

Significant weather and realized rainfall during last week:

- Significant rainfall occurred in Chennai, Kancheepuram, Kanyakumari, Karaikal, Nagapattinam, Puducherry, Ramanathapuram, Thirunelveli, Tiruvallur and Thiruvallur districts in Tamil Nadu, Chittoor in Rayalaseema, Nellore in Coastal Andhra Pradesh, Alappuzha, Thiruvananthapuram and Pathanamthitta districts in Kerala, Baramula, Jammu, Kupwara, Rajouri and Reasi districts of Jammu & Kashmir during last week. Mainly dry / dry weather prevailed over rest of the country.
- During the last week cold wave/cold day conditions prevailed over most parts of Punjab, Haryana, Chandigarh, Delhi and many parts of west Uttar Pradesh and isolated pockets of north Rajasthan and northwest Madhya Pradesh, some parts of east Uttar Pradesh, east Madhya Pradesh, interior Odisha and Gangetic west Bengal and Bihar.

South India

- Farmers in Kerala are advised to harvest the matured mundakan rice crop and complete sowing of punja rice.
- Farmers in Karnataka are advised to complete harvesting of rice and maize crop and undertake land preparation for sowing of pulse crops viz. black gram, green gram, horse gram, cowpea and sunflower. They are also advised to irrigate October sown crops like wheat, jowar and chickpea.
- Farmers in Andhra Pradesh are advised to undertake sowing of rice fallow maize, pulses and sesame till January and nursery preparation of rabi rice. Weather is congenial for aggravating the attack of *Helicoverpa armigera* in pulses which are at pod formation to pod maturity stage in some parts of the state. Farmers are advised to spray Quinalphos @ 2.0 ml or Acephate @ 1.5 g per litre of water.

Northwest India

- Ground frost conditions are likely to develop over some parts of North Rajasthan, Haryana and adjoining West Uttar Pradesh during next 48 hours. Farmers are advised to apply light and frequent irrigation / sprinkling to the standing crops and arrange for smoking around the field to safeguard from cold / frost injury.
- District level weather forecast indicates minimum temperature below 4°C in number of districts of Punjab, Himachal Pradesh, Uttarakhand and Jammu, which may cause occurrence of ground frost. Therefore, farmers in this region are also advised to monitor the crops and undertake protective measures, as mentioned above, to safeguard the crops.
- Due to prevailing extreme low temperature conditions in Valley Temperate Zone of Jammu & Kashmir, farmers are advised to withhold sowing of vegetables in the fields during the period. Undertake mulching in already sown knol-khol, cabbage and root crops under high frost conditions.
- In Western Zone in Haryana, there are chances of infestation of white rust and *Alternaria* blight in mustard crop due to high humidity and foggy weather conditions and occurrence of blight incidence in potato and tomato crops due to humid weather conditions; farmers are advised to undertake proper plant protection measures.
- Due to prevailing foggy weather conditions in Arid Western Plain Zone in Rajasthan, incidences of powdery mildew in mustard and blight in cumin may occur. Farmers are advised to monitor the crops for the diseases and undertake spraying of Dithane M- 45 @ 2 g/litre of water, if the damage crosses ETL.

Northeast India

- Farmers in Assam are advised to continue transplanting of *boro* rice in the main fields.
- Farmers in Mizoram are advised to continue transplanting of cole crops and tomato.
- Farmers in Meghalaya are advised to undertake nursery preparation for *boro* rice and sowing of tomato.
- As temperature is expected to go below 10°C in Kiphire district of Nagaland, growth of banana may be affected. Farmers are advised to give irrigation at night or arrange for smoking.
- Farmers in Tripura are advised to undertake nursery raising of *boro* rice.

East India

- Farmers in West Bengal are advised to start nursery bed preparation and sowing of *boro* rice and also undertake land preparation for sowing of sunflower.
- Farmers in Bihar are advised to apply irrigation in tobacco, rajmah, vegetable crops and timely sown wheat. Farmers are also advised to complete nursery sowing of *boro* rice.
- In Jharkhand, farmers are advised to start field preparation for sowing of vegetable crops like long gourd, round gourd, bitter guard, sponge gourd, cucumber, water melon and muskmelon.
- Farmers in Orissa are advised to continue sowing of sunflower and groundnut.

(Continued on Page 2)



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

Executive Summary

(Continued from page no. 1)

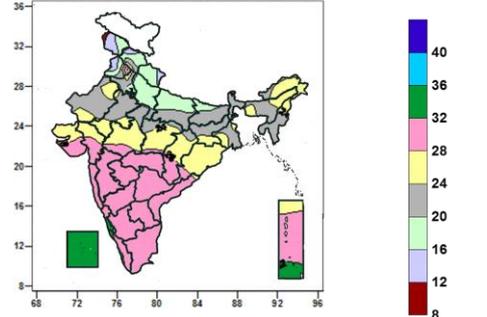
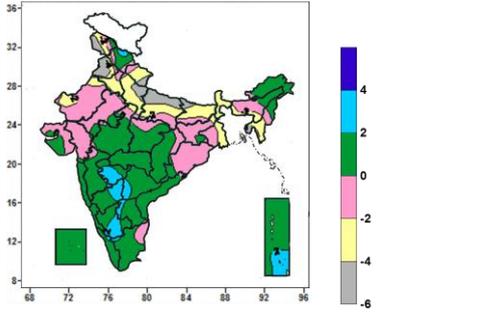
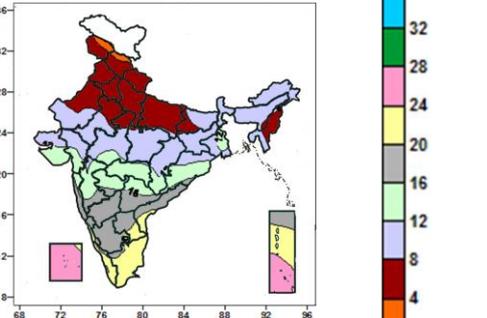
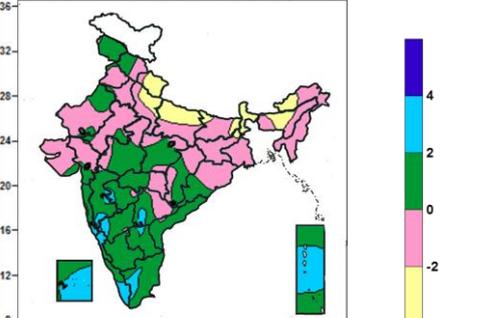
Central India

- Due to prevailing low temperature conditions in many parts of Madhya Pradesh and Chhattisgarh, farmers are advised to apply light and frequent irrigation / sprinkling to the standing crops and arrange for smoking around the field to safeguard from cold injury.
- Dry weather conditions prevailed during last week and likely to prevail over Madhya Pradesh. Farmers are advised to apply irrigation to wheat, potato, pea, mustard and vegetable crops.
- In Chhattisgarh Plain Zone, December-sown wheat is at Crown Root Initiation stage which is a critical stage. Hence, farmers are advised to apply irrigation and undertake intercultural operations.

West India

- As there was rain in some pockets of Buldhana, Akola, Wardha, Gondia, Bhandara and Nanded districts in Maharashtra, farmers are advised to postpone irrigation to the standing *rabi* crops in these regions.
- As dry weather is expected to continue with fall in minimum temperature by 2⁰C from prevailing 8-10⁰C, during next 2-3 days in Gujarat and North Maharashtra, farmers are advised to apply light irrigation in the evening to the *rabi* crops.
- Farmers in South Konkan are advised to undertake transplanting of summer rice and finger millet. Undertake nursery sowing of summer rice in Western Ghat Zone and East Vidarbha. Undertake sowing of summer pearl millet. Farmers of Madhya Maharashtra and Marathwada are advised to start planting of *suru* sugarcane. Farmers in the State are also advised to start harvesting of already matured red gram.
- Farmers in Gujarat are advised to apply irrigation in wheat. Carry out picking of matured vegetables late in the morning.
- Under prevailing weather, there may be incidence of powdery mildew and blight infestation in cumin in Middle Gujarat Zone. Arrange for smoke / fumigation in evening to avoid it.

Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 02.01.2013

<p>Actual Mean Maximum Temperature ($^{\circ}\text{C}$) in India for the week ending 02.01.2013</p> 	<p>Mean Maximum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 02.01.2013</p> 
<p>Actual Mean Maximum temperature ranged between 32 to 36$^{\circ}\text{C}$ over many parts of Lakshadweep Islands, some parts of Coastal Karnataka, Andaman & Nicobar Islands, 20 to 24$^{\circ}\text{C}$ over many parts of Punjab, Haryana, Delhi, Rajasthan, Bihar, Jharkhand, West Bengal & Sikkim, Assam, Manipur, Mizoram, Tripura, some parts of Himachal Pradesh, Uttar Pradesh, Arunachal Pradesh, Madhya Pradesh, Chattisgarh, 16 to 20$^{\circ}\text{C}$ over many parts of Himachal Pradesh, Uttarkhand, Uttar Pradesh, some parts of Jammu & Kashmir, Punjab, Haryana, Bihar, 12 to 16$^{\circ}\text{C}$ over some parts of Jammu & Kashmir, Punjab, Himachal Pradesh, Uttarakhand, 24 to 32$^{\circ}\text{C}$ over remaining parts of the country.</p>	<p>Actual Mean Maximum temperature anomaly ranged between 2$^{\circ}\text{C}$ and above over many parts of Marathwada, some parts of North Himachal Pradesh, North & South Interior Karnataka, Telanagana, Raylaseema, Tamil Nadu, Andaman & Nicobar Islands, -4 to -2$^{\circ}\text{C}$ over many parts of Haryana, Delhi, Uttarakhand, Bihar, Sub-Himalayan West Bengal & Sikkim, Mizoram, Tripura, some parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Uttar Pradesh, West Rajasthan, Gangetic West Bengal, Assam, -6 to -4$^{\circ}\text{C}$ over many parts of Punjab, some parts of Jammu & Kashmir, Uttarakhand, Uttar Pradesh, Bihar, -2 to 2$^{\circ}\text{C}$ over rest of the country.</p>
<p>Actual Mean Minimum Temperature ($^{\circ}\text{C}$) in India for the week ending 02.01.2013</p> 	<p>Mean Minimum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 02.01.2013</p> 
<p>Actual Mean Minimum Temperature ranged between 24 to 28$^{\circ}\text{C}$ and above over most parts of Lakshadweep, some parts of Andaman & Nicobar Islands, 20 to 24$^{\circ}\text{C}$ over many parts of Tamil Nadu, Kerala, some parts of Andaman & Nicobar Islands, 4 to 8$^{\circ}\text{C}$ over most parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Uttar Pradesh, Nagaland, Manipur, some parts of Rajasthan, West Madhya Pradesh, Bihar, Mizoram, 0 to 4$^{\circ}\text{C}$ over some parts of Jammu & Kashmir, Himachal Pradesh, 12 to 20$^{\circ}\text{C}$ over remaining parts of the country.</p>	<p>Minimum Temperature anomaly ranged between 2$^{\circ}\text{C}$ and above over many parts of Andaman & Nicobar, Lakshadweep Islands, some parts Madhya Maharashtra, Marathwada, Telangana, Raylaseema, Coastal & North Interior Karnataka, Tamil Nadu, Kerala, -4 to -2$^{\circ}\text{C}$ and below over most parts of Uttarakhand, Sub_Himlayan West Bengal & Sikkim, some parts of Uttar Pradesh, Bihar, Jharkhand, Arunachal Pradesh, Assam & Meghalaya, -2 to 2$^{\circ}\text{C}$ over remaining parts of the country.</p>

Distribution of rainfall of the country during week ending on 02.01.2013

State/Districts	Actual (mm)	02.01.13 (% Dep.)
Jammu & Kashmir		
Anantnag	4.1	-74
Badgam	13.8	58
Bandipore	**	**
Baramula	25.5	-77
Doda	2.2	-93
Ganderwal	19.6	50
Jammu	29.8	116
Kargil	0.0	-100
Kathua	0.7	-96
Kistwar	**	**
Kulgam	6.7	-58
Kupwara	51.5	218
Ladakh(Leh)	1.4	-28
Poonch	0.0	-100
Pulwama	6.2	-22
Rajouri	36.2	238
Ramban	10.9	-65
Reasi	30.4	10
Samba	10.6	-23
Shopian	0.0	-100
Srinagar	7.4	-44
Udhampur	5.1	-82
Karnataka		
Coastal Karnataka		
Dakshin Kannada	1.6	44
Udupi	4.3	229
Uttar Kannada	5.1	928
North Interior Karnataka		
Bagalkote	0.0	-100
Belgaum	4.6	2187
Bidar	0.0	-100
Bijapur	0.5	-65
Dharwad	8.0	433
Gadag	0.0	-100
Gulbarga	0.0	-100
Haveri	16.3	2233
Koppal	0.0	-100
Raichur	0.0	-100
Yadgir	0.0	-100
South Interior Karnataka		
Bangalore Rural	1.7	18
Bangalore Urban	1.5	23
Bellary	0.2	-52
Chamarajnaragar	0.6	-50

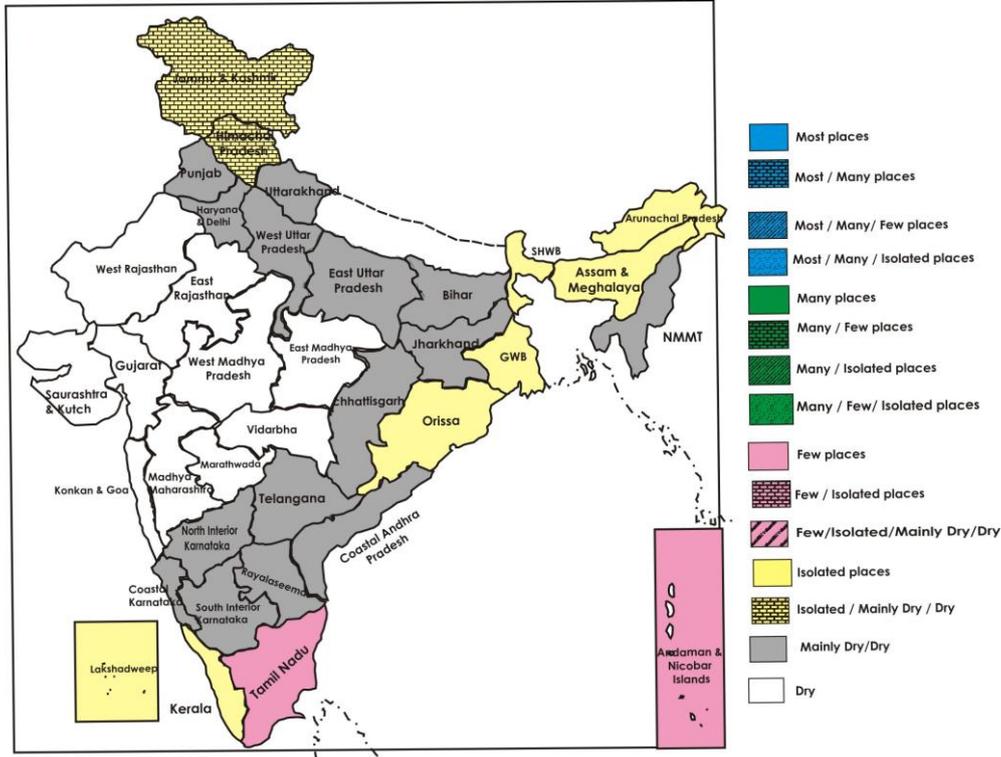
Chichballapur	1.0	-52
Chickmagalur	1.7	22
Chitradurga	0.0	-100
Davangere	0.4	-37
Hassan	3.5	66
Kodagu	0.8	-51
Kolar	4.7	290
Mandya	1.2	-14
Mysore	0.3	-73
Ramnagara	0.0	-100
Shimoga	4.3	619
Tumkur	0.8	-27
Kerala		
Alappuzha	26.0	300
Kannur	0.0	-100
Ernakulam	15.4	285
Idukki	5.3	-2
Kasaragod	0.0	-100
Kollam	8.6	-5
Kottayam	4.1	-29
Kozhikode	1.3	-43
Malappuram	8.3	1975
Palakkad	3.9	129
Pathanamthitta	32.5	249
Thiruvananthapuram	26.4	190
Thrissur	12.2	191
Wyanad	0.2	-92
Tamil Nadu		
Ariyalur	11.3	16
Chennai	41.2	158
Coimbatore	4.0	-3
Cuddalore	11.3	-23
Dharmapuri	1.9	-41
Dindigul	14.1	43
Erode	0.0	-100
Kanchipuram	38.0	273
Kanyakumari	22.2	171
Karikal	64.9	57
Karur	1.2	-74
Krishnagiri	2.2	-15
Madurai	2.8	-65
Nagapattinam	32.6	-3
Namakkal	0.6	-80
Nilgiris	8.1	-9
Perambalur	3.5	-30
Puducherry	25.9	34
Pudukottai	9.3	-17

