

Significant weather and realized rainfall during last week:

- Mainly dry weather prevailed over the country.
- During the last week, **cold wave conditions** prevailed over some parts of Uttar Pradesh, Bihar, West Bengal & Sikkim, Interior Odisha, Madhya Pradesh, and Chhattisgarh. **Cold day condition prevailed** at a few places over east Madhya Pradesh and at one or two places over Bihar, Jharkhand, Chhattisgarh and Gangetic West Bengal on 27th January during last week.

Central India

- Due to low temperature White rust is being observed in the cucurbitaceous vegetables in Bastar Plateau Zone in Chhattisgarh, farmers are advised to dust Sulfex as per recommended dose.
- In Satpura Plateau Zone of Madhya Pradesh, due to prevailing temperature and partly cloudy weather, there are chances of increased activity of caterpillars in Bengal gram. Farmers are advised to monitor the crops and apply plant protection measures.
- Due to cloudy weather, there is possibility of attack of powdery mildew in pea and lentil crops; farmers in Bundelkhand Zone of Madhya Pradesh are advised to monitor the crops and spray soluble Sulphur dust @ 1000 g or carbendazim @ 500 g, dissolve in 500 litre of water per ha.

Northwest India

- Under the influence of a strong western disturbance, rain/snow would occur at many places over western Himalayan region with heavy to very heavy rain/snow at one or two places on 4th and 5th February. Rain/thundershowers would occur at many places over Punjab, Haryana, Delhi, Uttar Pradesh and Rajasthan from 4th to 6th February. Farmers are advised to postpone irrigation and intercultural operations in standing crops and arrange for drainage facilities.
- As hailstorm would occur at one or two places over Himachal Pradesh, Uttarakhand, Punjab, Haryana & Delhi, Rajasthan and Uttar Pradesh on 4th and 5th February, farmers are advised to use hail net for orchard crops to protect from mechanical damage to the crops.
- In Cold Arid Zone of Jammu & Kashmir, during these days keep the newly planted Apricot & Apple plants covered with gunny bags to prevent them from excessive cold. Cover the polythene of greenhouses with black polythene in the night for proper growth of crops or maintain 2 layers of polythene over greenhouse.
- Weather conditions are favourable for incidence of yellow rust in wheat in Punjab and Delhi, also due to high humidity and cloudy weather there may be incidence of white rust and *Alternaria* blight in mustard crop in Western Zone of Haryana. Farmers are advised to monitor the crop for the diseases and spray recommended fungicides in clear weather when the damage crosses ETL.
- Due to continuous cool and humid weather, there are chances of *Alternaria* blight (black spot) disease in mustard crop in some pockets of Flood Prone Eastern Plain Zone of Rajasthan. Farmers are advised to monitor and destroy the infested plants and spray Iprodione or Mancozeb @ 2 kg / 800 litre solution and repeat the spray in 15 days interval, on a non-rainy day.
- Due to cloudy and foggy weather conditions, there is chance of aphid incidence in mustard crop at flowering / pod formation stage, if aphid population is seen to be @ 8 insects per plant, spray Metasystox @ 250 ml per 250 liters of water per acre crop area in Bhabar and Terai Zone of Uttarakhand.

East India

- Due to mainly dry weather in South Alluvial Zone of Bihar, farmers are advised to provide second irrigation to timely sown wheat at tillering stage and first irrigation to late sown wheat crops at CRI stage.
- As the weather will be mainly dry, the farmers of Odisha are advised to irrigate wheat, rapeseed and mustard crop.
- As dry weather is prevailing, farmers in Jharkhand are advised to irrigate gram and lentil at branching and flowering stage.
- In view of dry weather condition, farmers in New Alluvial Zone and Laterite and Red Soil Zone of West Bengal are advised to apply irrigation to timely sown wheat crop.
- Due to present weather condition in Old Alluvial Zone of West Bengal, occurrence of late blight has been reported from many areas. So, if attacked by late blight, spray the mixture of Metalaxyl 8% and Mancozeb 64% @ 2.5 gm per litre of water at 12-15 days interval by completely wetting the leaves.
- In North West Alluvial Plain Zone of Bihar, early and late blight disease may intensify in potato crop due to foggy weather condition; spray Endophil M-45 or mixture of Synomaxi and Mancozeb @ 2 g per litre of water.

(Continued on Page 2)



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

(Continued from page no. 1)

Northeast India

- In the present weather conditions, in Sub-Tropical Hill Zone of Arunachal Pradesh farmers are advised for moisture conservation using locally available mulch in rapeseed and mustard.
- As prevailing dry weather is favourable for development of blossom end rot in tomato in Mild Tropical Hill Zone of Nagaland, farmers are advised for mulching in tomato to conserve soil moisture.
- In Barak Valley Zone of Assam, there is infestation of aphids, jassids and beetles in French bean which is in early vegetative stage; farmers are advised to spray Malathion 50 EC @ 1.5 ml / litre of water to control the attack.
- Due to prevailing weather conditions in Mild Tropical Plain Zone of Tripura, there is chance of attack of aphids in toria, powdery mildew in pea and beans at flowering stage and late blight in potato; farmers are advised to spray Monocrotophos @ 2 ml per litre of water for attack of aphids in toria, Mancozeb (Indofil M-45) @ 2.5 g per liter of water in potato field at least twice at an interval of 15 days and wettable sulphur 2 g per litre of water or to dust Sulphur at 25 kg / ha on pea and beans as precautionary measures.
- In Temperate Sub Alpine Zone of Meghalaya, due to congenial weather, there is chance of attack of aphids in toria, pea and lentil; farmers are advised to apply Dimethoate @ 2 ml per litre of water or Malathion 50 EC @ 1.5 ml per litre of water if incidence is noticed.
- Due to favourable weather conditions, there is attack of saw fly in toria in lower Brahmaputra Valley Zone and Upper Brahmaputra Valley Zone of Assam; farmers are advised to apply Endosulfan @ 2 ml per litre of water during evening hours to control saw fly in toria.

West India

- As dry weather prevailed over the States during last few weeks and dry or mainly dry weather would prevail during the period, farmers are advised to apply irrigation to rabi jowar, wheat, safflower, gram and also to sugarcane, vegetables and orchard crops in Madhya Maharashtra, Marathwada and Vidarbha and wheat, potato, gram, vegetables etc. in Gujarat.
- As minimum temperature is expected to be around 13 to 17°C (optimum temperature for germination of seed is around 14°C), farmers in Pune region are advised to complete preparatory tillage and continue sowing of summer bajra and groundnut.
- As prevailing temperature is favourable (day temperature 27°C to 37°C), farmers are advised to continue planting of suru sugarcane in Madhya Maharashtra and Marathwada.
- As expected minimum temperatures are low, 9-10°C in Panchmahal and Dohad districts, in Middle Gujarat Zone, give mulching in groundnut with paddy straw or plastic for better germination of groundnut.
- In view of favourable weather conditions, farmers are advised to undertake sowing of summer groundnut in North Saurashtra Zone of Gujarat and summer vegetables viz. okra, cluster bean and bottle gourd in North Gujarat Zone.
- As partly cloudy weather and minimum temperature around 14-17°C is expected in Western Maharashtra Scarcity Zone, there may be incidence of rust in wheat; spray Mancozeb 75 % @ 1500g / ha in 500 litres of water with 10 kg urea.
- Garlic blight and onion purple blotch have been noticed in North Saurashtra Zone of Gujarat in garlic and onion; spray 25 gm Mencozeb 75% WP in 10 liters of water for control of garlic blight and onion purple blotch.

