.1 ml Spinosad per litre of water to control pod borer. Remove the infested leaves and burn or spray the crop with 3 ml Chloropyrifos dissolved in 1 ml of water to control wooly aphid.

- Rust incidence is observed in sugarcane in the North Coastal Zone of Andhra Pradesh. Farmers are advised to spray tridemorph @ 1 ml / lt. or mancozeb 3 g/ lt at bi-weekly interval.
- Incidence of maruca pod borer is noticed in red gram in the North Telangana Zone of Andhra Pradesh .Farmers are advised to spray a combination of chloropyriphes @ 2.5 ml + dichlorovas @ 1 ml /l to control it. Due to the prevailing dry weather conditions infestation of sucking pest complex has increased drastically in cotton and thrips attack is noticed in chillies. Spray triazophos@ 3 ml/l. or profenophos @ 3 ml /l or acephate 2 g / l mixed with stickers like triton or sandovit @ ml / l of spray fluid to control sucking pest complex and acephate @ 1.5 g / l or fipronil @ 2.0 ml / l or spinosad @ 0.25 ml / l or carbaryl @ 3.0g / l of water to control thrips.
- Undertake spraying of chemicals on a non- rainy day over Tamil Nadu and Kerala.
- **Animal husbandry**
 - Relative humidity and day and night temperatures are showing decreasing tendency in the Eastern Dry Zone of Karnataka. So farmers are advised to maintain optimum room temperature for silkworm and poultry rearing houses.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** No significant rain occurred during the period over the States of the region except in Sindhudurg district in Maharashtra state during last week.
- **Rainfall Forecast:** 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.
 - Farmers of Madhya Maharashtra, Marathwada and Vidarbha are advised to continue picking of fully opened cotton bolls. Farmers in Vidarbha region are advised to undertake sowing of mustard and linseed. Prepare nurseries for *rabi* onion.
 - Present weather is suitable for planting of *kande bag* banana in Madhya Maharashtra and Marathwada. Undertake transplanting of *rabi* tomato and cabbage seedlings in the main fields.
 - Farmers of Madhya Maharashtra and South Konkan region of Maharashtra are advised to undertake sowing of *rabi* sunflower. Farmers in South Konkan region of Maharashtra are advised to undertake sowing of mustard.
 - Farmers in Konkan region of Maharashtra are advised to undertake sowing of short duration crops like cowpea, wal, kulthi utilizing optimum moisture in the harvested rice field. Undertake transplanting of 5 to 6 weeks old seedlings of brinjal and chilli on ridges of main field. Transplant the cole crops as the temperature will be favourable for their growth.
 - 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.
 - Farmers in Middle Gujarat Zone are advised to undertake sowing late (25 Nov. to 15 Dec.) varieties of wheat. Carry out sowing of *rabi* maize and planting of potato tuber.
 - 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.

- 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 apply irrigation in early sown crops and apply split doze of nitrogen fertilizer. Carry out sowing of cumin.
- Complete sowing of *rabi* crops in Bhal and Coastal Zone of Gujarat as early as possible. Picking of Cotton may be carried out during morning hours.
- 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.
- As light rain and cloudy weather prevailed in Sindhudurga district of Maharashtra during last week, there may be incidence of mango hopper on new mango flush, spray 25 % Cypermethrin @ 3 ml or 2.8% Deltamethrin @ 9 ml or 20% Fenvelarate @ 5 ml per 10 litres of water on whole tree.
- As cloudy and humid weather prevailed during last 4-5 days in Madhya Maharashtra, there may be attack of pod borer on gram; spray 5% Neemark followed by Heliokill 500 ml per hectare after 10-15 days.
- Due to cloudy and humid weather there may be 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 and sugary disease in jowar in Madhya Maharashtra and Marathwada; spray Dimethoate 34% @ 500 ml or Methyl Dimeton 25% @ 500 ml per hectare in 500 litres of water in Madhya Maharashtra and spray Imidacloprid @ 5 ml or Thiamethoxam 25% @ 4 g per 10 litres of water in Marathwada.
- There is a possibility of outbreak of shoot borer and stem borer in jowar in South Gujarat Heavy Rainfall Zone; farmers are advised to spray Chloropyriphos 20 EC @ 20 ml or Quinalphos 25 EC @ 20 ml or Monocrotophos @ 12 ml in 10 liter of water.
- In Bhal and Coastal Zone of Gujarat, there is a possibility of army worm in *rabi* crops. Farmers are advised to adopt IPM measures to control the pest. There may also be incidence of aphids in *rabi* crops; farmers are advised to spray any systemic insecticide.
- Stages of major crops are mentioned in Annexure I.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Dry weather prevailed over the region.
- **Rainfall Forecast:** Mainly dry weather is likely to prevail over the region.
- **Advisories:**
 - In view of dry weather likely in Kymore Plateau and Satpura Hill Zones of Madhya Pradesh, farmers are advised to prepare field for sowing of wheat crop in irrigated conditions. Intercultural operation may be done for controlling weeds in crops like mustard, toria, chickpea and lentil due to mainly dry weather during next three days. Farmers are advised to harvest late maturing paddy varieties, thresh them and dry them properly. Farmers are also advised to prepare nursery for cauliflower and transplant seedlings in a main field with optimum distance, transplanting of onion seedlings in main field may be done, give irrigation to chilly, brinjal and tomatoes, and harvest the matured fruits.

