



National Agromet Advisory Service Bulletin

Friday 19th January 2018
(For the period 19th to 24th January 2018)



Issued by
India Meteorological Department

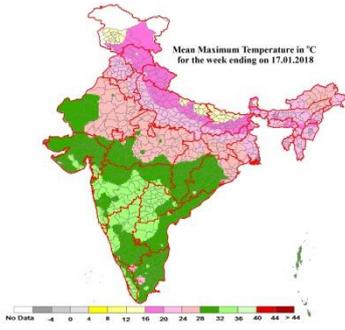
Weblink For

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

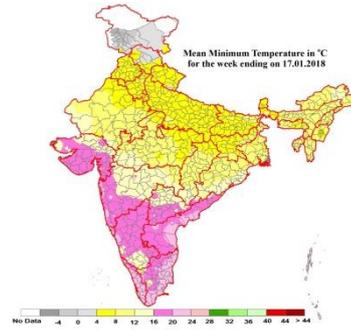
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

Spatial distribution of weather parameters for the week ending 17.01.2018

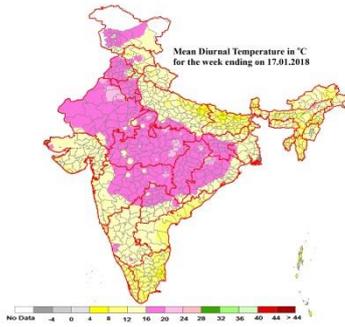
Mean Maximum Temperature (°C) for the week ending 17.01.2018



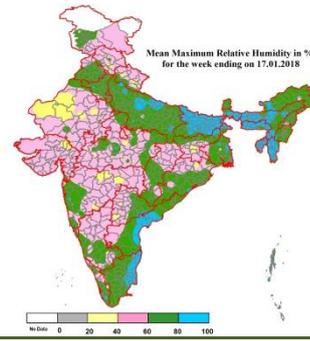
Mean Minimum Temperature (°C) for the week ending 17.01.2018



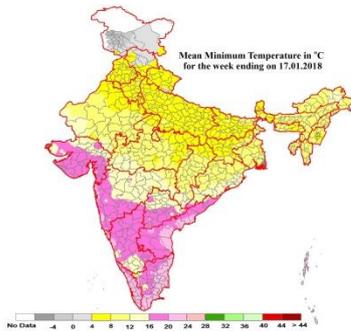
Mean Diurnal Temperature Variation (°C) for the week ending 17.01.2018



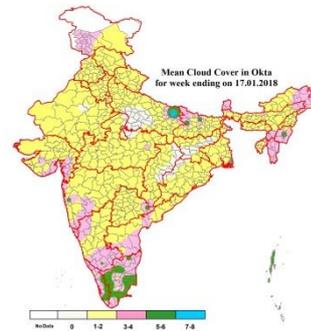
Mean Maximum Relative Humidity (%) for the week ending 17.01.2018



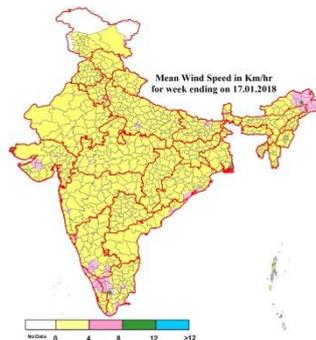
Mean Minimum Relative Humidity (%) for the week ending 17.01.2018