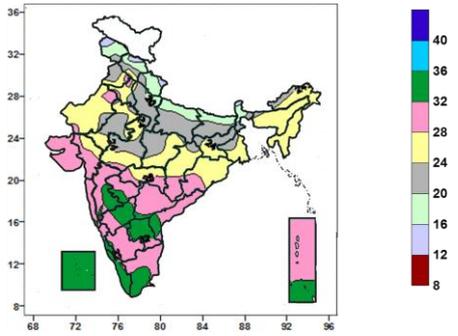
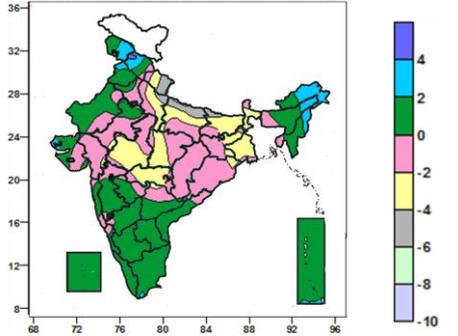
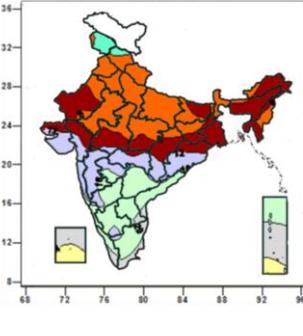
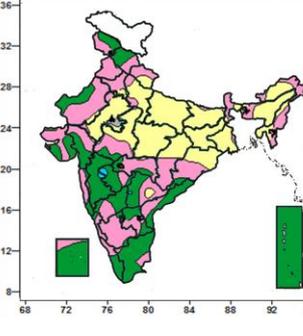
South India

- Farmers in the Northern and Central Zone of Kerala are advised to mulch the soil or use soil mulch to prevent evaporation loss of water in coconut gardens and in the High Altitude zone in pepper and arecanut plantations.
- In Eastern Dry Zone of Karnataka, low temperature in morning hours is congenial for powdery mildew in mango and grapes. Farmers are advised to undertake plant protection measures.
- Due to continuous dry weather, thrips activity is increased on vegetables in North East Dry Zone of Karnataka, to control them spray oxy-demeton methyl (1.5 ml) or dimethoate (1.7 ml) with one liter of water.
- Due to high day temperature, leaf miner, early leaf spot and aphid in groundnut, hoppers and powdery mildew in chillies and alternaria blight, tobacco cut worm and powdery mildew incidence in sunflower

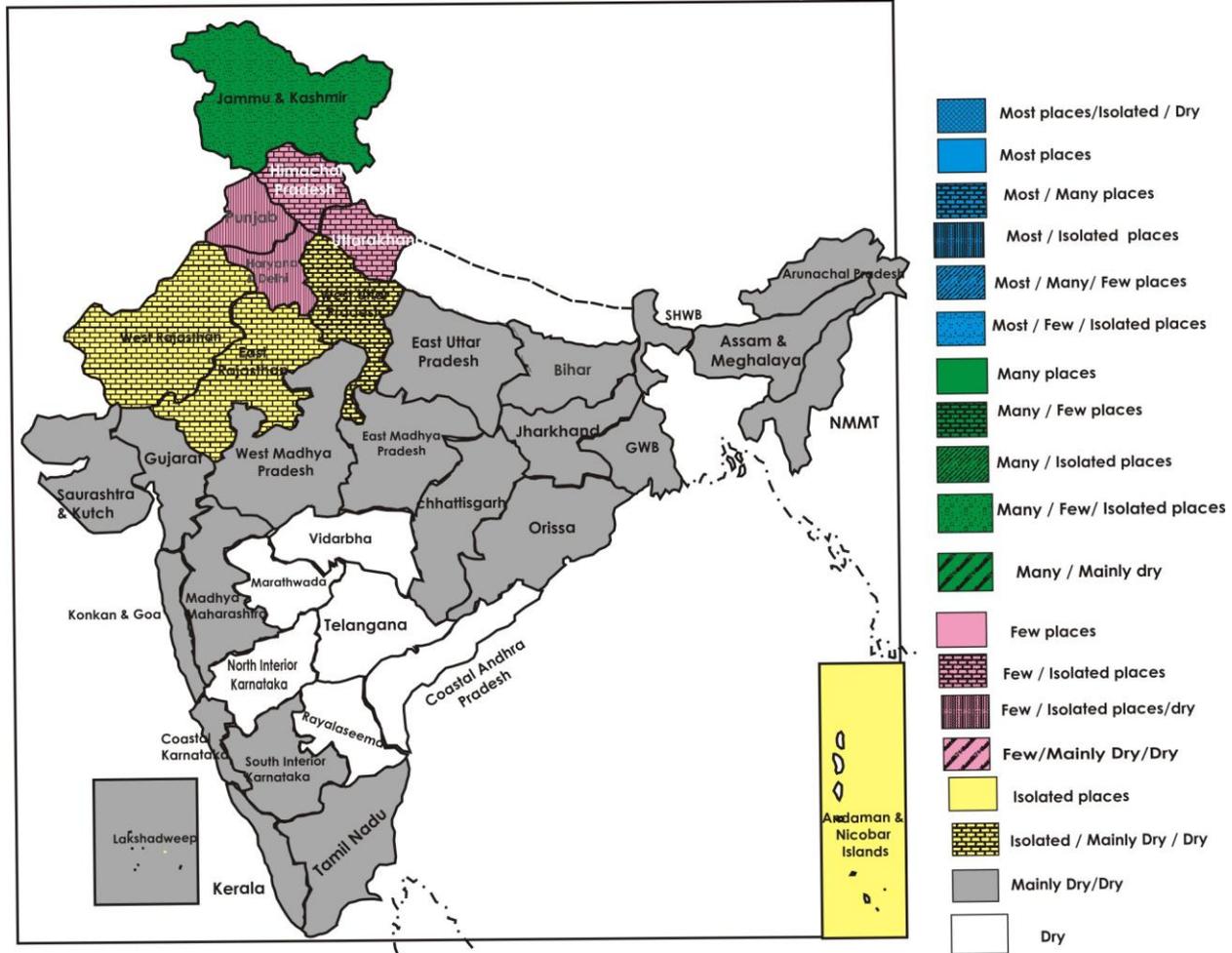
was noticed in the Scarce Rainfall Zone of Andhra Pradesh. Prevailing weather conditions are also congenial for incidence of *Spodoptera litura* in groundnut (maximum temperature of 30-32 °C, minimum temperature of 21-23 °C) and blast (night temperatures 18-22°C, and RH-90%) in rice. Farmers are advised to undertake plant protection measures.

- Incidence of blast is observed in paddy in the North Coastal Zone of Andhra Pradesh. Farmers are advised to spray tricyclozole @ 0.6 g/l to control blast incidence.

Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 30.01.2013

<p>Actual Mean Maximum Temperature (°C) in India for the week ending 30.01.2013</p> 	<p>Mean Maximum Temperature (°C) Anomaly in India for the week ending 30.01.2013</p> 
<p>Actual Mean Maximum temperature ranged between 32 to 36°C over many parts of North Interior Karnataka, Rayalaseema, Kerala, Lakshadweep Islands, some parts of Madhya Maharashtra, Marathwada, Telanagana, Coastal Andhra Pradesh, Coastal Karnataka, South Interior Karnataka, Tamil Nadu, Andaman & Nicobar Islands, 16 to 20°C over many parts of Jammu & Kashmir, Uttarkhand, Sub-Himalayan West Bnegal & Sikkim, some parts of Himachal Pradesh, Uttar Pradesh, Bihar, 12 to 16°C over some parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, 20 to 32°C over remaining parts of the country.</p>	<p>Mean Maximum temperature anomaly ranged between 4 to 6°C over some parts of Himachal Pradesh, 2 to 4°C over many parts of Jammu & Kashmir, Himachal Pradesh, Arunachal Pradesh, Nagaland, some parts of Punjab, Assam & Meghalaya, Manipur, Saurashtra & Kutch, Tamil Nadu, -4 to -2°C over many parts of Uttar Pradesh, Bihar, West Bengal, Madhya Pradesh, Vidarbha, some parts of Uttarakhand, East Rajasthan, Gujarat, Jharkhand, Orissa, Telangana, -2 to 2°C over rest of the country.</p>
<p>Actual Mean Minimum Temperature (°C) in India for the week ending 30.01.2013</p> 	<p>Mean Minimum Temperature (°C) Anomaly in India for the week ending 30.01.2013</p> 
<p>Actual Mean Minimum Temperature ranged between 24 to 28°C over some parts of Lakshadweep, Andaman & Nicobar Islands, 20 to 24°C over many parts of Lakshadweep, Andaman & Nicobar Islands, some parts of Tamil Nadu, Kerala, Coastal Andhra Pradesh, Raylaseema, 4 to 8°C over many parts of Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Uttar Pradesh, East Rajasthan, Sub-Himalayan West Bengal & Sikkim, Manipur, North Madhya Pradesh, some parts of West Rajasthan, Bihar, Jharkhand, Assam, Arunachal Pradesh, Nagaland, Mizoram, Chattisgarh, 0 to 4°C over many parts of Jammu & Kashmir, some parts of Himachal Pradesh, 8 to 20°C over remaining parts of the country.</p>	<p>Minimum Temperature anomaly ranged between 2 to 4°C over some parts of Madhya Maharashtra, Marathwada, 0 to 2°C many parts of Jammu & Kashmir, Himachal Pradesh, Gujarat, Saurashtra, Madhay Maharashtra, Marathwada, Andhra Pradesh, Tamil Nadu, Kerala, Lakshadweep, Andaman & Nicobar Islands, some parts of West Rajasthan, Kutch, West Madhya Pradesh, Konkan & Goa, Karnataka, Orissa, -4 to -2°C over many parts of East Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, Assam & Meghalaya, Arunachal Pradesh, Madhya Pradesh, some parts of Uttarakhand, Haryana, Delhi, Tripura, Chattisgarh, Orissa, Telangana, -2 to 0°C over remaining parts of the country.</p>

