



# *National Agromet Advisory Service Bulletin*

*Friday 28<sup>th</sup> December 2018*

*(For the period 28<sup>th</sup> December 2018 to 2<sup>nd</sup> January 2019)*



*Issued by*

*India Meteorological Department*

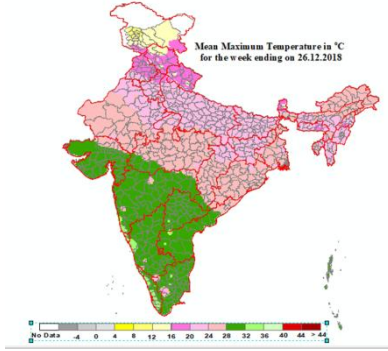
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District AAS Bulletin: <http://www.imdagrimet.gov.in/node/3545>

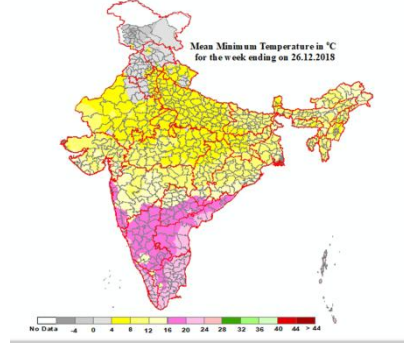
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

**Spatial distribution of weather parameters for the week ending on 26.12.2018**

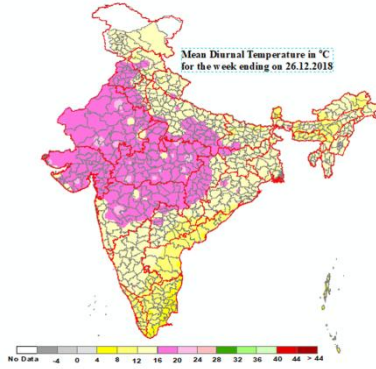
**Mean Maximum Temperature (°C) for the week ending on 26.12.2018**



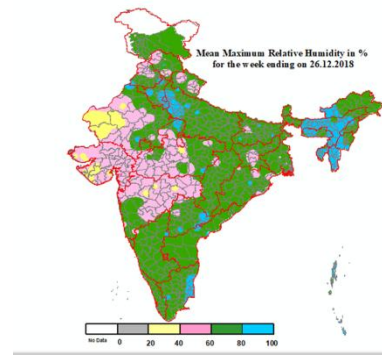
**Mean Minimum Temperature (°C) for the week ending on 26.12.2018**



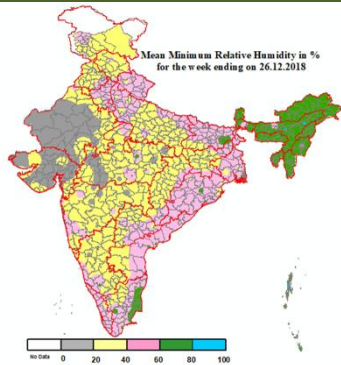
**Mean Diurnal Temperature Variation (°C) for the week ending on 26.12.2018**



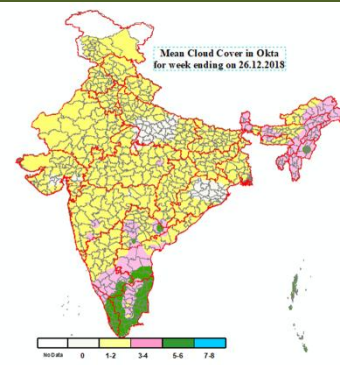
**Mean Maximum Relative Humidity (%) for the week ending on 26.12.2018**



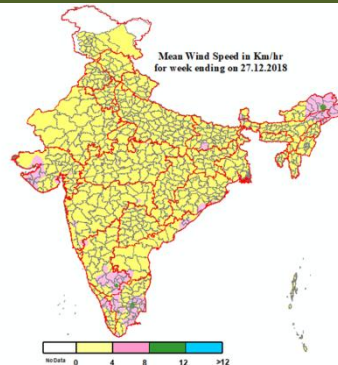
**Mean Minimum Relative Humidity (%) for the week ending on 26.12.2018**



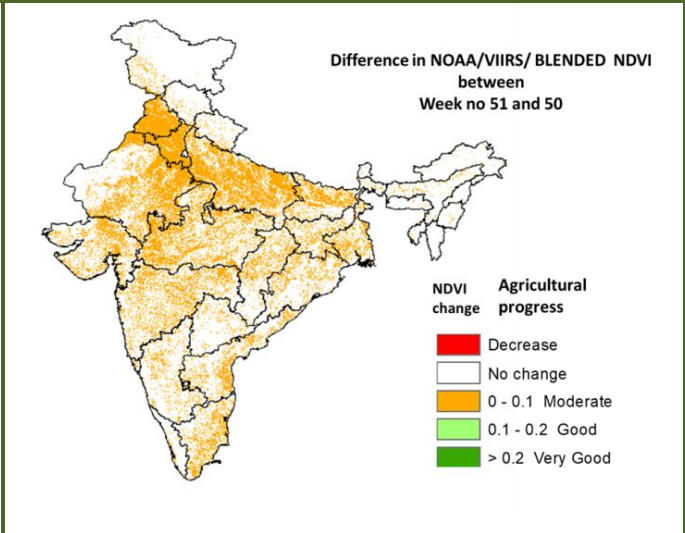
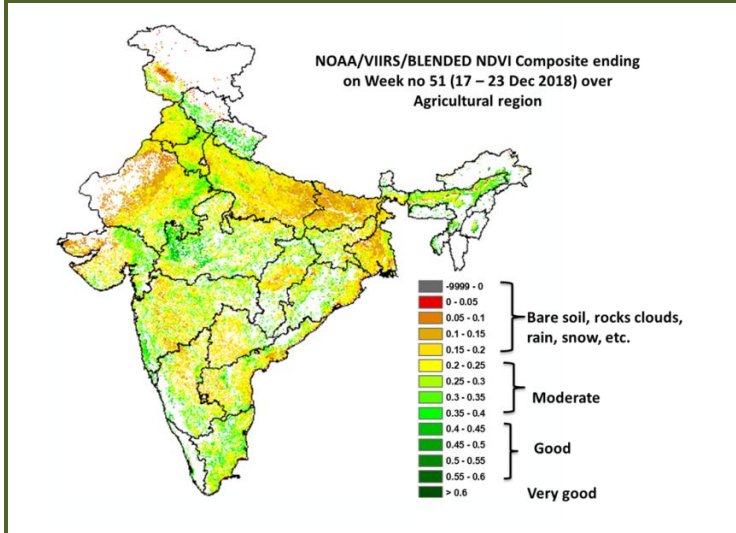
**Mean Cloud Cover (okta) for the week ending on 26.12.2018**