Mean Cloud Cover (okta) for the week ending 17.01.2018

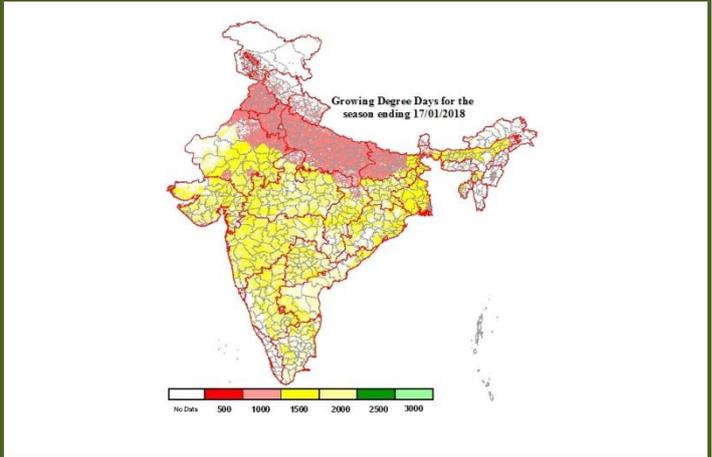
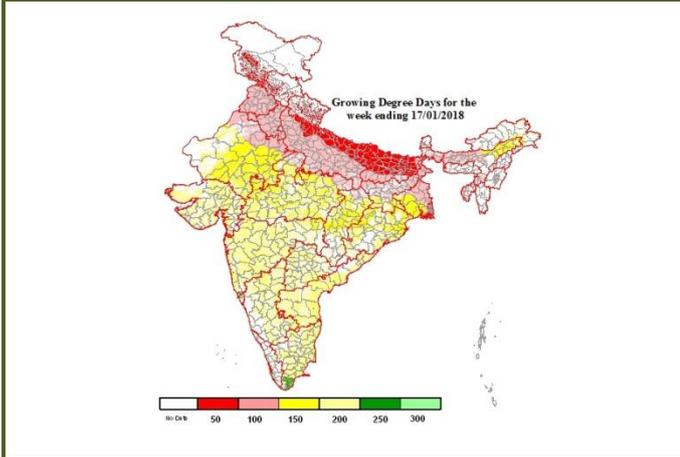


Mean Wind Speed (km/hr) for the week ending 17.01.2018



Growing Degree Days for the week ending 17.01.2018

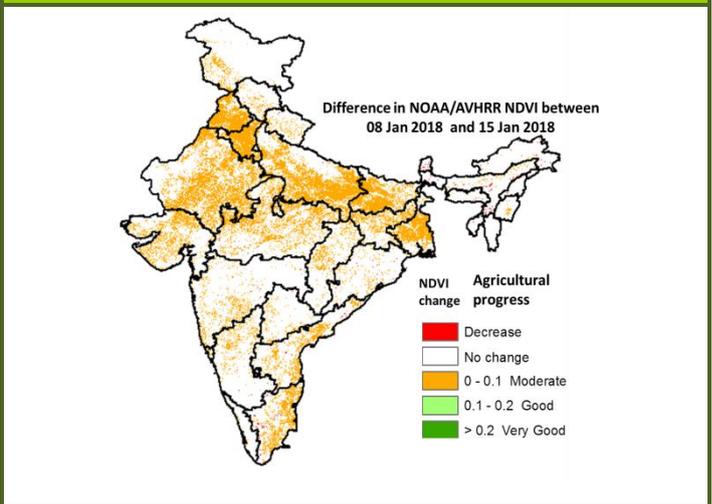
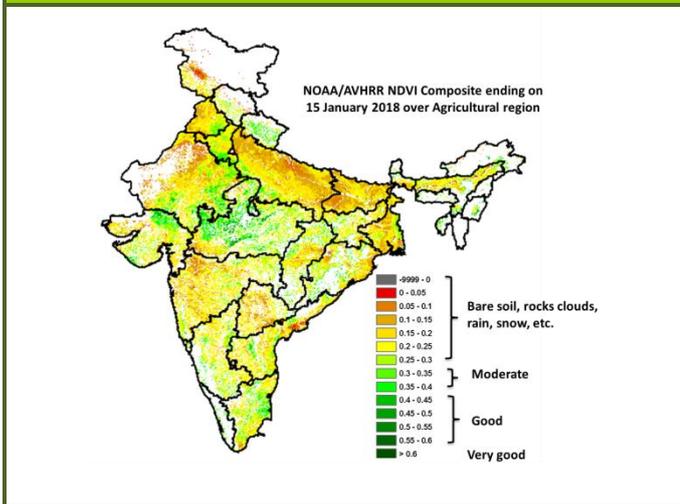
Growing Degree Days for the season ending 17.01.2018



