



National Agromet Advisory Service Bulletin

Thursday 25th January 2018
(For the period 25th to 30th January 2018)



Issued by
India Meteorological Department

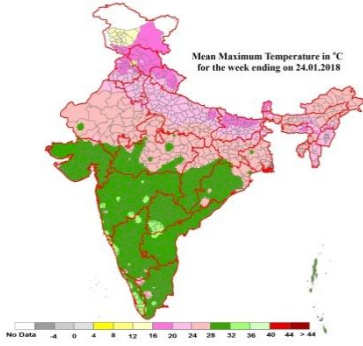
Weblink For

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

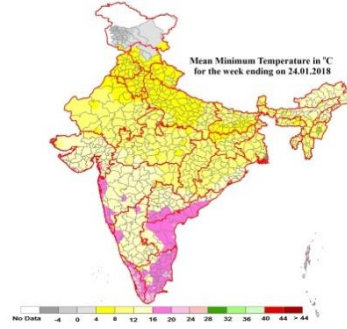
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

Spatial distribution of weather parameters for the week ending 24.01.2018

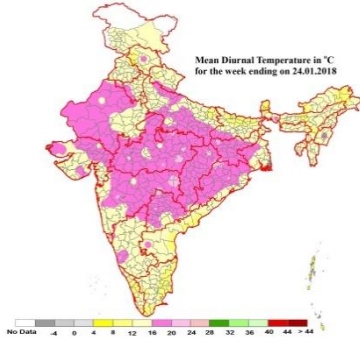
Mean Maximum Temperature (°C) for the week ending 24.01.2018



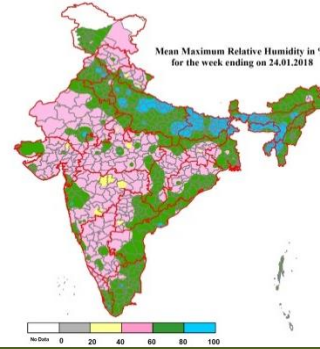
Mean Minimum Temperature (°C) for the week ending 24.01.2018



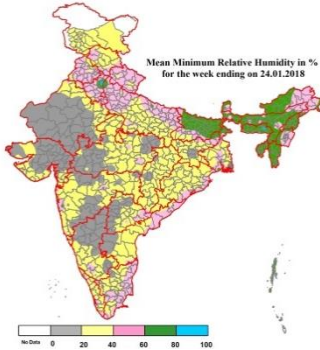
Mean Diurnal Temperature Variation (°C) for the week ending 24.01.2018



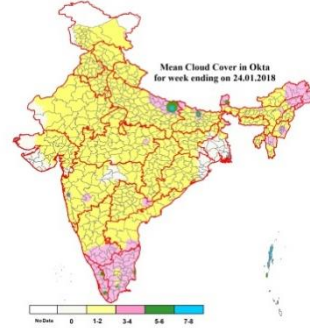
Mean Maximum Relative Humidity (%) for the week ending 24.01.2018



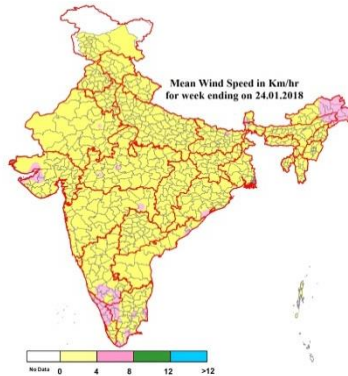
Mean Minimum Relative Humidity (%) for the week ending 24.01.2018



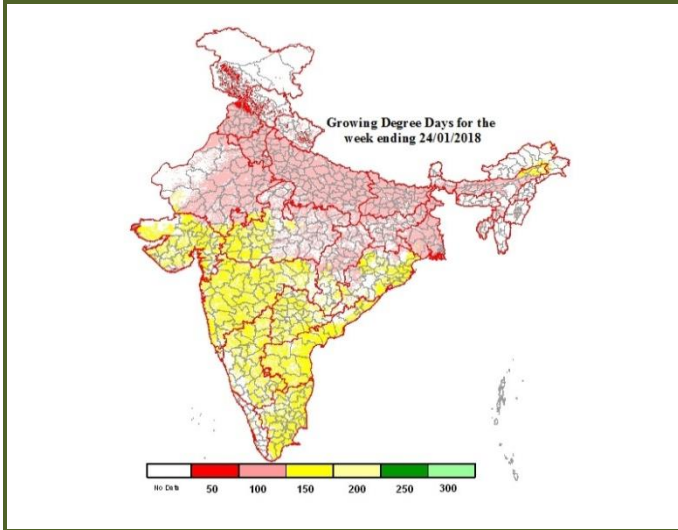
Mean Cloud Cover (okta) for the week ending 24.01.2018



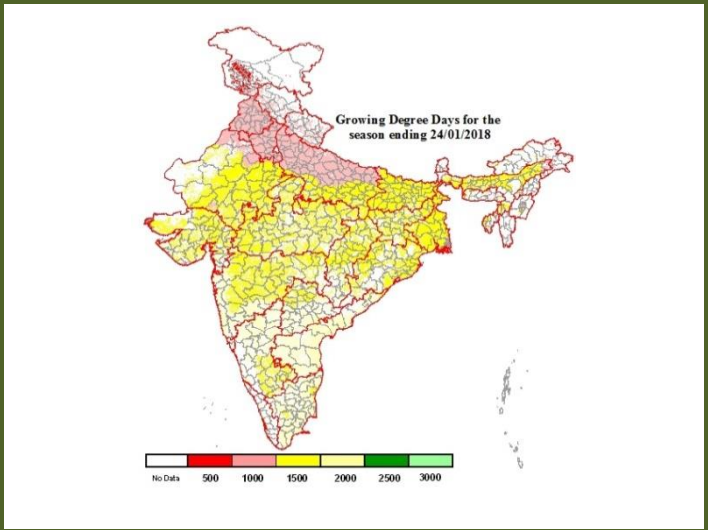
Mean Wind Speed (km/hr) for the week ending 24.01.2018