Ramanathapuram	20.5	27
Salem	1.3	-61
Sivaganga	8.9	-11
Thanjavur	16.4	17
Theni	19.9	185
Tirunelveli	54.7	207
Tirupur	0.0	-100
Tiruvallur	37.4	413
Tiruvannamalai	14.4	162
Tiruvarur	25.1	7
Toothukudi	19.4	59
Trichy	5.8	-13
Vellore	13.0	260
Villupuram	9.6	-5
Virudhunagar	4.1	-52
Andhra Pradesh		
Coastal Andhra Pradesh		
East Godavari	0.0	-100
Guntur	0.0	-100
Krishna	0.0	-100
Nellore	22.7	191
Prakasam	4.4	12
Sirkakulam	0.0	-100
Visakhapatnam	0.0	-100
Vizianagram	0.0	-100
West Godavari	0.0	-100
Telangana		
Adilabad	0.0	-100
Hyderabad	0.0	-100
Karimnagar	0.0	-100
Khammam	0.0	-100
Mehabubnagar	0.0	-100
Medak	0.0	-100
Nalgonda	0.0	-100
Nizamabad	0.0	-100
Rangareddy	0.0	-100
Warangal	0.0	-100
Royalaseema		
Anantapur	0.3	-79
Chittoor	20.5	401
Cuddapah	9.1	406
Kurnool	1.5	69

Legends

	(20% or more) excess rainfall		(-60 to -99 %) scanty rainfall
	(-19 to +19%) normal rainfall		(-100%) no rainfall
	(-20 to -59%) deficient rainfall		** Data not available

Weather Forecast (Valid upto 0830 hours of 7th January, 2013)



Major Feature of Weather Forecast up to 0830 hours IST of 7th January, 2013

- **Fog/dense fog would occur over some parts of Punjab, Haryana & Delhi, north Rajasthan and northwest Madhya Pradesh and over many parts of Uttar Pradesh with gradual decrease in intensity and duration during next 48 hours.**
- No significant change in minimum temperatures over Indo-Gangetic Plains and a fall by about 2°C over Madhya Pradesh, Gujarat, north Maharashtra and Chhattisgarh during next 48 hours.
- Rise in maximum temperatures by 2-3°C over northwest India. However, cold day conditions would continue to prevail over many parts of Punjab, Haryana & Delhi and some parts of west Uttar Pradesh and north Rajasthan during next 48 hours.
- The maximum temperature would fall by 2-3°C over east Uttar Pradesh and Bihar which may cause cold day conditions over some parts of the same area during next 2-3 days.
- Light rain/snow would occur at one or two places over Jammu & Kashmir and Himachal Pradesh during next 24 hours.
- Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands.
- Rain/thundershowers would occur at a few places over south Tamilnadu and at one or two places over north Tamilnadu, Kerala and Lakshadweep.
- Rain/thundershowers would occur at one or two places over Jharkhand, Odisha and West Bengal & Sikkim, Arunachal Pradesh and Assam & Meghalaya.
- Mainly dry weather would prevail over rest parts of the country.

Weather Warning during next 3 days

- Dense fog (visibility 200 M or less) would occur over some parts of Punjab, Haryana, Delhi, Uttar Pradesh, north Rajasthan and northwest Madhya Pradesh during next 48 hours.
- Ground frost conditions would develop over some parts of north Rajasthan, Haryana, and adjoining west Uttar Pradesh during two nights.

Weather Outlook for subsequent 4 days up to 0830 hours IST of 11th January, 2013

- Wind chill would occur over Indo Gangetic plains due to strengthening of northwesterly winds.
- Light rain/thundershower would occur at one or two places over east and northeast India.

Zonewise Agromet Advisories

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

- **Realised Rainfall:** Mainly dry weather prevailed over the States in the region during last week.
- **Rainfall Forecast:** Rain/thundershowers would occur at one or two places over Arunachal Pradesh, Assam and Meghalaya during the period. Mainly dry weather would prevail over the remaining States.
- **Advisories:**
 - As there was no significant rain over the districts of the States of the region during last couple of weeks and no significant rain is likely to occur during the period, farmers are advised to apply irrigation to the standing crops.
 - Farmers of Assam are advised to continue transplanting of *boro* rice in the main field.
 - Farmers in Upper Brahmaputra Valley Zone of Assam are advised to continue transplanting of cauliflower, cabbage and tomato and harvesting of rice.
 - In Mild Tropical Hill Zone of Mizoram, farmers are advised to continue transplanting the seedling of cabbage, cauliflower, tomato, broccoli and knolkhol.
 - Farmers in Sub Tropical Plain Zone of Manipur are advised to continue transplanting of seedlings of cabbage, cauliflower and raising of nursery of cucurbits like sponge gourd, bitter gourd, pumpkin etc.
 - In Temperate Sub Alpine Zone of Meghalaya, farmers are advised to continue transplanting of cole crops and other winter vegetables. Farmers are also advised to undertake nursery preparation for *boro* rice.
 - As minimum temperature is expected to go below 10⁰C in Kiphire district of Nagaland, growth of banana may be affected under this weather condition. Farmers are advised to apply light irrigation at night or arrange smoking.
 - In Mild Tropical Plain Zone of Tripura, farmers are advised to undertake nursery raising of *boro* rice. Germination of may be delayed due to cold weather. To enhance germination, seeds may be kept in sunlight to increase the temperature.
 - Suitable varieties of the crops are mentioned in Annexure II.
 - Due to favourable weather conditions, there is chance of attack of aphids and saw fly on rapeseed and mustard in North Bank Plain Zone of Assam; farmers are advised to apply Dimethoate 30EC or Chloropyriphos @ 2 ml / litre of water.
 - Due to favourable weather conditions, there is chance of attack of saw fly and cut worm in toria in Upper Brahmaputra Valley Zone of Assam; farmers are advised to apply Quinalphos @ 3 ml per litre of water during evening hours to control saw fly and cut worm.
 - Due to prevailing cloudy weather conditions in Mild Tropical Plain Zone of Tripura, there is chance of attack of aphids in toria at flowering stage; farmers are advised to spray Monocrotophos @ 2 ml per liter of water. Due to prevailing foggy condition fungal diseases like early blight in potato may occur. Mancozeb (Indofil M-45) @ 2.5 g per liter of water may be sprayed in the potato field at least twice at an interval of 15 days as precautionary measures. Due to prevailing foggy condition there may be increase of population of White flies in tomato. These flies are responsible for leaf curl diseases in tomato and brinjal. Affected plant may be uprooted from the field or otherwise if the attack is more, Monocrotophos @ 3 ml per liter of water or Imidacaloprid @ 2 g per liter of water may be sprayed.
 - Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
 - In Central Brahmaputra Valley Zone of Assam, farmers are advised to protect poultry birds from cold by using electric bulb (300 Watt for 100 sq. feet) to prevent *Coryza* disease.
 - In Upper Brahmaputra Valley Zone, North Bank Plain Zone, Lower Brahmaputra Valley Zone and Central Brahmaputra Valley Zone of Assam, farmers are advised to vaccinate poultry against Ranikhet disease.
 - Due to prevailing weather conditions in Sub Tropical Hill Zone of Arunachal Pradesh, farmers are advised to protect the poultry from cold by using gunny bags / plastic sheets around the poultry shed during night, provide heat by lighting 100 W bulb @ 1 bulb per 20 newly born chicks. Maintain warm conditions in the shed of pig/piglet and cattle.
 - Farmers in Mild Tropical Hill Zone of Mizoram are advised to provide additional bulbs in poultry, heating system in cattle shed or tie gunny bags on the back of cattle to protect against cold conditions.
 - In Mild Tropical Plain Zone of Tripura, farmers are advised to protect poultry birds and pig from cold by keeping shed warm.
- **Pisciculture**
 - Farmers in Central Brahmaputra Valley Zone, Upper Brahmaputra Valley Zone, Lower Brahmaputra Valley Zone and North Bank Plain Zone of Assam are advised to apply chemicals Potash @ 4-5 mg / litre of water, Sukrena WS @ 1 litre per bigha of water, Lime in required doses to protect the fish population against various bacterial diseases prevalent in winter season.