**Mean Wind Speed (km/hr) for the week ending on 26.12.2018**



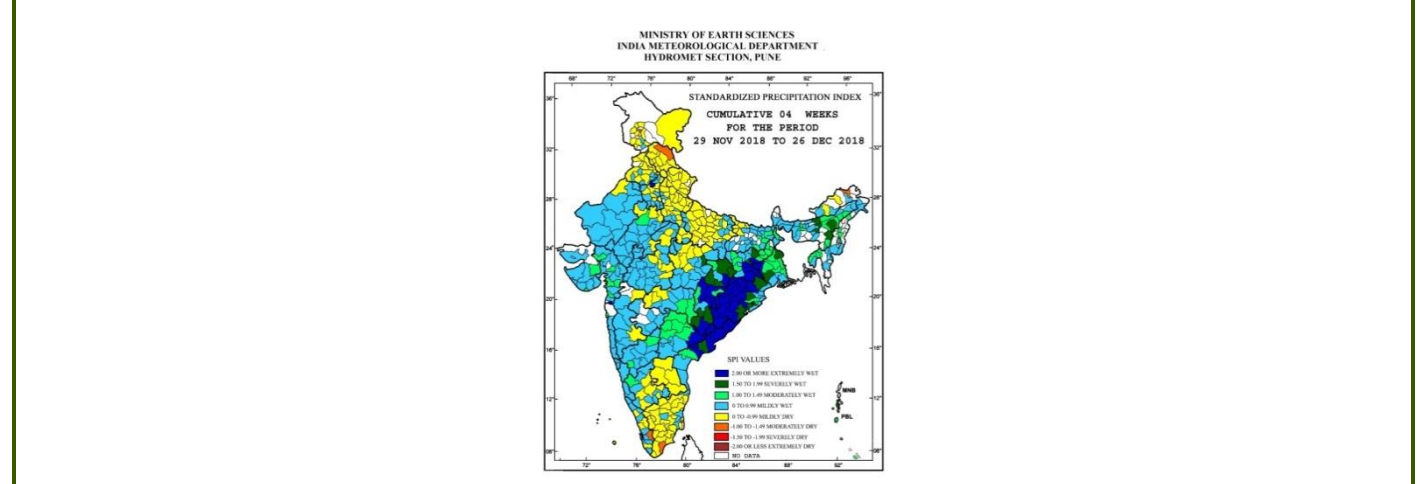
**NOAA/VIIRS BLENDED NDVI composite for the week number 51 (17.12.2018 to 23.12.2018) over Agricultural regions of India**      **Difference in NOAA/VIIRS/BLENDED NDVI between week number 51 and 50**



- Agriculture vigour is good at many places over West Madhya Pradesh; at a few places over Uttarakhand, North Eastern states, Sub Himalayan West Bengal, Northern parts of Chhattisgarh, Sikkim & East Madhya Pradesh and at isolated places over Punjab and adjoining Haryana, East Rajasthan, Jharkhand, Interior parts of Odisha, Konkan and Goa, North Telangana, Gujarat Andhra Pradesh, Karnataka and Kerala. It is moderate over rest of the country.

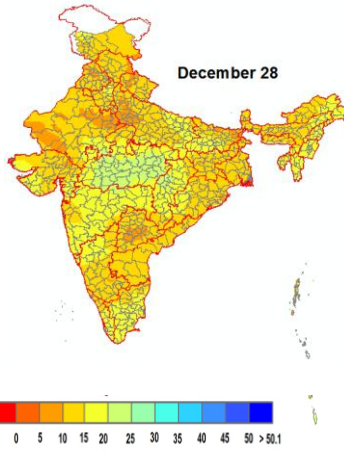
- Moderate difference in agricultural vigour was noticed at most places over Punjab, Haryana; many places over Uttar Pradesh, East Rajasthan, West Madhya Pradesh, Bihar, Maharashtra, Tamilnadu, Gujarat, North Chhattisgarh & Gangetic West Bengal and at a few to isolated places over rest of the country.

**Standardised Precipitation Index**  
**Cumulative 4 weeks for the period 29<sup>th</sup> November to 26<sup>th</sup> December 2018**

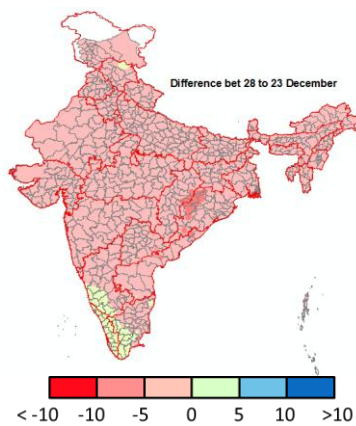
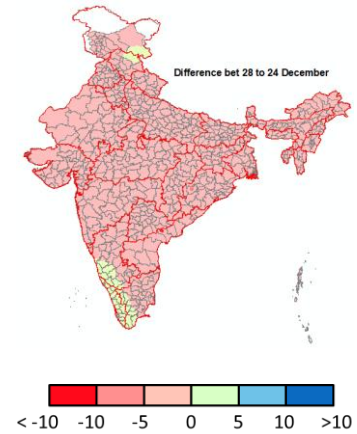
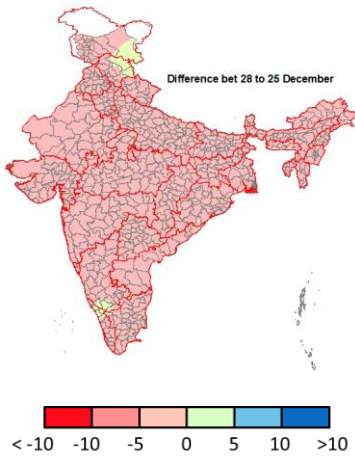
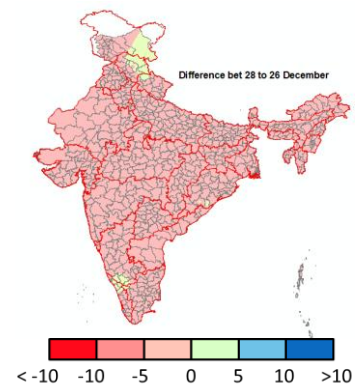
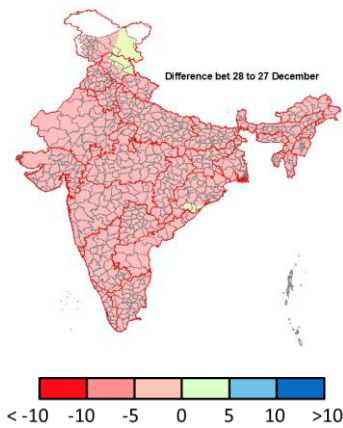


- Extremely/severely wet conditions experienced in most districts of Odisha; many districts of Chhattisgarh; few districts of Assam; Jharkhand; Andhra Pradesh; Purulia, Murshidabad, West Midnapore districts of West Bengal; Kaithal district of Haryana; Shahdol district of Madhya Pradesh; Dadara & Nagar Haveli district of Gujarat Region; Khammam district of Telangana.
- Moderately dry conditions experienced in Upper Siang district of Arunachal Pradesh; Lahaul & Spiti district of Himachal Pradesh; Srinagar district of Jammu & Kashmir; Toothukudi, Karaikal districts of Tamil Nadu & Puducherry; Idukki district of Kerala.
- Rest of the country experienced moderately wet/mildly dry/mildly wet conditions.

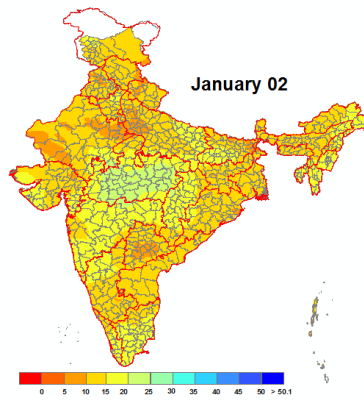
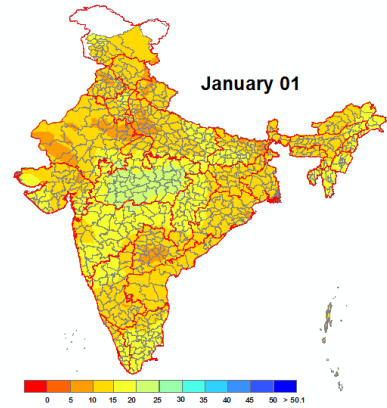
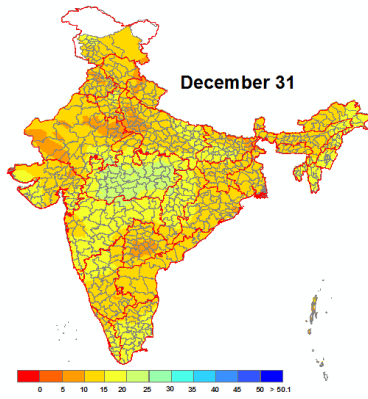
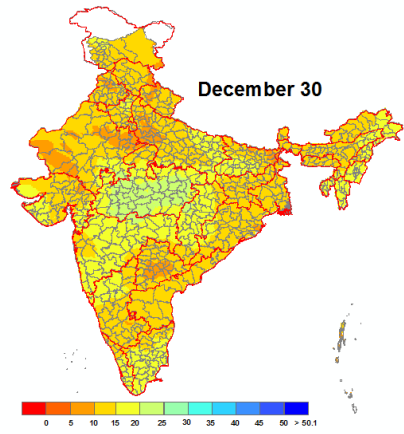
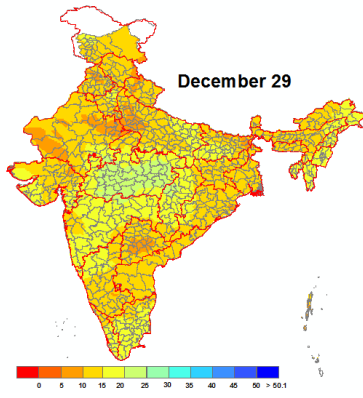
Daily Soil Moisture (mm) for 28<sup>th</sup> December 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 29<sup>th</sup> December 2018 to 2<sup>nd</sup> January 2019 (ending at 0830 IST)  
for 60 cm depth**