Growing Degree Days for the week ending 24.01.2018

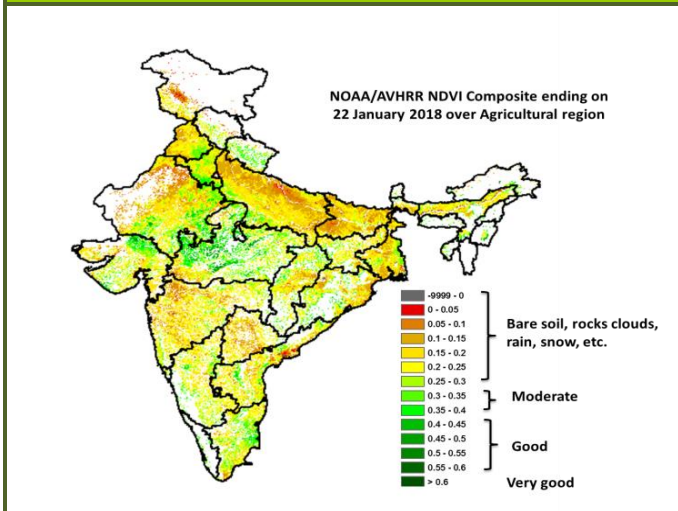


Growing Degree Days for the season ending 24.01.2018

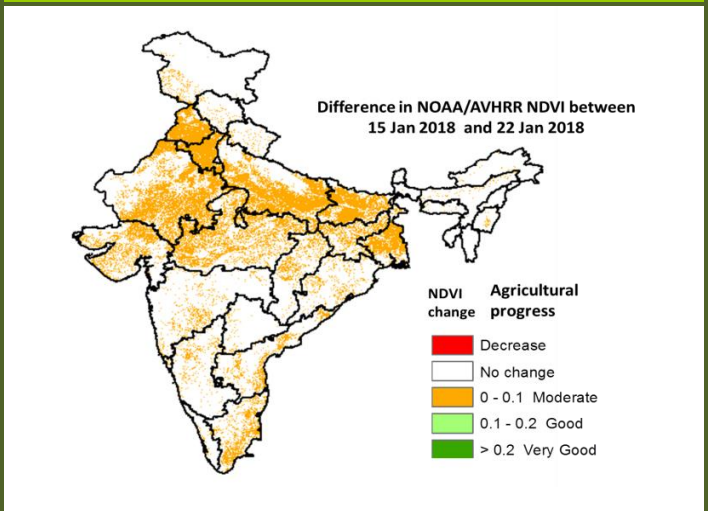


* Base temperature for *Rabi* Season is taken as 05⁰ C

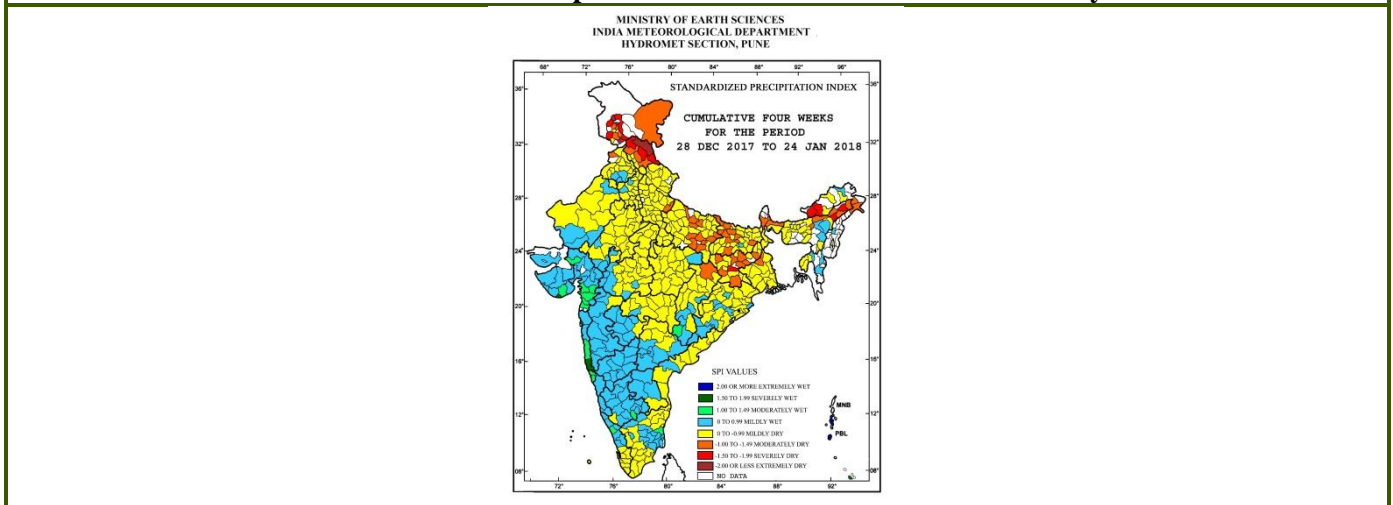
NOAA/AVHRR NDVI composite ending on 22nd January 2018 over Agricultural regions of India



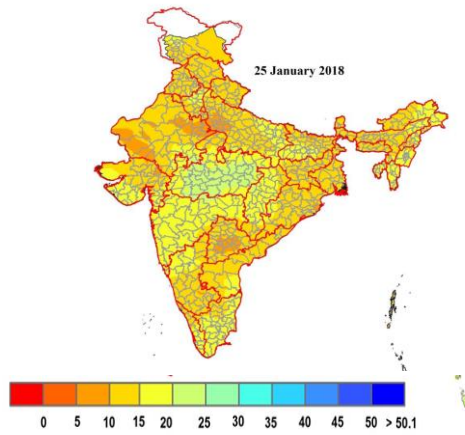
Difference in NOAA/AVHRR NDVI between 15th and 22nd January 2018



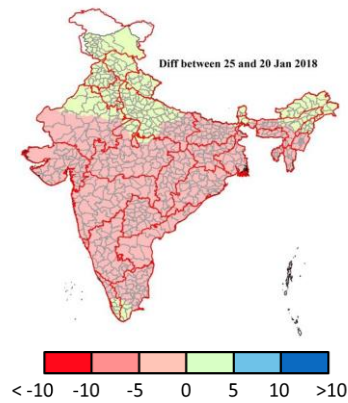
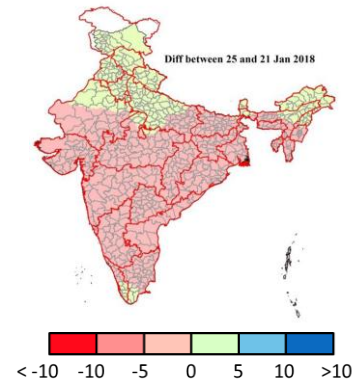
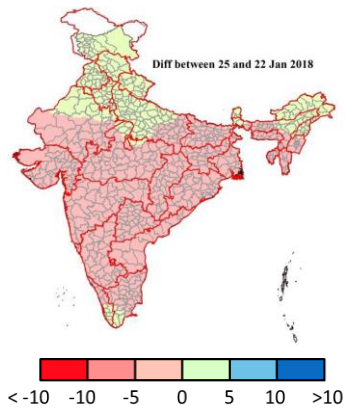
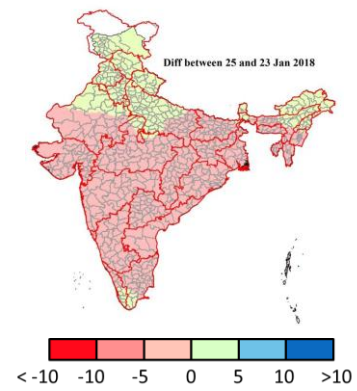
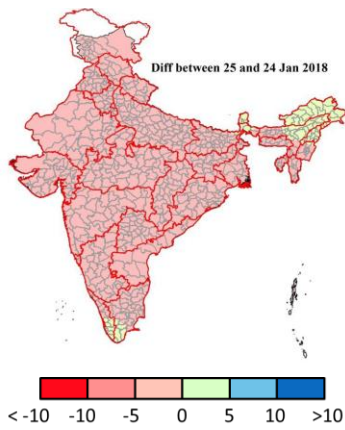
**Standardised Precipitation Index
Cumulative 4 weeks for the period 28th December 2017 to 24th January 2018**