- Farmers in Jhabua Hills Zone of Madhya Pradesh are advised to prepare their field and sow *rabi* crops. Apply first irrigation to wheat crop after 21 DAS (fully irrigated) and 30-35 DAS (semi-irrigated) condition.
- There is a possibility of 1-2°C decrease in temperature, so farmers in Gird Zone and Satpura Plateau regions of Madhya Pradesh are advised for sowing of wheat, barley and berseem (for green fodder).
- Farmers in Malwa Plateau Zone of Madhya Pradesh are advised for sowing of wheat and transplanting of onion, brinjal, chilli and tomato. 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 and 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 and 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. Sowing of potato and pea may also be done.
- Farmers in Nimar Valley Zone of Madhya Pradesh are advised to sow wheat and gram after proper seed treatment.
- Farmers in Bundelkhand Zone of Madhya Pradesh are advised to irrigate the mustard crop after 30-35days of sowing and also irrigate wheat crop, which is about 20-25 days old. Apply remaining half dose of nitrogen fertilizer after irrigation.
- 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.
- Weather is congenial for insect attack in pigeon pea in Kymore Plateau and Satpura Hill Zones and Satpura Plateau of Madhya Pradesh. Farmers are advised to spray Quinalphas at 2.0 ml. per litre also pheromone or light traps may be used for monitoring these pests.
- Farmers in Jhabua hills Zone of Madhya Pradesh are advised to spray met sulfuron methyl @ 8 gm/acre for weed control of broad leaves and for narrow leaves spray chlodinofop propargil @ 160 gm/acre in wheat crop after first irrigation. Also for control of sucking pest i.e. jassid, aphid & white fly on cotton spray Acitameprid 0.35 to 0.5ml/l (5.0 to 7.0 ml/pump), boll worm spray Profenophos @ 40 ml/pump and mealy bug spray Profenophos 40-45 ml + Acefat 20 gm/pump (15lit.) of water with 5.0 ml/l of neem oil. They are also advised for the control of milibug in fruit plants use grease strips and given Follidol @ 250 gm/plant in soil application.
- 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 crop is affected by wilt in some areas 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. It is also advised to monitor the chickpea crop against attack of pod borer and if found, spray Quinolphos 25 E.C @ 2.0 ml. per litre of water.