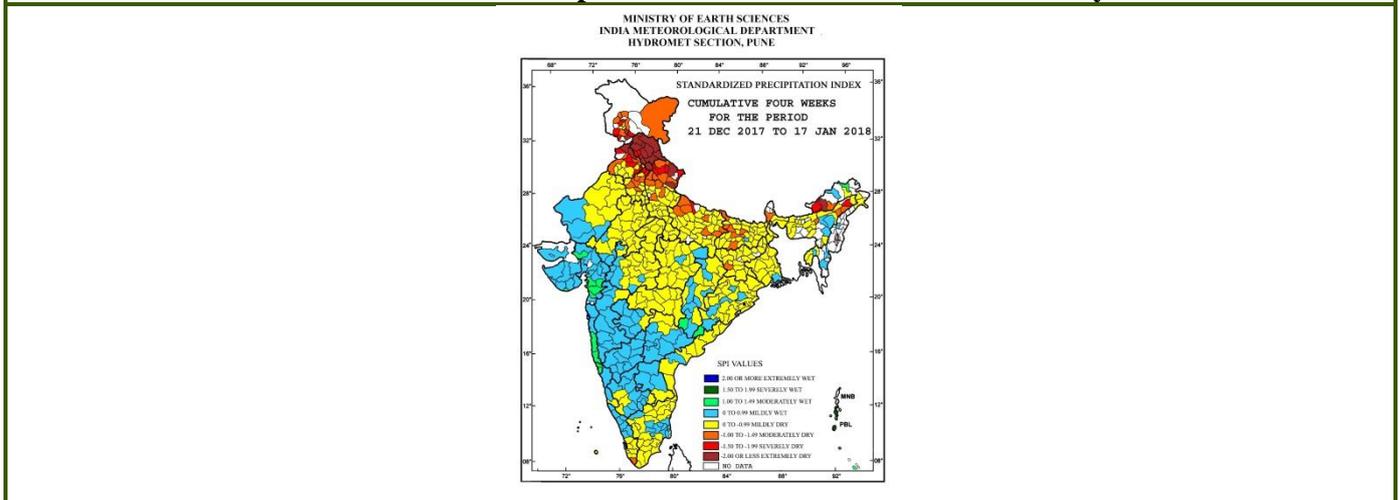
* Base temperature for *Rabi* Season is taken as 05⁰ C

NOAA/AVHRR NDVI composite ending on 15th January 2018 over Agricultural regions of India

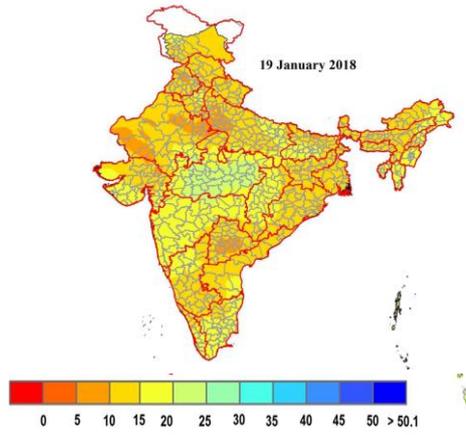
Difference in NOAA/AVHRR NDVI between 8th and 15th January 2018



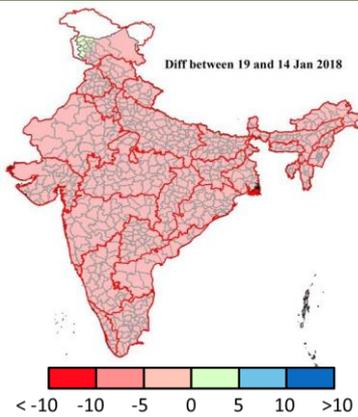
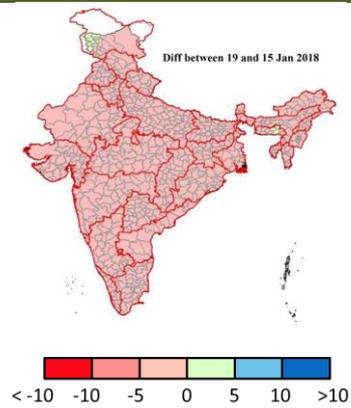
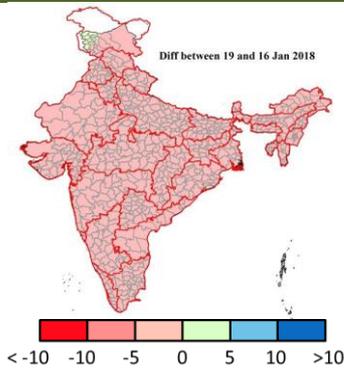
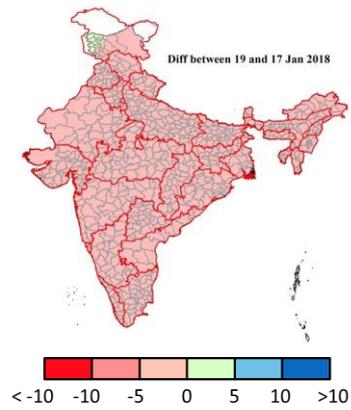
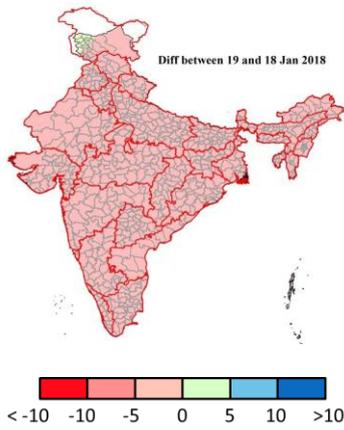
**Standardised Precipitation Index
Cumulative 4 weeks for the period 21st December 2017 to 17th January 2018**