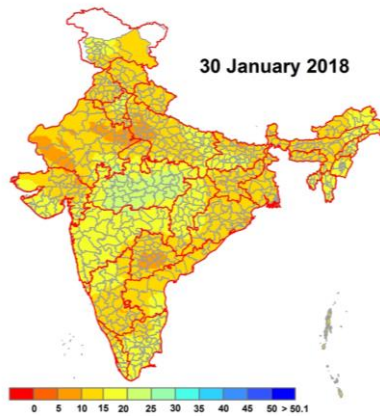
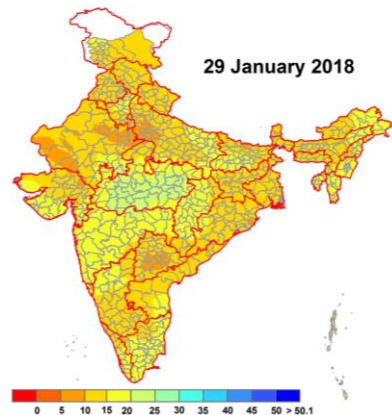
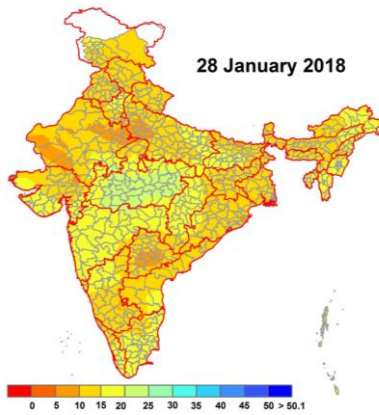
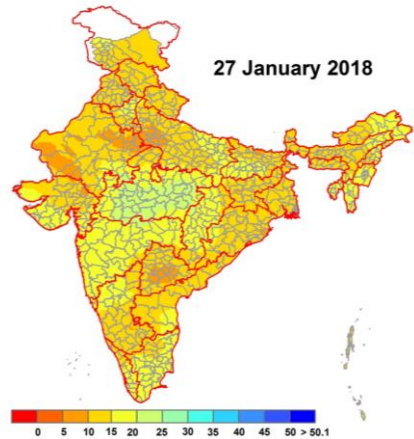
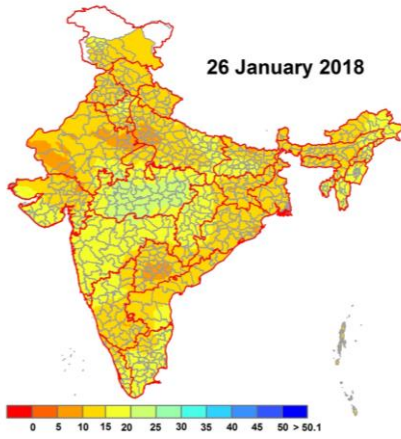
Daily Soil Moisture (mm) for 25th January 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 26th to 30th January 2018 (ending at 0830 IST)
for 60 cm depth**



Weather Forecast for next 5 days valid upto 0830 hours of 30th January 2018

- Meteorological subdivision wise detailed 5 days rainfall forecast is given in Table below.
- Minimum temperatures likely to fall by 1-2°C over Central & East India. No significant change in minimum temperatures likely over northwest India and western parts of Peninsular India during next 3 days. They are likely to rise by 2-3°C over northwest India thereafter.
- Rise in maximum temperatures very likely by 2-3°C during next 24 hours over parts of northwest India.
- Shallow to moderate fog very likely at isolated places over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during next 2 days.

5 Day Rainfall Forecast (Mid day) 25th January 2018

Met-Sub-Division	25-Jan Today	26Jan Fri	27Jan Sat	28Jan Sun	29Jan Mon
1. Andaman & Nicobar Islands	FWS	SCT	SCT	ISOL	ISOL
2. Arunachal Pradesh	FWS	SCT	ISOL	ISOL	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	DRY	DRY	DRY	DRY	DRY
6. Gangetic West Bengal	DRY	DRY	DRY	DRY	DRY
7. Odisha	DRY	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	DRY
13. Haryana, Chd & Delhi	DRY	DRY	DRY	DRY	DRY
14. Punjab	DRY	DRY	DRY	DRY	DRY
15. Himachal Pradesh	DRY	DRY	DRY	DRY	ISOL
16. Jammu & Kashmir	ISOL	ISOL	ISOL	ISOL	SCT
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	DRY	DRY	DRY	DRY	DRY
29. Telangana	DRY	DRY	DRY	DRY	DRY
30. Rayalaseema	DRY	DRY	DRY	DRY	DRY
31. Tamilnadu & Puducherry	ISOL	DRY	DRY	DRY	DRY
32. Coastal Karnataka	DRY	DRY	DRY	DRY	DRY
33. North Interior Karnataka	DRY	DRY	DRY	DRY	DRY
34. South Interior Karnataka	DRY	DRY	DRY	DRY	DRY
35. Kerala	ISOL	DRY	DRY	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

- **25 January (Day 1):** Dense to very dense fog very likely at a few places Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, Bihar, Sub-Himalayan West Bengal and at isolated places over north Rajasthan and lower reaches of Himachal Pradesh & Uttarakhand. Cold Wave conditions very likely at isolated places over Uttarakhand, Himachal Pradesh, Punjab, Haryana, Chandigarh, north Rajasthan and Madhya Pradesh. Ground frost conditions very likely at isolated places over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, north Rajasthan, Punjab, Haryana and Chandigarh.
- **26 January (Day 2):** Dense to very dense fog very likely at a few places East Uttar Pradesh, Bihar and Sub-

Himalayan West Bengal and at isolated places over north Rajasthan, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh and lower reaches of Himachal Pradesh & Uttarakhand. Cold Wave conditions very likely at isolated places over Uttarakhand, Himachal Pradesh, Punjab, Haryana, Chandigarh, north Rajasthan and Madhya Pradesh. Ground frost conditions very likely at isolated places over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, north Rajasthan, Punjab, Haryana and Chandigarh.

- **27 January (Day 3):** Dense to very dense fog very likely at a few places East Uttar Pradesh, Bihar and Sub-Himalayan West Bengal and at isolated places over Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh; Dense fog very likely at isolated places over lower reaches of Himachal Pradesh & Uttarakhand. Cold Wave conditions very likely at isolated places over Uttarakhand, Himachal Pradesh, Punjab, Haryana, Chandigarh and north Rajasthan and Madhya Pradesh. Ground frost conditions very likely at isolated places over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, north Rajasthan, Punjab, Haryana and Chandigarh.
- **28 January (Day 4):** Dense fog likely at isolated places over East Uttar Pradesh.
- **29 January (Day 5):** No weather warning.

Weather Outlook for subsequent 2 days from 30th January to 1st February 2018

- Scattered to fairly widespread rain/snow likely over Jammu & Kashmir and isolated over Himachal Pradesh.
- Weather likely to be dry over remaining parts of the country outside Andaman & Nicobar Islands, where isolated rainfall likely.

Salient Advisories

- As cold wave conditions very likely at isolated places over **Uttarakhand, Himachal Pradesh, Punjab, Haryana, Chandigarh, north Rajasthan** and **Madhya Pradesh** from 25th to 27th January, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/gunny bags. Irrigate the rice nursery beds every day in the evening and let out the water in the morning.
- As ground frost conditions very likely at isolated places over **Jammu & Kashmir, Himachal Pradesh, Uttarakhand, north Rajasthan, Punjab, Haryana** and **Chandigarh** from 25th to 27th January, apply light and frequent irrigation in standing crops during evening hours and in cash crops, spray of 0.1 percent H₂SO₄ to protect from frost injury.
- As dense to very dense fog at a few places very likely over **Bihar** and **Sub-Himalayan West Bengal** from 25th to 27th, over **Punjab, Haryana, Chandigarh & Delhi** and **Uttar Pradesh** on 25th, over **East Uttar Pradesh** on 26th and 27th, dense to very dense/dense fog at isolated places over **north Rajasthan** and lower reaches of **Himachal Pradesh & Uttarakhand** from 25th to 27th, over **Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh** on 26th and 27th and over **East Uttar Pradesh** on 28th January, monitor the standing crops for incidence/spread of pest and diseases, potato, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake plant protection measures.
- As dry weather would prevail, continue harvesting of matured toria in **Jharkhand**, pigeon pea in **North Interior Karnataka** and **Odisha** and Castor in south **Saurashtra** and **North Gujarat Zone**.
- In view of the cold wave conditions in **Uttarakhand, Himachal Pradesh, Punjab, Haryana, Chandigarh, north Rajasthan** and **Madhya Pradesh** from 25th to 27th January, keep animals inside the sheds during night hours and provide dry bedding to protect them from cold. 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.