- In Bastar plateau zone of Chhattisgarh monitoring should be done for Cashew Stem and Root Borer insect (CSRB).
- **Animal Husbandry & Poultry**
 - Farmers in Jhabua hills, Malwa Plateau Gird Zone regions of Madhya Pradesh are advised to vaccinate their animals for 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.
 - As Temperature is going to decrease in Kymore Plateau and Satpura Hill Zones, Central Narmada zones of Madhya Pradesh therefore precaution should be taken to improve temperature conditions in the poultry and dairy localities.
 - 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 (maturity / harvesting), *boro* rice (nursery preparation / sowing), wheat, toria, linseed, (sowing / seedling), tomato (sowing / vegetative / flowering / fruiting), *rabi* pulses (sowing / seedling), early cauliflower (curd formation / maturity), cabbage and knoll khol (transplanting / vegetative / head formation), brinjal (early variety), country bean (vegetative / flowering), jute (for seed production) (harvesting), winter vegetables (nursery bed preparation / sowing / transplanting / vegetative), onion, garlic (sowing / seedling / vegetative), khasi mandarin (fruit maturity / harvesting), niger and lentil (sowing / seedling), potato (planting / vegetative), rapeseed and mustard (sowing / vegetative) and winter vegetables, pea (sowing / transplanting / germination / vegetative), cole crops (transplanting / vegetative) in Assam.
- Rice (Mipun cultivar) (maturity / harvesting), Khampti variety of rice (maturity), cabbage, cauliflower, knolkhol etc. (transplanting / vegetative / head formation), maize (sowing / vegetative) and pea, mustard (sowing / germination / vegetative) in Arunachal Pradesh.
- *Kharif* rice (harvesting), potato, pea (planting / sowing), rapeseed / mustard (sowing / vegetative), tomato (nursery raising / transplanting), cauliflower and cabbage (transplanting / vegetative), onion (nursery raising / transplanting / vegetative), broccoli (transplanting / vegetative), brinjal (flowering / fruiting) in Manipur.
- Arhar (pod maturity / harvesting), *sali* rice (maturity / harvesting), *boro* rice (nursery sowing / seedling), wheat (sowing), pea, garlic and lettuce (sowing), ginger and turmeric (late sown) (vegetative), *toria* (flowering / pod formation), onion (bulb formation / maturity), potato (planting / vegetative), *Khasi* mandarin (flowering / fruiting), banana (vegetative), lentil, mustard, rapeseed (vegetative / flowering), *rabi* onion (sowing) in Meghalaya.
- Rice (harvesting), 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 (vegetative / flowering / pod formation), pigeon pea (pod filling), rapeseed, mustard (sowing / vegetative), French bean (sowing), *rabi* crops (sowing), broccoli (transplanting / vegetative) and papaya (transplanting) in Nagaland.
- Lowland 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 (grain formation / maturity), *kharif* arhar (pod formation / seed formation), sorghum, jowar (maturity), sesame (maturity), lobia for green fodder (sowing), mishri kand (vegetative), onion, radish (sowing), cauliflower (sowing), fruit

trees (transplanting), potato, sweet potato (planting), mustard, wheat, vegetables, maize, pulses (sowing) in Bihar.

- Rice (maturity / harvesting), maize (grain formation / grain filling / maturity), pigeon pea (pod formation / seed formation), pulses (urd bean, moong bean) (maturity), groundnut (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 (sowing / vegetative), toria (flowering), green pea (sowing / vegetative), cauliflower, cabbage, chilli, tomato (transplanting / vegetative), niger (sowing), papaya (transplanting), gram, chick pea, onion, African or French marigold (sowing) in Jharkhand.
- Arhar (pod formation), maize (cob formation / maturity), 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), wheat (sowing / crown root initiation stage), 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), potato (planting) 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 (milk / dough / grain maturity), 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 mustard, pea, garlic, carrot, sarson saag, radish, spinach, coriander, turnip, pea, potato, gram, fodder oats and berseem, (sowing), *rabi* onion, cauliflower, cabbage, broccoli, tomato, knolkhol (transplanting) in Delhi
- Wheat (sowing), 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), maize, bajra (maturity), *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)), citrus, guava, apple (fruiting /

