



# *National Agromet Advisory Service Bulletin*

*Friday 27<sup>th</sup> December 2019*

*(For the period 27<sup>th</sup> to 31<sup>st</sup> December 2019)*



*Issued by*

*India Meteorological Department*

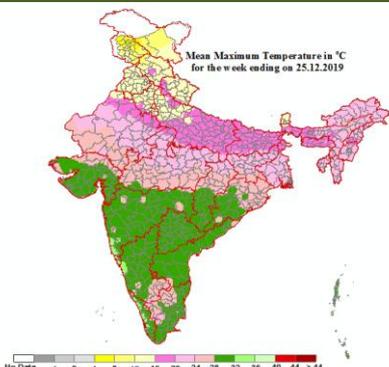
**Weblink For**

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

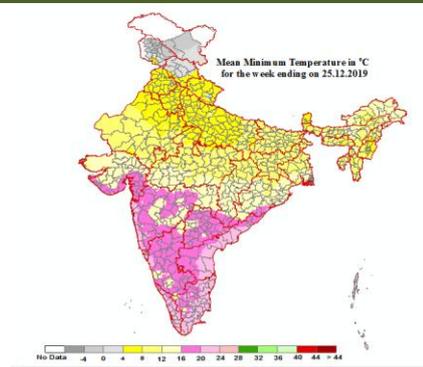
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

## Spatial distribution of weather parameters for the week ending on 25.12.2019

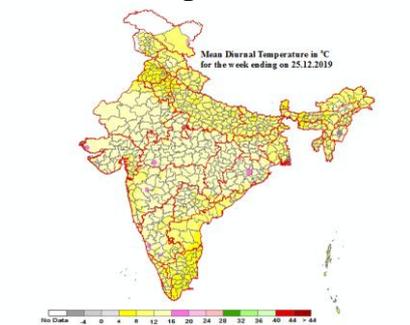
**Mean Maximum Temperature (°C) for the week ending on 25.12.2019**



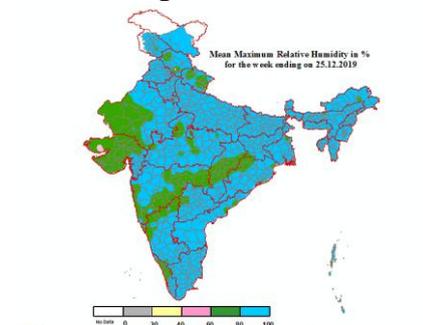
**Mean Minimum Temperature (°C) for the week ending on 25.12.2019**



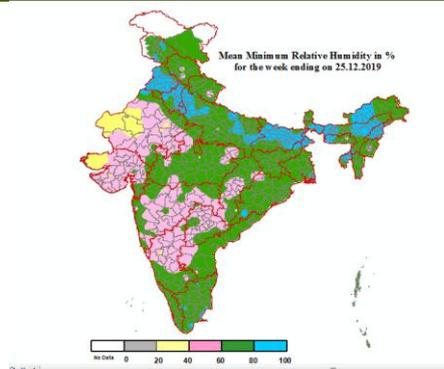
**Mean Diurnal Temperature Variation (°C) for the week ending on 25.12.2019**



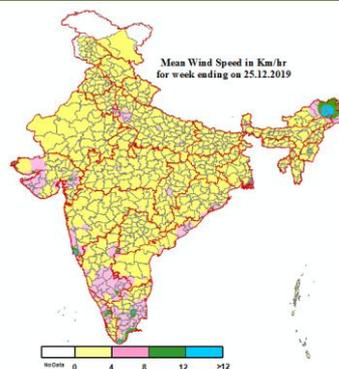
**Mean Maximum Relative Humidity (%) for the week ending on 25.12.2019**



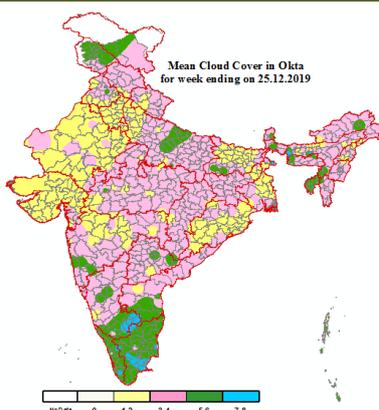
**Mean Minimum Relative Humidity (%) for the week ending on 25.12.2019**



**Mean Wind Speed (km/hr) for the week ending on 25.12.2019**

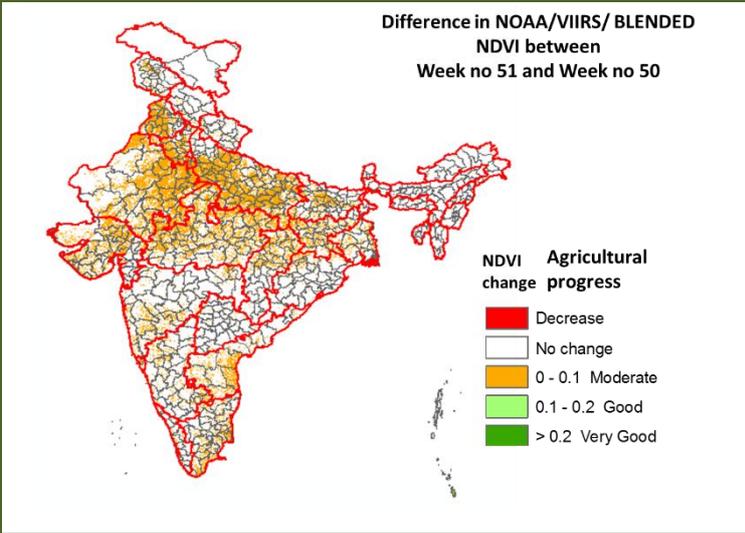
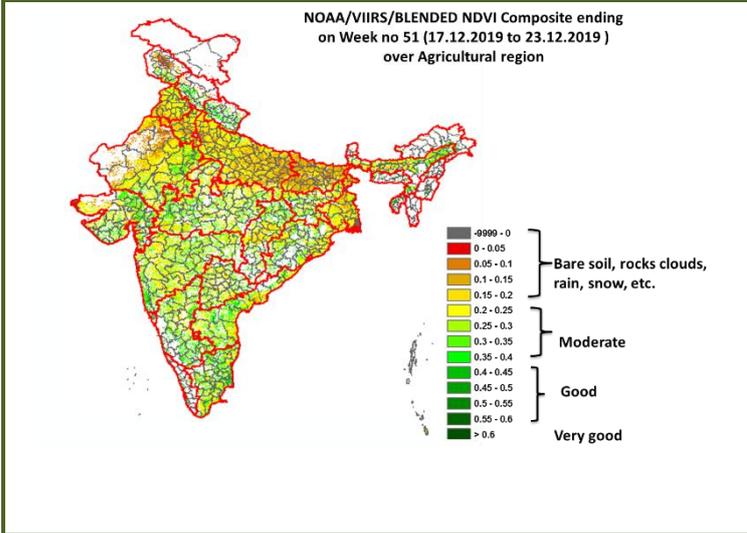