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

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
 - **Kerala:**
 - In the Problem Area Zone, undertake harvesting of cabbage and cauliflower 8-10 days after head emergence. Provide irrigation to banana and coconut as per requirement.
 - In the Northern Zone, for controlling rice bug infestation in paddy, apply Azadiractin 3000ppm stock after diluting in water @ 3ml/litre. Add and stir one to two ml of Malathion 50EC per litre of the diluted Azadiractin solution before applying for better results. The spraying should be done in the evening, immediately after sunset.
 - In the Southern Zone, for controlling of white ear disease in rice, spray Flubendamide (Fame) 2 ml/ 20 litre of water. Apply prophylactic spray with Pseudomonas 2% for managing downy mildew in cucurbits. For control of fungal disease in rubber tapping panel, apply Copper oxy Chloride or Bordo mixture.
 - In the Central Zone, in coconut gardens, irrigation shall be continued with one or two irrigations per week. 50-60 litres of water should be provided per palm if drip irrigation is been giving. Conserve soil moisture by providing suitable mulches.
 - In the Problem Area Zone, there are chances of incidence of rice bug during grain filling stage. Remove weeds on bunds, closely observe the rice field and catch rice bugs with nets. Use 2% neem oil garlic emulsion to control or apply Carbaryl 4g/ litre of water if the incidence is severe.
 - **Andhra Pradesh:**
 - In the Krishna Godavari Zone, undertake sowing of chickpea.
 - In the North Coastal Zone, continue harvesting sugarcane crop. In rice fallow pulses, spray Dimethoate @ 2.0 ml/litre of water for sucking pest and Chlorpyrifos @ 2.5 ml + Dichlorvos @ 1.0 ml per litre of water for maruca pod borer.
 - In the Southern Zone, the present weather conditions are highly favourable for blast in paddy. To control the disease spray Tricyclozole (Beem) @ 0.6 g/L of water. If the intensity of the disease is more, spray Isoprothiolin @ 1.5 ml per litre of water. To control leaf curl in chilli crop, spray Phasalon (Jolon) 3 ml or Diphenthiuron @ 1 gm per litre of water. The present weather conditions are favourable for occurrence of spodoptera in groundnut crop. To control, place pheromone traps @ 4 per acre and observe the pest incidence. If the pest incidence is more, spray Thiodicarb @ 1 g or Novaluron 1 ml or Emamectin Benzoate 0.2 g per litre of water.
 - In the Scarce Rainfall Zone, BPH incidence in paddy is observed in some parts of district. Farmers are advised to spray Buprofezin 1.6 ml or Ethofenpros @ 2.0 ml per litre of water. Rice leaf folder incidence is observed in some parts of the district. For the control of leaf folder, farmers are advised to spray Chloropyrifos @ 2 ml/litre for control. Incidence of sucking pests is observed in some parts of the district in groundnut crop. Farmers are advised to spray, Dimethoate @ 2ml/litre of water or Thiomethoxam @ 40gm/acre for control.
 - In the Krishna Godavari Zone, spray Carbendazim 200 g or Thiophanate Methyl 200 g or Hexaconazole 400 g or Propiconazole 200 g per acre twice at 10 days interval for powdery mildew in rice fallow pulses and rabi pulses.
 - **Telangana:**
 - In North Telangana Zone, undertake transplanting of rice. Maintain shallow depth of water at the time of transplanting. Provide irrigation during flowering and grain filling stage in sorghum crop, two irrigations at flower initiation stage in Bengal gram crop and enough irrigation at pod development stage in groundnut crop.
 - In South Telangana Zone, prevailing dry weather conditions are favorable for incidence of aphids in maize. To control, spray Dimethoate @ 2 ml or Methyl Demetan @ 2 ml or Acephate @ 1.5 g per litre of water. In vegetable crops, spray Traizophos @ 2 ml or Acetamiprid @ 0.2 g per litre of water for white fly; Dimethoate @ 2 ml per litre of water for aphids and Acephate @ 1.5 g per litre of water or Fipronil @ 2 ml per litre of water for thrips.
 - In North Telangana Zone, spray Methyl-o-demeton or Dimethoate or Malathion 5% @ 2 ml per litre of water for control of aphids in soghum crop. Spray Chlorothalonil @ 2 g or Pyraclostrobin @ 1g/litre of water for early blight in tomato crop.
 - **Tamil Nadu:**
 - In the Western Zone, stop irrigation to rice crop 15 days before harvesting. Increase the duration between irrigation to facilitate maturity in turmeric crop. Postpone sowing of maize till first week of February as low temperatures are expected.
 - In the High Rainfall Zone, irrigate paddy fields and maintain 5 cm water level. Apply irrigation to newly planted fruit trees and horticulture crops.
 - In the High Rainfall Zone, to control sigatoka leaf spot in banana, spray Propiconazole @ 1 ml + teepol 0.5 ml per litre of water.
 - In the Western Zone, for pod borer incidence in Bengal gram, dust Malathion or Fenthion 5% dust @ 10kg / acre when sufficient soil moisture is available. For ear head bug incidence in paddy crop, spray Dichlorvos @ 2ml/liter of water.
 - In the South Zone, in the prevailing weather, incidence of pink bollworm is noticed in cotton crop. For controlling

this pest, apply Carbaryl 5% D 20 kg/ha or spray Triazophos 40 EC 2.5 litres /ha. For controlling incidence of white fly in cotton, spray Profenofos 50% EC 1000 ml/ ha. Prevailing weather condition is favourable for brown leaf hopper incidence in rice. To control, spray Chlorantraniliprole 18.5% SC 150 g/ha or Fipronil 5% SC 1000-1500 ml/ha or Imidacloprid 17.8 SL 100-125 ml/ha. Spray Imidachloprid 17.8 % SL @ 3 ml/10 litre of water or Dimethoate 30 % EC @1.0 ml/litre for thrips in chilli crop.

- To control *Helicoverpa armigera* in chickpea crop, use Pheromone traps for @ 12 Nos. / ha. and set up Bird perches in the field @ 50 Nos./ha.

- **Karnataka:**

- In Southern Transition Zone, undertake land preparation for transplanting of summer rice and harvesting of matured sugarcane.
- In North Transition Zone, provide irrigation to sorghum, wheat and late sown Bengal gram crop. Undertake picking of cotton and harvesting of early sown Bengal gram.
- In North East Dry Zone, complete harvesting of red gram, Bengal gram and safflower. Undertake planting of sugarcane.
- In North East Transition Zone, provide protective irrigation in sorghum.
- In North Transition Zone, due to low minimum temperature forecast there is a chance of development of powdery mildew in mango; for control, spray Phosphamidon 86 WSC @0.5 ml with Hexaconazole 5 EC @1.0 g / litre of water.
- In North Dry Zone, provide light irrigation in late sown sorghum, sugarcane, chickpea and wheat as per need.
- In Hill Zone, as a precautionary measure, for control of hoppers, spray Melathion @ 2 ml /litre of water or Monocrotophos @ 1.25 ml/litre of water.
- In North East Transition Zone, incidence of leaf hopper is noticed in mango growing belts; for its effective management, application of Thiamethaxom 25 WG @ 0.5 g/liter of water is recommended.
- In Eastern Dry Zone, spray Lamda Cyhalothrin 5 EC@ 0.5 ml/litre of water or Sulphur dust (SULTAF) 80 W@3g/litre of water against the powdery mildew disease in mango.
- In Central Dry Zone, to manage sucking pests in safflower, spray Thiamethacom 25 WG @0.2 gram or Acephate 75 SP @1 gram or Dimethoate 30 EC @1.75 ml dissolved in one liter of water.
- In North East Dry Zone, due to low temperature, attack of hoppers was noticed in mango crop; for effective control, spray Carbaryl 50WP @ 4 g or Malathion 50 EC @ 2 ml or Monocrotophos 36SL @ 1.5 ml or Phosphamidon 40 EC @ 0.5 ml/litre of water.