Weather Forecast (Valid upto 0830 hours of 4th February, 2013)



Major Feature of Weather Forecast up to 0830 hours IST of 4th February, 2013

- Rain/snow would occur at one or two places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand during next 24 hours and increase from tomorrow onwards.
- Rain/thundershowers would occur at one or two places over Punjab, Haryana, Rajasthan and west Uttar Pradesh on 2nd and increase thereafter.
- Rain/thundershowers would occur at one or two places over Andaman & Nicobar Islands.
- Rise in minimum temperatures by 3-4°C over northwest, central and east India during next 2-3 days.
- Mainly dry weather would prevail over rest parts of the country.

Weather Warning during next 3 days

- Fog (visibility 200 M or less) would occur at isolated pockets of Uttar Pradesh, Punjab and Haryana & Delhi during next 24 hours.

Weather Outlook for subsequent 4 days from 4th to 8th February, 2013

- Under the influence of a strong western disturbance, rain/snow would occur at many places over western Himalayan region with heavy to very heavy rain/snow at a few places on 4th and 5th.
- Rain/thundershowers would occur at many places over Punjab, Haryana, Delhi, Uttar Pradesh and Rajasthan from 4th to 6th February.
- Rain/thundershowers would occur at few places over Madhya Pradesh from 4th.
- Meteorological conditions are favourable for hailstorm at one or two places over Himachal Pradesh, Uttarakhand, Punjab, Haryana & Delhi, Rajasthan and Uttar Pradesh on 4th and 5th.

Zonewise Agromet Advisories

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

- **Realised Rainfall:** Dry weather prevailed over the states of the region during last week.
- **Weather Forecast:** Mainly dry weather will prevail over the region.

Advisories:

- As dry weather prevailed over the States of the region during last week and mainly dry weather is likely to prevail during the period, farmers are advised to apply irrigation to the standing crops.
 - In the present weather conditions, in Sub-Tropical Hill Zone of Arunachal Pradesh farmers are advised for moisture conservation using locally available mulch in rapeseed and mustard.
 - As prevailing dry weather is favourable for development of blossom end rot in tomato in Mild Tropical Hill Zone of Nagaland, farmers are advised for mulching in tomato to conserve soil moisture.
 - Attack of cut worm in wheat at CRI stage and toria in flowering stage is observed in different places of Nagaon and Marigaon districts in Central Brahmaputra Valley Zone of Assam. Farmers are advised to apply Quinalphos @ 3 ml per litre of water during evening hours to control cut worm. Present weather condition is congenial for occurrence and spread of late blight disease in potato. Spray Mancozeb 75% a.i. @ 2.5 g per litre of water against late blight.
 - In Barak Valley Zone of Assam, there is infestation of aphids, jassids and beetles in French bean which is in early vegetative stage; farmers are advised to spray Malathion 50 EC @ 1.5 ml / litre of water to control the attack.
 - Due to favourable weather conditions, there is chance of attack of aphids and saw fly on rapeseed and mustard in North Bank Plain Zone, Hill Zone and Lower Brahmaputra Valley Zone of Assam. Farmers are advised to apply Dimethoate 30 EC or Chloropyriphos @ 2 ml / litre of water to control aphids and saw fly. Late blight may also appear in potato in North Bank plain Zone of Assam under prevailing weather. To control spray Mancozeb @ 2.5 g / litre of water against late blight.
 - Due to humid and cloudy weather conditions, there is chance of attack of late blight in tomato in Hill Zone of Assam; farmers are advised to apply Ridomil MZ-72 @ 2 g per litre of water and Indofil M-45 @ 2.5 g / litre of water at 15 days interval.
 - Due to favourable weather conditions, there is attack of saw fly in toria in lower Brahmaputra Valley Zone and Upper Brahmaputra Valley Zone of Assam; farmers are advised to apply Endosulfan @ 2 ml per litre of water during evening hours to control saw fly in toria.
 - In Temperate Sub Alpine Zone of Meghalaya, due to congenial weather, there is chance of attack of aphids in toria, pea and lentil; farmers are advised to apply Dimethoate @ 2 ml per litre of water or Malathion 50 EC @ 1.5 ml per litre of water if incidence is noticed.
 - Due to prevailing weather conditions in Mild Tropical Plain Zone of Tripura, there is chance of attack of aphids in toria, powdery mildew in pea and beans at flowering stage and late blight in potato; farmers are advised to spray Monocrotophos @ 2 ml per litre of water for attack of aphids in toria, Mancozeb (Indofil M-45) @ 2.5 g per liter of water in potato field at least twice at an interval of 15 days and wettable sulphur 2 g per litre of water or to dust Sulphur at 25 kg / ha on pea and beans as precautionary measures.
 - Other advisories are mentioned in Annexure - I
 - Stages of major crops are mentioned in Annexure II.
 - Suitable varieties of crops are mentioned in Annexure III.
- **Animal Husbandry**
 - In Mild Tropical Hill Zone of Mizoram, farmers are advised to provide good shelter by additional bulbs in poultry, heating system to cattle shed or tie gunny bag on back to protect from cool temperature.
 -

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

- **Realised Rainfall:** Mainly dry weather prevailed over the region.
- **Weather Forecast:** Mainly dry weather would prevail over the States. Rise in minimum temperature by 3-4° C over the region during next 2-3 days.
- **Advisories:**
 - As there was no significant rain over the States during last week and mainly dry weather is likely during the period, farmers are advised to apply irrigation to the standing crops.

- Due to mainly dry weather in South Alluvial Zone of Bihar, farmers are advised to provide second irrigation to timely sown wheat at active tillering.
- As mainly dry weather is likely to prevail, farmers in North West Alluvial Plain Zone of Bihar, are advised to harvest matured tobacco crop. Farmers are also advised to provide irrigation to maize crop. As temperature condition is getting normal for planting, farmers are advised to plant spring planted sugarcane.
- As dry weather is prevailing, farmers of Western Undulating Zone and Eastern Ghat High Land Zone of Odisha are advised to undertake harvesting of cotton. In view of prevailing dry weather condition, farmers are advised to apply irrigation to vegetable crops, groundnut, mustard and sunflower.
- Farmers of East and South Eastern Coastal Plain Zone of Odisha are advised to apply irrigation to wheat crop at flowering stage.
- As the weather will remain sunny and dry, the farmers of North Eastern Plateau Zone of Odisha are advised to irrigate the wheat crop.
- As the weather will remain sunny and dry, the farmers of North Eastern Coastal Plain Zone of Odisha are advised to irrigate the wheat, rapeseed and mustard crops.
- Taking the advantage of dry weather, farmers in Central and North Eastern Plateau Zone of Jharkhand are advised to undertake intercultural operation to control weed in timely sown wheat.
- As dry weather is prevailing, farmers in Jharkhand are advised to irrigate gram and lentil at branching and flowering stage.
- In view of dry weather condition, farmers in new Alluvial Zone and Laterite and Red Soil Zone of West Bengal are advised to apply irrigation to timely sown crop of wheat.
- Due to prevailing low temperature in New Alluvial Zone of West Bengal to protect the seedlings of *boro* rice from cold by covering nursery bed with polythene keeping stagnant water in the nursery bed especially for the night-time.
- Due to cloudy weather conditions in Laterite and Red soil Zone and New Alluvial Zone of West Bengal, there is chance of late blight attack in potato. As a control, spray Blitox or Mancozeb @ 2.5g /liter of water at an interval of 5-7 days, thrice.
- Due to present weather condition in Old Alluvial Zone of West Bengal, occurrence of late blight has been reported from many areas. So, if attacked by late blight, spray the mixture of Metalaxyl 8% and Mancozeb 64% @ 2.5 gm per litre of water at 12-15 days interval by completely wetting the leaves.
- Due to cloudy weather and fog in Laterite and Red Soil Zone of West Bengal, cabbage and cauliflower may be attacked by powdery mildew. Apply Sulfex @ 2 g per litre of water if attack is noticed.
- In North West Alluvial Plain Zone of Bihar, early and late blight disease may intensify in potato crop due to foggy weather condition; spray Endophyl M-45 or mixture of Synomaxi and Mancozeb @ 2 g per litre of water.
- Pod borer has occurred in gram and pea in Puri, Khurda, Cuttack districts of East and South Eastern Coastal Plain Zone of Odisha; farmers are advised to spray 50 ml Imidacloprid or 400 ml Dimethoate or Metasystox in 200 litres of water per acre.
- Infestation of aphids has been found in potato in North Central Plateau Zone of Odisha. Farmers are advised to spray 4 ml neem based pesticides or 2 ml Metasystox or 2 ml Rogor per litre of water.
- Prevailing weather is favourable for the infestation of aphids, saw fly and leaf webber in mustard. Farmers in Western Undulating Zone and Eastern Ghat High Land Zone of Odisha are advised to spray imidacloprid @ 1ml/4lit of water for aphids, for saw fly spray 400 ml Chloropyriphos or Triazophos/acre and to control leaf webber spray 200 ml Ithofenprox or Deltamethrin per acre in 200 litre water.
- Due to cold and cloudy weather there may be possibility of infestation of aphids in greengram, blackgram, pea etc. Farmers of East and South Eastern Coastal Plain Zone of Odisha are advised to spray 50 ml Imidacloprid or 400 ml Dimethoate or Metasystox in 200 litre water per acre. Alternaria blight infestation has been found in early planted onion, spray 3 g Dithane-M-45 in 1 litre water. Stem borer in wheat is found in Cuttack district, farmers are advised to spray 400 ml Triozophos or Prophenophos in 200 litre water/acre also loose smut of wheat has been occurred, farmers are advised to uproot the affected plants and destroy them by burning it into ground and spray 2 g Carbendazim/acre in 200 litre of water. Leaf eating caterpillar and leaf miner have been found in *rabi* sunflower, spray 400