**Mean Cloud Cover (okta) for the week ending on 25.12.2019**



**NOAA/VIIRS/BLENDED NDVI composite for the week number 51 (17.12.2019 to 23.12.2019) over Agricultural regions of India**

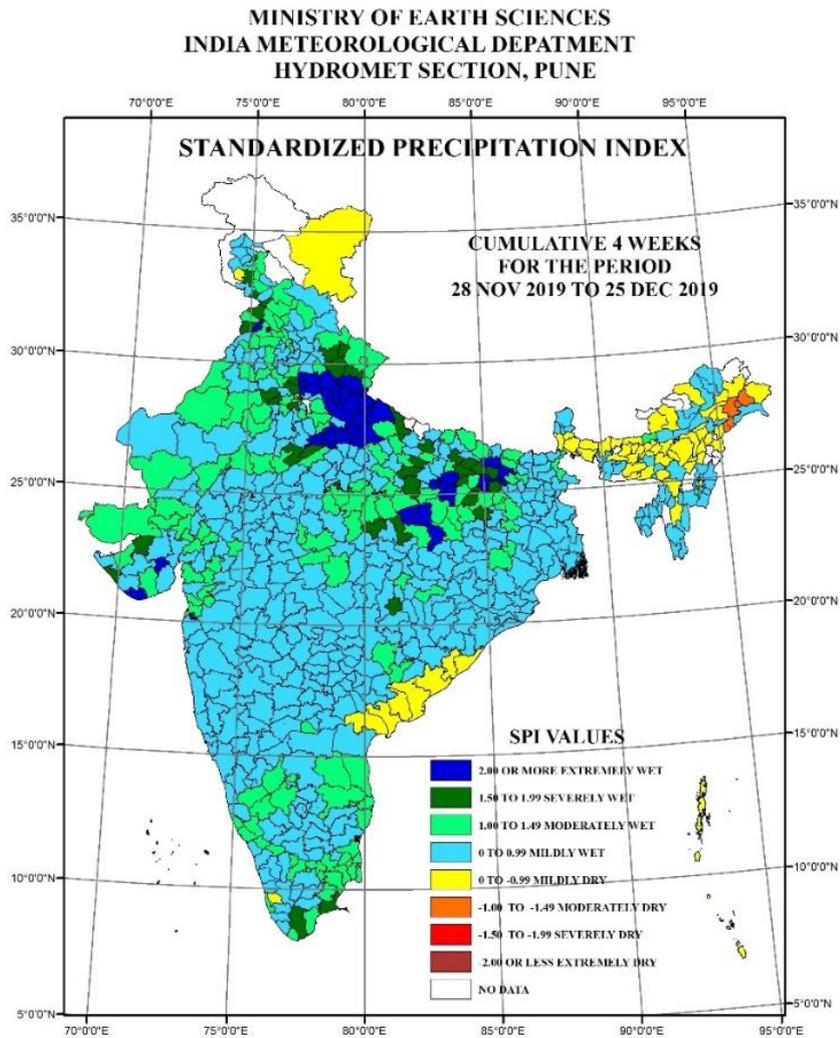
**Difference in NOAA/VIIRS/BLENDED NDVI between week number 51 and week number 50**



Agriculture vigour was good at few parts of Uttarakhand; isolated places of North Eastern states, Chhattisgarh, Odisha, Karnataka, South Konkan, Andhra Pradesh, Madhya Pradesh, Jharkhand, Kerala, Himachal Pradesh, Telangana & Tamilnadu and at isolated pockets of East Rajasthan, Sub Himalayan West Bengal, Sikkim, Gujarat & East Vidarbha.

Good difference in agricultural vigour has been observed at isolated pockets over Uttar Pradesh, Rajasthan, Andhra Pradesh, Tamil Nadu & Madhya Pradesh and moderate over many places in Punjab, Haryana, East Rajasthan, Uttar Pradesh, North Gujarat and Madhya Pradesh. It was isolated over rest of the country.

**Standardised Precipitation Index  
Cumulative 4 weeks for the period 28<sup>th</sup> Nov to 25<sup>th</sup> Dec 2019**



- Extremely/Severely wet conditions exist in Aurangabad, Bhabua, Buxar, Jahanabad, Muzaffarpur, Nalanda, Patna, Samastipur, Saran, Siwan, Vaishali, Arwal district of Bihar, Porbandar, Botad, Gir Somnath, Morbi districts of Gujarat, Gurgaon, Bhiwani, Sonapat, Panipat districts of Haryana, Reasi, Pulwama, Samba of Jammu, Katni, Shahdol, Sidhi, Singrauli in West Madhya Pradesh, Gurdaspur, Kapurthala, Taran Taran of Punjab, Dholpur, Karauli of Rajasthan, Ramanathapuram, Tirunelveli of Tamilnadu, Allahabad, Bahraich, Ballia, Basti, Chandauli, Deoria, Farrukhabad, Ghazipur, Hardoi, Kannauj, Kheri, Pratapgarh, Sultanpur, Varanasi, Agra, Baghpat, Bareilly, Bijnor, Badaun, Etah, Firozabad, Jyotiba Phule Nagar, Mainpuri, Meerut, Moradabad, Muzaffarnagar, Pilibhit, Rampur, Shahjahanpur, Hapur, Sambhal of Uttar Pradesh, Chatra of Jharkhand, Almora, Nainital, Garhwal Paurof in Chhatisgarh and Central Delhi;
- Moderately dry conditions exist in Lohit, Tirap district of Arunachal Pradesh; Tinsukia district of Assam;
- Moderately wet to mildly dry conditions were experienced in remaining districts in the country.

## Weather Forecast for next 5 days valid upto 0830 hours of 1<sup>st</sup> January, 2020

- ◆ Meteorological sub-division wise detailed 5 days precipitation forecast is given in Table below.
- ◆ Gradual fall in Minimum temperatures by 3-4°C over East India during next 2-3 days. No significant change in minimum temperatures over the rest of the country during next 2-3 days.