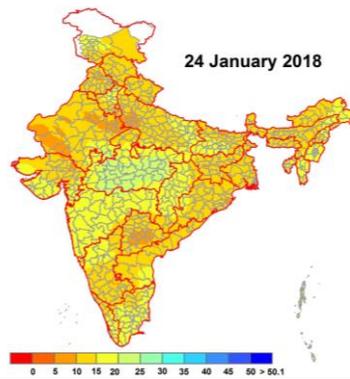
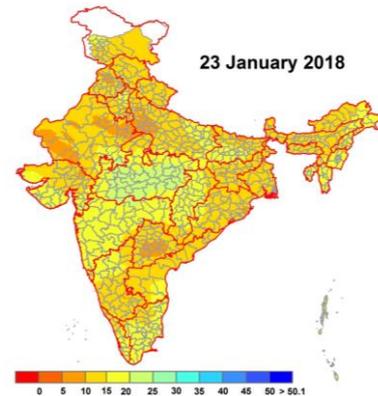
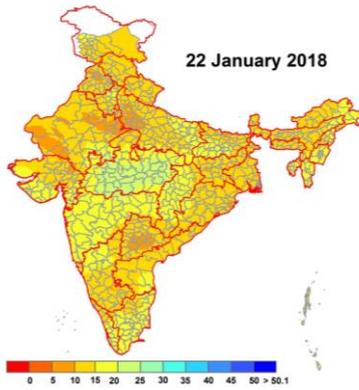
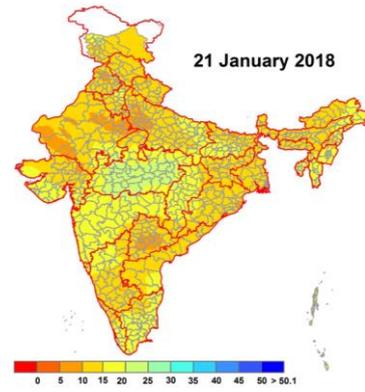
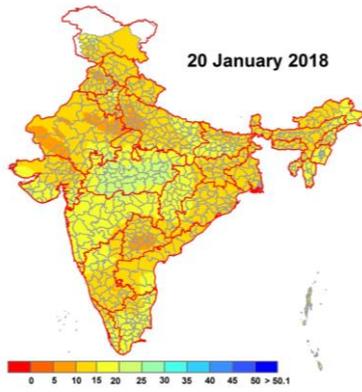
Daily Soil Moisture (mm) for 19th January 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 20th to 24th January 2018 (ending at 0830 IST)
for 60 cm depth**



Weather Forecast for next 5 days valid upto 0830 hours of 24th January 2018

- Meteorological subdivision wise detailed 5 days rainfall forecast is given in Table below.
- No significant change in minimum temperatures are likely over most parts of India during next 3 days.
- Shallow to moderate fog during late night & morning hours very likely over parts of plains of northwest, eastern India and Coastal Andhra Pradesh during next 3 days.