harvesting), mosambi, sweet lime (fruit ripening / harvesting), winter lettuce, chinese cabbage (transplanting), beet root (planting 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), maize (cob maturity/ harvesting), 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 (sowing / germination), onion (nursery sowing), wheat (germination/crown root initiation) in Uttarakhand.
- Rice (harvesting), wheat (sowing/emergence), 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), wheat, barley, lentil (sowing/emergence) 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 (sowing / germination), gram, coriander (sowing / germination), barley, oats, lentil, lucerne, taramira, linseed (alsi), opium poppy, vegetables (potato, fenugreek, tomato, brinjal, radish, 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), Rice-Thaladi (tillering) cotton (boll formation), vegetables (flowering / fruiting), sugarcane (vegetative/ grand growth/maturity), maize, millets (vegetative/ harvest), sorghum (vegetative/harvest), **bengal gram (sowing)**, groundnut (flowering/harvest) and pulses (vegetative) in Tamil Nadu.
- Sugarcane (vegetative), cotton (flowering/picking), hybrid jowar, maize (harvesting), ragi, sunflower (heading/sowing), bengal gram (vegetative), red gram (pod filling), *rabi* jowar (sowing), late planted paddy (maturity/harvest),cotton (flowering), wheat (sowing/vegetative) and safflower (sowing), pigeon pea (pod filling) and horticultural crops (vegetative growth/ flowering/ fruit development) in Karnataka.
- Maize (tasselling / cob initiation), cotton (boll initiation/ boll development / picking), rice (grain filling / harvesting), groundnut (sowing), bajra (harvesting), *rabi* pulses green gram (flowering), Bengal gram (vegetative), red gram (flowering/pod development) *rabi* groundnut (sowing) in Andhra Pradesh.

- Black pepper (maturity/harvesting), ginger (maturity/harvesting), mundakan rice (tillering / panicle initiation), Rubber (tapping) 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), cotton (boll maturity / picking), red gram (pod development), *rabi* jowar (vegetative), safflower (vegetative), irrigated gram (germination / branching), irrigated wheat (seedling / crown root initiation), sunflower, maize (germination / early vegetative) in Maharashtra.
- Wheat (sowing), gram (sowing), *rabi* maize (sowing), vegetables (fruiting / harvesting), sugarcane (planting / vegetative), jowar (seedling), cotton (boll formation / maturity / picking), castor (flowering / capsule formation / spike initiation), cluster bean, mustard, cauliflower, sweet corn (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 (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 and Dinanath.

Wheat: Sonalika, UP 262, K 7410, WH 291, HDR-77.

Toria: M-27, TS-36, TS-38, TS-46, TS-47.

Linseed: T-397.

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.

Broccoli: Pushpa, Pusa Broccoli, Aishwarya and Fiesta.

Cauliflower: Pusa Early Synthetic, 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 and JL-24.

Wheat: Sonalika, 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.

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, Kufri Chamatkar, Kufri Jyoti, Kufri Sinduri and Kufri Alankar.

Bengal gram: Gourav, Annegiri, Radhey.

Lentil: Asha, Pant-L-4, Pant-L-6.

Garlic: Phawari, Rajalbadi, Jamnagar and G-282.

Fodder Oat : Kent, OS-6 and JHO- 822.

West Bengal

Banana: Mortoman, Chapa, Kathali, Singapuri.
Cauliflower: Pusa Deipali, Pusa Chetaki.
Tomato: Baisali, Indam 1116, Akash.
Mustard: Sita, Vagirathi, Baruna, Agrani, Panchali, Sarama, B-54, M-27. Sanjukta etc.
Lathyrus: Nirmal, Ratan.
Boro Rice: Supriya, Jamini, Bhupen, IET-2233.
Wheat: PBW-343, K-307, UP-262, Janak, C-306, Raj-911.
Potato: Kufri Jyoti.

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.
Bell pepper: California Wander, Bharat, Arka Basant, Arka Mohini, Arka Gaurav, Allowander, Bombi, Indra, Nan-3020.
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.
Barley: Ratna.
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 and medium variety: 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-2584, UP-2338, UP-2572, UP-2526 (irrigated) UL-802, 804A, BL-719, BL-832, BL-892, UP-2554, , UP-2628, UP-2382, UP_2338,, HD-2687, PBW-550, PBW-502, PBW-343, PBW-154, WH-542 (non-irrigated), VL-719, VL-738, HS-240, HD-2380, UP-1109, HPW-42, HS-365 etc. For irrigated conditions: UP-2572, VL-719, VL-738, HD-2380, VL-421, HS-240, UP-1109 etc.