### 5 Day Rainfall Forecast (MID-DAY)

27<sup>th</sup> December 2019

Met-Sub-Division	27-Dec Today	28Dec Sat	29Dec Sun	30Dec Mon	31Dec Tue
1. Andaman & Nicobar Islands	DRY	DRY	ISOL	ISOL	ISOL
2. Arunachal Pradesh	ISOL	DRY	DRY	DRY	DRY
3. Assam & Meghalaya	ISOL	DRY	DRY	DRY	DRY
4. N. M. M. & T.	SCT	ISOL	DRY	DRY	DRY
5. S.H. West Bengal & Sikkim	ISOL	DRY	DRY	DRY	DRY
6. Gangetic West Bengal	ISOL	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	ISOL
11. West Uttar Pradesh	DRY	DRY	DRY	DRY	ISOL
12. Uttarakhand	DRY	DRY	DRY	DRY	ISOL
13. Haryana, Chd & Delhi	DRY	DRY	DRY	DRY	ISOL
14. Punjab	DRY	DRY	DRY	DRY	ISOL
15. Himachal Pradesh	DRY	DRY	DRY	DRY	ISOL
16. Jammu & Kashmir	DRY	DRY	DRY	ISOL	SCT
17. West Rajasthan	DRY	DRY	DRY	DRY	DRY
18. East Rajasthan	DRY	DRY	DRY	DRY	ISOL
19. West Madhya Pradesh	DRY	DRY	DRY	ISOL	ISOL
20. East Madhya Pradesh	DRY	DRY	DRY	DRY	ISOL
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	ISOL	ISOL	DRY
25. Marathwada	DRY	DRY	ISOL	ISOL	ISOL
26. Vidharbha	DRY	DRY	DRY	ISOL	ISOL
27. Chhattisgarh	ISOL	DRY	DRY	DRY	ISOL
28. Coastal A. P. & Yanam	ISOL	ISOL	ISOL	ISOL	ISOL
29. Telangana	ISOL	DRY	ISOL	ISOL	DRY
30. Rayalaseema	DRY	DRY	DRY	DRY	DRY
31. T.N., Puducherry & Karaikal	DRY	DRY	ISOL	ISOL	ISOL
32. Coastal Karnataka	ISOL	ISOL	ISOL	ISOL	ISOL
33. North Interior Karnataka	DRY	DRY	DRY	ISOL	ISOL
34. South Interior Karnataka	DRY	DRY	ISOL	ISOL	ISOL
35. Kerala & Mahe	ISOL	ISOL	ISOL	ISOL	ISOL
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

### 27 December (Day 1):

- ◆ **Severe cold day conditions** very likely in most pockets over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan and Uttar Pradesh; **Cold day to severe cold day conditions** very likely in many pockets over Bihar; in some pockets over Madhya Pradesh and **cold day** in some pockets over Sub-Himalayan West Bengal & Sikkim; in isolated pockets over Uttarakhand, Jharkhand, Gangetic West Bengal and Odisha.
- ◆ **Cold wave to severe cold wave conditions** very likely in some pockets over Haryana, Chandigarh & Delhi and north Rajasthan and **cold wave conditions** in some pockets over Bihar; isolated pockets over Punjab, West Uttar Pradesh, north Madhya Pradesh, Jharkhand, West Bengal & Sikkim and Odisha.
- ◆ **Dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, north Rajasthan, north Madhya Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Odisha, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.
- ◆ Ground frost very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, south Uttar Pradesh, north Rajasthan and north Madhya Pradesh.
- ◆ **Thunderstorm accompanied with lightning & hail** very likely at isolated places over Sikkim.

### 28 December (Day 2):

- ◆ **Severe cold day conditions** very likely in most pockets over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan and Uttar Pradesh; **Cold day to severe cold day conditions** very likely in many pockets over Bihar; in some pockets over West Madhya Pradesh and **cold day** in some pockets over Sub-Himalayan West Bengal & Sikkim; in isolated pockets over East Madhya Pradesh, Jharkhand, Gangetic West Bengal and Odisha.
- ◆ **Cold wave to severe cold wave conditions** very likely in some pockets over Haryana, Chandigarh & Delhi and north Rajasthan and **cold wave conditions** in some pockets over Bihar; isolated pockets over Punjab, West Uttar Pradesh, north Madhya Pradesh, Jharkhand, West Bengal & Sikkim and Odisha.
- ◆ **Dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, north Rajasthan, north Madhya Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Odisha, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.
- ◆ Ground frost very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, south Uttar Pradesh and north Rajasthan.

### 29 December (Day 3):

- ◆ **Severe cold day conditions** very likely in some pockets over Punjab and Haryana, Chandigarh & Delhi, **Cold day to severe cold day conditions** very likely in some pockets over Bihar and **cold day** in some pockets over Uttar Pradesh, north Rajasthan and Sub-Himalayan West Bengal & Sikkim.
- ◆ **Cold wave conditions** very likely in some pockets over Bihar and in isolated pockets over Haryana, Chandigarh & Delhi, north Rajasthan, Gangetic West Bengal and Odisha.
- ◆ **Dense to very Dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi and West Uttar Pradesh and **Dense fog** in isolated pockets over East Uttar Pradesh, north Rajasthan, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.

#### 30 December (Day 4):

- ◆ **Severe cold day conditions** very likely in isolated pockets over Punjab and Haryana, Chandigarh & Delhi and **cold day** in isolated pockets over Uttar Pradesh and north Rajasthan.
- ◆ **Dense fog** very likely in isolated pockets over Assam & Meghalaya.

#### 31 December (Day 5):

- ◆ **Dense fog** very likely in isolated pockets over Assam & Meghalaya.
- ◆ **Thunderstorm accompanied with lightning** very likely at isolated places over West Madhya Pradesh and Vidarbha.

### Weather Outlook for subsequent 2 days from 1<sup>st</sup> to 3<sup>rd</sup> January, 2020

- ◆ Isolated to scattered rainfall is likely over parts of peninsular India and over Islands.
- ◆ Fairly widespread to widespread rainfall likely over central, east & northwest India, northern plains, western Himalayan region and northeastern India with isolated heavy falls over Uttarakhand on 1st Jan, 2020 and thunderstorm accompanied with hailstorm over eastern and northeastern India on 2nd Jan, 2020.
- ◆ Weather likely to be dry over remaining parts of the country.