5 Day Rainfall Forecast (Mid day) 19th January 2018

Met-Sub-Division	19-Jan Today	20Jan Sat	21Jan Sun	22Jan Mon	23Jan Tue
1. Andaman & Nicobar Islands	ISOL	ISOL	SCT	SCT	FWS
2. Arunachal Pradesh	ISOL	ISOL	DRY	DRY	DRY
3. Assam & Meghalaya	ISOL	DRY	DRY	DRY	DRY
4. N. M. M. & T.	DRY	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	ISOL
11. West Uttar Pradesh	DRY	DRY	DRY	DRY	SCT
12. Uttarakhand	DRY	DRY	DRY	DRY	SCT
13. Haryana, Chd & Delhi	DRY	DRY	DRY	DRY	SCT
14. Punjab	DRY	DRY	DRY	DRY	SCT
15. Himachal Pradesh	DRY	DRY	DRY	DRY	ISOL
16. Jammu & Kashmir	ISOL	DRY	DRY	DRY	ISOL
17. West Rajsthan	DRY	DRY	DRY	ISOL	ISOL
18. East Rajasthan	DRY	DRY	DRY	DRY	ISOL
19. West Madhya Pradesh	DRY	DRY	DRY	DRY	ISOL
20. East Madhya Pradesh	DRY	DRY	DRY	DRY	DRY
21. Gujarat Region	DRY	DRY	DRY	DRY	DRY
22. Saurashtra & Kutch	DRY	DRY	DRY	ISOL	ISOL
23. Konkan & Goa	DRY	DRY	DRY	DRY	DRY
24. Madhya Maharashtra	DRY	DRY	DRY	DRY	DRY
25. Marathawada	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	DRY	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	DRY	DRY	DRY	DRY	DRY
36. Lakshadweep	DRY	DRY	DRY	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

- **19 January (Day 1):** Dense to very dense fog very likely at many places over Bihar and Sub-Himalayan West Bengal; at a few places over East Uttar Pradesh and at isolated places over Nagaland, Manipur, Mizoram & Tripura and dense fog at isolated places over Assam & Meghalaya. Cold Day to severe cold day conditions at a few places very likely over Bihar and Cold day at isolated places over East Uttar Pradesh. Cold wave at Punjab,

Uttarakhand, East Uttar Pradesh, Odisha and Bihar. Ground frost conditions very likely at a few places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand and at isolated places over Punjab. Strong northnortheasterly winds speed reaching 45-55 kmph are likely to prevail over Comorin area. Fishermen off south Tamilnadu coast are advised to be cautious while venturing into the Sea over Comorin area.

- **20 January (Day 2):** Dense to very dense fog very likely at many places over Bihar and Sub-Himalayan West Bengal; at a few places over East Uttar Pradesh; at isolated places over West Uttar Pradesh and dense fog at isolated places over Punjab, Haryana, Chandigarh & Delhi, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura. Cold Day to severe cold day conditions at a few places very likely over Bihar. Cold wave conditions very likely at isolated places over Punjab, Uttarakhand, East Uttar Pradesh, Odisha and Bihar. Ground frost conditions very likely at isolated places over Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Punjab.
- **21 January (Day 3):** Dense to very dense fog very likely at a few places over Bihar, Sub-Himalayan West Bengal and East Uttar Pradesh: at isolated places over West Uttar Pradesh and dense fog at isolated places over Punjab, Haryana, Chandigarh & Delhi, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura. Cold Day to severe cold day conditions at a few places very likely over Bihar. Cold wave conditions very likely at isolated places Odisha and Bihar.
- **22 January (Day 4):** Dense to very dense fog likely at a few places over Bihar, Sub-Himalayan West Bengal and East Uttar Pradesh and dense fog at isolated places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura. Cold Day to severe cold day conditions at a few places likely over Bihar.
- **23 January (Day 5):** Hailstorm at isolated places likely over West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh, Punjab, Himachal Pradesh and Jammu & Division. Dense to very dense fog likely at a few places over Bihar, Sub-Himalayan West Bengal and East Uttar Pradesh and dense fog at isolated places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura. Cold Day to severe cold day conditions at a few places very likely over Bihar.

Weather Outlook for subsequent 2 days from 24th to 26th January 2018

- Rain/snow at isolated places likely over Jammu & Kashmir and rainfall at isolated to a few places over northeast India and Andaman & Nicobar Islands.
- Weather likely to be dry over remaining parts of the country.

Salient Advisories

- As strong north northeasterly wind speed reaching 45-55 kmph are likely to prevail over Comorin area. Fishermen off **south Tamilnadu coast** are advised to be cautious while venturing into the Sea over Comorin area.
- As cold wave condition very likely at isolated places over **Odisha** and **Bihar** from 19th to 21st January, over **Uttarakhand, Punjab** and **East Utttar Pradesh** on 19th and 20th 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. Cover the nursery bed with FYM & paddy straw/banana leaves after sowing. 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 a few/isolated places over **Jammu & Kashmir, Himachal Pradesh, Uttarakhand** and **Punjab** on 19th and 20th 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 many/at a few places very likely over **East Uttar Pradesh, Bihar** and **Sub-Himalayan West Bengal** and dense fog at isolated places over **Assam & Meghalaya** and **Nagaland, Manipur, Mizoram & Tripura** during the period, over **West Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi** on 20th and 21st January, monitor the standing crops for incidence and spread of pest diseases, potato, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake plant protection measures.
- As hailstorm at isolated places likely over **West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh, Punjab, Himachal Pradesh** and **Jammu & Division** on 23rd January, farmers are advised to use hail net for orchard crops to protect from mechanical damage. Provide support to young fruit plants.