ml Endosulphan/acre. Spray 400 ml Chloropyriphos/acre in 400 litre water to control cut worm infestation.

- **Animal Husbandry**

- Due to low temperature, there are chances of respiratory infection viz pneumonia in calf; farmers of North Eastern Coastal Plain Zone of Odisha are advised to provide warm and comfortable housing to animals and vaccinate animals against FMD.

- **Pisciculture**

- Farmers of North Eastern Coastal Plain Zone of Odisha are advised to use 3ml Vitapet oil per kg of artificial feed as feed attractant in winter. To prevent the EUS disease in fish during winter apply Cifax @ 400 ml or Aquaneem per a pond of 1 acre and 1 meter depth of water.
- Other crop advisories are mentioned in Annexure I.
- Stages of major crops are mentioned in Annexure II.
- List of Varieties are mentioned in Annexure III.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Mainly dry weather prevailed over the states of the region during last week.

- **Rainfall Forecast:** Mainly dry/ dry weather would prevail over the States.

- **Advisories:**

- As dry weather prevailed over Maharashtra during last few weeks and dry or mainly dry weather would prevail during the period, farmers in Madhya Maharashtra, Marathwada and Vidarbha are advised to apply irrigation to *rabi* jowar at grain formation stage, wheat at ear head emergence stage, safflower at head formation stage, gram at pod development and also to sugarcane, vegetables and orchard crops.
- As minimum temperature is expected to be around 13 to 17^o C (optimum temperature for germination of seed is around 14^o C), farmers in Pune region are advised to complete preparatory tillage and continue sowing of summer bajra and groundnut.
- As prevailing temperature is favourable (day temperature 27^o C to 37^o C), farmers are advised to continue planting of *Suru* sugarcane in Madhya Maharashtra and Marathwada.
 - As dry weather prevailed during last few weeks and is likely to prevail in North Gujarat Zone, Bhal and Coastal Zone and North West Zone of Gujarat, apply irrigation to cumin and vegetable crops. Apply irrigation in potato also in North Gujarat zone. Under expected dry weather in coming days, apply irrigation in castor in South Gujarat Heavy Rainfall Zone. As dry and clear weather is prevailing, carry out weeding and intercultural operations in the crops.
 - As dry weather is prevailing and gram is at flowering stage and wheat is at active tillering / ear head emergence stage in Bhal and Coastal Zone, South Saurashtra Zone, North West Zone of Gujarat and gram is at pod formation stage in North Gujarat Zone, apply irrigation to gram and wheat crops.
 - As expected minimum temperatures are low, 9-10^o C in Panchmahal and Dohad districts, in Middle Gujarat Zone, give mulching in groundnut with rice straw or plastic for better germination of groundnut.
 - As weather is congenial, undertake sowing of summer vegetables viz. okra, cluster bean and bottle gourd in North Gujarat Zone.
 - In view of favourable weather conditions, farmers in North Saurashtra Zone of Gujarat are advised to undertake sowing of summer groundnut.
- As partly cloudy weather and minimum temperature around 14-17^o C is expected in Western Maharashtra Scarcity Zone, there may be incidence of rust in wheat; spray Mancozeb 75 % @ 1500g / ha in 500 litres of water with 10 kg urea.
 - Prevailing cold and dry weather is conducive for the incidence of powdery mildew in pea, chilli and tomato in Pune region; spray Sulphur WS 80 % @ 25g in 10 litres of water.
 - Weather conditions are favourable for incidence of blight and powdery mildew in cumin in North Saurashtra Zone of Gujarat; spray 10 ml Hexaconazole 5 EC in 10 litres of water to prevent it. Garlic blight and onion purple blotch have been noticed in North Saurashtra Zone of Gujarat in garlic and onion; spray 25 gm Mencozeb 75% WP in 10 liters of water for control of garlic blight and onion purple blotch.

- Other advisories are mentioned in Annexure I.
- Stages of the crops are mentioned in Annexure II.
- Varieties of the crops are mentioned in Annexure III.
- **Animal Husbandry**
 - Udder of milking animals must be properly cleaned with insecticide like Zinc Oxide or Boric powder. Cut the beaks of birds in the poultry under age of 15 weeks, in South Gujarat Heavy Rainfall Zone and North Saurashtra Zone of Gujarat.
 - In North Saurashtra Zone of Gujarat and Middle Gujarat zone, keep animals in sheds for protection against cold and take special care of young calves during morning hours. Cover poultry house by gunny bags or cloth / plastic sheets and give dry fodder to animals for protection against cold.

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

- **Realised Rainfall:** Mainly dry weather prevailed over the region.
- **Weather Forecast:** Rain/snow would occur at one or two places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand during next 24 hours and increase thereafter. Rain/thundershowers would occur at one or two places over Punjab, Haryana, Rajasthan and west Uttar Pradesh on 2nd February and increase thereafter. Rise in minimum temperatures by 3-4°C over the region during next 2-3 days. Mainly dry weather would prevail over rest parts of the region.
- **Warning:** Fog (visibility 200 m or less) would occur at isolated pockets of Uttar Pradesh, Punjab and Haryana & Delhi during next 24 hours.
- **Advisory :**
 - Under the influence of a strong western disturbance, rain/snow would occur at many places over western Himalayan region with heavy to very heavy rain/snow at one or two places on 4th and 5th February. Rain/thundershowers would occur at many places over Punjab, Haryana, Delhi, Uttar Pradesh and Rajasthan from 4th to 6th February. Farmers are advised to postpone irrigation and intercultural operations in standing crops and arrange for drainage facilities.
 - As hailstorm would occur at one or two places over Himachal Pradesh, Uttarakhand, Punjab, Haryana & Delhi, Rajasthan and Uttar Pradesh on 4th and 5th February, farmers are advised to use hail net for orchard crops to protect from mechanical damage to the crops.
 - In Cold Arid Zone of Jammu & Kashmir, during these days keep the newly planted Apricot & Apple plants covered with gunny bags to prevent them from excessive cold. Cover the polythene of greenhouses with black polythene in the night for proper growth of crops or maintain 2 layers of polythene over greenhouse.
 - In the Mid Hills Sub humid Zone of Himachal Pradesh farmers are advised to continue pruning and training operations in apple/stone fruits. Protect the sub-tropical fruit plants of 4-5 years of age by covering with dry and Sarkanda grass by keeping eastward side open for proper sun light and air.
 - Weather conditions are favourable for incidence of yellow rust in wheat in Punjab and Delhi, also due to high humidity and cloudy weather there may be incidence of white rust and *Alternaria* blight in mustard crop in Western Zone of Haryana. Farmers are advised to monitor the crop for the diseases and spray recommended fungicides in clear weather when the damage crosses ETL.
 - In Sub Tropical Zone of Jammu & Kashmir, weather condition is favourable for increase in aphids incidences in mustard crop; farmers are advised to spray the crop with Chloropyripous @ 0.05%, if 40-45% plants are infested with aphids on a non-rainy day.
 - Under the influence of Western Disturbance, heavy snowfall would occur at a few places over the mid and high reaches of Himachal Pradesh viz. in the districts of Chamba, Lahul Spiti, Kangra, Kullu, Kinnaur and Shimla from mid night of 4th to morning of 6th Feb 2013, take appropriate precautionary measures.
 - Due to cloudy and foggy weather conditions, there is chance of aphid incidence in mustard crop at flowering / pod formation stage, if aphid population is seen to be @ 8 insects per plant, spray *Metasystox* @ 250 ml per 250 liters of water per acre crop area in Bhabar and Terai Zone of Uttarakhand.