### Salient advisories

- As **cold wave to severe cold wave conditions** very likely in some pockets over Haryana, Chandigarh & Delhi and north Rajasthan on 27<sup>th</sup>, 28<sup>th</sup> and **cold wave conditions** in some pockets over Bihar from 27<sup>th</sup> to 29<sup>th</sup>; in isolated pockets over Punjab, West Uttar Pradesh, north Madhya Pradesh, Jharkhand, West Bengal & Sikkim and Odisha on 27<sup>th</sup>, 28<sup>th</sup>; in isolated pockets over Haryana, Chandigarh & Delhi, north Rajasthan, Gangetic West Bengal and Odisha on 29<sup>th</sup> with **severe cold day conditions** very likely in most pockets over Punjab, Haryana, Chandigarh & Delhi from 27<sup>th</sup> to 29<sup>th</sup>, over north Rajasthan and Uttar Pradesh 27<sup>th</sup>, 28<sup>th</sup>; in isolated pockets over Punjab and Haryana, Chandigarh & Delhi on 30<sup>th</sup>; **cold day to severe cold day conditions** very likely in many pockets over Bihar on 27<sup>th</sup>, 28<sup>th</sup>; in some pockets over Madhya Pradesh on 27<sup>th</sup>, 28<sup>th</sup>; over Bihar on 29<sup>th</sup> and **cold day conditions** in some pockets over Sub-Himalayan West Bengal & Sikkim from 27<sup>th</sup> to 29<sup>th</sup>; over Uttar Pradesh and north Rajasthan on 29<sup>th</sup>; in isolated pockets over Uttarakhand, Jharkhand, Gangetic West Bengal and Odisha on 27<sup>th</sup>, over East Madhya Pradesh, Jharkhand, Gangetic West Bengal and Odisha on 28<sup>th</sup>, over Uttar Pradesh and north Rajasthan on 30<sup>th</sup> and as **ground frost** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, south Uttar Pradesh, north Rajasthan on 27<sup>th</sup>, 28<sup>th</sup> and over north Madhya Pradesh on 27<sup>th</sup>, apply light and frequent irrigation /sprinkler irrigation in the evening to protect the crops from frost / cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/ gunny bags. Keep the animals inside the sheds and provide dry bedding and use heaters inside cattle sheds to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with the situation. Keep the chicks warm by providing artificial light in the poultry sheds.
- As **dense to very dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi and West Uttar Pradesh on 29<sup>th</sup>; **dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, north Madhya Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Odisha on 27<sup>th</sup>, 28<sup>th</sup>, over north Rajasthan during 27 to 29 December, over East Uttar Pradesh on 29<sup>th</sup>, over Assam & Meghalaya on 27<sup>th</sup> to 31<sup>st</sup>, and over Nagaland, Manipur, Mizoram & Tripura during 27 to 29 December, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for blight disease. If symptoms are noticed, undertake plant protection measures.
- As **thunderstorm accompanied with lightning & hail** very likely at isolated places over Sikkim on 27<sup>th</sup> and **thunderstorm accompanied with lightning** over West Madhya Pradesh and Vidarbha on 31<sup>st</sup>, provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging. Keep harvested produce at safer places. Use hail net for orchard crops to protect from mechanical damage.

➤ Undertake sowing/ transplanting of following crops:

- In Uttar Pradesh, Jammu & Kashmir, Punjab, Delhi, Rajasthan, Bihar, Jharkhand, West Bengal & Sikkim, complete the sowing of wheat.
- In Himachal Pradesh, continue transplanting of onion and sowing of pea.
- In Assam, undertake transplanting of Boro rice and continue sowing of wheat, maize, rabi pulses and oilseed crops.
- In Odisha, complete sowing of lentil, field pea, green gram, black gram and chickpea.
- In West Bengal & Sikkim, undertake nursery raising for Boro rice.
- In Telangana, continue nursery sowing of short duration *rabi* rice and sowing of groundnut crop.
- In Andhra Pradesh, continue nursery sowing of short duration *rabi* rice and sowing of sesame.
- In Karnataka, complete sowing of green gram, black gram, horse gram, sesame and groundnut crops.
- In Madhya Pradesh, continue sowing of chickpea and early maturing and medium maturing wheat varieties.
- In Chhattisgarh, continue transplanting of onion.

### *Detailed Agromet Advisories*

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

**Realised Rainfall** : Significant rainfall occurred in Kanyakumari, Karaikal and Nagapattinam districts in Tamilnadu. Weather remained mainly dry over rest of the region.

**Advisories:**

**Kerala**

- In Problem Area Zone, undertake planting of three to five weeks old seedlings of cool season vegetables such as cabbage & cauliflower.
- In Northern Zone, weather is congenial for aphid in cowpea, spray neem based insecticide (@ 4ml insecticide/litre of water). Repeat the spraying at seven days intervals till flowering.
- In Central Zone, there is a chance of thrips in paddy. To control, apply 3 ml Imidacloprid per 10 litre of water.
- In High Altitude Zone, undertake harvesting of ginger. To control berry borer in coffee, spray Quinalphos (0.05%) 400 ml in 200 litres of water.

**Andhra Pradesh**

- In North Coastal Zone, undertake nursery owing of short duration varieties of rabi paddy. Soak the seed with Carbendazim @ 1 g/litre for 12 hours before taking up sowing. Continue sowing of ragi and maize.
- In Southern Zone, take up sowing of suitable sesamum varieties after seed treatment with Thiram (or) Kaptan @ 3 g/kg of seeds.
- In Scarce Rainfall Zone of Rayalaseema, present weather conditions are favourable for leaf minor and spodoptera incidence in groundnut. For control, spray Chloripyriophos 2.5 ml + Dichlorovos (Nuvan) or Quinalphos 2 ml or Thiodicarb @ 1.5 g per litre of water.
- In Krishna Godavari Zone, undertake harvesting of cotton. Care should be taken while harvesting of kappas regarding mixing of dried squares and leaves to kappas. Otherwise this will leads to dusky cotton bug attack thereby reduce the quality.

**Telangana**

- Undertake sowing of Rabi Groundnut under irrigated situation. Continue nursery sowing of rabi rice nursery by selecting short duration varieties of rice. Before sowing for dry nursery, treat the seed with Carbendazim @ 3 g per kg of seeds and for wet nursery, soak the seeds in Carbendazim solution @ 1 g per litre of water for 24 hours, after that sprouted seeds are broadcasted into nursery plot.
- Prevailing weather conditions are congenial for maruca and helicoverpa in redgram. To control, spray Chlorpyriphos @ 2.5 ml or Novaluron @ 0.75 ml along with Dichlorvos @ 2ml per liter of water.
- The Prevailing dry weather conditions are congenial for incidence of hopper in mango. Control the pest by spraying Dichlorvos @ 1ml +Neem oil @2.5 ml per litre of water.

## **Tamil Nadu**

- In Cauvery Delta Zone, weather is congenial for rice gall midge in Thaladi paddy. To control, spray Chlorpyrifos 500 ml/acre or Fipronil 5% Sc @ 400 ml/ acre.
- In North Eastern Zone, pre-sown paddy could be harvested based upon the irrigation pattern.
- In Western Zone, considering the existing cool weather condition, grapes may be pruned for summer crops. Also, in grapes, both powdery mildew and downy mildew would be seen. For powdery mildew spray 0.3% wettable sulphur and for downy mildew spray 1% Bordeaux mixture.
- In Southern Zone, high humidity over longer periods may cause severe defoliation in cotton crop due to Grey mildew. To control, spray Carbendazim at 250- 375g or wettable sulphur at 1.25-2.0 kg/ha, repeat after a week.
- In High Rainfall Zone, provide mechanical support to banana plants to avoid lodging. For infection of rice stem borer and leaf folder, spray Chlorantriliprole 0.3 ml or Flubendiamide 0.1ml/litre of water.