- **Animal Husbandry**

- In North East Transition Zone and Eastern Dry Zone of Karnataka, maintain the optimum temperature in the poultry house. In Eastern Dry Zone, maintain the optimum room temperature in sericulture and dairy unit.
- In the Northern Telangana Zone, vaccinate poultry birds against Ranikhet disease, cattle against FMD and Hemorrhagic Septicemia diseases and sheep/goat against sheep pox disease.

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

- **Realised Rainfall:** Weather remained dry over of the region during the week.
- **Advisories:**
 - As rain/thundershowers likely at many places over Arunachal Pradesh on 25th January, avoid irrigation, inter-cultural operation and application of plant protection measures and fertilizers to the standing crops.
 - **Assam & Meghalaya, Arunachal Pradesh:**
 - In Arunachal Pradesh, continue harvesting of mature crop of ginger/turmeric on a non rainy day. Cover newly emerged banana bunches with locally available sack to protect from cold/frost. Continue harvesting of matured citrus fruits. Apply light irrigation to cole crops.
 - In Meghalaya, continue harvesting of French bean, rajmash and cow pea crops. Provide irrigation to pea, lentil, chickpea, rapeseed and mustard crops. Undertake harvesting of cabbage, cauliflower and broccoli crops. Undertake nursery raising for tomato and capsicum crops.
 - In Lower Brahmaputra Valley Zone of Assam, complete transplanting of *Boro* rice seedlings in the main field. Undertake land preparation and setts selection for sugarcane crop. Undertake sowing of okra varieties like Pusa Sawani, Arka Anamika, Parbhdani Kranti and local cultivars. Undertake sowing of foxtail millet from mid-January to mid-February and provide light irrigation.
 - In the Hill Zone of Assam, keeping in view of low temperature and humidity, monitor rice crop seedlings for the presence of thrips on leaves during morning hours. Provide second irrigation in timely sown wheat crop at tillering stage. Continue transplanting of brinjal, tomatoes, chilli, cauliflower, cabbage, seedlings and sowing of garden pea, spinach, coriander, carrot, radish, garlic vegetables. Continue transplanting of onion seedlings.
 - In the Central Brahmaputra Valley Zone, maintain 5±2 cm of standing water in the field after 2-3 days of transplanting up to 7-10 days before harvest. Apply second irrigation to wheat crop at ear head stage (70-75 days after sowing).
 - In the North Bank Plain Zone, continue transplanting seedlings of *Boro* rice varieties like Jyotiprasad, Bishnuprasad,

Joymoti etc. in the main field.

- In the Upper Brahmaputra Valley Zone, spray Dimethoate 30 EC or Chloropyriphos 20EC @ 0.5litre/ha with a spray volume of 500-700 litres of water/ha for aphids in rapeseed and mustard crops. Uproot the bacterial wilt-affected tomato plants.
- In the Barak Valley Zone, spray Dimethoate 30 EC or Ragor @ 2 ml per liter of water to control aphids and saw fly in rapeseed and mustard. To manage the black spot disease in leafy vegetables and Cole crops, spray Mancozeb @ 2gm per liter of water. For attack of stem borer in paddy. spray Chlorpyriphos 50 EC @ 2 ml per litre of water.
- In the Central Brahmaputra Valley and North Bank Plain Zones, apply Dimethoate 30EC or Chloropyriphos @ 2ml/litre with a spray volume of 500-700 litres/ha for hand sprayer & 200-250 litres/ha for power sprayer to control aphids and saw fly in rapeseed and mustard.
- **Nagaland, Mizoram, Manipur and Tripura:**
- In Manipur, provide light irrigation to rabi maize and potato. Undertake land preparation for sowing of pre-kharif rice crop. Raise nursery for late cole crops. Raise cucurbits like water-melon, cucumber, sponge gourd, etc. in poly-pouch and trays under polyhouse. Tomato nurseries should be raised under low cost polyhouse as the temperature is very low in open field. Carry out land preparation for okra crop.
- In Mizoram, continue harvesting of banana, khasi mandarin, acid lime, star fruit, plum and peach. Provide irrigation to maize, gram, soybean, and vegetable crops.
- In Tripura, continue transplanting of Boro rice. Plant them in square pattern to facilitate weeding. Apply irrigation and provide mulching to mustard and lentil crops. Apply light irrigation to cole crops and tomato.
- In Nagaland, provide mulching to rabi maize, toria, lentil and linseed crops. Give light irrigation to cabbage and cauliflower. Carry out mulching in lentil and linseed. Harvest ripened fruits of Khasi Mandarin.
- In Manipur, for organic control against aphids in lentil, black gram, pea, rapeseed and mustard crops, spray Azadirachtin, neem oil or Pyrethrin; spray Neem Seed Kernel Extract at 5% concentration for powdery mildew and Nimbicidin (0.3%) to control rust disease. Apply Carbaryl @ 30 ml per 15 litres of water against cut worm in potato.
- In Tripura, spray Cymoxanil+ Mancozeb or Metalaxyl+ Mancozeb @ 1.5 gm per liter of water in the potato field at least twice at an interval of 15 days to control early blight.
- In Nagaland, spray Neem seed kernel extract at @ 5 gm per ha twice at 10 days interval for cut worm in cabbage and cauliflower.
- **Animal Husbandry**
- In Arunachal Pradesh, provide lukewarm food & water to cattle and pigs. De-worm animals with anti helmetic drugs (particularly Tapeworms) viz. Fento Plus @ 1 tablet per 30 kg body weight. Vaccinate pigs against swine fever and cattle against FMD.
- In the Lower Brahmaputra Valley Zone of Assam, to control Avian Cholera of Duck apply Sulfadimethoxine-ormetoprim (0.02-0.04%) and Chlortetracycline (0.044%) in given feed or vaccinate with duck chorea vaccine (@ 1ml) in skin.
- In the Hill Zone of Assam, vaccinate poultry birds against Ranikhet disease.
- In Manipur vaccinate cattle against FMD, HS and BQ diseases.
- In the Upper Brahmaputra and Barak Valley Zones of Assam, protect the poultry birds from cold by using gummy bags or plastic sheets around the poultry shed during night. Provide artificial heating using electric bulb (300watt/ sq ft.) during night time to prevent Coryza disease in the poultry.
- In the Central Brahmaputra Valley Zone, vaccinate animals against Anthrax and FMD.
- **Fishery**
- In the Barak Valley Zones of Assam, an extra dose of Lime @ 200 kg per ha may be applied in the fish pond to prevent the outbreak of EUS (ulcer disease).
- In Meghalaya, nursery ponds should be harvested and the fingerlings should be transferred to grow out ponds @ 10000 to 15000 nos. per ha. Grow out ponds should be properly cleaned from weeds and other aquatic weeds in the bank so that the ponds can get proper Sunlight during winter season.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
 - **Maharashtra:**
 - In Konkan, in transplanted rice, maintain 5 cm water level. Apply straw mulch or polythene mulch in water melon crops to minimize evaporation.
 - In Madhya Maharashtra, continue planting of *suru* sugarcane. To increase productivity of wheat and gram crop, spray 2% urea. Continue planting of papaya (varieties : Co-7, Coorg honeydew, Pusa delicious, Sunrise solo, Arka Prabhat). Continue sowing of *summer* groundnut (varieties are Phule Unnati, TAG24, TG26, TPG41, JL501). Complete harvesting of matured pigeon pea.
 - In Marathwada, apply irrigation to standing crops like wheat and chick pea, vegetables, orchards as per availability of

water. Continue planting of *suru* sugarcane. Before planting dip the seed 10 to 15 minutes in solution of Malathion 50 EC @ 300 ml + Bavistin @100 g + 100 liter water.