## Weather Forecast for next 5 days valid upto 0830 hours of 2<sup>nd</sup> January 2019

- Meteorological sub-division wise detailed 5 days precipitation forecast is given in Table below.
- Shallow to moderate fog very likely at isolated places in morning hours over northern plains and northeastern states during next 3-4 days.

### 5 Day Rainfall Forecast (Mid-day) 28<sup>th</sup> December 2018

Met-Sub-Division	28-Dec Today	29Dec Sat	30Dec Sun	31Dec Mon	01Jan Tue
1. Andaman & Nicobar Islands	DRY	DRY	DRY	DRY	ISOL
2. Arunachal Pradesh	SCT	ISOL	DRY	DRY	DRY
3. Assam & Meghalaya	ISOL	DRY	DRY	DRY	DRY
4. N. M. M. & T.	ISOL	DRY	DRY	DRY	DRY
5. S.H. West Bengal & Sikkim	ISOL	DRY	DRY	DRY	DRY
6. Gangetic West Bengal	DRY	DRY	DRY	DRY	DRY
7. Odisha	ISOL	DRY	DRY	DRY	DRY
8. Jharkhand	DRY	DRY	DRY	DRY	DRY
9. Bihar	DRY	DRY	DRY	DRY	DRY
10. East Uttar Pradesh	DRY	DRY	DRY	DRY	DRY
11. West Uttar Pradesh	DRY	DRY	DRY	DRY	DRY
12. Uttarakhand	DRY	DRY	DRY	DRY	ISOL
13. Haryana, Chd & Delhi	DRY	DRY	DRY	DRY	DRY
14. Punjab	DRY	DRY	DRY	DRY	ISOL
15. Himachal Pradesh	DRY	DRY	ISOL	DRY	SCT
16. Jammu & Kashmir	DRY	ISOL	ISOL	DRY	FWS
17. West Rajasthan	DRY	DRY	DRY	DRY	DRY
18. East Rajasthan	DRY	DRY	DRY	DRY	DRY
19. West Madhya Pradesh	DRY	DRY	DRY	DRY	DRY
20. East Madhya Pradesh	DRY	DRY	DRY	DRY	DRY
21. Gujarat Region	DRY	DRY	DRY	DRY	DRY
22. Saurashtra & Kutch	DRY	DRY	DRY	DRY	DRY
23. Konkan & Goa	DRY	DRY	DRY	DRY	DRY
24. Madhya Maharashtra	DRY	DRY	DRY	DRY	DRY
25. Marathwada	DRY	DRY	DRY	DRY	DRY
26. Vidharbha	DRY	DRY	DRY	DRY	DRY
27. Chhattisgarh	DRY	DRY	DRY	DRY	DRY
28. Coastal Andhra Pradesh	ISOL	DRY	DRY	DRY	DRY
29. Telangana	DRY	DRY	DRY	DRY	DRY
30. Rayalaseema	DRY	DRY	DRY	DRY	DRY
31. Tamilnadu & Puducherry	ISOL	ISOL	ISOL	DRY	DRY
32. Coastal Karnataka	DRY	DRY	DRY	DRY	DRY
33. North Interior Karnataka	DRY	DRY	DRY	DRY	DRY
34. South Interior Karnataka	ISOL	ISOL	DRY	DRY	DRY
35. Kerala	ISOL	ISOL	ISOL	DRY	DRY
36. Lakshadweep	ISOL	ISOL	ISOL	DRY	DRY

#### % Station Reporting Rainfall

% Stations	Category	% Stations	Category
76-100	Widespread (WS/ Most Places)	26-50	Scattered (SCT/ A Few Places)
51-75	Fairly Widespread (FWS/ Many Places)	1-25	Isolated (ISOL)
No Rain	Dry		

### Weather Warning during next 5 days

- **28 December (Day 1):** Cold wave conditions at many places with Severe cold wave conditions at a few places very likely over Punjab and north Rajasthan and Cold wave conditions at a few places with Severe Cold wave conditions at isolated places over West Madhya Pradesh Himachal Pradesh and Uttarakhand; Cold wave conditions at many places over Haryana, Chandigarh & Delhi and Cold Wave conditions at isolated places over north Madhya Maharashtra, Vidarbha, East Madhya Pradesh, Jammu & Kashmir, Gangetic West Bengal, Jharkhand, Bihar, West Uttar Pradesh and Gujarat State. Ground frost conditions at isolated places very likely over West Madhya Pradesh, Punjab, north Rajasthan, Jammu & Kashmir, Himachal Pradesh and Uttarakhand. Dense Fog very likely at isolated places over Punjab and Sub- Himalayan West Bengal. Thunderstorm

accompanied with hailstorm likely at isolated places over Meghalaya.

- **29 December (Day 2):** Cold wave conditions at many places with Severe cold wave conditions at a few places very likely over Punjab and north Rajasthan; Cold wave conditions at many places over Haryana, Chandigarh & Delhi and Cold Wave conditions at isolated places over Vidarbha, Madhya Pradesh, north Chhattisgarh, Odisha, Gangetic West Bengal, Jharkhand, Bihar, Himachal Pradesh and Uttarakhand, West Uttar Pradesh and Gujarat State. Ground frost conditions at isolated places very likely over Punjab, north Rajasthan, Himachal Pradesh, and Uttarakhand. Dense Fog likely at isolated places over Punjab, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Sub-Himalayan West Bengal.
- **30 December (Day 3):** Cold wave conditions at many places with Severe cold wave conditions at a few places very likely over Punjab and north Rajasthan; Cold wave conditions at many places over Haryana, Chandigarh & Delhi and Cold Wave conditions at isolated places over Madhya Pradesh, north Chhattisgarh, Odisha, Gangetic West Bengal, Jharkhand, Bihar and West Uttar Pradesh. Ground frost conditions at isolated places very likely over Punjab and north Rajasthan. Dense Fog likely at isolated places over Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- **31 December (Day 4):** Cold wave conditions at a isolated places likely Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Madhya Pradesh, Odisha, Gangetic West Bengal, Bihar and Jharkhand. Dense Fog likely at isolated places over Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Rajasthan, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.
- **01 January (Day 5):** Dense Fog likely at isolated places over Rajasthan.

#### Weather Outlook for subsequent 2 days from 2<sup>nd</sup> to 4<sup>th</sup> January 2019

- Cold wave conditions are likely to continue over parts of northern plains and central India, but with less severity.
- Scattered to fairly widespread precipitation likely over western Himalayan region and isolated rainfall over adjoining plains of northwest India, southeast coast of peninsular India and Andaman & Nicobar Islands.
- Dry weather likely over the rest of the country.