## **Karnataka:**

- In South Interior Karnataka, complete the harvesting of matured rice and ragi crops. Complete the sowing of black gram, green gram, horse gram and chickpea. Spray Chlorpyrifos @ 2.5 ml / litre of water against sucking pest in vegetable crops.
- In North Interior Karnataka, carry out intercultural operations in sorghum and chickpea crops. Continue picking of late sown cotton bolls. For management of sunflower Necrosis spray Confidor Super 200 SL @ 0.5ml or Flonicamid 50 WG @ 0.02ml/litre of water. For control of cob worm in maize, spray Carbaryl 50% @ 4g / liter of water.
- In Coastal Karnataka, complete the sowing of green gram, black gram, groundnut and sesame crops.

## **Animal Husbandry:**

- In Karnataka, maintain the ambient room temperature in the poultry house; cover the sides with curtains during cool hours of the day. Provide artificial brooding to chicks to maintain adequate temperature.
- In Tamilnadu, do not allow livestock to graze in early morning hours during winter. Since Store the concentrate feed properly to avoid fungal growth.
- In Puducherry, vaccinate cattle against HS disease. The affected cattle must be separated and suitable treatments should be given after consultation with veterinarian.

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

**Realised Rainfall:** Dry weather prevailed over North-eastern region during the week.

### **Advisories:**

- **As dense fog** very likely in isolated pockets over Assam & Meghalaya from 27<sup>th</sup> to 31<sup>st</sup> and over Nagaland, Manipur, Mizoram & Tripura from 27<sup>th</sup> to 29<sup>th</sup> December, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for blight disease. If symptoms are noticed, undertake plant protection measures.

### **Arunachal Pradesh**

- In Arunachal Pradesh, continue harvesting of rice. In trunk borer attacked orange trees, cleaning of entry hole and treatment with Dichlorvos dipped cotton swabs is advised.

### **Assam & Meghalaya**

- In Assam, carry out transplanting of *Boro* rice seedlings in the main field, which have attained 5-6 leaf stage. Weather is congenial for occurrence of blight disease in potato. Spray Mancozeb 75% (Indofil M 45/ Dithane M 45) @ 2.5g/litre at canopy closure at an interval of 7-10 days in fair weather to control the disease. Alternatively 1% Bordeaux mixture (10g CuSO<sub>4</sub> + 10g lime in 1 litre of water is also effective in controlling blight disease.
- In Central Brahmaputra Valley, continue sowing of wheat, maize, pulses and oilseeds crops. Take up transplanting of tomato.
- In Upper Brahmaputra Valley Zone, North Bank Plain Zone and Barak Valley Zone, apply irrigation to

rapeseed & mustard crops which are at flowering stage. Spray Chlorpyrifos 20 EC @ 5 ml/litre of water or Dimethoate 30EC, 0.5 litre per 500-700 litre of water per ha area against aphid and saw fly infestation in rapeseed and mustard crops.

- In Barak Valley Zone, to control fruit & shoot borer infestation in brinjal, apply Phorate or Furadon Granule @ 2.5g/ plant at 20 days after transplanting. Alternatively, apply Deltamethin (Decis 2.8EC) @ 1 ml/litre.
- In North Bank Plain Zone, continue planting of potato.
- In Hill Zone of Assam, monitor leaf feeders in cole crops. If pest population is above ETL, spray B.t. @ 1.0 gram\ litre of water or Spinosad @ 1 ml \ 3 litre of water.
- In Meghalaya, undertake transplanting of *rabi* crops. Go for regular harvesting of ginger, turmeric and Khasi Mandarin fruits. Maintain proper soil moisture in the field of standing crops by irrigation. To prevent bird damage of Khasi Mandarin fruit use bird netting or used traditional methods of bird control.

#### **Manipur, Mizoram, Tripura and Nagaland**

- In Nagaland, continue harvesting of sesame crop at maturity stage.
- In Manipur, use yellow plates for every 3 sq.m to attract the aphids in rapeseed/ mustard fields or spray Pyrethrum @ 2ml/litre of water on the infected patches. In fruit crops and perennial vegetables, apply organic mulches after earthing up and weeding to conserve residual soil moisture as well as to maintain the soil temperature. Light watering during morning hours is advised for the *rabi* crops (especially in vegetative stages) to avoid effects of frost/ fog on crops.
- In Tripura, undertake sowing of *Boro* rice after necessary seed treatment. Foggy and cloudy weather may be sensitive for infestation of blight in potato. To control, spray Carbendazim @ 2 gm per litre of water. Irrigate potato field in the evening to help increase the soil temperature.

#### **Animal Husbandry**

- In Northeastern states, to protect the livestock from sudden drop in temperature, keep the animals in a covered shed or area during the night. Carry out vaccination against FMD, Haemorrhagic Septicaemia, Black Quarter etc. during winter period.

#### **Fishery**

- In Lower Brahmaputra Valley of Assam, apply mixture of Neem leaf extracts and lime water at 1:2 ratio to reduce various winter-borne diseases and various biological harmful gases.
- In North Bank Plain Zone of Assam, apply Potash @ 4-5 mg/litre of water or Sukrena WS @ 1 litre per bigha of water or Lime in required doses to protect the fish population against various bacterial diseases prevalent in winter season.

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

**Realised Rainfall:** Rainfall occurred in Nicobar district of Andaman & Nicobar Islands. Weather remained dry/mainly dry over rest of the region.

#### **Advisories:**

- As **cold wave conditions** in some pockets over Bihar from 27<sup>th</sup> to 29<sup>th</sup>; in isolated pockets over Jharkhand, West Bengal & Sikkim and Odisha on 27<sup>th</sup>, 28<sup>th</sup>; in isolated pockets over Gangetic West Bengal and Odisha on 29<sup>th</sup> with **cold day to severe cold day conditions** very likely in many pockets over Bihar on 27<sup>th</sup>, 28<sup>th</sup>; in some pockets over Bihar on 29<sup>th</sup> and **cold day conditions** in some pockets over Sub-Himalayan West Bengal & Sikkim from 27<sup>th</sup> to 29<sup>th</sup>; in isolated pockets over Jharkhand, Gangetic West Bengal and Odisha on 27<sup>th</sup> and 28<sup>th</sup>, arrange for smoking around the fields during night, arrange for smoking around the fields during night, apply light and frequent irrigation /sprinkler irrigation in the evening to protect the crops from frost / cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/ gunny bags. Keep the animals inside the sheds and provide dry bedding and use heaters inside cattle sheds to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with

the situation. Keep the chicks warm by providing artificial light in the poultry sheds.