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: HD2009, WH157, WH147, WH446, WH542, HD2329, HD-2428, HD-2189, HD-2733, U.P.-2425, HI-1077, Raj.-3765, K-9107, PBW343, PBW502, SCW468, WH-147, K-9006, HD2888, UP 2338, UP-2382, Sangam-WH-896, WH542, K-88, PBW-343, K-9006, LOK-1. KRL-1-4., Raj3.77, PBW-65, K-307, Narendra-1012, Ujijar, HD-2888, Mandakini, Gomti PVW-443, 343, HUW-468, 514, UP-2382, KRL-19, K-8434, NW-1067, 1076, Non-irrigated var. (C-306, K-8027, K-8962, K-9351, K-9644)

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

Mustard: T-59 (Varuna), Kranti, P.R. 45, Bio-902, Ashirwad, Rh-30, Pusabold, Jagnath, Laxmi (140-150 days), Pusa Jai Kisan (115-120 days), P.R-15 (125-130 days), Pusa bold (130-135 days) & T-59 (125-130 day)

Normal sown (irrigated) - Maya, Rohini, Pusa Jai kisan, Varuna, RGN13, RGN73, NRCDR 2, NRCHB 506(hybrid), Normal sown (rainfed) -Arawali,RGN48, Geeta and PBR97, Saline sodic soils - CS52, CS54, CS56, Narendra Rai 1, 4.Taramira - Karan Tara, Narendra Tara 5, Yellow Sarson - NRCYS-05-02, YSH401

Late sown : Laxmi, Swarn Jyoti, Pusa Agni and Vasundhara.

Lucerne :-T-9 and Anand-2, LLC-3, RL-88

Taramira :-T-27 and RTM-314,

Oat : kent,

Fenugreek:RMT-1, RMT-143, Pusa early bunch

Cumin : RS-1, RZ-19, RZ-209, Gujarat Jira-1, Gujarat jira-2 & Gujarat jira-3

Berseem : Muskavi vardan & Pusa Jiant

Coriander : D.C.86, C.S.6, U.D.20, R.C.R.41, R.C.R.436, R.C.R.684

Linseed (Alsi) : R.L.102-71, T.397, Jawahar 23, L.C.K. 8528, Triveni Kiran, Madmani, L.M.H. 62, Mira, R.L.914, Pratap Alsi-1.

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

Potato: **Early sown**- Kufri-Ashok and Chandramukhi, **Mid sowing**- Kufri-Anand, Chipsona-1, 2, Jyoti and Pukhraj.

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

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.

Mustard: Guj - Mustard-1, 2, 3, Pusa Jaykisan (Bio-902), Varuna GM-1 or GM-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 Badsah, 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, SS-56, EC-68414, KBSH-11, APSH-11, BSH-11 and Phule Bhanu in Madhya Maharashtra and Modern, S.S.56, B.S.H-1 in Konkan.

Banana: Basrai, Shrimanti, Grandnaine.

Rabi tomato: Dhanashri, Bhagyashri, Phule Raja (hyb)