#### Salient Advisories

- As cold wave conditions at many places with severe cold wave conditions at a few places and ground frost conditions at isolated places very likely over **Punjab** and **north Rajasthan** from 28<sup>th</sup> to 30<sup>th</sup> and cold wave conditions at a few places with severe cold wave conditions at isolated places over **Himachal Pradesh** and **Uttarakhand** on 28<sup>th</sup>, cold wave conditions at many places over **Haryana, Chandigarh & Delhi** from 28<sup>th</sup> to 30<sup>th</sup> and cold wave conditions at isolated places over **Jammu & Kashmir** on 28<sup>th</sup>, over **West Uttar Pradesh** from 28<sup>th</sup> to 31<sup>st</sup>, over **Punjab, Haryana, Chandigarh & Delhi** on 31<sup>st</sup> December, cold wave conditions at a few places with severe cold wave conditions at isolated places and ground frost conditions at isolated places very likely over **West Madhya Pradesh** on 28<sup>th</sup>, cold wave conditions at isolated places over **East Madhya Pradesh** on 28<sup>th</sup>, over **Madhya Pradesh** from 29<sup>th</sup> to 30<sup>th</sup>, over **north Chhattisgarh** on 29<sup>th</sup> and 30<sup>th</sup> December, cold wave conditions at isolated places very likely over **Gangetic West Bengal, Jharkhand, Bihar** from 28<sup>th</sup> to 31<sup>st</sup>, over **Odisha** on 29<sup>th</sup> and 30<sup>th</sup> December, cold wave conditions at isolated places very likely over **north Madhya Maharashtra** on 28<sup>th</sup>, over **Vidarbha** and **Gujarat State** on 28<sup>th</sup> and 29<sup>th</sup> December, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from cold winds, cover young fruit plants with straw/polythene sheets/gunny bags. Also farmers in Punjab are advised to provide light irrigation to wheat. Apply light irrigation in fruit plants to avoid adverse effect of low temperature and possible ground frost. Cover banana bunches with porous polythene bags.
- Prevailing low temperatures may cause cold injury in rice nurseries in **Telangana**. To overcome cold injury and for better nursery growth, cover the nursery beds with polythene sheet during night and remove in the morning, irrigate the nursery bed every day in the evening and let out the water in the morning.
- As dense fog at isolated places very likely over over **Punjab** from 28<sup>th</sup> to 31<sup>st</sup>, over **Haryana, Chandigarh &**

**Delhi, West Uttar Pradesh** on 30<sup>th</sup> and 31<sup>st</sup> and over **Rajasthan** on 31<sup>st</sup> December and 1<sup>st</sup> January, **Assam & Meghalaya** and **Nagaland, Manipur, Mizoram & Tripura** from 29<sup>th</sup> to 31<sup>st</sup> December, monitor the standing crops for incidence and spread of pest and diseases, potato, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake appropriate plant protection measures.

- As rain/snow likely at many places **over Jammu & Kashmir** on 1<sup>st</sup> January, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- In **Punjab**, keep animals inside the sheds during night and provide dry bedding to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with the cold condition. Animals should be given mineral mixture along with salt regularly and wheat grains, jaggery etc. may be provided @ 10%-20% in the daily ration during winter season to meet the energy requirement of the animals, 10% extra dry matter should be provided over and above the total requirement to fulfill the extra energy requirement in winter. In Poultry, keep the chicks warm by providing artificial light in the poultry sheds and use curtain at the windows. Give balanced feed to the poultry birds. Make clean poultry sheds for better health of poultry birds.

### *Detailed Agromet Advisories*

#### **SOUTH INDIA [TAMIL NADU, TELANGANA, ANDHRA PRADESH, KARNATAKA, KERALA]**

- **Realised Rainfall:** Rainfall occurred in Kottayam district of Kerala, Nagapattinam, Puducherry, Tirunelveli, Tiruvarur districts of Tamilnadu during the week. Weather remained mainly dry/dry over rest of the region.
- **Advisories:**
  - **Kerala:**
    - In High Altitude Zone, short duration vegetable crops like Amaranthus, cow pea etc. can be cultivated in the inter spaces of newly planted banana crop. Apply first dose of fertilizers (50:65:65g NPK per plant), spray 1% Bordeaux mixture as a prophylactic measure to control leaf spot. Also Farmers are advised to spray Quinalphos (0.05%) 400 ml in 200 litres of water against coffee berry borer on coffee.
    - In Southern Zone, weather conditions may favour the incidence of leaf folder in paddy, spray Flubendiamide (Takumi 20 WDG) @ 2.5ml per 10 L of water to control the incidence.
    - In Central Zone, there are chances of attack of spodoptera in banana, destroy the affected leafs along with the Spodoptera. If Spodoptera attack is severe, spray Quinalphos 2ml per one litre of water or chlorantraniliprole 3 ml per ten litre of water.
    - In Northern Zone, chances of attack of tea mosquito bug and Anthracnose in cashew , spray Quinalphos (2ml/L) and against Anthracnose spray Mancozeb(2gm/Litre of water)., also to control shoot and fruit borer in okra, spray Chlorantraniliprole @ 3 ml in 10 litres of water 2-3 times at weekly interval on a non rainy day. To control brown plant hopper in rice, apply Thiomethoxam @ 2g per 10 litres of water or Spray Buprofezin @ 1.75 ml per litre.
  - **Andhra Pradesh:**
    - In North Coastal Zone, due to recent cyclonic storm water stagnation and lodging has been observed in rice and red gram. Spray 5 % salt solution on harvested sheaves of rice if it is in the field and turn the sheaves up and downward for aeration and for quick drying. In red gram, lift lodged plants and staking of 2-3 plants to keep the plants upright.
    - In Krishna Godavari Zone, in red gram, spray KNO<sub>3</sub> 1% solution or water soluble fertilizers to protect the crop from untimely rains.
    - In Rayalaseema, undertake sowing of Gingelly till January 15<sup>th</sup> . With- hold irrigation in mango orchards. The prevailing night temperatures and with- holding of irrigation will help in initiating flowering. If flowering delayed spray KNO<sub>3</sub> or Multi K @10g + urea @5g per liter water.
  - **Telangana:**
    - Prevailing low temperatures may cause cold injury in rice nurseries in the state. To overcome cold injury and for better nursery growth, cover the nursery beds with polythene sheet during night and remove in the morning, irrigate the nursery bed every day in the evening and let out the water in the morning, apply 2 kg urea for 200 m<sup>2</sup> of nursery area at 10-15 days after sowing and apply Carbofuran 3G @ 1 kg/200 sq.m (5 cents) to rice nurseries one week before pulling nursery.
    - For prevailing weather conditions may congenial for maruca in redgram. Spray Chlorpyrifos @ 2.5 ml or



Novaluron @ 0.75 ml along with dichlorvos @ 1.0 ml per litre of water and in rabi Bengal gram undertake intercultivation twice at 20 and 30 DAS.

▪ **Tamil Nadu:**

- In Western Zone, since rainfall is anticipated in forthcoming days, irrigation can be postponed to garden land crops and harvest operation may be also postponed. Also, in grapes both powdery mildew and downy mildew would be seen under this weather condition. To control powdery mildew spray 0.3% Wettable sulphur. Against downy mildew spray 1% Bordeaux mixture.
- In North Eastern Zone, in water stagnation areas, farmers are advised to apply foliar spray of urea 1% + Zinc sulphate 0.5 % (200 liters of water + 2 kg urea +1 kg zinc sulphate/acre) may be hand sprayed in the morning and evening hours for the tillering and flowering stage crops.
- In High Rainfall Zone, the flower buds of clove should be harvested when the buds change in colour from green to slightly pinkish tinge in clear weather. Also, due to the prevailing weather conditions, there are chances for increase in the severity of blast incidence, spray Tricyclozole 75 wp @ 500 g/ha.
- In Cauvery Delta Zone, leaf folder incidence is being noticed in the samba and thaladi paddy crops due to prevailing weather condition, spray Profenophos 50 EC @ 400 ml/ acre, when rainfall does not occur.