- As **dense fog** very likely in isolated pockets over Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Odisha on 27<sup>th</sup> and 28<sup>th</sup>, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for blight disease. If symptoms are noticed, undertake plant protection measures.
- As **thunderstorm accompanied with lightning & hail** very likely at isolated places over Sikkim on 27<sup>th</sup>, provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging. Keep harvested produce at safer places. Use hail net for orchard crops to protect from mechanical damage.

### **Odisha**

- Continue nursery sowing of Rabi rice (Soak paddy seeds overnight; drain out water in the morning; incubate seeds for 24 hours to get germinated seeds and sow these germinated seeds in already prepared wet nursery). Complete the sowing of lentil, field pea, green gram, black gram and chickpea. Prepare main field to transplant eight week old onion seedlings. Complete the picking of cotton from matured dry bolls and keep the produce in safe place. Apply irrigation to early sown wheat crop at crown root initiation (CRI) stage.
- Spray 400ml/acre Profenophos 50% EC @ 2ml/litre of water for control of leaf eating caterpillar in green gram and black gram crops as well as for pod borer in arhar crop..

### **Bihar**

- Complete the sowing of late varieties of wheat at the earliest. Apply irrigation to timely sown wheat crop at 21-25 DAS (CRI stage) and apply nitrogenous fertilizers after irrigation.
- Spray Profenofos/Chlorpyrifos @2ml/litre of water for stem bore in maize crop at seedling stage. Spray Dithane M-45 or Ridomil MZ @ 2.5g per liter of water in potato field to prevent early and late blight disease.

### **Jharkhand**

- In early potato, which is approaching maturity stage within 7-10 days, remove the upper leaves of the plant. This will help in hardening of the tuber and its skin. Timely sown rapeseed crop is now approaching maturity stage. Harvest the crop when siliqua turns bright yellow and dry the harvested crop in the sun for 2-3 days before threshing. For cultivation as early summer vegetables, sow the seeds of cucurbitaceous plants in polythene bag (filled with soil and FYM) and keep it at warmer place (either in poly house or under rice straw). Before sowing, seeds may be soaked in water for 24 hours.
- There is a chance of the attack of powdery mildew disease in table pea. To control, spray Kairathen @ 1 ml per liter of water or Sulfex @ 3 gm per liter of water.

### **West Bengal**

- In Sub-Himalayan West Bengal, start preparing nursery for Boro rice. Apply irrigation to potato crop. Undertake intercultural operation in pea and cole crops followed by irrigation. Complete the harvesting of Mandarin orange.
- To control alternaria blight in mustard, spray Mancozeb @ 2.5g/litre of water.
- In Gangetic West Bengal, start sowing of boro paddy. Keep the base of nursery bed dry and apply straw ash for avoiding seedling death due to low temperatures. Treat paddy seeds before sowing. Apply light irrigation to tomato, brinjal and mustard crops at flowering and fruiting stages. Irrigate potato crop as per the requirement.
- Apply Dithane M45 @ 2.5g/liter of water or Chlrothalonyl @ 2ml/liter of water for rust disease in lentil and lathyrus crops at flowering stage. Wheat crop is at tillering stage. If there is appearance of Yellow Rust disease, spray Mancozeb -75 wettable powder @ 2g/litre of water at regular intervals at clear weather conditions.

### **Andaman & Nicobar Islands**

- Treat the seeds of green gram and black gram with Rhizobium culture before sowing. Prepare land and sow the seeds of bhendi @ 8-10 kg/ha with the good drainage facility. Carry out weeding in tomato at 25 to 30 days after transplanting.
- Apply neem oil @ 30 ml/litre of water along with teepol @ 0.5 ml/litre to control pod borer in beans.

### **Animal Husbandry**

- In Andaman & Nicobar Islands, provide calcium carbonate @ 3 % mixed with feed to the poultry birds. To cure anaemia in piglet, provide ferrous sulphate @ 0.5 kg dissolved in 10 litres of hot water.
- In Bihar, protect animals from cold by covering them with jute sacks and laying straw.
- In Jharkhand, vaccinate cattle for FMD twice a year. Keep animals and birds in a warm place.

### **Fishery**

- In West Bengal, apply less amount of floating food during day time only. Clear the surrounding for direct sunlight. Stir pond water once a week. Apply CIFAX @ 1 litre/ha-m for three months or as required to control ulcer disease of fish.

## **WEST INDIA [GOA, MAHARASHTRA, GUJARAT]**

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

### **Advisories:**

- As thunderstorm accompanied with lightning very likely at isolated places over Vidarbha on 31st December, provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging. Keep harvested produce at safer places.

### **Maharashtra**

- In Konkan, complete nursery sowing of *summer* rice. Maintain 2-3 cm water level in rice fields. Apply irrigation and undertake gap filling in groundnut. To control aphids in pulses, spray Dimethoate @ 10 ml per 10 litres of water. Apply irrigation to vegetables and orchards. To control powdery mildew in mango, spray Lambda cyhalothrin 5% EC @ 6 ml + Hexaconazole @ 5 ml per 10 liters in water.
- In Madhya Maharashtra, undertake intercultural operation like weeding and hoeing in gram. To control aphids in wheat, spray Imidacloprid 17.8 SL @ 4 ml per 10 liters of water. Apply fertilizer dose of Nitrogen @ 60 kg /ha to wheat (21 DAS). To control aphids in safflower, spray Acetamiprid 20 SP @ 2 ml per 10 liters of water. To control pod borer in gram, spray 18.5 % Chlorantraniliprole @ 100 ml/ ha in 500 liters of water. Undertake intercultural operation like hoeing in early sown wheat and gram. To control powdery mildew in grapes, spray Dithane corteva @ 0.5 ml per litre of water.
- In Marathwada, apply Nitrogen/ ha @ 50 kg of wheat (30 DAS). Apply irrigation to pomegranate orchards. To control stem borer in sugarcane, spray Chloropyriphos 20 % EC @ 30 ml per 10 liters of water.
- In Vidharbha, continue nursery sowing of *summer* rice. Undertake intercultural operations like weeding and apply irrigation in early sown wheat, safflower and gram. Apply irrigation to vegetables and orchards. Application of organic mulches in tree basins/soil surface is advisable for thermal insulation to reduce cooling of soil surface during cold weather period. To control sap sucking pest in safflower, spray of Dimethoate 30% EC @ 10 ml per 10 litres of water. Undertake intercultural operation like weeding in linseed and mustard fields. To control pod borer in pigeon pea, spray 5 % *Neemak*.