- In Vidarbha, continue transplanting of 22-25 days old rice seedlings. Apply 50 kg Nitrogen, 50 kg Phosphorus and 50 kg Potash at the time of puddling for paddy. Complete harvesting of matured pigeon pea. Continue sowing of summer groundnut (varieties : TAG-24, TG-26, SB-11) with irrigation facility.
- In Konkan, if attack of aphids and thrips observed in *rabi* vegetable nursery like brinjal, tomato, cabbage, chilli, khol khol, spray Malathion @ 20 ml or Dimethoate @ 12 ml per 10 liter of water.
- In Madhya Maharashtra, to control attack of thrips and purple blotch in onion, spray Dimethoate 30 EC @ 15 ml or Lambda cyhalothrin 5 EC 6 ml or Quinalphos 25 EC @ 24 ml per 10 liters of water alternatively. Also use Dithane M-45 @ 0.3% fungicide + sticker.
- **Gujarat:**
 - In North Gujarat Zone, undertake harvesting of matured spikes of castor. Carry out hand weeding in wheat.
 - In Bhal and Coastal Zone, apply irrigation in mustard and wheat as per requirement.
 - In South Saurashtra Zone, apply irrigation in coriander, cumin and garlic as per need.
 - In Middle Gujarat Zone, apply irrigation to wheat (milking stage).
 - In South Gujarat Heavy Rainfall zone, complete land preparation for transplanting of summer rice and continue earthing up in cole crops. Undertake ploughing in the orchard field to remove weeds and to make aeration.
 - In South Gujarat Zone, apply irrigation in gram.
 - In North West Zone of Gujarat, apply light irrigation in mustard, castor and mango, citrus, pomegranate and sapota orchards to minimize adverse effects of cold. Carryout hand weeding and intercultural operations in wheat and vegetable crops.
 - In South Gujarat Zone, occurrence of powdery mildew in mango is observed; spray wettable Sulphur @30 g/10 litres of water for control.
 - In Middle Gujarat Zone, in late sown wheat for management of stem borer infestation, spray Quinalphos 25 EC @ 20 ml/10 litres of water. Spray Mencozeb 0.2% @ 25 gram in 10 litres of water for control of blight disease in potato.
 - In North Gujarat Zone, weather is congenial for outbreak of aphids in vegetable crops; for effective control, spray Dimethoate or Monochrotophos @10ml/10 liters of water.
 - In North Saurashtra Zone, under present weather condition, attack of thrips and aphids in cumin has been reported; for control, spray Acetamiprid @ 5 g/10 liters of water. The alternaria leaf blight infestation observed in garlic crop; spray Mencozeb/10 liters @27 gm /litre of water at 10 days interval.
 - In Middle Gujarat Zone, there is chance of blight disease in potato crop; to control, spray Mencozeb 0.2% @ 30 g plus 25 ml of concentrated desi soap solution in 10 litres of water. Due to favorable weather conditions, there are chances of infestation of sucking pests in vegetable crops in North Gujarat Zone; for control, spray Dimethoate 30 EC 0.1% to manage sucking pests.
- **Animal Husbandry**
 - In Gujarat, keep young calves indoors during night time to protect from cold.

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

- **Realised Rainfall:** Rainfall occurred in Nicobar and South Andaman districts of Andaman & Nicobar Islands during the week and weather remained dry over rest of the region.
- **Advisories:**
 - As dense to very dense fog at a few places very likely over Bihar and Sub-Himalayan West Bengal from 25th to 27th January, monitor the standing crops for incidence/ spread of pest and diseases, potato, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake plant protection measures.
 - **Odisha:**
 - In Western Undulating Zone, continue transplanting of rice. Continue harvesting of matured pods of pigeon pea.
 - In South Eastern Ghat Zone and North Eastern Coastal Plain Zone, undertake field preparation for transplanting of rice. As temperature will remain low, cover the nursery bed with FYM & paddy straw/banana leaves after sowing.
 - In Eastern Ghat High Land Zone, continue field preparation and sowing of summer green gram and black gram. Prepare the main field for transplanting and undertake transplanting at three week stage of seedling.
 - In North Eastern Coastal Plain Zone, current weather favours attack of powdery mildew in pulses. To control it, spray Sulfex @ 5g/litre of water.
 - In Mid Central Table land Zone, to control pod borer in arhar, spray Indoxacarb @ 500ml/ha or Flubendiamide @ 125 ml/ha.
 - **Bihar:**
 - In North West Alluvial Plain Zone, as dry weather would prevail, undertake weeding in wheat crop and apply 2nd irrigation.
 - In South Bihar Alluvial Zone, apply irrigation in the pea crop before flowering stage, in timely sown wheat at

tillering stage and at CRI stage in late sown wheat. In view of very low temperature, farmers are advised to apply light irrigation at evening time to protect the standing crops from probable frost.