- As dry weather would prevail, undertake harvesting of matured toria in **Jharkhand**, pigeon pea in **North Interior Karnataka** and **Odisha** and Castor in south **Sourashtra** and **North Gujarat Zone**.
- In North East Alluvial Zone of **Bihar**, in the prevailing foggy weather, infection of blight may occur in potato. If symptoms appear then spray Carbendazim @ 1 g/litre of water or Dithane-M-45 @ 2 g/litre of water for control .
- In Undulating Plain Zone of **Punjab**, in the prevailing weather, monitor the wheat crop for incidence of yellow rust. If symptoms are noticed, spray Native @ 120g or Tilt @ 200 ml per litre of water for control.
- In view of the cold wave conditions in **Odisha, Bihar, Uttarakhand, East Uttar Pradesh** and **Punjab**, 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.

Detailed Zonewise Agromet Advisories

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

- **Realised Rainfall:** Rainfall occurred in Cuddalore and Nagapattinam districts of Tamil Nadu during the week and weather remained mainly dry/dry over rest of the region.
- **Advisories:**
 - As strong north northeasterly wind speed reaching 45-55 kmph are likely to prevail over Comorin area. Fishermen off south Tamilnadu coast are advised to be cautious while venturing into the Sea over Comorin area.
 - **Kerala:**
 - In the Problem Area Zone, continue harvesting of mature nutmeg fruits. Undertake harvesting in pepper at specific intervals when some of the berries in the spike turn red. Undertake harvesting of cabbage and cauliflower 8-10 days after head emergence. Provide irrigation to coconut.
 - 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 Southern Zone, for control of white ear disease in paddy, spray Flubendamide (Fame) 2 ml/ 20 litres of water. For control of fungal disease in rubber tapping panel, spray copper oxy chloride or Bordo mixture.
 - In the Problem Area Zone, there are chances of incidence of leaf roller and stem borer in paddy. The attack of leaf roller may result in yield loss up to 10 per cent. Use trichocards to control this. Replace the old trichocards at weekly interval up to 70- 75days. Use of pheromone traps also help to reduce the population of stem borer. For sheath blight disease in paddy spray Propiconazol 1 ml or Hexaconazol 2 ml/litre of water.
 - **Andhra Pradesh:**
 - 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./L of water. To control leaf curl in chilli crop, spray Phasalon (Jolon) 3 ml. or Diphenthion @ 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. Spray Novaluron @ 1ml or Thiodicarb @ 1.5gm or Rynoxypyr @ 0.2ml per litre of water for pod borer and tobacco caterpillar in Bengal gram.
 - **Telangana:**
 - In North Telangana Zone, undertake transplanting of paddy seedlings to main field. 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 Dimethioate @ 2 ml or Mithyl 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 aphids in soghum crop. Spray Monocrotophos @ 1.6 ml/ litre of water for leaf folder and Dimethoate @ 2.0 ml or Monocrotophos @ 1.6 ml/litre of water for control of Aphids/Jassids in red gram. Spray Chlorothalonil @ 2 g or Pyraclostrobin @ 1g/litre of water for early blight in tomato crop.