### **Gujarat**

- In Middle Gujarat, apply irrigation to wheat crop at crown root initiation (CRI) stage and to tobacco, chilli and potato crops as per requirement. Spray Quinalphos 25 EC @20 ml / 10 litres of water at evening hours for control of shoot and fruit borer in brinjal.
- In North Gujarat, carry out intercultural operations in castor, fennel and mustard crops. Continue harvesting of matured fruits of custard apple, pomegranate and aonla. There are chances of blight disease in the potato crop. To control this disease, spray Mancozeb 0.2% @ 30 gram plus 25 ml of

concentrated desi soap solution in 10 litre of water. Spray next three doses at the interval of 10 days.

- In South Gujarat, continue planting of sweet potato. Undertake mulching in sugarcane crop.
- In Saurashtra & Kutch, continue picking of matured bolls of cotton in time. To prevent leaf blight disease infestation in garlic, spray Mancozeb @ 27 gm / 10 liters of water at 10 days interval as precautionary measure.

### **Animal Husbandry**

- In Gujarat, keep animals indoor at night time to protect them from cold wind. Give dry fodder twice a day.

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

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

### **Advisories:**

- As **cold wave conditions** in some pockets over north Madhya Pradesh on 27<sup>th</sup>, 28<sup>th</sup>; with **cold day to severe cold day conditions** very likely in some pockets over Madhya Pradesh on 27<sup>th</sup>, 28<sup>th</sup> and **cold day** in isolated pockets over East Madhya Pradesh on 28<sup>th</sup> and as **Ground frost** very likely in isolated pockets over north Madhya Pradesh on 27<sup>th</sup>, arrange for smoking around the fields during night, arrange for smoking around the fields during night, apply light and frequent irrigation /sprinkler irrigation in the evening to protect the crops from frost / cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/ gunny bags. Keep the animals inside the sheds and provide dry bedding and use heaters inside cattle sheds to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with the situation. Keep the chicks warm by providing artificial light in the poultry sheds.
- As **dense fog** very likely in isolated pockets over north Madhya Pradesh on 27<sup>th</sup> and 28<sup>th</sup>, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for blight disease. If symptoms are noticed, undertake plant protection measures.
- **Thunderstorm** accompanied **with lightning** very likely at isolated places over West Madhya Pradesh on 31<sup>st</sup> December, provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging. Keep harvested produce at safer places.

### **Madhya Pradesh**

- In Malwa Plateau Zone, irrigate wheat crop which is in CRI stage (21-25 days after sowing). Carry out intercultural operations in vegetable crops and mustard.
- In Keymore Plateau Zone, continue sowing of early maturing and medium maturing wheat varieties, chickpea; transplanting of egg plant, tomatoes, chilli, cauliflower, cabbage seedlings and sowing of vegetables like garden pea, spinach, coriander, carrot, radish, garlic..)
- In Nimar Valley Zone, immediately take up sowing of late wheat crop as temperature is favourable. Avoid irrigation to chickpea crop at flowering stage and provide irrigation to the crop at pod filling stage.
- In Bundelkhand, monitor potato crop of early blight and, if noticed, spray Metalaxyl + Mencozeb in 2:1 ratio / litre of water.
- In Jhabua Hill Zone, irrigate wheat crop at CRI stage (21-25 DAS) and chickpea at branching stage (35-40 DAS) and mustard at 30-35 DAS. Irrigate transplanted/sown winter vegetables like tomato, brinjal, chilli, cauliflower, cabbage, spinach, fenugreek, garlic, radish, pea, carrot etc. Stop irrigation and dig mature crops of ginger and turmeric.

### **Chhattisgarh**

- In Chhattisgarh Plain Zone, irrigate wheat crop at CRI stage (21 DAS). Carry out nipping at 35-40 DAS in the timely sown gram crop. Carry out thinning in mustard/toria and sunflower crops. Spray Indoxacarb @ 300 gram/ha dissolved in 500 liter water for control of pod borer in pigeon pea.
- In Northern Hill Zone, apply irrigation to wheat at CRI stage. Continue transplanting of onion

seedlings. Carry out nipping of gram plants to facilitate more branching and flowering for more pods. Monitor pigeon pea crop for pod borer infestation. If the infestation is above ETL, spray Polytrin C @ 1 litre/ha or Endoxacarb @ 300 ml/ha.

- In Bastar Plateau Zone, apply NSKE @ 50ml/litre of water for control of spodoptera larva in cauliflower, cabbage, pea and tomato crops.

#### **Animal Husbandry**

- Keep cattle in a dry, airy and clean place. Vaccinate cattle for FMD. Vaccinate goats with ETV vaccine. Take measures to control ticks and mites in animals.

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

**Realised Rainfall :** Significant rainfall occurred Ananthnag and Kulgam districts of Jammu & Kashmir. Weather remained mainly dry/ dry over rest of the region.

#### **Advisories:**

- As **cold wave to severe cold wave conditions** very likely in some pockets over Haryana, Chandigarh & Delhi and north Rajasthan on 27<sup>th</sup>, 28<sup>th</sup> and **cold wave conditions** in isolated pockets over Punjab, West Uttar Pradesh, on 27<sup>th</sup>, 28<sup>th</sup>; in isolated pockets over Haryana, Chandigarh & Delhi, north Rajasthan on 29<sup>th</sup> with **severe cold day conditions** very likely in most pockets over Punjab, Haryana, Chandigarh & Delhi from 27<sup>th</sup> to 29<sup>th</sup>, over north Rajasthan and Uttar Pradesh 27<sup>th</sup>, 28<sup>th</sup>; in isolated pockets over Punjab and Haryana, Chandigarh & Delhi on 30<sup>th</sup> ; **cold day conditions** in some pockets over Uttar Pradesh and north Rajasthan on 29<sup>th</sup>; in isolated pockets over Uttarakhand on 27<sup>th</sup>, over Uttar Pradesh and north Rajasthan on 30<sup>th</sup> and **Ground frost** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, south Uttar Pradesh, north Rajasthan on 27<sup>th</sup> and 28<sup>th</sup> , arrange for smoking around the fields during night, arrange for smoking around the fields during night, apply light and frequent irrigation /sprinkler irrigation in the evening to protect the crops from frost / cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/ gunny bags. Keep the animals inside the sheds and provide dry bedding and use heaters inside cattle sheds to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with the situation. Keep the chicks warm by providing artificial light in the poultry sheds.
- As **dense to very dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi and West Uttar Pradesh on 29<sup>th</sup>; **Dense fog** very likely in isolated pockets over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh on 27<sup>th</sup>, 28<sup>th</sup>, over north Rajasthan on 27<sup>th</sup> to 29<sup>th</sup>, over East Uttar Pradesh on 29<sup>th</sup>, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for blight disease. If symptoms are noticed, undertake plant protection measures.