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 pea1 and 2

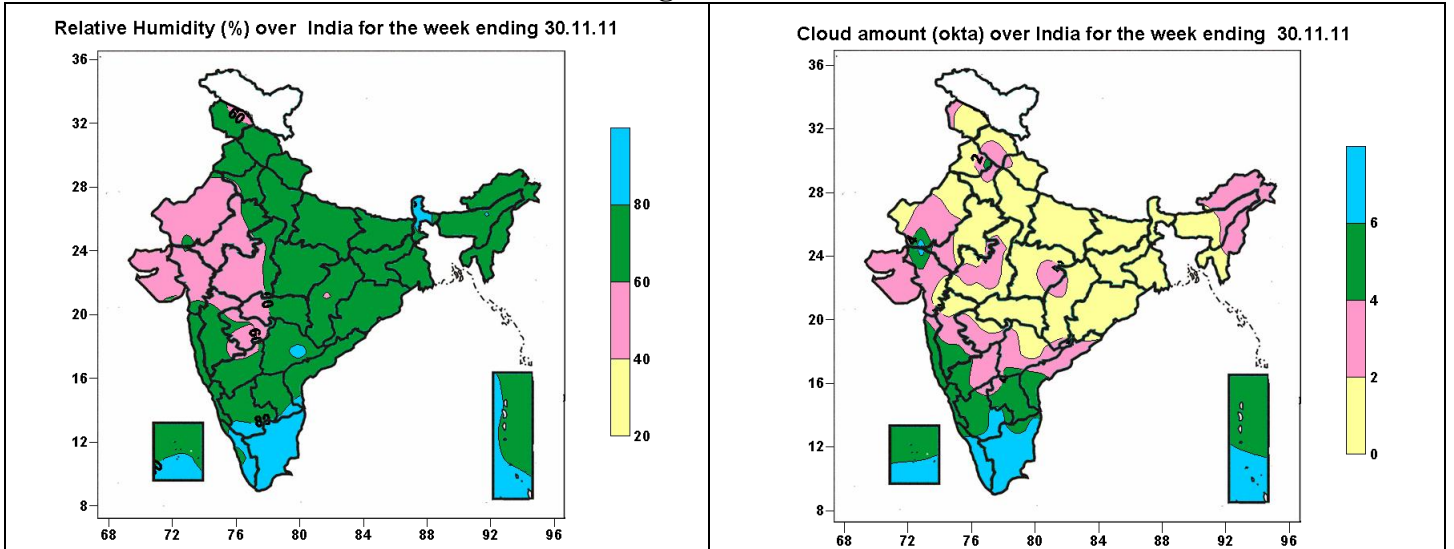
Chattisgarh

Wheat-GW-273

Potato-Kufari Lalima, Kufari Pukhra

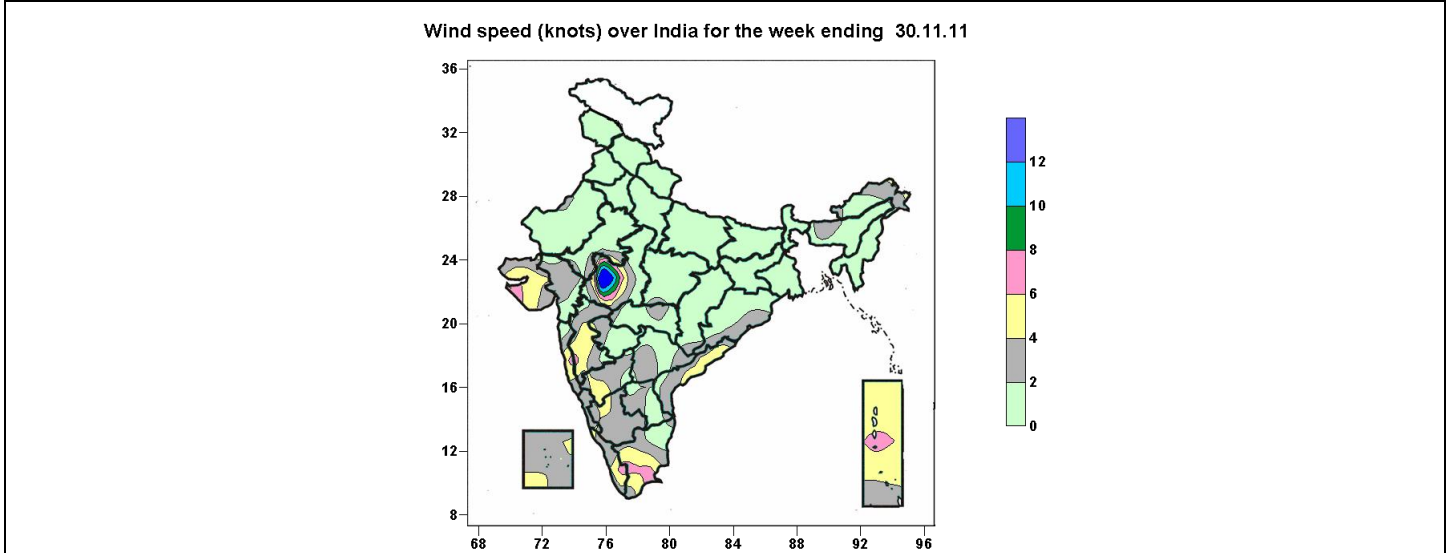
Sugarcane- Co 86032, Co 86141

Annexure III
Contour maps for Relative Humidity, Cloud Amount and Wind speed for the week ending on 30.11.2011



Relative humidity between 80% and above over most parts of Sub-Himalayan West Bengal & Sikkim, Tamil Nadu, Kerala, some parts of Andhra Pradesh, South Interior Karnataka, Lakshadweep, Andaman Nicobar Islands, 40 to 60% over most parts of Rajasthan, West Madhya Pradesh, Gujarat, Saurashtra & Kutch, some parts of Jammu & Kashmir, Madhya Maharashtra, Marathwada, Vidarbha, south Interior Karnataka, 60 to 80% over remaining parts of the country.