- Due to continuous cool and humid weather, there are chances of *Alternaria* blight (black spot) disease in mustard crop in some pockets of Flood Prone Eastern Plain Zone of Rajasthan. Farmers are advised to monitor and destroy the infested plants and spray Iprodione or Mancozeb @ 2 kg / 800 litre solution and repeat the spray in 15 days interval, on a non-rainy day.
- Due to favourable weather conditions, there is chance of attack of aphid and saw fly in rapeseed and mustard in Central Plain Zone in Uttar Pradesh. Farmers are advised to apply Dimethoate 30EC or Chloropyrifos @ 2ml/litre with a spray volume of 500-700 litre/ha for hand sprayer & 200-250 litre/ha for power sprayer. Spray wettable sulphur to control the powdery mildew on a non-rainy day. Save the crop from cold/frost by frequent and light irrigation and smoking around the field.
- Due to favourable weather conditions in Eastern Plain Zone of Uttar Pradesh, attack of fruit fly and fruit borer in arhar has been increased. Farmers are advised to spray Endosulphan 35 E.C. 1.5 lit. or Imidachlorpid 1 lit. in 800-1000 lit. water per ha.
- Other advisories are mentioned in Annexure – I.
- Stages of major crops are mentioned in Annexure II.
- Suitable varieties of crops are mentioned in Annexure III.
- **Apiculture**
 - In Subtropical Zone of Jammu & Kashmir, it is advised to protect colonies of bees against frost and cold by providing winter packing of paddy straw filled in polythene bags. In Intermediate Zone of Jammu & Kashmir, farmers are advised to provide winter packing against cold when bees start forming clusters.
- **Animal Husbandry**
 - In Subtropical Zone and Intermediate Zone of Jammu & Kashmir, it is advised to protect the pregnant and milch animals from cold and feed them mineral mixture regularly. Cover the poultry shed with gunny bags in order to protect the birds from cold weather.
 - In Uttarakhand, it is advised to keep all animals inside the shed in the night due to low temperature in the night during this week also. Feed them with balance feed including a mixture of green & dry fodder. Keep neat and clean the place of sitting & provide fresh water.
 - In Varanasi Plain Zone of Uttar Pradesh, due to prevailing weather conditions, farmers are advised to protect the poultry/cattle/pig from cold by using gunny bags / plastic sheets around the poultry/cattle/pig shed during night. Farmers are also advised to vaccinate animals against FMD. As the winter is in the peak phase, there is a possibility of “EUS” disease in fish. Farmers are advised to apply ‘Cifax’ @ 1000 ml mixed with 100 litre of water in one hectre pond area.

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

- **Realised Rainfall:** Mainly dry weather prevailed over the States of the region during last week.
- **Rainfall Forecast:** Mainly dry weather would prevail over the region.
- **Advisories:**
 - As no significant rainfall occurred over the region during last couple of weeks and no significant rain is expected over the region, apply irrigation to the standing crops.
 - Farmers in the Northern and Central Zone of Kerala are advised to mulch the soil or use soil mulch to prevent evaporation loss of water in coconut gardens and in the High Altitude zone in pepper and arecanut plantations.
 - In view of mainly dry weather, farmers in Problem Area Zone of Kerala are advised to apply 150 kg lime in rice field and drain out standing water followed by application of 2nd dose of fertilizers in rice. Newly planted coconut seedlings may be protected from scorching effect of sunlight and irrigated at 2 days intervals. Mulching with crop residues may be done to reduce evapotranspiration loss.
 - In the Southern Zone of Kerala, farmers are advised to raise cow pea and other vegetables after the second crop of paddy.
 - Due to prevailing dry weather in the Western Zone of Tamil Nadu, rice crop at tillering stage may lose leaf water content. Farmers are advised to undertake foliar application of one per cent urea followed by impounding water to a depth of 2.5 to 3 cm in the field. Apply gypsum @ 200 kg/ac. followed by irrigation to groundnut crop for improving pegging and pod development. Due to increase in maximum temperature, matured early planted sugarcane may be harvested immediately.

- In Eastern Dry Zone of Karnataka, low temperature in morning hours is congenial for powdery mildew in mango and grapes and also leaf hopper in mango. Farmers are advised to undertake plant protection measures.
- Due to low temperature, hoppers were noticed in mango crop in North East Transition Zone of Karnataka. Spraying of 4 g Carbaryl 50 WP or 2 ml Malathion 50 EC or 1.5 ml Monocrotophos 36 SL or 0.5 ml Phosphamidon 40 EC in one litre water is advised. Farmers are advised to remove the stubbles from already harvested pigeon pea fields to avoid multiplication and spreading of mosaic disease.
- Due to continuous dry weather, thrips activity is increased on vegetables in North East Dry Zone of Karnataka; to control spray oxy-demeton methyl (1.5 ml) or dimethoate (1.7 ml) with one liter of water.
- Farmers in Central Zone of Kerala are advised, cut and remove the infected leaves and spray neem based pesticides at the rate of 2ml per 1 liter water to control caterpillars in coconut plantations and irrigation must be done twice per week to avoid extreme heat. To protect the arecanut crop from extreme heat, lime can be applied over the stem or the stem region can be covered with dried leaves of coconut or arecanut. Farmers are advised to continue irrigation in banana plantations. Mulching should be done to retain moisture in the plantation.
- Since temperature and wind speed is likely to increase, farmers in Problem Area Zone of Kerala are advised to increase the frequency of irrigation. The weather is conducive for the incidence of powdery mildew in cucurbits. To control fruit fly, remove affected fruits and use banana fruit traps; fertilizers can be applied. Aphid attack can be expected in bhindi, cowpea, brinjal etc. In the prevailing climatic condition there is chance of sheath blight occurrence in the rice fields where the plant population is high. The farmers are advised to remove severely affected plants in order to provide air circulation into the crop canopy and thereby reduce the spread of the disease to the nearby plants. In padasekharams where false smut (Lakshmi disease) was observed during the previous season, there is chance for occurrence of the disease in this season. Remove the weeds from bunds. The attack of white backed plant hopper is noticed in some fields of Kuttanad. The farmers are advised to drain off the field completely, if the attack persists. Present weather condition also favours for the outbreak of blast disease and the attack of brown plant hopper (BPH). Hence farmers are advised to strict field surveillance.
- Farmers of the High Altitude Zone of Kerala are advised to spray 1% Bordeaux mixture or Bavistin (2ml/lit of water) in irrigated banana plantations to control sigatoka leaf spot, burrowing nematode, after cutting the severely affected leaves and burning it. Four to five sprayings at fortnightly intervals are to be given depending on the severity of the disease. Remove the dry outer sheathes of the pseudostem of all infested and un-infested plants and spray Carbaryl 50 WP 4gm/litre of water on pseudostem to control pseudostem weevil. Spray solution may be applied to leaf axils also.
- Farmers in the Southern Zone of Kerala are advised to give proper irrigation and ploughing in order to control root wilt in coconut plantations. Leaf rot disease increase the probability of incidence of root wilt disease. Remove and destroy rotted leaves and apply copper oxy chloride or Dithane M 45 4 g/ 1 litre of water. Incidence of Aphid attack on bhindi, cowpea, brinjal etc. can be safely controlled by spraying Beauveria bassiana.
- Button shedding was noticed in well grown coconut palms in the North Western Zone of Tamil Nadu. Farmers are advised to apply either Borox nutrient mix (200g) or TNAU tonic 200 ml per palm and irrigate to control this problem.
- As ground frost is expected in the High Altitude Hilly Zone of Tamil Nadu, farmers are advised to undertake suitable measures to prevent damages to tea crop.
- Incidence of blast is observed in rice in the North Coastal Zone of Andhra Pradesh. Farmers are advised to spray tricyclozole @ 0.6 g/l to control blast incidence.
- Due to high day temperature, leaf miner, early leaf spot and aphid in groundnut, hoppers and powdery mildew in chillies and alternaria blight, tobacco cut worm and powdery mildew incidence in sunflower was noticed in the Scarce Rainfall Zone of Andhra Pradesh. Prevailing weather conditions are also congenial for incidence of *Spodoptera litura* in groundnut (maximum temperature of 30-32 °C, minimum temperature of 21-23 °C) and blast (night temperatures 18-22°C, and RH-90%) in rice. Farmers are advised to undertake plant protection measures.