- **Tamil Nadu:**

- In the Southern Zone, continue picking of Cotton during morning and evening hours.
- In the Heavy Rainfall Zone, provide irrigation to the newly planted fruit trees and other horticultural crops.
- In the Heavy Rainfall Zone, apply Chlorantriliprole 0.3 ml/litre of water or Flubendiamide 0.1ml/litre of water for rice stem borer and leaf folder. Spray Tricyclozole 75 wp @ 500 g/ ha to control the blast disease in rice crop. To control sigatoka leaf spot in banana, spray Propiconazole 1 ml + Teepol 0.5 ml /litre of water.
- In the Western Zone, prevailing weather condition is favorable for the powdery mildew disease in chilies. Spray Wetable sulphur 3 g/litre or Carbendazim 1 g/litre @ 3 sprays at 15 days interval from the first appearance of symptom. Prevailing weather condition is also favorable for the blotch incidence in turmeric. Hence farmers are request to monitor the crop and spray Mancozeb @ 2.5 g/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 Dry Zone, continue sowing of ragi (KMR-204, 301, Indof-9, GPU-28 varieties) and rice (MTU-1000, 1001, Krh-4, IR-64 varieties) crops.
- In Southern Transition Zone, continue nursery preparation of rice.
- In North Transition Zone, provide irrigation to sorghum, wheat and late sown Bengal gram crop.
- In North East Dry Zone, apply irrigation to wheat. Complete last picking of cotton in early sown cotton and third picking of seed cotton in late sown cotton.
- In Central Dry Zone, apply light irrigation in chickpea before flowering. Continue harvesting of matured fruits of chilli.
- In North East Transition Zone, complete harvesting of matured pigeon pea.
- 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 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 North East Dry Zone, for control of ear head fly in sorghum, spray Carbaryl @2 gm or Malathion @2 ml per liter of water. 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.
- In Hill Zone, for control of leaf spot and rot in cardamom, spray 1% Bordeaux mixture or 3 gm Copper-oxy-Chlorid/litre of water.

- **Animal Husbandry**

- In the Southern Zone of Tamilnadu, vaccinate cattle against FMD.
- 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.
- In Eastern Dry Zone, use nylon mess for control of UJI fly in sericulture unit.

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

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

- **Advisories:**

- As dense to very dense/dense fog very likely at isolated places over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during the period, 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.