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

- **Realised rainfall:** Mainly dry weather prevailed over the region.
- **Rainfall Forecast:** Rain/thundershowers would occur at one or two places over Jharkhand, Orissa and West Bengal and Sikkim. Mainly dry weather would prevail over rest parts of the region.
- **Weather Forecast:** The maximum temperature would fall by 2-3°C over Bihar which may cause cold day conditions over some parts of the state during next 2-3days.
- **Advisories:**
 - In view of low minimum temperature in Darjeeling district of SHWB, Sikkim and Purnea district of West Bengal, farmers are advised to apply light irrigation in standing crops to avoid cold / frost injury.
 - Farmers are advised to apply irrigation to the standing crops in Jharkhand, Bihar, Orissa, West Bengal and Sikkim as there was no significant rainfall in these States and no significant rainfall is likely to occur during next three days.
 - In North West Alluvial Plain Zone of Bihar, farmers are advised to apply irrigation to maize, potato, tobacco, oilseed, rajmah and vegetable crops as there was no significant rainfall during previous weeks and no significant rainfall is likely during next three days. Apply irrigation to timely sown wheat crop which is in 30-40 days stage.
 - In South Bihar Alluvial Zone, farmers are advised to undertake sowing of late sown wheat. Apply first irrigation to timely sown wheat which are about 21-25 days old and are in the CRI stage. Give irrigation to gram, maize, chilli and potato. Harvest fodder crop and apply irrigation after harvesting.
 - In North East Alluvial Zone of Bihar, farmers are advised to complete nursery sowing of *boro* rice.
 - Farmers of Western Undulating Zone of Orissa are advised to complete sowing of sunflower by first week of January. In irrigated belts sowing may be continued upto last week of January. Nursery raising may be started with medium and short duration rice varieties.
 - Farmers of North Eastern Plateau Zone of Orissa are advised to prepare the land for sowing of sunflower where the harvesting of rice is completed.
 - Farmers of Mid Central Table Land Zone of Orissa are advised for complete sowing of groundnut.
 - Farmers of Eastern Ghat High Land Zone of Orissa are advised to complete the sowing of coriander and linseed.
 - Farmers of East and South Eastern Coastal Plain Zone are advised to complete nursery sowing of summer rice in this week if not sown earlier.
 - Farmers of North Eastern Ghat Zone are advised to undertake sowing of coriander due to favourable weather. Grow high yielding varieties.
 - In North Central Plateau Zone, wheat crop is at Crown Root Initiation stage, farmers are advised to irrigate the crop at this critical stage. First top dressing may be given with 35 Kg urea per acre after irrigation. Undertake transplanting of onion. As the night temperature was 6-7⁰ C, cover the vegetable seedling by paper packets during night time.
 - Farmers in Central and North Eastern Plateau Zone of Jharkhand are advised to prepare nursery for sowing of onion and prepare field for sowing of long gourd, round gourd, bitter guard, sponge gourd, cucumber, water melon and musk melon. For timely sown wheat, farmers are advised to undertake intercultural operation to control weed and apply rest dose of urea @ 52 kg per acre after irrigation
 - Undertake first weeding and intercultural operation in 25 days after sowing for green pea as no significant rainfall is likely during next three days.
 - Farmers in Coastal Saline Zone of West Bengal are advised to complete the land preparation for planting of potato and transplanting of chilli. Farmers are also advised to undertake land preparation for sowing of sunflower.
 - Farmers in New Alluvial Zone of West Bengal are advised to irrigate mustard as there was no significant rainfall occurred during previous two weeks and no significant rainfall is likely during next three days.
 - Farmers in Laterite and Red Soil Zone of West Bengal are advised to start nursery bed preparation of *boro* rice.
 - Farmers in Old Alluvial Zone of West Bengal are advised to give irrigation to the timely sown wheat crop and apply first top dressing of urea.
 - Farmers in Terai Zone of West Bengal are advised to irrigate the wheat and mustard crop as there was no significant rainfall occurred during previous two weeks and no significant rainfall is likely during next three days.
 - Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
 - In East and South Eastern Coastal Plain Zone and North Eastern Ghat Zone of Orissa, mustard crop has been found to be affected by *Crociodollem*a and aphids. Farmers are advised to spray 400 ml Dimethoate per acre for controlling aphids and 200 ml Ethofenprox or Deltamethrin in 200 litre water per acre for *Crociodollem*a.
 - In East and South Eastern Coastal Plain Zone of Orissa, pod borer in gram and pea, and seedling rot on groundnut has occurred. Farmers are advised to spray 50 ml Imidacloprid or 400 ml Dimethoate or Metasystox in 200 litre water per acre for gram, pea and 2 g Bavistin in 1 litre water at 2- leaf stage for groundnut. Infestation of stem borer has been found in maize crop. Farmers are advised to release 2000 eggs of *Trycogram*a *chilonies* twice at 10 days interval. If the pest is not controlled by the above method, go for spraying of 2 ml

Chloropyrifos or Monocrotophos or Quinalphos in 1 litre water or go for whorl application of granular Carbofuran in the leaf whorls. Bacterial wilt has been occurred in brinjal and tomato, spray 1 g streptomycin in 10 litre water.