▪ **Karnataka:**

- In North Interior Karnataka, provide irrigation to groundnut crop. Carry out repeated intercultural operations in chick pea, safflower and sorghum crops to conserve soil moisture. Continue picking of matured cotton bolls.
  - In South Interior Karnataka, undertake sowing of pulses like black gram, green gram and also the green manure crop sun hemp to utilize residue moisture after harvest of the rice. Continue harvesting of matured sugarcane, pepper, ginger and turmeric crops.
  - In North Interior Karnataka, for the management of tur pod fly, spray the crop with Thiamethoxam @0.5 gm or Imidacloprid @0.5 ml / litre of water. For control of sucking pests (aphids) in safflower, spray Dimethote (Rogor) @1.75 ml / liter of water or Monocrotophos @1 ml or Acephate @1 gm / liter of water.
  - In South Interior Karnataka, due to low temperature and cloudy weather rose plants are infected with leaf spot disease; to manage this spraying or drenching with Bavistin @ 1 g/litre of water is advised.
  - In Coastal Karnataka, spray with lambda Cyhakoثرin @0.6ml/liter against Tea mosquito bug in cashew crop.
- **Animal Husbandry**
- In Karnataka, maintain the optimum room temperature in sericulture, poultry and dairy unit by providing electric bulb. Vaccinate (ET vaccine) sheep and goats against Enterotoxemia. Vaccinate the dairy cow against the mastitis diseases.
  - In Southern Zone, prevailing weather conditions are favourable for developing of Aplatoxin infection in the Corn kernels and paddy straw which may affect the health of your cattle. To avoid the infection ,dry the Corn kernels and paddy straw before feeding.

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

- **Realised Rainfall:** Weather remained mainly dry/dry over the region during the week.

• **Advisories:**

- As dense fog at isolated places very likely over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura from 29<sup>th</sup> to 31<sup>st</sup> December, monitor the standing crops for incidence and spread of pest and diseases, potato, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake appropriate plant protection measures.
  - As thunderstorm accompanied with hailstorm likely at isolated places over Meghalaya on 28<sup>th</sup> December, farmers are advised to use hail net for orchard crops to protect from mechanical damage, provide support to banana, young fruit plants and staking in vegetables to prevent the crops from lodging due to strong winds and Keep cattle indoor during thunderstorm.
- **Arunachal Pradesh:**
- Complete harvesting of *kharif* rice at the earliest. Complete sowing of mustard, pea/gram in rice fallow and transplanting of rabi vegetables.
  - There is chance of attack of white rust/downy mildew disease in mustard at flowering/pod formation stage. Spray Metalaxyl + Dithane M-45 @ 2.5g/litre. In present weather condition there is high probability of attack of late blight in potato. Spray Mancozeb @ 2 g/4 litres of water on a non rainy day.
- **Assam:**
- Complete harvesting of Sali rice at the earliest. Continue sowing of wheat and sowing of *Boro* rice in Assam. Continue transplanting of the *Boro* rice seedlings in the main field, which have attained 5-6 leaf stage. Complete sowing of pea and *rabi* pulses.
  - Due to low temperature, there is chance of attack of saw fly and aphid in the field of rapeseed–mustard at vegetative stage. Spray Chloropyriphos 20 EC or Dimethoate 30 EC or Ragor @ 2 ml per litre of water. The

weather is found congenial for occurrence of the blight disease in potato and tomato. To control this disease six spraying with Mancozeb 75% (Indofil M 45/ Dithane M 45) @ 2.5g/litre at canopy closure at an interval of 7-10 days.

- In Hill Zone of Assam, due to humid and cloudy weather there is chance of attack of late blight disease in tomato. Apply Ridomil MZ-72 (2g/ litre) and Indofil M-45 2.5g/litre at 15 days interval.
- **Meghalaya:**
- Continue harvesting of *Sali* rice. Maintain proper soil moisture in the field of cole crops (cabbage, cauliflower, broccoli ) by irrigation.
- **Manipur:**
- Continue sowing of *rabi* maize.
- Spray Flubendiamide (Fame) @ 2ml/10 litres of water against leaf eating caterpillar pest attack in cole crops.
- **Mizoram:**
- Continue harvesting of low land rice.
- **Tripura:**
- Continue nursery sowing of *Boro* rice. Complete sowing of *rabi* legumes like toria, sesame, lentil and planting of potato.
- Weather may conducive for blight disease attack in potato. Apply combination of Metalaxyl and Mancozeb @ 1-2 g per litre of water as prophylactic measure or Cymoxanil @ 2 g per litre of water as curative measure.
- **Nagaland:**
- Complete harvesting of TRC/WRC rice.
- **Animal Husbandry**
- In Central Bramhaputra Valley Zone of Assam, in winter protect poultry birds from cold by using electric bulb (300Watt for 100 sq.foot) to prevent Coryza disease. In case of lacrimation and swelling of the head, treat the fowl with Sulphur drugs.
- In North Eastern States, to protect poultry birds from cold winds, gunny bags or plastic sheath curtains should be installed on the side walls of shed house and bedding material (litter) should be increased by six inches. Care should be taken not to restrict ventilation. Undertake vaccination against ranikhet disease in poultry during this period.

#### EAST INDIA [JHARKHAND, BIHAR, ODISHA, WEST BENGAL & SIKKIM, ANDAMAN & NICOBAR ISLANDS]

- **Realised Rainfall:** Rainfall occurred in North & Middle Andaman district of Andaman & Nicobar Islands during the week. Weather remained dry over rest of the region.
- **Advisories:**
  - As cold wave conditions at isolated places very likely over Gangetic West Bengal, Jharkhand, Bihar from 28<sup>th</sup> to 31<sup>st</sup>, over Odisha on 29<sup>th</sup> and 30<sup>th</sup> December, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from cold winds, cover young fruit plants with straw/polythene sheets/gunny bags.
  - **Odisha:**
  - Carry out intercultural operations in wheat crop at 21 DAS. Complete the nursery sowing of summer paddy by the end of December and transplant rice seedlings in January to maximize yield. Complete the sowing of pulses (lentil, field pea and chick pea) and planting of potato. It is optimum time to sow toria, mustard, linseed and sunflower. Go for sowing of winter vegetables. Use low cost polythene cover above the vegetables nursery to avoid poor germination due to low temperature. Carry out weeding and hoeing in early sown groundnut.
  - Medium duration arhar at flowering stage is found to be affected by pod borer. Spray 400 ml Endosulphan or 800 ml neem based pesticides or 250 LE NPV in 200 litre water per acre. For fruit and shoot borer in brinjal, spray Neem based pesticide 1500ppm@600ml/acre at initial stages and later on go for alternate spray of Spinosad 45%SC@70ml/acre and Thiodicarb@250g/acre at 15 days interval.
  - **Bihar:**
  - Complete the sowing of late sown wheat crop by 25th December. Transplant 50-55 days old onion seedlings in small beds. Apply light irrigation to onion crop. Carry out weeding in potato and garlic crops followed by light irrigation. Provide irrigation in timely sown wheat which reaches Crown Root Initiation (CRI) stage @.21-25 days after sowing. Carry out thinning and weeding in late sown mustard crop and give light irrigation when crop is 35 days old.
  - Monitor vegetables crops for blight disease. Spray Diethane M-45@ 2.5 gram/liter of water if disease infestation is observed. For blight disease in potato crop, spray Mancozeb @ 2.5-3gm or Radomil @ 2gm per litre of water on a clear day.
  - **Jharkhand:**
  - Continue harvesting of matured late rice varieties. After threshing, dry the grains and store them at moisture

level 8-10%. Raise nursery of summer rice with improved rice varieties like IR-36, IR-64, Naveen, Lalat, Parijat(80-85 days), etc. Continue sowing of improved varieties of table pea. Carry out transplanting of onion. Carry out weeding and intercultural operations in gram and lentil. Carry out nipping (pruning of upper parts of the plant) in gram crop at 30 to 40 DAS (before flowering stage) to enable plants to bear more branches and subsequently more flowers and pods. Timely sown rapeseed crop is approaching maturity stage. Harvest the crop when siliqua turns into bright yellow colour. Sun-dry the harvested crop for 2-3 days before threshing.