- In North East Alluvial Zone, continue transplanting of cauliflower, cabbage, broccoli in raised bed.
- In North East Alluvial Zone, infection of blight may occur in potato. If symptoms appear then spray Carbendazim @ 1 gm/litre of water or Dithane-M-45 @ 2 gm/litre of water.
- **Jharkhand:**
 - In South Eastern Plateau Zone, undertake intercultural operations in as normal sown wheat followed by irrigation after 2 days of irrigation apply urea if not applied earlier.
 - In Central and North Eastern Plateau Zone, continue transplanting of summer rice. If irrigation facility is available, undertake sowing of maize varieties 1(Hybrid),HQPM (Hybrid) with recommended dose of fertilizer. Undertake land preparation for sowing of summer green gram.
 - In Western Plateau Zone, complete nursery sowing of summer rice. Continue harvesting of matured toria
 - In Central and North Eastern Plateau Zone, due to fluctuation in temperature, there is chance of attack of powdery mildew in green pea, spray Kairathen @ 1 ml or Sulfex @ 3 ml per liter of water to prevent from further spreading. Also, to control pod borer, spraying of Monochrotophose @ 1ml per liter of water is advised.
 - In South Eastern Plateau Zone, mustard crops are at capsule formation stage and because of cool, humid weather during morning time and later on clear sunny weather favours for the attack of aphid and also being seen hence, intergated aphid management practice should be followed by plucking and destroying the infested twigs from the border rows 2-3 times at 10-day intervals, which is very useful to prevent the further multiplication in the crop season. In case of more damages spraying of Methyl Demeton or rogar (Dimethoate) @ 1ml per liter mixed with teepol @ 5 ml per liter is recommended.
- **West Bengal:**
 - In Coastal Saline Zone, carry out main field preparation and start transplanting Boro rice within 2-3 days @ 4-5 seedlings per hill. Undertake sowing of sunflower varieties like variety like Modern Surya (90-95days), Pack (104days) and KBSH (90-95 days). Complete the sowing of sunflower at optimum soil moisture conditions
 - In the Hill Zone, apply irrigation after weeding to mandarin orange and mustard crops. Carry out weeding in potato and wheat. Continue harvesting of mature curd in cole crops.
 - In Laterite and Red Soil Zone, carry out transplanting of rice seedlings as soon as possible. Apply light irrigation to potato and mustard crops.
 - In New Alluvial Zone, carry out main field preparation and start transplanting Boro rice. Undertake sowing of spinach, coriander and fenugreek may be done in present weather conditions.
 - In the Old Alluvial Zone, carry out field preparation and sow seeds of summer Okra crop.
 - In Laterite and Red Soil Zone, spray Acephate 75% WP @ 0.75 g/litre of water for mites and thrips in potato crop. Spray Mancozeb @ 2.5 - 3 ml/litre of water for blight and yellow rust in wheat crop. Spray Imidachloprid 17.8 SL@ 3ml/10 lit of water for aphids in mustard crop.
 - In the Coastal Saline Zone, for aphid attack in mustard crop, spray Dimethoate @ 1.5ml/liter of water or Imidachlorpit @ 3ml/5 liters of water during afternoon hours.
 - In the New Alluvial Zone, for monitoring of the pod borer in the gram crop, install Pheromone traps @ 3-4 traps per acre. Spray Carbaryl @ 2 grams per litre of water with sticky material (Tipol 1.0 gram /litre) against attack of thrips in timely sown onion crop.
 - In Old Alluvial Zone, at 45 days after sowing of lentil, spray 2% solution of DAP. Take 20 grams DAP in 1 litre of water and kept in for overnight, shake it well before spraying. In early transplanted Brinjal fields, start installation of sex pheromone trap @ 4-5 trap/bigha for fruit and shoot borer management. Install yellow sticky traps @ 5-6 traps/bigha for aphid control in mustard crop.
- **Andaman & Nicobar Islands:**
 - As rain/thundershowers likely at many places over Andaman & Nicobar Islands on 25th January, avoid intercultural operation and application of plant protection measures and fertilizers to the standing crops.
 - In North and Middle Andaman, collect and destroy the affected fruits of snake gourd and spray neem oil @ 3.0 % to control fruit flies on a non rainy day.
 - In the Nicobar Islands, Harvest matured coconut and fallen nuts, dehusk it and bring to the market on a non rainy day.
- **Animal Husbandry**
 - In Old Alluvial Zone of West Bengal, keep the animals in a covered shed area during the night. The bedding/hay in the animal shed must be changed regularly in this winter season for better health of animals.
 - In the New Alluvial Zone, vaccinate cattle and buffalo against FMD and pox. Ensure proper sanitation in the cattle shed.
 - In the Hill Zone of West Bengal, provide some extra feed to keep the livestock body warm during winter months. Cover animal with gunny bags and provide lukewarm water for drinking.
 - In the Andaman & Nicobar Islands, to cure anaemia in piglet provide ferrous sulphate @ 0.5 kg dissolved in 10 litres of hot water..

- In Odisha, 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 fulfil the extra energy requirement in winter. As the minimum temperature will be below normal, the poultry birds should be protected from cold using electric bulb (300watt for 10sq.ft.).
- **Fisheries**
- In the Laterite and Red Soil Zone, apply Lime (Calcium Carbonate) in split doses depending on water pH. Carry out health check-up of fish by periodical netting.
- In the Andaman & Nicobar Islands, feed the fingerlings of Indian major carp with rice bran and ground nut oil cake at 1:1 ratio at the rate of 5 % of body weight.
- In the North Central Plateau Zone of Odisha, as the winter is in the starting phase, there is a possibility of “EUS” disease in fish. Farmers are advised to apply ‘Cifax’ @ 400 ml mixed with 40 litre of water in one acre pond area as a preventive measure. The fishes should be fed daily with oil cake bran mixture at the rate of 2-3 % of their total biomass.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
 - As cold wave conditions very likely at isolated places over Madhya Pradesh from 25th to 27th January, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/gunny bags.
 - **Madhya Pradesh:**
 - In Bundelkhand Zone, continue transplanting of onion and vegetables like chilli, tomato, brinjal and cauliflower.
 - In Satpura Plateau Zone, continue field preparation for summer vegetables like pumpkin, bitter gourd, bottle gourd, okra, watermelon, muskmelon etc. Apply irrigation in wheat, field pea, gram, safflower and sunflower crops.
 - In Central Narmada Valley Zone, apply irrigation in wheat and undertake weeding and hoeing. Continue intercropping operations in vegetables and chickpea.
 - In Vindhya Plateau Zone, apply 3rd irrigation in wheat crop after 60-65 days of sowing. Apply light irrigation in vegetables. Undertake picking up of matured pods of pea.
 - In Malwa Plateau Zone, apply 2nd irrigation in wheat. Continue transplanting of onion and intercropping operations in vegetables.
 - In Jhabua Hill Zone, apply 3rd irrigation in wheat. Continue picking up of matured cotton bolls. Apply irrigation and recommended dose of fertilizers in winter vegetables. Continue digging up of matured rhizomes of ginger.
 - In Kymore Plateau and Satpura Hill Zone, apply irrigation in late sown wheat at CRI stage followed by application of urea. Apply light irrigation in vegetables as night temperature is low.
 - In Satpura Plateau Zone, there are chances of mustard aphid outbreak, for its control spray Dimethoate 30 EC @ 1000 ml/hectare.
 - In Malwa Plateau Zone, there are chances of termite attack in wheat, apply mixture of 20 kg sand with Chlorpyrifos 20 EC @ 2.0 litre in evening hours.
 - **Chhattisgarh:**
 - In Chhattisgarh Plain Zone, continue intercropping operations in vegetables and apply nitrogenous fertilizers. Apply irrigation in banana and papaya seedlings once a week and give support to the banana plant at the time of flowering.
 - In North Hill Zone, apply irrigation in wheat, field pea, gram, lentil, linseed, safflower and sunflower. Continue sowing of leafy vegetables and sowing of cucurbitaceous crops in polythene bags. Continue land preparation for sowing of summer vegetables like cowpea, okra etc.
 - In Bastar Plateau Zone, for control of leaf blight in mustard, spray Mancozeb @ 3 gm/litre or Propeconazol @ 1 ml per litre at 15 days interval for 2-3 times.
- **Animal Husbandry**
 - In Madhya Pradesh, provide 3-4 hours light in poultry houses during night and give the food, mixed with vitamins and energy food material. Protect cattle from cold at night. Use litter in cattle shed.
 - In Chhattisgarh, to protect the animals from low temperature give protein enriched diet and keep them indoor. Provide supplementary wormicide medicine in feed of poultry birds.

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

- **Realised Rainfall:** Rainfall/snow occurred in Sirmour district of Himachal Pradesh, Chamoli, Dehradun and Rudraprayag districts of Uttarakhand during the week and weather remained mainly dry/dry over rest of the region.
- **Advisories:**
 - As cold wave conditions very likely at isolated places over Uttarakhand, Himachal Pradesh, Punjab, Haryana,

Chandigarh and north Rajasthan from 25th to 27th January, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/gunny bags.