- Prevailing weather conditions are congenial for the incidence of stem borer in 20-25 days old transplanted rice and peanut stem necrosis disease (PSND) and leaf miner in groundnut in the Southern Telangana Zone of Andhra Pradesh. Farmers are advised to undertake plant protection measures.
- Weather is congenial for attack of thrips on groundnut (due to rise in day temperatures) and blast on *rabi* rice (due to fall in night temperature and high relative humidity) in the Southern Zone and North Coastal Zone of Andhra Pradesh. Farmers are advised to spray Tricyclazole @ 0.6 g per litre of water as soon as blast disease symptoms are noticed in rice and Monocrotophos @ 1.6 ml or Chlorpiriphos @ 2 ml per liter of water for thrips on groundnut.
- Other advisories are mentioned in Annexure – I.
- Stages of major crops are mentioned in Annexure II.
- List of Varieties are mentioned in Annexure III.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Mainly dry weather prevailed over the region.
- **Weather forecast:** Mainly dry weather would prevail over the region. Rise in minimum temperature by 3-4⁰C over the region during next 2-3 days.
- Advisories:
 - As mainly dry weather is prevailing and mainly dry weather is likely to prevail over the region, farmers are advised to apply irrigation to *rabi* crops.
 - Farmers in Kymore and Satpura Hill Zone of Madhya Pradesh, farmers are advised to apply irrigation in wheat and mustard. Sowing of cabbage and cauliflower may be done in main field.
 - In Chhattisgarh Plain Zone, farmers are advised to apply irrigation to maize due to high evaporation and prepare nursery for sowing of summer vegetables and sow cucurbits in Bastar Plateau Zone.
 - Due to low temperature White rust is being observed in the cucurbitaceous vegetables in Bastar Plateau Zone in Chhattisgarh, farmers are advised to dust Sulfex as per recommended dose.
 - In Satpura Plateau Zone of Madhya Pradesh, due to prevailing temperature and partly cloudy weather, there are chances of increased activity of caterpillars in Bengal gram. Farmers are advised to monitor the crops and apply plant protection measures.
 - Farmers in Nimar Valley of Madhya Pradesh are advised to prepare nursery for vegetables and cole crops, and also apply irrigation in wheat and gram.
 - Due to dry and cloudy weather, farmers in Bundelkhand Zone of Madhya Pradesh are advised to monitor the wheat crop for termites, if noticed spray chlorpyrifos 25 E.C. @ 5.0-6.0 ml/L of water.
 - Due to cloudy weather, there is possibility of attack of powdery mildew in pea and lentil crops; farmers in Bundelkhand Zone of Madhya Pradesh are advised to monitor the crops and spray soluble Sulphur dust @ 1000 g or carbendazim @ 500 g, dissolve in 500 litre of water per ha.
 - In Jhabhua Hills Zone of Madhya Pradesh, farmers are advised that for control mealy bug in mango, apply grease strips & follidol @ 250 gm/plant in soil application and to control shoot and fruit borer in brinjal and fruit fly in tomato, spray trizophos @ 2.0 ml/lit of water.
 - Other advisories are mentioned in Annexure – I.
 - Stages of major crops are mentioned in Annexure II.
 - Suitable varieties of crops are mentioned in Annexure III.

Annexure I
Other Advisories

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

- Farmers in Upper Brahmaputra Valley Zone of Assam are advised for transplanting of *boro* rice and maintaining of 5 cm standing water in the field 2-3 DAT.
- In Temperate Sub Alpine Zone of Meghalaya, farmers are advised to continue nursery preparation of *boro* rice and sowing of chilli and brinjal.
- In Mild Tropical Plain Zone of Tripura, farmers are advised to continue transplanting of *boro* rice and sowing of summer moong and black gram.
- Farmers in Lower Brahmaputra Valley Zone of Assam are advised to undertake land preparation and sowing of pointed gourd.
- Farmers in Hill Zone of Assam are advised to prepare main field for transplanting seedlings of *boro* rice.
- Farmers in Sub Tropical Plain Zone of Manipur are advised transplanting of tomato and chilli and raising nursery of cucurbits.

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

- Temperature condition is now congenial for planting of autumn planted sugarcane, onion and sowing of sweet potato and summer vegetables, farmers in North West Alluvial Plain Zone of Bihar are advised to start preparing the fields.
- Farmers of Western Undulating Zone of Odisha are advised to complete transplanting of summer rice. Prepare land for planting of sugarcane.
- The farmers of East and South Eastern Coastal Plain Zone of Odisha are advised for sowing of summer groundnut, sesame, maize and sunflower.
- The farmers of Mid Central Table Land Zone of Odisha are advised for sowing of summer groundnut.
- Farmers of North Eastern Coastal Plain Zone of Odisha are advised to undertake sowing of sunflower.
- Farmers in Central and Western Plateau Zone of Jharkhand are advised to prepare the nursery bed for raising seedlings of summer rice.
- Farmers in Western Plateau Zone and Central and North Eastern Plateau Zone of Jharkhand are advised to prepare the nursery bed for raising seedlings of summer rice and prepare field for sowing of long gourd, round gourd, bitter gourd, sponge gourd, cucumber, water melon and musk melon. In Western Plateau Zone, as timely sown toria crops are at maturity stage, farmers are advised to harvest the crop and irrigate gram and lentil crops.
- Farmers in new Alluvial Zone and Laterite and Red Soil Zone of West Bengal are advised to start transplanting the seedling of *boro* rice and maintain 5 cm standing water in the field during transplanting to protect the seedlings from drying.
- Farmers in Old Alluvial Zone of West Bengal are advised to undertake land preparation for transplanting of *boro* rice.
- Farmers in Coastal Saline Zone of West Bengal are advised to complete transplanting of *boro* rice and avoid delayed transplanting with aged seedling (more than 40 days age).

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- Farmers in Central Vidarbha Zone are advised to prepare land for sowing of summer sesamum and green gram. Also undertake sowing of summer groundnut as prevailing minimum temperature is favourable for germination of seeds. Farmers in East Vidarbha are advised to complete preparatory tillage for sowing of summer groundnut and undertake planting of water melon and musk melon.
- Undertake land preparation for sowing of summer crops *viz.* groundnut, bajra and moong in South Gujarat Heavy Rainfall Zone and sowing of groundnut and moong in South Saurashtra Zone of Gujarat with assured irrigation facilities.
- Carry out harvesting of vegetables in Bhal and Coastal Zone and North West Zone of Gujarat, harvesting of matured castor capsules in Bhal and Coastal Zone, Middle Gujarat Zone and South Saurashtra Zone of Gujarat. Carry out picking of cotton bolls in morning time and cut the maize crop at tasseling stage for fodder purpose in North Gujarat Zone.