- Due to prevailing weather, infestation of thrips and aphid have been found in groundnut in East and South Eastern Coastal Plain Zone of Orissa, spray 400 ml Dimethoate or 50 ml Imidachloprid in 200 litre water per acre.
- Due to prevailing weather condition in North Eastern Plateau Zone of Orissa, incidence of powdery mildew in mustard is likely to increase, so farmers are advised to apply 1 kg Sulfex/Ac for their control.
- Due to prevailing weather condition in New Alluvial Zone of West Bengal, white streak disease may be observed in pea, masur and Bengal gram. To control them apply Sulphex or Dinocap (2.5 gm) per lt of water.
- Due to possibility of low temperature and fog in Terai Zone of West Bengal, there may be chance of late blight attack in potato, spray Mancozeb (2 gm /lt of water) and Blitox (4 gm/lt of water) alternately at 10-12 days interval by completely wetting the leaves.
- In North West Alluvial Plain Zone of Bihar, weather is likely to remain favorable for spread of fungi borne diseases in lentil and mustard crops, farmers are advised to spray Endophil M-45@2.5gm per litre of water in lentil crop and Blitox@3 gm per litre of water in rape seed and mustard.
- **Animal Husbandry**
 - As minimum temperature will be low till Saturday, farmers in North Eastern Coastal Plain Zone and North Central Zone of Orissa are advised to provide warm and comfortable housing to animals. Vaccinate the animals against FMD.
 - The farmers of Jharkhand are advised to take proper care and management in winter. Vaccinate animals against FMD. For domestic animals and birds take preventive measures to protect from cold by providing protein rich feed.
 - Low temperature condition may adversely affect the milk production and performance of domestic animals. Farmers in Bihar are advised to give protein enriched diet to the animals and keep them in shed. Their bed should be dry and should be changed regularly.
- **Pisciculture**
 - As the winter is mild to severe, there is a possibility of “EUS” disease in fish. Farmers in North Central Plateau Zone of Orissa are advised to apply ‘Cifax’ @ 400 ml mixed with 40 litre of water in one acre pond area. Stages of major crops are mentioned in Annexure I.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Dry weather prevailed over Gujarat, Maharashtra and Goa State.
- **Rainfall Forecast:** Dry weather would prevail over the region.
- **Weather Forecast:** Minimum temperatures fall by 2^oC over Gujarat and north Maharashtra during next 2-3 days.
- **Advisories:**
 - As there was rain in some pockets of Buldhana, Akola, Wardha, Gondia, Bhandara and Nanded districts in Maharashtra, farmers are advised to postpone irrigation to the sanding *rabi* crops in these regions.
 - As dry weather is expected to continue with fall in minimum temperature by 2^oC from prevailing 8-10^oC, during next 2-3 days in Gujarat and North Maharashtra, farmers are advised to apply light irrigation in the evening to the *rabi* crops.
 - As mainly dry weather prevailed during last week and is also likely to prevail during next 3 days in remaining parts of Maharashtra, farmers in Madhya Maharashtra, Marathwada and Vidarbha are advised to apply irrigation to the *rabi* jowar, wheat, safflower, sugarcane, vegetables and orchard crops.
 - Farmers in South Konkan are advised to undertake transplanting of summer rice and finger millet seedlings. As dry weather is prevailing and gram is at flowering / pod formation stage, farmers are advised to apply irrigation.
 - Farmers in Western Ghat region are advised to complete preparatory tillage for sowing of summer pearl millet and to undertake nursery sowing for summer rice.
 - Farmers in East Vidarbha are advised to undertake nursery sowing of improved variety of summer rice.
 - Prevailing weather is favourable for planting of *suru* sugarcane in Madhya Maharashtra.
 - As mainly dry weather is prevailing, farmers are advised to start harvesting of already matured red grams.
 - In view of prevailing dry weather with expected fall in minimum temperature by 2^oC from prevailing 8-10^oC, during next 2-3 days in Bhal and Coastal Zone of Gujarat, farmers are advised to apply light irrigation in the evening to the *rabi* crops like cotton, wheat, castor, mustard, chickpea, vegetables and orchard crops. Availing dry weather condition, carry out weeding in cumin and mustard.
 - As cold and dry weather is expected to prevail in North West Zone of Gujarat during next 2-3 days, apply light irrigation to wheat, vegetables and orchard crops. Taking the advantage of dry weather, carryout inter-cultural operation in cumin.

- As cold and dry weather is expected to prevail during next 2-3 days in North Gujarat Zone, farmers are advised to apply light irrigation to wheat, vegetables, orchard crops and potato to minimize the cold injury. In view of prevailing dry weather, carry out intercultural operations in cumin, fennel etc. and also undertake earthing up operations in potato.
- As dry weather is prevailing and wheat is at active tillering / booting stage in Middle Gujarat Zone, farmers are advised to apply irrigation in timely sown wheat. Taking advantage of dry weather, carry out picking of matured vegetables late in the morning.
- In view of prevailing dry weather conditions, apply irrigation to vegetable crops like chilli, brinjal and tomato in South Saurashtra Zone of Gujarat.
- Taking advantage of dry weather in South Gujarat Heavy Rainfall Zone, farmers are advised to carry out picking of matured cotton bolls and weeding and intercultural operations in early sown crops. Also provide irrigation in standing crops.
- Varieties of *rabi* crops are mentioned in Annexure II.
- Due to cloudy weather conditions, there may be attack of pod borer in gram in Western Maharashtra Scarcity Zone; spray Chlorpyrifos 25 % @ 25 ml or Profenofos 40% @ 25 ml in 10 litres of water.
- Considering the cloudy weather, there is possibility of incidence of aphids in wheat in Western Ghat region; spray Imidacloprid @ 5 ml per 15 litres of water.
- Under prevailing weather, there may be incidence of powdery mildew and blight infestation in cumin in Middle Gujarat Zone. Arrange for smoke / fumigation in evening to avoid it.
- Stages of the crops are mentioned in Annexure I.
- **Animal Husbandry**
 - Cover the poultry house with cloth / plastic sheets to protect the poultry birds from cold wind in Middle Gujarat Zone.
 - Keep young calves indoors during night time to avoid cold stress.

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

- **Realised Rainfall:** Significant rainfall occurred in Baramula, Jammu, Kupwara, Rajouri, Reasi districts of Jammu & Kashmir and mainly dry / dry weather prevailed over rest of the region.
- **Weather Forecast:** Fog/dense fog would occur over some parts of Punjab, Haryana & Delhi, north Rajasthan and over many parts of Uttar Pradesh with gradual decrease in intensity and duration during next 48 hours. Mainly dry weather would prevail over rest of the States in the region.
- **Warning:** Dense fog (visibility 200 M or less) would occur over some parts of Punjab, Haryana, Delhi, Uttar Pradesh, north Rajasthan during next 48 hours. Ground frost conditions would develop over some parts of north Rajasthan, Haryana, and adjoining west Uttar Pradesh during two nights.
- **Advisory:**
 - Farmers in North Rajasthan, Haryana and adjoining West Uttar Pradesh are advised to apply light and frequent irrigation / sprinkling to the standing crops and arrange for smoking around the field to safeguard from cold / frost injury.
 - District level weather forecast indicates minimum temperature below 4⁰C in number of districts of Punjab, Himachal Pradesh, Uttarakhand and Jammu, which may cause occurrence of ground frost. Therefore, farmers in these regions are also advised to monitor the crops and undertake protective measures, as mentioned above, to safeguard the crops.
 - Due to prevailing extreme low temperature conditions in Valley Temperate Zone of Jammu & Kashmir, farmers are advised to stop sowing of vegetables in the fields during the period. Undertake mulching in already sown knol-khol, cabbage and root crops under high frost conditions.
 - In view of dry weather in Barbar & Tarai Region and Hilly Zones of Uttarakhand, farmers are advised to harvest matured toria crop.
 - Undertake sowing of spinach, coriander, fenugreek in Delhi under the present weather conditions. Also present temperature is favourable for transplanting of onion and seedlings of late varieties of cabbage, cauliflower and knol-khol on the ridges.
 - Farmers in Low Hills Subtropical Zone of Himachal Pradesh are advised to continue sowing radish (var: Pusa Himani) and planting of onion and in High Hills Temperate Dry Zone, farmers are advised to cover the nursery with thatch house of grass or leaves to protect the plants from frost.
 - Farmers in Mid Hills Subhumid Zone of Himachal Pradesh are advised to undertake training and pruning in plum and other fruit crops and apply Chaubatia paste after pruning at the cutting ends of the branches before the occurrence of snowfall.