#### **Jammu & Kashmir**

- In Sub Tropical Zone, of Jammu & Kashmir, continue sowing of late maturing varieties of wheat. Provide thatching prepared from Sarkanda or any other material to young fruit plants to protect them from low temperature. In mustard, Apply cypermethrin 10EC @ 1ml/lt or chloropyriphos 3EC @ 2ml/lt to control mustard sawfly. In lentil, undertake hoeing and weeding.
- In Cold Arid Zone, Keep the vents of greenhouses closed during cloudy days. Cover the Polyhouses to conserve energy. Stop irrigating orchards or nurseries in open. Drain out excess water to avoid frost damage.
- In Valley Temperate Zone, provide drainage in the Rabi crop fields wherever there is probability of water accumulation during winter months and make bunds and irrigation channels clean. Complete transplantation of onion seedlings.

#### **Himachal Pradesh**

- In High Hill Temperate Dry Zone, after completing the excavation of the pit for apple plantations, start

filling up the pits with dung manure, superphosphate and pesticides etc. and pit should be 15-20 cm above the ground. Cover the small plants with grass to avoid cold.

- In Mid Hills Sub-Humid Zone, continue transplanting of onion and sowing of pea. Undertake harvesting of ginger and turmeric. Cover the small plants with grass to avoid cold paralysis .

### **Punjab, Haryana and New Delhi**

- In Western Zone of Punjab, considering cold to severe cold conditions, give light irrigation in wheat, mustard; vegetables like radish, turnip, carrot and newly planted orchards. Provide polythene sheet/Sarkanda/Kahi/ rice straw to protect tomato plants from frost.
- In Western Plain Zone of Punjab, apply light irrigation to protect sugarcane from frost. In mustard, monitor for white rust infection. If noticed, spray Dithane-M-45 @ 2 gram or Chlorothalonil 75 WP @ 1 gram/ litre of water under clear sky conditions.
- If symptoms of late blight are observed in potato crop, spray Indofil M45/Mass M- 45/Markzeb /Antracole/ Kavach @ 500-750 g using 250-350 litres of water per acre at 7 days interval.
- In Western Zone of Haryana, undertake intercultural operations in chickpea crop. Apply need based irrigation to wheat, barley and mustard crops.
- In **Delhi**, continue sowing of late maturing varieties of wheat, Undertake transplanting of onion, tomato, cauliflower, cabbage, knolkhol and broccoli crops in raised bed. Due to high relative humidity, infection of blight may occur in potato and tomato crops. To control, spray Carbandizam @ 1gm / litre of water or Dithane-M-45 @ 2gm / litre of water.

### **Uttar Pradesh**

- In East Uttar Pradesh, irrigate timely sown wheat crop at CRI stage. Carry out weeding followed by light irrigation in standing crops of mustard, Bengal gram and chick pea. Carry out harvesting of mature sugarcane crop.  
Due to prevailing foggy weather condition, there is a chance of late blight in potato crop. For control, spray Indofil M45 / Kavach / Antracol @ 500-700 g or Blitox @ 750-1000 g in 250-350 litres of water per acre 2-3 times at weekly interval.
- In West Uttar Pradesh, go for sowing of wheat if the field is ready. Carry out transplanting of brinjal, cabbage, cauliflower, tomato and chilli seedlings. Carry out harvesting of toria crop in stages. Carry out hoeing and weeding in mustard at 15 to 20 DAS; in pea crop at 20 to 25 DAS and in Bengal gram at 30 to 35 DAS. Apply irrigation to mustard at 30-35 DAS and to green pea at 40-45 DAS. Apply irrigation to potato crop after weeding and hoeing operations. Continue raising nursery of onion.

### **Uttarakhand**

- In Bhabar and Tarai Zone, undertake harvesting of yellow mustard. undertake weeding and hoeing in wheat, mustard and barley.
- In Sub-Humid Sub-Tropic Zone, carry out weeding operation in wheat crop. Carry out weeding operation in potato.

### **Rajasthan**

- In Flood Prone Eastern Plain Zone, carry out weeding operation in wheat crop. Spray a solution of Mancozeb @ 2g/ litre water to manage early blight in potato crop. Sawfly infestation may occur in mustard and other brassica, To control, apply 5% Melathion or 5% Carbaryl powder @ 20-25 kg/ha.
- In Arid Western Plain Zone, apply light and frequent irrigation in cumin crop. Continue sowing of wheat and barley (use late maturing varieties).
- In Semi Arid Eastern Plain Zone, leaf curl and mosaic diseases may affect papaya crop. Uproot and burn the affected plants. To check further spread of disease, spray Dimethoate 30EC or Methyl demeton 25 EC @ 1.0 ml per litre water.
- In Transitional Plain Zone of Inland Drainage, apply irrigation in gram. Apply irrigation to wheat crop at CRI stage. Undertake transplanting of cabbage, cauliflower and broccoli.
- In Sub Humid Southern Plain and Aravali Hill Zone, apply irrigation to mustard crop. To control pod

borer in gram, undertake dusting of Malathion 5% or Methyl Parathion 2% or Quinalphos 1.5 % @ 25 kg/ha before flowering and after pod formation stages. Apply irrigation to wheat crop at CRI stage.

#### **Animal Husbandry**

- In Jammu & Kashmir, Put some bedding material like puaal etc. to keep animals warm. Provide dry bedding during night. Cover the poultry shed with gunny bags in order to protect the birds from cold weather.
- In Himachal Pradesh, protect animals from cold by keeping them in clean and closed sheds. Give balanced diet to the animals. Give 40 to 50 g minerals mixture to a cow daily.
- In Uttarakhand, To save the animals from the cold, proper arrangement of the animal shed should be done.
- Maintain optimum room temperature in poultry and dairy units by providing electric bulbs. Give salt and minerals to cattle in addition to dry/green fodder. Give balanced feed to poultry birds. Keep cattle and poultry sheds clean.

#### **Apiculture:**

- In Sub Tropical Zone of Jammu & Kashmir, protect honey bee colonies from cold by providing winter packing. Reduce the entrance. Give sugar feeding.

#### **Floriculture:**

- In Sub Tropical Zone of Jammu & Kashmir, Continue Transplanting of marigold. in Gladiolus plants Hoeing and weeding is recommended. Cut the shoots up to the height of 10-15 cm, if shoots are 20-30 cm high or after 30-45 days after planting to enable the plant grow erect.

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