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

- Farmers in the North Dry Zone of Karnataka are advised to undertake sowing of groundnut, green gram and cowpea under irrigated condition, continue harvesting of matured cowpea, black gram, green gram and pigeon pea crops and prepare nursery bed for sowing of summer rice.
- Farmers in the Eastern Dry Zone of Karnataka are advised to harvest red gram.
- Farmers in the Southern Dry Zone of Karnataka are advised to undertake sowing of pulses like black gram, green gram and also sun hemp after harvesting of rice.
- Tomato crop is infected with early leaf blight (ELB) in the coastal and Eastern Dry Zone of Karnataka. Farmers are advised to spray mancozeb @ 2 g/L or cuprous oxide @ 2.5 g/L to control early leaf blight.
- Farmers in the Cauvery Delta Zone of Tamil Nadu are advised to sow the pulses, black gram and green gram in *samba* rice field.
- Farmers in Northern Kerala are advised to drain out water from the paddy fields completely for early and uniform hardening of the grains.
- Farmers in the High Altitude Zone of Andhra Pradesh are advised to undertake intercultural operation in transplanted *rabi* rice after 30-45 days of sowing.

CENTRAL INDIA [M.P., CHHATTISGARH]

- Present weather conditions are favorable for planting of onion and prepare nursery for sowing of summer vegetable crops in Chhattisgarh Plain Zone.
- In Bastar Plateau Zone of Chhattisgarh, prepare field and arrange high yielding variety seeds of summer moong, urad and maize and undertake sowing immediately.
- In Satpura Plateau Zone of Madhya Pradesh, farmers are advised to prepare the field for sowing of maize and sugarcane.
- In Jhabua Hills Zone of Madhya Pradesh, farmers are advised to prepare nursery for summer vegetables.
- In Vindhya Plateau zone of Madhya Pradesh, farmers are advised to do the intercultural operations and apply irrigation in mango.
- **Animal Husbandary**
 - Due to prevailing low temperature, farmers in Bundelkhand Zone of Madhya Pradesh are advised to vaccinate Goats against P.P.R.
 - In Jhabhua Hill Zone and Vindhya Plateau Zone of Madhya Pradesh, farmers are advised to protect animals & birds against cold condition by using thick curtain in window and dry bed, use two bulb of 200W at night for brooding in chicks shed.

Annexure II

Major Crops

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

- *Boro* rice (transplanting / tillering), cole crops (head formation / maturity / harvesting), wheat (tillering), rapeseed, mustard (flowering / capsule formation), potato (tuber formation / maturity / harvesting), tomato (flowering / fruiting / maturity), *rabi* pulses viz. lentil, rajmah, pea (vegetative / flowering / pod formation), okra, Fench bean (sowing / seedling), sunflower (sowing) in Assam.
- Cauliflower, cabbage (maturity / harvesting), potato (maturity / harvesting), pea (flowering / pod formation), rapeseed, mustard (flowering / capsule formation) in Arunachal Pradesh.
- Potato (vegetative / tuber formation), pea (flowering / pod formation), cauliflower, cabbage (head formation), rapeseed (vegetative / flowering), onion, garlic (vegetative / bulb formation) *rabi* maize (vegetative), tomato, chilli, (transplanting), beans (sowing / early vegetative), cucurbits (nursery raising) in Manipur.
- *Rabi* maize (vegetative), *boro* rice (nursery preparation), cole crops (vegetative / head formation), pea, lentil, mustard (flowering), toria (flowering / pod formation), *Dolichos* / French bean (flowering / pod formation), tomato (vegetative), chilli, brinjal (sowing) in Meghalaya.
- Cole crops (head formation), beans (flowering / pod formation), pea, lentil (flowering / pod formation / pod maturity / harvesting), tomato (fruiting) in Mizoram.
- Cabbage (head formation), mustard (capsule formation), tomato (flowering / fruiting), pea (pod maturity / harvesting), banana (vegetative), potato (vegetative / tuber formation) in Nagaland.
- *Boro* rice (seedling / transplanting), toria (pod formation / pod filling), summer brinjal, tomato (nursery raising), potato (vegetative / tuber formation), banana (harvesting), pea, bean (flowering / pod formation), summer moong, black gram (sowing) in Tripura.

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

- Gram, peas, lentil (flowering / pod formation), sunflower, maize (vegetative / flowering), sugarcane (planting), potato (tuber formation), mustard (flowering / pod formation), urad, arhar, bajra etc. (grain formation), winter vegetables (vegetative / flowering / fruiting / harvesting), wheat (tillering) and toria (pod formation), pigeon pea (flowering / pod formation) in Bihar.
- Wheat (jointing stage), potato (vegetative / tuber formation), pigeon pea (pod formation), onion (transplanting), vegetables (vegetative / flowering / fruiting / harvesting), mustard, gram, linseed, lentil, pea (vegetative / flowering / pod formation), Rice (seedling) in Jharkhand.
- Sugarcane (grand growth), banana (vegetative), mustard, sunflower, sesame, cowpea (vegetative / flowering / pod formation), *rabi* groundnut (pod formation), summer groundnut (sowing), fruit crops (planting / seedling), summer rice (land preparation / transplanting), wheat (CRI / tillering) in Odisha.
- *Boro* rice (seedling / transplanting), wheat (tillering), vegetable (flowering / fruiting), potato (tuberization stage), chilli(vegetative/flowering), mango (flowering), Jackfruit (fruiting), tomato (flowering / fruiting), mustard (flowering / siliqua formation stage), pointed gourd (vegetative), onion (transplanting) in West Bengal.
- Ginger (sprouting / early vegetative), large cardamom (vegetative / primary flowering / secondary flowering), vegetables (vegetative), rice (grain formation / maturity) in Sikkim.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- *Rabi* jowar (grain formation / grain maturity in Madhya Maharashtra, Marathwada and harvesting in Pune region), safflower (head formation / seed maturity in Madhya Maharashtra and Marathwada), maize (cob initiation in Marathwada and Madhya Maharashtra), gram (pod formation / pod maturity and harvesting in Pune region), wheat (ear head emergence / flowering), summer rice (early tillering in South Konkan, in Western Ghat region and East Vidarbha), summer groundnut (germination / early vegetative in South Konkan and sowing in Madhya Maharashtra, Marathwada and Vidarbha), summer bajra (sowing in Pune and Nashik region) in Maharashtra.
- Summer groundnut (sowing / germination), Summer rice (nursery sowing / seedling), wheat (tillering / ear head emergence), gram (pod formation), cumin (branching / flowering / grain filling), cotton (boll maturity / picking), sugarcane (planting / early vegetative / vegetative), castor (spike maturity / harvesting), winter vegetables (flowering / fruiting), chilli, brinjal (fruiting / harvesting), cauliflower (vegetative / head formation), potato (tuber formation), mustard (flowering / pod formation), jowar (flowering), *rabi* fennel (vegetative / flowering), fenugreek (flowering / pod formation), maize (vegetative / tasseling) in Gujarat.

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

- Wheat (tillering), pea (vegetative / flowering / pod formation), radish (vegetative), Pome and stone fruits (planting), vegetables (vegetative / flowering / fruiting), potato (sowing) in Himachal Pradesh.
- Cauliflower, cabbage, broccoli (vegetative / flowering / fruiting), tomato (vegetative / flowering / fruiting), carrot (vegetative), pea (flowering / pod formation), sarson saag, bathua, radish and turnip (flowering/ fruiting), mustard (flowering / capsule formation), onion (vegetative), spinach, coriander, fenugreek (vegetative/ flowering/fruiting), wheat (tillering) 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 / early vegetative), potato (planting), radish, spinach (sowing), carrot, turnip (sowing), onion, cole crops (nursery sowing / transplanting), mustard (late sown- flowering, normal / early sown- seed formation), wheat (late sown- emergence / tillering / jointing, normal / early sown- tillering / jointing / flag leaf initiation), barley (tillering / jointing stage / flag leaf initiation), pulses (pea, lentil, gram) (vegetative), oat, berseem – vegetative in Jammu & Kashmir.
- Wheat (tillering / ear head emergence), arhar (flowering/pod formation), ginger (vegetative), autumn sugarcane (vegetative), mustard (flowering/pod formation), yellow sarson, rai, brinjal, chilli, lady's finger, barley, oat, chick pea, lentil (vegetative / flowering) in Uttarakhand.
- Wheat (tillering), late sown wheat (CRI), barley (tillering), sugarcane (ripening/maturity/harvesting), lentil, linseed, jai (vegetative / flowering), fodder barseem (vegetative / second cutting), vegetable crops (radish, carrot) (vegetative), onion, garlic (vegetative), rapeseed, mustard, pea, lentil and gram, maize (flowering/pod formation) in Uttar Pradesh.
- Wheat (tillering / jointing), sugarcane (harvesting), mustard (flowering / capsule formation) in Punjab.
- Wheat (tillering / jointing), sugarcane (harvesting), mustard (flowering / capsule formation), barseem (sowing / vegetative) in Haryana.
- Cauliflower, cabbage, onion (transplanting / early vegetative), sugarcane (maturity), maize (maturity), *capsicum*, guar, vegetables (tinda, water melon, pumpkin, cucumber, coriander, bhindi, ridge gourd) (sowing / germination / seedling), potato (tuber formation), mustard (vegetative / flowering / capsule formation), wheat (CRI / tillering), barley (tillering), opium poppy (pre-flowering/ flowering) in Rajasthan.