- Spray Indofil M-45 or Diathen Z-78 @ 2 g per litre of water for Alternaria blight in wheat crop. For aphids in mustard/rai crop, spray Methyl Dematone @ 1.5 to 2 ml/litre of water at 15 days interval. Table pea crop may suffer from attack of powdery mildew disease. Spray Karathen @ 1 ml or Sulfox @ 3 gm per litre of water to control the disease. To prevent pod borer in pigeon pea, apply three alternate sprays of Endoxacarb or Spinosad or Dhawan gold @ 1.5 to 2 ml/ liter of water @ 50% flowering and after 15 days, apply Monocrotophos @ 2 ml/litre of water.

- **West Bengal:**

- As dense fog very likely at isolated places over Sub- Himalayan West Bengal on 28<sup>th</sup> and 29<sup>th</sup> December, monitor the standing crops for incidence and spread of pest and diseases, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake appropriate plant protection measures.
- In Sub-Himalayan West Bengal, undertake planting of potato tuber. Continue land preparation/sowing for mustard. Start preparing Boro rice nursery. Continue harvesting Mandarin orange fruits as per the elevation. Carry out careful rouging and destruction of infected ginger and turmeric plants. Continue sowing of winter vegetable seeds in the nursery bed. Before sowing treat the seed bed with fungicide Copper-oxychloride @ 4g/litre of water.
- In Gangetic West Bengal, continue nursery sowing of boro paddy after seed treatment. Maintain a thin layer of water over the seed bed. Continue sowing of Rabi maize. Carry out inter cultural operations in mustard, gram, pea, onion, garlic and cole crops. Apply light irrigation to vegetable crops. Wrap plastic sheets around mango trunk and apply grease to seal any cracks to prevent young mealy bugs from climbing up the trees.
- In Sub-Himalayan West Bengal, for management of winter vegetable pest at early vegetative stage, spray Chlorpyrifos 50% + Cypermethin 5% @ 1.5 ml/liter of water. To control leaf blight in mustard crop, spray Copper Oxychloride @ 3-4g / liter of water. For management of potato insect/pests, spray Neem oil 1% @ 3ml + Sandovit @0.5ml per litre of water at evening hours at 7 days interval.
- In Gangetic West Bengal, spray Neem seed kernal extract solution @ 30ml/litre of water at clear weather condition for aphids and diamond black moth in cole crops. Spray Imidacloprid @1ml/1.5 litres of water for aphids in mustard crop.

- **Andaman & Nicobar Islands:**

- In the Andaman Islands, farmers are advised to dry the harvested rice in the field to safe moisture level (8 to 10 %). Prepare the land and sow seeds of bhendi @ 8-10 kg/ha with the drainage facility.
- In the Nicobar Islands, prepare the land and sow seeds of bhendi @ 8-10 kg/ha with the drainage facility.

**Animal Husbandry**

- In Odisha, clean the shed and de-worm the animals. Give mineral mixture along with salt regularly and wheat grains, jaggery etc. may be provided @ 10%-20% in the daily ration during winter season to meet the energy requirement of the animals.10% extra dry matter should be provided over and above the total requirement to fulfil the extra energy requirement in winter. Vaccinate animals against FMD, Haemorrhagic Septicaemia, Black Quarter, Enterotoxemia etc.
- In Bihar, in view of low temperature and cold, farmers are advised to take proper care of milch animals in terms of shelter and feeds. Provide them feed with protein and calcium rich diet.
- In Jharkhand,take preventive measures to control FMD and vaccinate animals twice in a year. Protect cattle against cold waves and keep their place warm. Provide light bulbs or hot air blowers in the poultry shed to maintain temperature during winter. Give Oxytetracycline @ 1 gm per litre of water to poultry birds for treating fowl cholera and pullorum diseases.
- In West Bengal, sheep and goat are susceptible to Pneumonia and FMD in winter months. Take protective measure in winter months. Give vaccination against FMD. Don't allow sheep and goat to graze at early morning. Arrange electric bulb in the cages of new born chicks. For avoiding moist condition, apply lime and old news paper in the litter.
- In Andaman & Nicobar Islands, to cure anaemia in piglets, provide ferrous sulphate @ 0.5 kg dissolved in 10 litres of hot water.

- **Fisheries**

- In Odisha, increase the fish feed @ 10-20% because of the rise in temperature.
- In West Bengal, apply CIFAX @ 1litre/ha-m for three months or as required to control ulcer disease of fish.

## WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
  - As cold wave conditions at isolated places very likely over north Madhya Maharashtra on 28<sup>th</sup>, over Vidarbha and Gujarat State on 28<sup>th</sup> and 29<sup>th</sup> December, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from cold winds, cover young fruit plants with straw/polythene sheets/gunny bags.
  - **Maharashtra:**
    - In South Konkan, in *rabi* rice, maintain the water level 2-3 cm for first 8-10 days and then increase the level up to 5 cm. Apply light irrigation to groundnut three days after sowing and also undertake gap filling. Undertake thinning of water melon plants @ 2 plants per basin. In North Konkan, Apply 1 kg urea per guntha 15 days old rice nursery. Apply irrigation to groundnut at an interval of 10-12 days. Apply irrigation to orchards and vegetables.
    - In Madhya Maharashtra, continue picking of cotton. Remaining plant parts should be collected and destroyed properly after final picking. Apply irrigation to 18 to 21 days old wheat crop, vegetables and orchards. Undertake intercultural operations like weeding in 30 days old wheat crop.
    - In Marathwada, continue picking of cotton. Remaining plant parts should be collected and destroyed properly after final picking. Continue harvesting and threshing of mature pigeonpea crop.
    - In West Vidarbha, continue picking of cotton. Continue harvesting of matured pigeon pea. Undertake intercultural operation like weeding in safflower, gram and wheat (30-40 days old crop). As cold wave conditions is expected in next 48 hours, apply organic mulches in orchards. In East Vidarbha, Continue nursery sowing of *summer* rice. Undertake thinning operation in 15-20 days old mustard crop.
    - In Madhya Maharashtra, to control pod borer in pigeon pea, spray Flubendiamide 480 SC @ 2 ml in 10 liters of water.
  - **Gujarat:**
    - In North Gujarat, under cold and dry weather condition, apply irrigation in potato, wheat (at CRI stage), mustard, lemon and vegetable crops as per need. Carry out the intercultural operations in cumin, potato, castor, mustard, amaranth and fennel crops. Continue sowing of water melon. Continue picking of matured cotton bolls.
    - In South Gujarat, undertake planting of sugarcane crop. Apply irrigation in pulses as per need. Continue picking of matured cotton bolls.
    - In Middle Gujarat, apply irrigation in potato, pigeon pea and wheat (at CRI stage) crops as per need. Continue picking of matured cotton bolls. Carry out the intercultural operations in chick pea crop.
    - In Saurashtra & Kutch, undertake harvesting of pigeon pea and picking of matured clusters of castor crop. Carry out intercultural operations in mustard crop. Apply irrigation in wheat (CRI stage), castor, coriander, garlic, chick pea and vegetable crops as per need. Continue picking of matured cotton bolls.
    - In North Gujarat, there are chances of blight disease in the potato crop; to control, spray Mencozeb 0.2% @ 30 g plus 25 ml of concentrated desi soap solution in 10 litre of water. Spray next three doses at the interval of 10 days.
    - In Saurashtra & Kutch, under present weather condition heliothes infestation is observed in chickpea; monitor the crop regularly for heliothes and prodenia infestation. Install "T" shaped bird perches in and around crop field; spray neem seed extract 5 % or neem seed oil 50 ml in 10 litres of water. If infestation crosses ETL spray Spinosad @3 ml in 10 liters of water.
- **Animal Husbandry**
  - In Gujarat, keep cattle indoor at night time. Protect from cold wind. Give dry fodder twice a day.

## CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
  - As cold wave conditions at a few places with severe cold wave conditions at isolated places very likely over West Madhya Pradesh on 28<sup>th</sup>, cold wave conditions at isolated places over East Madhya Pradesh on 28<sup>th</sup>, over Madhya Pradesh from 29<sup>th</sup> to 30<sup>th</sup>, over north Chhattisgarh on 29<sup>th</sup> and 30<sup>th</sup> December, ground frost conditions at isolated places very likely over West Madhya Pradesh on 28<sup>th</sup> December, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold/frost injury. To protect young fruit plants from cold winds, cover young fruit plants with straw/polythene sheets/gunny bags.
  - **Madhya Pradesh:**
    - In East Madhya Pradesh, apply irrigation in gram, mustard and wheat (at CRI stage). Continue transplanting of onion. Continue earthing up and application of nitrogenous fertilizer followed by irrigation in potato. Continue intercultural operations in transplanted vegetables. In view of low temperature, apply light irrigation in

vegetables.

- In West Madhya Pradesh, continue thinning and weeding in mustard. Apply irrigation in vegetables, gram, mustard and in wheat at CRI stage. In wheat apply 1/3 dose of recommended nitrogenous fertilizer in the form of urea as top dressing. Continue harvesting of matured pods of green pea.
- In Satpura Plateau Zone, to control late and early blight in potato, spray Mencozeb @ 2.5g/litre of water.
- In Central Narmada Valley Zone, due to past cloudy weather condition the incidence of aphids in mustard, radish and beans is likely to increase, if the infestation is above ETL spray Imdacloprid @ 0.5 ml/litre of water.
- **Chhattisgarh:**
  - Continue transplanting of onion. Continue intercultural operations in oilseed crops and pulses. Continue intercultural operations in transplanted vegetables and apply nitrogenous fertilizers. Continue earthing up in potato. Continue seedling preparation of cucurbits in polythene bags. Apply irrigation in wheat at CRI stage and broadcast urea @ 22 kg per acre in 22-25 days old crops after weeding. Apply irrigation in gram and lentil crops.
  - In Bastar Plateau Zone, continue field preparation for planting of *rabi* colocasia and bunda. Apply irrigation in wheat at CRI stage.
  - In North Hill Zone, for control of pod borer in pigeon pea, spray Indoxacarb @ 300 g/ha. dissolved in 500 litres of water.
- **Animal Husbandry**
  - In Madhya Pradesh, newly borne calves should be protected from cold. For this floor should be covered with paddy straw litter which provides a thermal mulch. All milk animals should be kept in specially protected and safe cattle sheds during night. Provide 4-5 hours light in poultry houses during night.
  - In Chhattisgarh, due to decrease in temperature and its possible adverse effects, dairy farmers are advised to keep the animals in the cattle shed with concrete/brick roof. Give protein enriched diet to the animals. In poultry house hang gunny bags to protect the birds from cold.

#### **NORTH INDIA [JAMMU & KASHMIR, HIMACHAL PRADESH, UTTARAKHAND, PUNJAB, HARYANA, DELHI, UTTAR PRADESH & RAJASTHAN]**

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
  - As cold wave conditions at many places with severe cold wave conditions at a few places very likely over Punjab and north Rajasthan from 28<sup>th</sup> to 30<sup>th</sup> and cold wave conditions at a few places with severe cold wave conditions at isolated places over Himachal Pradesh and Uttarakhand on 28<sup>th</sup>, cold wave conditions at many places over Haryana, Chandigarh & Delhi from 28<sup>th</sup> to 30<sup>th</sup> and cold wave conditions at isolated places over, Jammu & Kashmir on 28<sup>th</sup>, over West Uttar Pradesh from 28<sup>th</sup> to 31<sup>st</sup>, over Punjab, Haryana, Chandigarh & Delhi on 31<sup>st</sup> December, ground frost conditions at isolated places very likely over Punjab and north Rajasthan from 28<sup>th</sup> to 30<sup>th</sup>, over Jammu & Kashmir on 28<sup>th</sup>, over Himachal Pradesh and Uttarakhand on 28<sup>th</sup> and 29<sup>th</sup> December, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold/frost injury. To protect young fruit plants from cold winds, cover young fruit plants with straw/polythene sheets/gunny bags.
  - As dense fog very likely at isolated places over Punjab from 28<sup>th</sup> to 31<sup>st</sup>, over Haryana, Chandigarh & Delhi, West Uttar Pradesh on 30<sup>th</sup> and 31<sup>st</sup> and over Rajasthan on 31<sup>st</sup> December and 1<sup>st</sup> January, monitor the standing crops for incidence and spread of pest and diseases, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake appropriate plant protection measures.
  - **Jammu & Kashmir:**
    - As rain/snow likely at many places over Jammu & Kashmir on 1<sup>st</sup> January, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
    - In Sub Tropical Zone, apply 2<sup>nd</sup> dose of urea (25%) as top dressing in wheat crop. Carry out hoeing and weeding operations in chickpea and 20 days old lentil. Provide thatching prepared from sarkanda or any other material to young fruit plants to protect from frost.
    - In Intermediate Zone, carry out intercultural operations like hoeing and weeding in one month old wheat crop. Carry out hand weeding and hoeing *rabi* pulses, mustard and vegetables.
    - In Valley Temperate Zone, provide drainage channels in the fields wherever there is possibility of water accumulation during winter months. Undertake harvesting of vegetables sown in poly house.
    - In Intermediate Zone, as weather conditions are favourable for the attack of alternaria blight in mustard crop, apply Mancozeb @ 2.5 g/litre of water and Ridomil MZ @ 2.5 g/litre of water alternately as curative measure, if the pest is observed.
  - **Uttarakhand:**
    - In Bhabar and Tarai Zone, undertake weeding and hoeing in sugarcane crop and apply remaining dose of nitrogen. On occurrence of frost/fog, timely apply irrigation in standing crop fields. Undertake intercultural