- Due to high humidity and foggy weather conditions in Western Zone in Haryana there are chances of infestation of white rust and *Alternaria* blight in mustard crop and due to humid weather conditions blight incidence may occur in potato and tomato crops; farmers are advised to undertake proper plant protection measures.
- Due to high relative humidity in Delhi, incidences of blight may occur in potato and tomato. If symptoms appear, spray Carbendazim @ 1.0g / litre of water or Dithane-M-45 @ 2.0g / litre of water.
- In Sub-Tropical Zone of Jammu & Kashmir, weather conditions are congenial for aphids in early sown mustard crop under such situation farmer are advised to spray the crop with Chloropyripous@0.05% or Metasystox@0.03% during clear weather.
- Due to prevailing foggy weather conditions in Arid Western Plain Zone in Rajasthan, incidences of powdery mildew in mustard and blight in cumin may occur. Farmers are advised to monitor the crops for the diseases and undertake spraying of Dithane M- 45 @ 2 g/litre of water, if the damage crosses ETL.
- **Animal Husbandry**
- In view of prevailing low minimum temperatures in Punjab and Haryana, farmers are advised to cover animals with Jhull (Jute cloth). Arrange curtains at the windows in the poultry sheds. Use heaters as the temperature inside the poultry shed should not be below 60°F.
- In Rajasthan, farmers are advised to keep milch animals indoors and use curtains to avoid cold stress. Supplement hay with berseem, alfalfa or mustard leaves. Wrap jute bag around animal back. Keep animals in sun light.
- In Barbar&Tarai region of Uttarakhand farmers are advised to keep all animals inside the shed due to expected cold in the night. Maintain proper light and temperature inside shed.
- In Sub-Humid and Sub-Tropical Zone of Uttarakhand, farmers are advised to take proper care of cattles during winter and keep changing their litters regularly to avoid hygienic problems.

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

- **Realised Rainfall:** Chennai, Kancheepuram, Kanyakumari, Karaikal, Nagapattinam, Puducherry, Ramanathapuram, Thirunelveli, Tiruvallur and Thiruvarur in Tamil Nadu, Chittoor in Rayalaseema, Nellore in Coastal Andhra Pradesh, Alappuzha, Thiruvananthapuram and Pathanamthitta districts in Kerala received significant rainfall during last week. No significant rainfall occurred over the remaining parts of the region.
- **Rainfall Forecast:** Rain/thundershowers would occur at a few places over South Tamil Nadu and at one or two places over North Tamil Nadu and Kerala during next three days. Weather would be mainly dry in the remaining States of the region.
- **Advisories:**
 - As Chennai, Kancheepuram, Kanyakumari, Karaikal, Nagapattinam, Puducherry, Ramanathapuram, Thirunelveli, Tiruvallur and Thiruvarur in Tamil Nadu, Chittoor in Rayalaseema, Nellore in Coastal Andhra Pradesh, Alappuzha, Thiruvananthapuram and Pathanamthitta districts in Kerala received significant rainfall during last week, postpone irrigation to the standing crops in these districts. Apply irrigation to the standing crops in the remaining parts of the region.
 - In view of light to moderate rainfall is expected in the Cauvery Delta zone of Tamil Nadu, farmers are advised to apply input like fertilizer to rainfed rice and cotton crops and sow rice fallow pulses like blackgram greengram under rice fallow condition in early samba rice fields.
 - As moderate rainfall is expected in the coming days in the South zone of Tamil Nadu, farmers are advised to undertake top dressing of fertilizers to rainfed cotton and postpone irrigation to irrigated crops.
 - As light rainfall occurred during last week and rainfall is expected in the next 3 days in the High Altitude Hilly zone of Tamil Nadu, farmers are advised to apply mulching to conserve moisture in the standing crops.
 - Farmers in the High Altitude Zone of Andhra Pradesh are advised to continue transplanting of *rabi* rice in the main field as mainly dry weather is going to prevail for the next few days. They are also advised to maintain 2-5 cm of water in the already transplanted rice fields.
 - Farmers in the Northern Telangana zone of Andhra Pradesh are advised to undertake sowing for sesame, sunflower and cowpea. Due to dry weather prevailing in the zone the farmers are advised to irrigate the standing *rabi* crops.
 - Farmers in the North Coastal zone of Andhra Pradesh are advised to continue nursery sowing of rice.
 - Farmers in Problem area zone in Kerala are advised to sow vegetable crops like cabbage, cauliflower, bhindi and amaranthus utilizing the realized rainfall.
 - Farmers in the Coastal Zone of Karnataka and Southern Transition Zone are advised to undertake sowing of rice fallow pulses like cowpea, green gram, black gram with short duration varieties using residual moisture. Farmers in Southern transition zone are also advised to prepare nursery and undertake sowing of summer rice.
 - Farmers in the Southern Dry Zone of Karnataka are advised to drain out water from rice field before 15 days of harvesting of paddy crop and undertake harvesting on sunny days.
 - Farmers in Uttar Kannada district of Coastal Karnataka are advised to undertake the sowing of pulses like black gram, green gram and also the green manure crop like sunhemp to utilizing rainfall.
 - Farmers in the North Dry Zone of Karnataka are advised to undertake mulching with the dried leaves in between the rows in *rabi* sorghum to conserve the soil moisture.

- As the day time temperature increased to 33°C in the Western zone of Tamil Nadu, the weather is conducive for leaf folder incidence in paddy and gram caterpillar in Bengal gram. Hence, farmers are advised to spray propenaphos @ 1000 ml/ha to control leaf folder incidence and set up pheromone traps @ 12/ha in to control gram caterpillar in Bengal gram.
- In Southern Zone of Tamil Nadu, incidence of sucking pests like mites, whitefly and thrips in chillies and sheath blight in rice may occur due to cloudy conditions and low temperature with high RH. Farmers are advised to undertake plant protection measures.
- Due to prevailing high humidity and low temperature in the North Western zone of Tamil Nadu, rice crop may get affected by leaf folder and stem borer pests. If the infestation is higher showing economic loss, farmers are advised to spray propanophos @ 2ml/litre of water as a spray.
- Incidence of *Helicoverpa armigera* in Bengal and Red gram was noticed in some parts of Scarce Rainfall zone of Andhra Pradesh and it may aggravate due to increase in minimum temperature during the next few days. Farmers are advised to spray Quinalphos@2.0ml or Acephate@ 1.5 gm per litre of water for control of *Helicoverpa armigera* in pulses.
- Prevailing weather is congenial for the incidence of Thrips and Tikka leaf spot in groundnut in the Southern Telangana zone of Andhra Pradesh. Farmers are advised to spray Dimethoate @ 2 ml per litre of water for control of thrips and Mancozeb @ 2.0g + Carbendazim @ 1.0g or Chlorothanil @ 2.0 g or Hexaconazole @ 1.0 ml per litre of water for control of Tikka leaf spot.
- Farmers in the Central zone of Kerala are advised to monitor the sigatoka disease in banana and rice bug in rice field and undertake plant protection measures, if noticed. They are also advised to provide proper irrigation to banana crop in this month.
- In the Problem area zone of Kerala, weather condition is favourable for thrips in Punja rice. Farmers are advised to keep regular watch over the fields and if the attack is found, they are advised to drain off the field completely. In the fields where dry condition has occurred it is favourable for the attack of Army worms in *Punja* rice. Ensure standing water of at least 1.5 cm in the field in order to prevent the larval migration from one field to another. Chemical control may be needed when populations are extremely high. Apply *Cartap* 10 kg/acre may control the Army worms. It may be applied along with fertilizers.
- **Livestock**
 - Outbreak of FMD is expected in this weather in the Problem Area zone of Kerala. Farmers are advised to vaccinate the animals.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Mainly dry weather prevailed over the region.
- **Weather forecast:** Fog/dense fog would occur over some parts of northwest Madhya Pradesh with gradual decrease in intensity and duration during next 48 hours. Minimum temperatures would fall by 2°C over Madhya Pradesh and Chhattisgarh during next 2 days. Mainly dry weather would prevail over the region.
- **Advisories:**
 - Due to prevailing low temperature conditions in many parts of Madhya Pradesh and Chhattisgarh, farmers are advised to apply light and frequent irrigation / sprinkling to the standing crops and arrange for smoking around the field to safeguard from cold injury.
 - As dry weather is prevailing over Satpura Plateau Zone, Malwa plateau Zone and Kymore Plateau and Satpura Hill Zone in Madhya Pradesh, farmers are advised to apply second irrigation to wheat after 40-45 DAS. Farmers in Kymore Plateau and Satpura Hill zone are also advised to apply irrigation to vegetable crops.
 - Foggy weather expected during next 3 days in Bundelkhand zone of Madhya Pradesh hence farmers are advised to monitor mustard crop against attack of aphids. If the incidences of aphids is observed, spray of Methyl demeton 25 E.C. or Dimethoate 30 E.C. @ 2.0 ml. per litre of water to control.
 - Present weather condition is favourable for infestation of thrips in groundnut and lathyrus in Chhattisgarh Plain Zone. Farmers are advised to spray Metasystox 25 EC or Dimethoate 30 EC @ 1.5-2 ml/l water.
 - Present weather conditions are favourable for planting of onion during this week in Chhattisgarh Plain Zone; farmers are advised to complete planting of onion.
 - In Chhattisgarh Plain Zone at present the pigeon pea is at pod filling stage and due to partial cloudy weather during the last few days the infestation of pod borer may occur. Farmers are advised to keep watch on the crop and if the infestation is above ETL spray Polytrin C@ 1L/ha or Endoxacarb @ 300 ml/ha.
 - Present weather condition is favourable for incidence of aphids in mustard, radish and beans and is likely to increase in Chhattisgarh Plain Zone, farmers are advised to keep keen watch on the crop and if the infestation is above ETL spray Carbaril @ 2 kg/ha.
- **Animal Husbandry & Poultry**
 - Farmers in Malwa Plateau Zone of Madhya Pradesh are advised to maintain proper temperature conditions in cattle sheds as temperature is low.