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

- *Rabi* groundnut (flowering/pegging/pod formation), *rabi* maize (tasseling and silking), rice (tillering), sunflower (seed maturation), *rabi* rice (transplanting/tillering), cotton (boll bursting/picking), Bengal gram (flowering/pod development), red gram (pod formation/ pod development), cow pea and sesame (vegetative/flowering), rice fallow pulses (vegetative) and rice fallow maize (sowing) in Andhra Pradesh.
- Cowpea, black gram and green gram (pod maturity / harvesting), pigeon pea (harvesting), chilli (fruiting), sunflower (vegetative), chick pea (pod maturity), grapes (flowering / fruiting), October sown wheat (flowering/pod filling), jowar (grain maturity), ragi (tillering), maize (cob formation/cob maturity), horse gram (flowering / pod formation), mango (flowering), sugarcane (maturity / ripening) in Karnataka.
- Coconut (nut development), *Puncha* rice (tillering), rubber (tapping), vegetables (harvesting), *mundakan* rice (maturity / harvesting), cardamom (new planting) in Kerala.
- Late *Samba* rice (dough stage), *samba* rice (flowering/grain formation/maturity), *thaladi* rice (flowering/milky stage), sorghum (maturity/harvesting), rice fallow pulses (sowing), rainfed groundnut (flowering / peg formation), cotton (boll maturity), sugarcane (vegetative /ratooning), maize (cob maturity/harvesting), red gram (flowering), irrigated groundnut (sowing), vegetables (fruiting) in Tamil Nadu.

CENTRAL INDIA [M.P., CHHATTISGARH]

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

Annexure III

List of Varieties

Assam

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

Okra: Parvani Kranti, Arka Anamika.

Sunflower: Jwalamukhi.

Tripura:

Mung: PDM 139.

Black gram: T-9, Panth Urd- 35.

Tomato: Anup.

Odisha

Groundnut: Smruti and JL-24, TMV-2, Devi, Phule Pragati, ICGS-44, TAG-24, TG-3 and TG 38.

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

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

Sugarcane: CO 740, CO 6304, CO7219, COT 8201, Neelamadhaba and Sabita.

Sesame: Vinayak, Kanak, Kalika, Uma, Usha.

Maize: Dhabal, Navjot, Decca, Ganga, Deccan 105, Kargil 900-M, PRO 345, Kargil 633.

Sunflower: Morden, PAC-36, KBSH, MSFH-8, SFH-7, KBSH-1, MSFH-1, MSFH-17.

West Bengal:

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

Jharkhand:

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

Rice: IR-36, IR-64, Naveen, Lalat, MTU-1010.

Jammu & Kashmir

Onion : Pusa Red, N-53), **Knolkhol :** Purple Vienna and White Vienna

Radish : Japanese White and Minowase, **Beans-Bush types :** Contender and Arka Komal and **Potato** Kufri Jyoti,

Rajasthan

Bottle gourd: Pusa summer prolific long, Pusa summer prolific round, Pusa manjri, Pusa Navin, Pusa Meghdoot, Arka vihar

Pumpkin: Pusa viswas, Pusa Alankar, Arka Chandan

Khira : Balam khira, Pusa Sayong

Bitter gourd: Coimbatore long, Pusa domosami, Priya, Ark harit, Pusa Vishesh

Tinda: Bikaner green, Dil pasand, Tinda Ludhiana, Arka Tinda

Cucumber: Lakhnow Ageti, Arka sheetal

Watermelon : Durgapura Madhu, Punjab, Sunahari, Punjab Hybrid, Hara Madhu, Pusa Madhuras,

Tarbuji : Sugar Baby, Durgapura Meetha, Durgapura Kesar, Arka Jyoti Sankar, Madhu Sankar,

Delhi

Spinach: Pusa Harit, hybrid varieties.

Karnataka:

Green gram: Selection-4 and Pusa Bisaki.

Cow pea: C-152.

Tamil Nadu:

Black gram: ADT 3.

Green gram: ADT 3.

Maharashtra

Suru Sugarcane: CO-419, COM-7125, CO-860032, CO-94012 and COM-0265 for Madhya Maharashtra and CO-86032, CO-M 7125, CO-8014, CO-740, CO-7219 for Marathwada region.

Summer sesamum: AKT-101 and NT11-99.

Bajra: Shraddha, Saburi and Shanti.

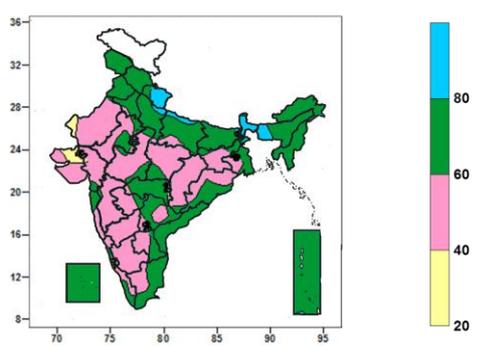
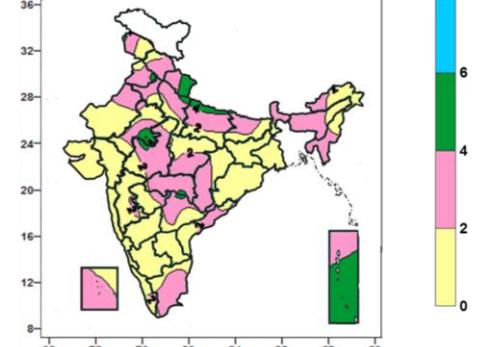
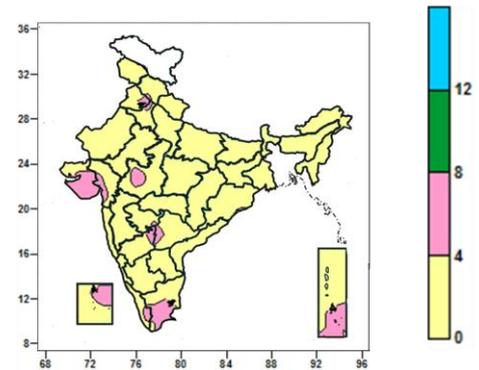
Groundnut : SB11, JL286, TPG41, TAG24, TG26 and JL501.

Gujarat

Groundnut: TAG-24, GG-2, TG-37-A, GG-4, GG-26.

Annexure IV

Contour maps for Relative Humidity, Cloud Amount and Wind speed for the week ending on 30.01.2013

<p>Relative Humidity (%) over India for the week ending 30.01.2013</p> 	<p>Cloud amount (okta) over India for the week ending 30.01.2013</p> 
<p>Relative humidity ranged between 80 to 100% over many parts of Uttarakhand, Sub-Himalayan West Bengal, Sikkim, some parts of Uttar Pradesh, Assam, 40 to 60% over many parts of Rajasthan, Jharkhand, Madhya Pradesh, Chhattisgarh, Gujarat, Saurashtra & Kutch, Maharashtra (other than Vidarbha), Karnataka, some parts of Haryana, East Uttar Pradesh, Gangetic West Bengal, Odisha, Rayalaseema, Telangana, Kerala Tamil Nadu, 20 to 40% over some parts of West Rajasthan, Kutch, 60 to 80 % over remaining parts of the country.</p>	<p>Cloud amount 4 to 6 okta over many parts of Andaman & Nicobar Islands, some parts of Uttarakhand, Punjab, Uttar Pradesh, East Rajasthan, West Madhya Pradesh, Vidarbha, Telangana, below 4 okta over remaining parts of the country.</p>
<p>Wind speed (knots) over India for the week ending 30.01.2013</p> 	
<p>Wind speed ranged between 4 to 8 knots over many parts of Saurashtra & Kutch, some parts of Punjab, Haryana, Himachal Pradesh, Gujarat, West Madhya Pradesh, Marathwada, North Interior Karnataka, Telangana, Kerala, Tamil Nadu, Lakshadweep, Andman & Nicobar Islands, 0 to 4 knots over remaining parts of country.</p>	