- operations in vegetables and apply recommended dose of nitrogenous fertilizer.
- In Hill Zone, continue transplanting of onion. Carry out mulching in cole crops in valley region to conserve soil moisture. Apply urea as foliar spray on leafy vegetables.
  - In Sub-Humid Sub-Tropic Zone, give light irrigation to late sown wheat crop at CRI stage (20-25 DAS). Apply first dose of nitrogen as top dressing in timely sown crop. Carry out mulching in cole crops. Carry out earthing-up in potato if crop has attained a height of 15-22 cm.
  - In Sub-Humid Sub-Tropic Zone, the downy mildew is expected in cruciferous vegetables. To control it, spray redomil M-Z @ 25 g per litres of water at 15 days interval. Due to high relative humidity, infection of blight may occur in potato and tomato crops. If symptoms appears than spray Carbandizam @ 1.0 g/litre of water or Dithane-M-45 @ 2.0 gm / litre of water.
- **Himachal Pradesh:**
    - In High Hill Temperate Dry Zone, polyhouse should be kept closed to prevent the crops from cold injury.
    - In Sub-Montane & Low Hills Sub-Tropical Zone, carry out thinning and weeding in timely sown mustard crop. Add mulch material in space between two rows of vegetables crops for conservation of soil moisture and maintaining the soil temperature. Continue earthing up in potato. Apply irrigation to wheat crop. After 3-4 days of irrigation, broadcast second dose of nitrogen. Undertake intercultural operations in vegetables. In Polyhouse undertake land preparation for sowing of green coriander, raddish and turnip.
    - In Mid Hills Sub-Humid Zone, protect the crops and vegetables from frost by applying light irrigation in the evening and cover the young plants with gunny bags, straw etc., keeping a small entrance in the south west directions. Undertake digging up of matured rhizomes of ginger and turmeric.
    - Monitor mustard crop against attack of white rust. If infection is high, spray Dithane-M-45 @ 2 g/litre of water.
  - **Punjab, Haryana & Delhi:**
    - In view of the cold wave conditions very likely at many places with severe cold wave conditions at a few places over Punjab, to protect young fruit plants from cold winds/frost, cover young fruit plants/vegetables with Sarkanda/rice straw/polythene sheets/gunny bags. Also farmers are advised to provide light irrigation to wheat. Apply light irrigation in fruit plants to avoid adverse effect of low temperature and possible ground frost. Apply second dose of urea @ 55 kg /acre with first irrigation in wheat. Undertake harvesting of matured sugarcane. Continue thinning and weeding in late sown mustard.
    - In Haryana, continue intercultural operations in vegetables and mustard followed by light irrigation. Apply irrigation in wheat and barley. Continue transplanting of matured seedlings of tomato, cauliflower, & cabbage in prepared field.
    - In Delhi, apply light irrigation at evening time to protect the crops from probable frost. Continue planting of winter sugarcane at optimum soil moisture for better seed germination. Continue transplanting of onion. Continue transplanting of cauliflower, cabbage, broccoli and tomato. Continue sowing of carrot on raised bed. Apply irrigation in late sown wheat at CRI stage. Continue sowing of oat and barseem. Undertake sowing of spinach, coriander, fenugreek. Undertake preparation of seedling of early cucurbitaceous crops in small polythene bags in poly houses.
    - In Punjab, existing low temperatures continuously in past two weeks may start white rust infection in mustard, spray Dithane-M-45 @ 2 gr/litre of water or Chlorothalonil 75 WP @1 g/litre of water. For control of late blight of potato, spray Indofil M-45/Markzeb/Kavach @ 500-700 g in 250-350 litres of water per acre.
  - **Uttar Pradesh:**
    - In East Uttar Pradesh, apply 1<sup>st</sup> irrigation after 20-35 days of sowing at CRI stage in wheat and in gram. Apply irrigation in pea after 35-40 days of sowing. Continue harvesting of toria and gram. Apply 87-108 kg urea as top dressing at time of earthing after 25 days of sowing in potato. Spray Pendimethalin 3.3 litre/1000 litre solution for control of weeds after 2-3 days of plantation of Onion. Continue weeding in peas, mustard, lentil and gram. Continue intercultural operation in vegetables as and where necessary. Undertake harvesting of standing sugarcane crop
    - In West Uttar Pradesh, continue thinning and weeding is in late sown mustard crop. Apply 1<sup>st</sup> irrigation after 20-35 days of sowing at CRI stage in wheat. Continue transplanting of onion. Continue harvesting of toria and gram. Apply irrigation in timely sown potato crop. Application of fertilizer should be done after irrigation. Continue transplanting of mature seedlings of tomato, cauliflower, cabbage, knolkhol and broccoli crop. Continue sowing of garlic in raised bed. Continue weeding in vegetables. Light irrigation is advised in pea and gram crop at flowering stage. For late sowing of wheat increase the seed rate. Seed rate: - 125 kg seed per hectare. Recommended cultivars: - P.B.W.373, WR-544, U.P.2338, U.P.2425. Seed should be treated with Bavistin or Thiram @ 2.0 g per kilogram of seed. Application of Chlorpyriphos (20EC) @ 5 litres per hectare with pre-irrigation water is recommended before sowing in the fields.
    - In East Uttar Pradesh, due to prevailing foggy weather condition, there is chances of attack of late blight in potato crop, for control, spray IndofilM-45/Kavach/Antracol @ 500-700 g per acre or Blitox @ 750-1000 g per acre in 250-350 litres of water per acre at weekly interval 2-3 times.

➤ In West Uttar Pradesh, due to high relative humidity, infection of blight may occur in potato and tomato. Farmers are advised to do constant monitoring in both the crops.

▪ **Rajasthan:**

➤ In Sub Humid Southern Plain and Aravali Hill Zone, due to cold waves and fall in temperature frost may occur. So, smoke should be produced during night at northwest direction of the field and apply irrigation in field crops. In cash crops spray of 0.1 percent H<sub>2</sub>SO<sub>4</sub> should be done.

➤ In Arid Western Plain Zone, there are chances of frost occur in coming days so adopt the measures as follows: Frost can harm the crops like mustard, cumin, gram, vegetables etc. therefore, try to protect them by giving light irrigation, smoking the field by burning the field waste and crop residue. If possible spray of commercially used sulfuric acid @ 0.1% along with water. Try to protect the newly planted (in rainy season) delicate horticultural plants by covering with crop residues or munjha thatches and frequent light irrigations. Also, in timely sown wheat crop, provide 2<sup>nd</sup> irrigation to standing crop at 40 - 45 days after sowing and also provide 2<sup>nd</sup> irrigation to the barley at 65-70 days after sowing.

➤ In Flood Prone Eastern Plain Zone, stem and fruit borer attack in brinjal crop, remove affected fruits and stems and spray Malathion 50 EC @ 1.0 ml per litre water.

➤ In North Western Plain Zone, to save mustard crop from ground frost, spray of 1 ml Sulphuric acid or Dimethyl Sulpho-oxide per litre of water @ 100-125 litre solution per bigha.

• **Animal Husbandary**

➤ In Punjab, keep animals inside the sheds during night and provide dry bedding to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with the cold condition. Animals should be given mineral mixture along with salt regularly and wheat grains, jaggery etc. may be provided @ 10%-20% in the daily ration during winter season to meet the energy requirement of the animals, 10% extra dry matter should be provided over and above the total requirement to fulfill the extra energy requirement in winter. In Poultry, keep the chicks warm by providing artificial light in the poultry sheds. Use curtain at the windows and keep temperature inside the shed above 60°F. Give balanced feed to the poultry birds. Make clean poultry sheds for better health of poultry birds.

➤ In Uttarakhand, dew appearing grasses/herbs should not be given to goat/sheep as fodder. Protect from cold by covering gunny bags during night and give some sunbath during day time. Install electric bulb in poultry farm to maintain temperature during night. Whitewash the walls by calcium oxide (dry lime) to protect the animals from harmful bacteria.

➤ In Himachal Pradesh, replace the poultry houses with fresh litter to avoid wetting and keep the houses clean and ensure clean drinking water to the birds. Increase the poultry feed by 10%. Protect the birds from cold. In case of poultry, save them from cold winds by providing curtains so that temperature of shed does not fall below 16°C.

➤ In Jammu & Kashmir, use dry gunny bags as bedding material for protection against low night temperatures for animals. To avoid cracking or fissuring of teats in cold dry weather, clean the teats with warm water and apply ghee or butter after every milking. Cover the poultry shed with gunny bags in order to protect the birds from cold weather. There should be a good source of light and heat in poultry houses.

➤ In Uttar Pradesh, maintain the optimum room temperature in Poultry and Dairy unit by providing electric bulb for creating warm room temperature. Give salt and minerals in addition to dry/green fodder to the cattle. Give balanced feed to the poultry birds. Make clean poultry sheds for better health of poultry birds.

• **Apiculture**

➤ In Jammu & Kashmir, provide winter packing to bee colonies to protect them from cold. Sulphur dusting/oxalic acid spray @ 3.5% in one litre of water is recommended at fortnight intervals to control ectoparasitic mites. Migrate colonies to areas having floral resources (near toria/vegetable crops). Spray Chloropyriphos around boxes of apiary for protection from termites or put the leg of these beehives stand in water pot.

• **Floriculture**

➤ In Jammu & Kashmir, continue planting of spring flowering bulbs (tulip, iris, daffodils etc.). Continue transplanting of winter flowering annuals. Prune the trees and shrubs to avoid damage by heavy snow during winter. Make preparations for protection of house plants during winter season.

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