- As ground frost conditions very likely at isolated places over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, north Rajasthan, Punjab, Haryana and Chandigarh from 25th to 27th January, apply light and frequent irrigation in standing crops. In cash crops, spray of 0.1 percent H₂SO₄ should be done.
- As dense to very dense fog at a few places very likely over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh on 25th, over East Uttar Pradesh on 26th and 27th and dense to very dense/dense fog at isolated places over north Rajasthan and lower reaches of Himachal Pradesh & Uttarakhand from 25th to 27th, over Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh on 26th and 27th and over East Uttar Pradesh on 28th January, monitor the standing crops for incidence and spread of pest diseases, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake plant protection measures.
- **Jammu & Kashmir:**
 - In Sub Tropical Zone, apply 2nd top dressing of urea in normal sown and 1st top dressing of urea in late sown wheat crop during clear weather. Prepare fields for solanaceous and cucurbitaceous vegetable crops and raise cucurbits properly in the poly bags under protected structures. Apply light irrigation whenever necessary to young fruit plants to protect them from low temperature.
 - In Cold Arid Zone, undertake intercultural practices like weeding and hoeing after applying vermicompost/Farm Yard Manure in polyhouses. Undertake harvesting of Chinese cabbage, palak, pakchoi, kale, spinach and lettuce in protected structures at weekly interval to avoid loss due to frost.
 - In Intermediate Zone, apply irrigation in wheat. Continue light weeding and hoeing in vegetables followed by irrigation depending upon soil moisture conditions. In lower mid hills continue early nursery sowing of summer vegetables under protected structures (Poly house, Poly tunnel etc.). Continue planting of new orchards of stone fruits (Peach, Plum & Apricot), almond, walnut etc.
 - In Valley Temperate Zone, provide drainage channels in wheat, lentil, oat, pea fields wherever there is probability of water accumulation during winter month. Provide proper drainage in apple orchards. Continue mulching in vegetables to protect from frost.
- **Uttarakhand:**
 - In Sub Humid Sub Tropic Zone, undertake intercultural operations in late sown wheat and barley crops at 25-30 days after sowing. Undertake harvesting of late sown toria and mustard.
 - In Hill Zone, undertake intercultural operation and hand weeding in onion. Undertake preparation of seedlings of vegetables like brinjal, capsicum, tomato etc. in polyhouse.
 - In Bhabar and Tarai Zone, continue weeding and hoeing in sugarcane crop and apply remaining dose of nitrogen. To save the vegetable nursery from frost, it should be covered with plastic sheet with proper circulation of wind and light. Undertake sowing of fruit crops like-apple, pear, plum, wall nut etc.
 - In Bhabar and Tarai Zone, to control the late blight disease in potato and tomato, spray Mancozeb @ 2.5g/liter or Copper Oxychloride @ 3g/litre of water.
- **Himachal Pradesh:**
 - In High Hill Temperate Dry Zone, keep the poly house closed to maintain optimum temperature. Apply fertilizers and complete the preparation of beds in apple orchard before snowing.
 - In Sub-Montane and Low Hill Tropical Zone, add mulch material in space between two rows of vegetables crops for conservation of soil moisture and maintaining the soil temperature. Undertake thinning and weeding in mustard.
 - In Solan Shimla, Bilaspur and Sirmour districts of Mid Hills Sub Humid Zone, continue transplanting of onion. Apply light irrigation in vegetables and after the germination of button mushroom, apply light spray of water over the bag.
- **Punjab, Haryana & Delhi:**
 - In Western Zone of Punjab, apply light irrigation in wheat, mustard, vegetables and fruit plants to protect from low temperature. Cover young fruit plants and vegetables with polythene sheet/sarkanda/kahi rice straw.
 - In Western Plain Zone of Punjab, continue harvesting of sugarcane. Apply irrigation in mustard and vegetables to save from frost. Avoid sowing of sunflower till cold wave conditions persists. Apply second irrigation in timely sown wheat and first irrigation in late sown wheat. Prepare seedling of early cucurbitaceous crops in small polythene bags in poly houses.
 - In Undulating Plain Zone of Punjab, apply light irrigation in wheat, sugarcane, oilseeds and vegetables to save from frost. Cover young fruit plants and nursery plants with thatches/sarkanda/plastic sheet to save from low night temperature.
 - In Eastern Zone of Haryana, as there are chances of cold wave and frost at isolated places, apply light irrigation and cover young fruit plants with rice straw or thatches. Continue harvesting of matured sugarcane. Apply irrigation in wheat and undertake weeding.
 - In Delhi, prepare seedling of early cucurbitaceous crops in small polythene bags in poly houses. Undertake nursery preparation for vegetables like chilli, brinjal and tomato and sowing of spinach, coriander, fenugreek. Continue

transplanting of onion. Undertake intercultural operations in carrot, radish, turnip and sweet potato crops.

- In Western Plain Zone of Punjab, there are chances of late blight in potato and if symptoms appear, spray Indofil M-45/Markzeb/Kavach @ 500-700 g in 250-350 litres of water per acre.
- In Delhi, in wheat crop, if symptoms of termite attack appear, application of mixture of 20 kg sand with Chlorpyrifos 20 EC @ 2.0 litre should be done in evening hours.
- In Undulating Plain Zone of Punjab, monitor the wheat crop for incidence of yellow rust. If symptoms are noticed, spray Native @ 120g or Tilt @ 200ml per litre of water for control.

▪ **Uttar Pradesh:**

- In Central Plain Zone, undertake sowing of cucurbit crops. Undertake harvesting of matured cabbage and cauliflower. Apply irrigation in wheat and undertake intercultural operations in garlic and onion.
- In Eastern Plain Zone, continue intercultural operations in vegetables and apply light irrigation during evening hours to protect from cold injury.
- In Central Plain Zone, due to prevailing foggy weather condition, there are chances of attack of late blight in potato crop, for control, spray Indofil-M-45 / Kavach /Antracol @ 500-700 g per acre or Blitox @ 750-1000 g per acre in 250-350 litres of water.

▪ **Rajasthan:**

- In Semi Arid Eastern Plain Zone, apply 3rd irrigation in normal sown wheat, 2nd irrigation in late sown wheat and in gram at pod formation stage.
- In Sub Humid Southern Plain and Aravalli Hill Zone, apply irrigation in wheat after 60-70 days and in mustard at grain filling stage. In potato crop, apply urea @ 60-75 kg N/ha after irrigation.
- In Bikaner district of Arid Western Plain Zone, to protect horticultural plants from low temperature, cover with crop residues or *munjha* thatches and apply frequent light irrigations. Apply 3rd irrigation in normal sown wheat, 2nd irrigation in late sown wheat and 2nd irrigation in barley.
- In Flood Prone Eastern Plain Zone, apply 3rd irrigation in wheat.
- In Irrigated North Western Plain Zone, apply irrigation in late sown wheat and in mustard and gram. Undertake harvesting of matured sugarcane.
- In Flood Prone Eastern Plain Zone, there are chances of thrips and aphid attack in brinjal, tomato and chilli crops, spray 0.1% Malathion solution for its control.
- In Semi Arid Eastern Plain Zone, methi, pea, cumin and coriander are likely to be affected by powdery mildew attack. Spray Karathion @ 1.0 ml or Calaxin @ 1.0 ml per litre water or dust Sulphur @ 25 kg per hectare.
- In Arid Western Plain Zone, if there is infestation of termite in wheat and other crop fields, apply Chloropyrifos (20 EC) @ 2400 ml/hectare along with irrigation water.

• **Animal Husbandry**

- In Jammu & Kashmir, give special care to young calves as they are more sensitive to pneumonia. Protect the pregnant and milch animals from cold and feed them mineral mixture regularly. 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. Put some bedding material like puaal etc. to keep animals warm. Provide dry bedding during night. Do not allow animals to leave khurli early in morning directly to open area. In Poultry keep the chicks warm by providing artificial light in the poultry sheds.
- In north Rajasthan, keep the animals under covered shed at night time. Dry bedding should be provided to animals to save them from cold. Keep the chicks warm by providing artificial heat.
- In Uttarakhand, maintain optimum temperature in day and night inside the poultry farm to minimize the mortality losses. In hilly areas, heater may be used to protect the animals from cold. Rice husk should be given to the animals as a food which is the source of energy.

• **Apiculture:**

- In Jammu & Kashmir, protect bee colonies from extreme weather conditions through reduced entrance and proper packing. Maintain adequate reserves of honey and pollen in the bee colony. Stimulating feeding of sugar, syrup should be given for expansion.

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