Cloud amount 6 okta and above over most parts of Tamil Nadu, Kerala, some parts South Interior Karnataka, Lakshadweep, Andaman Nicobar Islands, 4 to 6 okta over most parts of Konkan & Goa, Coastal & South Interior Karnataka, Rayalaseema, Lakshadweep, Andaman & Nicobar Islands, some parts of Punjab, West Rajasthan, Gujarat, Madhya Maharashtra, Coastal Andhra Pradesh, Telangana, Tamil Nadu, Kerala, 2 to 4 okta over most parts of West Rajasthan, Gujarat, Saurashtra & Kutch, Arunachal Pradesh, Nagaland, Manipur, Marathwada, Telengana, Coastal Andhra Pradesh, North Interior Karnataka, some parts of East Rajasthan, Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Uttarakhand, Madhya Pradesh, Chattisgarh, Konkan, Madhya Maharashtra, Rayalaseema, South Interior Karnataka, 0 to 2 okta over remaining parts of the country.

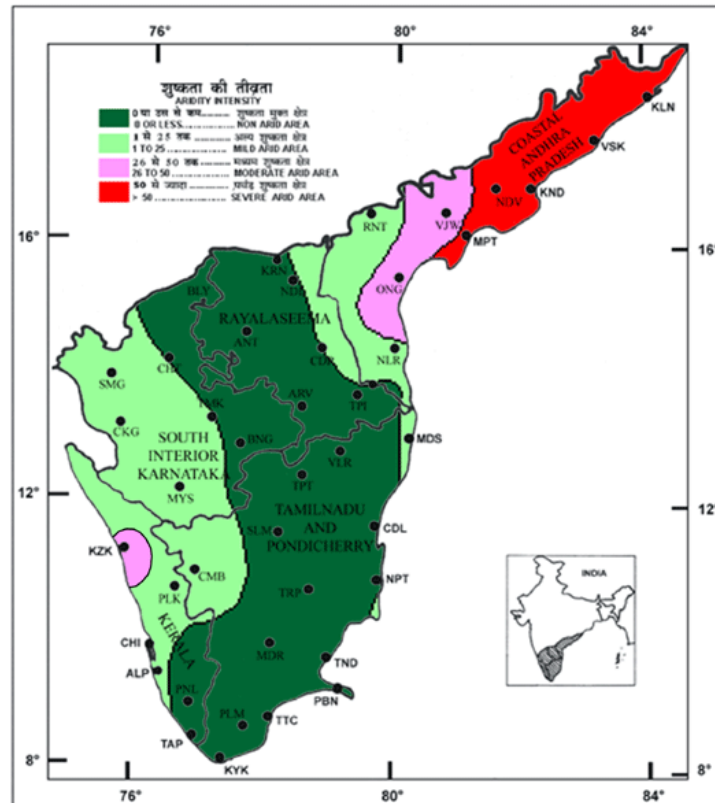


Wind speed ranged between 10 knots and above over west Madhya Pradesh, 4 to 6 knots over most parts of Andaman & Nicobar Islands, some parts Saurashtra & Kutch, Konkan, Madhya Maharashtra, Marathwada, West Madhya Pradesh, Coastal Andhra Pradesh, Tamil Nadu, Kerala, Lakshadweep Islands, 2 to 4 knots over most parts of Gujarat, Karnataka, Lakshadweep Islands, some parts of Arunachal Pradesh, Assam, Orissa, Chattisgarh, Saurashtra & Kutch, Madhya Pradesh, Maharashtra, Andhra Pradesh, Kerala, Tamil Nadu, Andaman & Nicobar Islands, 0 to 2 knots over remaining parts of the country.

Annexure IV

Aridity Anomaly Chart (Northeast Monsoon season) Period from (26.11.11 to 02.12.11)

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:**
Large northern part of Coastal Andhra Pradesh
- **Areas affected by moderate arid conditions:**
Small central part of Coastal Andhra Pradesh,
Isolated area around Kozhikode (Kerala)