Annexure I

Major Crops

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

- Sugarcane (grand growth / harvesting), *boro* rice (nursery raising / transplanting), cole crops (transplanting / vegetative / head formation / maturity / harvesting), wheat (CRI / tillering), rapeseed, mustard (flowering / siliqua formation), potato (vegetative / tuber formation), tomato (flowering / fruiting), *rabi* pulses like lentil, rajmah, pea, lathyrus (vegetative / flowering / pod formation), *rabi* maize (vegetative) in Assam.
- *Rabi* maize (vegetative), cauliflower, cabbage (vegetative / head formation / harvesting), brinjal (fruiting / maturity), tomato (flowering / fruiting/maturity), potato (vegetative / tuber formation), pea (vegetative), mustard (flowering / pod formation) in Arunachal Pradesh.
- Potato (vegetative), pea (vegetative / flowering), cauliflower, cabbage (transplanting / vegetative), mustard (vegetative), onion / garlic (vegetative), cucurbits (nursery raising) in Manipur.
- *Rabi* maize (vegetative), *boro* rice (nursery preparation), cole crops (transplanting / vegetative / head formation), turmeric, ginger (rhizome formation / harvesting), pea, mustard (vegetative / flowering), toria (vegetative / flowering / pod formation), *Dolichos* / French bean (flowering / pod formation) in Meghalaya.
- Cole crop (transplanting / vegetative), beans (flowering / flowering), pea (sowing) in Mizoram.
- Cabbage (head formation), mustard (flowering / siliqua formation), tomato (vegetative / flowering) in Nagaland.
- *Boro* rice (nursery sowing), toria (flowering / pod formation), tomato (flowering / fruiting / harvesting), potato (vegetative / tuber formation), cole crops (vegetative / head formation), banana (vegetative / harvesting) in Tripura.

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

- Gram, peas, sunflower, maize (sowing), sugarcane (sowing), potato, lentil, yellow mustard (vegetative), *kharif* rice (harvesting), urad, arhar, bajra etc. (grain formation), mango, litchi, guava (early vegetative / vegetative), winter vegetables (sowing), wheat (crown root initiation) and toria (vegetative) in Bihar.
- Wheat (CRI and tillering), potato (Vegetative to harvesting), pigeon pea (flowering and pod formation), onion (Seedling to transplanting), vegetables (vegetative, flowering, harvesting), mustard, gram and linseed, lentil, pea (vegetative) in Jharkhand.
- Sugarcane (grand growth), banana (vegetative), rice (maturity/harvesting), mustard, sunflower, sesame, cow pea (sowing/vegetative), groundnut(sowing/vegetative), fruit crops (planting / seedling), rice (land preparation),wheat (CRI),maize (vegetative) in Orissa.
- *Boro* rice (seedbed preparation/sowing/seedling), wheat (sowing/CRI), vegetable(vegetative/flowering), Sunflower (sowing), potato (sowing to emergence stage), tomato (flowering/fruiting), Mustard (flowering/pod initiation stage) in West Bengal.
- Ginger (germination / early vegetative), orange (transplanting / seedling), large cardamom (vegetative / primary flowering / secondary flowering), vegetables (vegetative), rice (grain formation / maturity) in Sikkim.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- Sugarcane (*suru*) (active tillering in Madhya Maharashtra and Marathwada), sugarcane *adsali* (cane maturity / harvesting), sugarcane (new *adsali*) (early tillering), sugarcane (new pre seasonal) (early tillering), *suru* sugarcane (planting), red gram (pod maturity), *rabi* jowar (flag leaf initiation / flowering in Madhya Maharashtra and Marathwada), safflower (floral bud initiation / flowering in Madhya Maharashtra and Marathwada), maize (vegetative in Marathwada and Madhya Maharashtra), gram (branching / flowering), wheat (crown root initiation / tillering) in Maharashtra.
- Summer rice (nursery sowing / seedling), wheat (tillering / booting), gram (vegetative / pod formation), cumin (branching / flowering), cotton (boll maturity / picking), sugarcane (planting / early vegetative), castor (spike maturity / harvesting), winter vegetables (vegetative / flowering / fruiting), chilli, brinjal (fruiting / harvesting), cauliflower (vegetative / head formation), potato (vegetative / tuber formation), mustard (vegetative / flowering), jowar (flowering), *rabi* fennel (vegetative / flowering), fenugreek (vegetative), maize (vegetative / tasseling) in Gujarat.

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

- Wheat (early tillering), apple (new planting), pea, radish (sowing) in Himachal Pradesh.
- Cauliflower, cabbage, broccoli and tomato (vegetative), carrot, pea (vegetative), sarson saag, bathua, radish, spinach, fenugreek, coriander and turnip (vegetative), mustard (vegetative), onion (vegetative), wheat (CRI stage) in Delhi.
- *Rabi* cereal (wheat), pulses (pea and lentil), brown sarson, fodder oat (in dormant stage in Valley Temperate zone (Srinagar), sunflower (early vegetative / vegetative), garlic, cucurbits, okra (seedling), potato (sowing), radish,

spinach (sowing), carrot, turnip (sowing), onion, cole crops (nursery sowing / transplanting), mustard (late sown-flowering, normal/ early sown- pod formation), brown sarson (rosette stage), wheat (late sown- emergence / CRI stage, normal/early sown- tillering / jointing stage), barley (CRI / jointing stage), pulses (pea, lentil, gram) (vegetative) in Jammu & Kashmir.

- Wheat (CRI/tillering), arhar and ginger (vegetative), autumn sugarcane (vegetative), mustard, yellow sarson, rai, brinjal, chilli, lady's finger, barley, oat, chick pea, lentil (vegetative / flowering), toria (maturity/ harvesting) in Uttarakhand.
- Wheat (CRI/tillering), late sown wheat (sowing/germination), barley (emergence/ CRI/tillering), sugarcane (vegetative / ripening), masoor, alsi, jai (vegetative), fodder barseem (vegetative/1st cutting), vegetable crops - radish, carrot, onion, garlic (vegetative), mustard, pea, lentil & gram, maize (vegetative) in Uttar Pradesh.
- Wheat (tillering / jointing), sugarcane (harvesting), mustard (flowering) in Punjab.
- Wheat (tillering), sugarcane (harvesting), mustard (flowering / seed formation), barseem (sowing/vegetative) in Haryana.
- Cauliflower, cabbage, onion (transplanting / early vegetative), sugarcane (maturity), maize (maturity), mirch, simla mirch, guar, vegetable (tinda, water melon, pumpkin, cucumber, coriander, bhendi, ridge gourd) (sowing / germination / seedling), potato (tuberization), green gram (vegetative), moong (vegetative), early sown mustard (vegetative / flowering), wheat (late sowing /germination/ CRI), fruits and vegetables (picking / harvesting), barley (vegetative) in Rajasthan.

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

- Sunflower (flowering), cowpea (vegetative), pigeon pea (pod filling/harvesting), cotton (boll opening to picking), chilli (fruiting/picking), October sown wheat (jointing), jowar (flowering), safflower (branching), red gram (pod filling), bengal gram (pod filling), vegetables (fruiting/harvesting) in Karnataka.
- Vegetables (vegetative/fruit development/maturity), late sown groundnut (pod formation / pod filling), *rabi* groundnut (vegetative/flowering), *rabi* maize (knee high stage), sunflower (vegetative /flowering), pulses (sowing/vegetative), *rabi* jowar (early vegetative/vegetative), Bengal gram (pod formation/pod maturity), red gram (pod formation/ pod maturity), Bt. cotton (boll bursting/picking) and *rabi* paddy (nursery sowing/transplanting) in Andhra Pradesh
- Coconut (flowering / nut development), punja rice (early vegetative), cardamom (harvesting), rubber (tapping), vegetables (harvesting), mundakan paddy (ripening), cardamom/ vegetables (new planting) in Kerala.
- Late samba rice (tillering), samba rice (flowering/grain formation/ maturity), thaladi rice (tillering/panicle initiation), sorghum (vegetative), cowpea (pod bearing), rainfed groundnut (flowering), pulses (harvesting), cotton (boll maturity), maize (tasseling), irrigated maize (vegetative/flowering), sugarcane (maturity), new groundnut and gram (weeding), vegetables (fruiting) in Tamil Nadu.

CENTRAL INDIA [M.P., CHHATTISGARH]

- Ladies finger, cucurbits (flowering/fruiting), pigeon pea (pod formation), potato (early vegetative), sugarcane (planting), *rabi* vegetables (transplanting/early vegetative), wheat (crown root initiation / tillering), maize (vegetative), fodder crops (sowing), chickpea, lentil, mustard, linseed (pod / seed formation) in Madhya Pradesh.
- Sugarcane (planting/vegetative), pigeon pea, groundnut (pod filling), sesame (late vegetative), ginger, turmeric, papaya, mango and guava (vegetative), onion (planting), vegetables (transplanting / vegetative), millet (vegetative), wheat (late sown), niger, kulthi (land preparation / sowing) in Chhattisgarh.

Annexure II

List of Varieties

Assam

Boro rice: Mahsuri, IR-50, Bishnuprasad, Jyotiprasad, Kanaklata and Dinanath, *Boro* 1, 2, 3, Kalinga-3, Joymati, Swarnav.

Cauliflower: Early Kunwari, Pusa Katki, Pusa Deepali.

Cabbage: Golden Acre, Pride of India, Pusa Mukta (Sel – 8), Japanese, Pusa Synthetic, Pusa Snowball and for late maturing varieties Snowball-16, Pusa Snowball, K-1 and Hissar 1 etc.

Tomato: Punjab Chhuhara, S-12, Punjab Kesri, Pusa Early Dwarf, Sioux, Pusa Ruby, VC- 48-1, Arka Abha (BWR-1).

Brinjal: Pusa Kranti, Pusa Purple Long, Pusa Purple Round, Pusa Vairab, Pant Samrat etc.

Manipur

Cauliflower: White Shot.

Pea: Arkel, Azad Pea.

Meghalaya:

Cabbage: H-139 and Pride of India.

Cauliflower: Pusa Meghna, Pusa Sharad and Meghalaya Local.

Broccoli: Puspa, Aiswarya and Fiesta.

Tripura:

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

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

Broccoli: Everest, Ayeshwaria.

Orissa

Groundnut: Smruti and JL-24, TMV-2, Devi

Sunflower: Morden, Sunrise, Surya, TNAUSUF-7, DRSF 108, DRSF 113 and Hybrid varieties like Jwalamukhi, KBSH-1, KBSH-3, Sungene 85 and MSFH 1, MSFH 8, MFSH 17, PAC 36, DRSH 1, Pro.Sun 09.

Coriander: CO-1, CO-2, CO-3, Swati, Sadhana, Ram Selection and Udi.

Rice: Lalat, MTU-1010, MTU-100, Parijat, Khandagiri, Naveen.

West Bengal:

Boro Rice : Supriya, Jamini, Bhupen, IET-2233, Satabdi (IET-4786), Kitish (I.E.T.-4094), Ratna, Bikash etc.

Potato : Chandramukhi, Joyti.

Jharkhand:

Onion : Pusa Red, Pusa Ratnar, N-53, Arka Nikatan, Arka kalyan, Agrifound Dark Red.

Bihar

Wheat: Late sown wheat varieties: HUW234, PBW373, HW2045, H.D.-2643, H.P.-1744, DBW14, H.D.-2285.

Himachal Pradesh:

Pea: Ageta – 6 or Arkal pea

Radish : Japni white and early mino white

Jammu & Kashmir

Potato : Kufri Badshah, K. Jyoti

Radish: P.Reshmi, Japanese White, Minowase

Carrot: Pusa Kesar, P.Yamdagani, Nantes, Chaman

Turnip: PTWG,

Garlic: Local, large segmented, Agrifound Paravati

Onion: Pusa Red ,N-53, Agrifound Dark Red & Agrifound Light Red, Punjab Selection

Knolkhol: King of Market and White Vienna

Spinach: prickly seeded

Methi : Pusa early bunching and kasuri methi .

Uttarakhand

Chilly: Pusa Sadabahar, Jwala, Pant C-1 etc.

AP

Sesame: Rajeshwari, Swetha thil, Chandana, Gauri, Madhavi & Hima

Karnataka

Pulses: Green gram: PS-16, Cow pea: C-152, TVX-944, Black gram: T-9, TAU-Horse gram: PHG-9

Field bean: Hebbal Avare-3 and 4

Tamil Nadu

Rice fallow pulses: Blackgram- ADT 3 and Greengram - ADT 3

Madhya Pradesh

Wheat: Sujata, HW- 2004, HI-1500, HI- 1531, HD-2004, JWS- 17, HD-4672,

Timely sown: HI-8498, HI -1418, HI- 1479, HI – 1544, GW -273, GW- 322, GW – 366

Late sown: MP-1142, MP-4010, MP-1201, LOK-1.

Gram: JG-130, JG-11, JG-315, JG-16, Jaki – 9218, Kabuli kak-2, JG-412, Vijay, JG-226

Late sown: JG-14

Lentil: RVL-31, JL-2

Maize: JVM -421, JM-16, Sweet corn, Popcorn and HQPM-1.

Pea: Pusa pragati, Jawahar Pea 1, Jawahar Pea 2, Jawahar Pea 5 and Bonvile

Sugarcane: KO-J-N- 86572, KO-J-N- 86141

Chattisgarh

Wheat : GW-273, Kanchan, GW-173, Amar, Lok-1, Ratan and HD-2329

Gram : Vaibhav, JG-74, JG-11, TG-315, ICC-2 (Kabuli)

Maize: Proagro-4640, 4212, Pusa Hybrid -42, MH-10, MH-11, Navjyot, HM-9.

Niger: JNC-1, JNC-6, JNC-9, GA-10, Ootakmund, KGN-2

Kulthi: AK-21, Ak-42, Bastar Kulthi, Birsa Kulthi and VLG-9

Maharashtra

Rabi groundnut: Konkan Gaurav, Konkan Tapora, Phule Pragati, TG-26, SB-11 and TAG-24.

Summer pearl millet: Shanti, Shradha and Saburi.

Suru Sugarcane: CO-419, COM-7125, CO-860032, CO-94012 and COM-0265.

Annexure III

Contour maps for Relative Humidity, Cloud Amount and Wind speed for the week ending on 02.01.2013