- **Assam & Meghalaya, Arunachal Pradesh:**

- In Arunachal Pradesh, continue harvesting of mature crop of ginger/turmeric. 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. Provide irrigation and mulching to cabbage, cauliflower and broccoli crops. Undertake nursery raising for tomato and capsicum crops.
- In Lower Brahmaputra Valley Zone of Assam, transplant rice seedlings of age about 30 days or 45 days (for hybrid varieties) with 5-6 leaves stage in the main field. Undertake sowing of foxtail millet and provide light irrigation after sowing as there is no forecast for rainfall. Apply irrigation to potato crop at tuber formation stage i.e., 60 days after sowing and tuber development stage i.e., 80 days after sowing. Undertake sowing of okra varieties like Pusa Sawani, Arka Anamika, Parbhdani Kranti and local cultivars.
- In the Upper Brahmaputra Valley Zone, apply irrigation to maintain 5±2 cm of standing water in the rice field. Replant the dead hills in the main field before irrigation. Continue harvesting sugarcane crop. Carry out land preparation for okra crop.
- In the Barak Valley Zone of Assam, transplant Boro rice seedlings in the main field and maintain 5 cm stagnant water level in the boro paddy main field. Gap filling should be done within 7 to 10 days after transplanting Boro paddy. In the potato crop, earthing up should be done just before the first irrigation, after 25 days of planting.
- 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 30EC or Chloropyriphos 20EC @ 0.5litre/ha with a spray volume of 500-700 litres of water/ha for aphids in rapeseed and mustard crops. Spray Indofil M45 @ 2gm/litre of water at 10-12 days interval followed by spraying of Dithane M45 @ 2.5 gm/litre of water at an interval of 7-10 days to control late blight in potato crop.
- 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 attack of black spot disease in leafy vegetables and Cole crops, spray Mancozeb @ 2gm per liter of water.
- In the North Bank Plain Zone, to control aphids and saw fly in rapeseed and mustard, 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.
- **Nagaland, Mizoram, Manipur and Tripura:**
 - In Manipur, provide light irrigation to Rabi maize. Raise nursery for late cole crops. Raise cucurbits like watermelon, 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.
 - In Mizoram, continue harvesting of matured kharif rice. Provide irrigation to maize, gram, soybean, and vegetable crops. Continue harvesting banana, khasi mandarin, acid lime, star fruit, plum and peach.
 - 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, carry out thinning, weeding and earthing up in rabi maize. Give light irrigation to cabbage and cauliflower. Carry out mulching in lentil and linseed.
 - 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 Nimbecidin (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.
- **Animal Husbandry**
 - In Arunachal Pradesh, provide lukewarm food & water to cattle and pigs. De-worm animals with anti helminthic drugs (particularly Tapeworms) viz. Fento Plus @ 1 tablet per 30 kg body weight. Vaccinate pigs against swine fever and cattle against FMD.
 - 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.
 - In Meghalaya, provide plenty of fresh and clean drinking water to poultry birds. Provide coccidiostatic like Amprolium @ 25-65 mg/kg feed once a day as a preventive measure against coccidiosis. Vaccinate the poultry birds with F1/Lasota vaccine (1 drop) at the age of 4-7 days old and 35 days old through eye and nostril. Vaccinate 6-9 months old calves with Brucella abortus cotton strain-19 @ 5ml subcutaneous on the neck. Undertake regular immunization of cattle & buffaloes against Foot & Mouth disease, Haemorrhagic septicaemia & Black Quarter.
- **Fishery**
 - In the Lower Brahmaputra Valley Zone, to control ulcer disease of fish apply Oxytetracycline @ 25-75 mg/ kg of feed for 6 days.
 - 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 irrigation in groundnut at an interval of 10-12 days.
 - In Madhya Maharashtra, apply irrigation in gram at pod development stage. Continue planting of *suru* sugarcane. Undertake land preparation for early summer groundnut with irrigation facility and apply FYM @ 5 ton/ha.
 - In Marathwada, apply irrigation in wheat. Continue harvesting of pigeon pea. Undertake planting of *suru* sugarcane
 - In Vidarbha, continue harvesting of matured pigeon pea. Undertake transplanting of cabbage and cauliflower.
 - In Konkan, for control of mango hoppers and powdery mildew in inflorescence of mango, spray Imidacloprid 17.8% @ 3 ml or 50 % WDG Clothianidin @ 1.2 g + Carbendazim @ 10 g or Hexaconazole @ 5 ml or Sulphur 80 % WP @ 20 g per 10 litres of water.
 - **Gujarat:**
 - In North Gujarat Zone Gujarat, apply light irrigation in wheat, castor and fennel crops to minimize effect of low temperature. Continue harvesting of matured spikes of castor. In Bhal and Coastal Zone, apply irrigation in mustard.
 - In South Gujarat Heavy Rainfall zone, continue land preparation for transplanting of summer rice and earthing up in cole crops. Apply irrigation in *rabi* pulses as per need.
 - 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 Saurashtra Zone, carry out weeding and intercultural operations in timely sown castor. Continue picking of cotton during morning hours and picking of matured clusters of castor. Apply irrigation to pigeon pea, cumin, garlic, onion and coriander crops at regular interval.
 - In Middle Gujarat Zone, apply irrigation to chickpea and castor crops as per requirement.
 - In South Gujarat Zone, apply irrigation in gram.
 - 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 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. Spray Hexaconazole @15 ml/10 litres of water to prevent blight and powdery mildew infestation in cumin.
 - In North Gujarat Zone and 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, provide adlib warm water to lactating animals, keep young calves indoors during night time to protect from cold, provide 6-8 kg good quality dry roughage with 15-20 kg green fodder to the animals.

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

- **Realised Rainfall:** Weather remained mainly dry/dry over the region during the week.
- **Advisories:**
 - As cold wave condition very likely at isolated places over Odisha and Bihar from 19th to 21st 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 dense to very dense fog at many/at a few places very likely over Bihar and Sub-Himalayan West Bengal during the period, 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.
 - **Odisha:**
 - In Western Undulating Zone, undertake transplanting of rice with 3 week old seedlings. Provide light and frequent irrigation to vegetable crops and rice nursery in view of low temperature. Continue harvesting of matured pods of pigeon pea.

- In North Eastern Coastal Plain Zone, complete sowing of rice nursery. As temperature will remain low, cover the nursery bed with FYM & paddy straw/banana leaves after sowing.
- In South Eastern Ghat Zone, due to low night temperature cover the vegetable nursery with polythene cover during night. Undertake field preparation for transplanting of rice.
- In North Eastern Ghat Zone, as cold wave conditions likely to prevail, cover the fresh nursery of rice with paddy straw. Continue weeding and hoeing in potato.
- In Eastern Ghat High Land Zone, undertake field preparation and sowing of summer green gram and black gram. Continue nursery sowing of summer rice. Prepare the main field for transplanting at three week stage of seedling. Apply light and frequent irrigation in vegetables to avoid cold injury.
- In Mid Central Table land Zone, due to low temperature, undertake growing of mushroom in polyhouse.
- 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, continue nursery raising of summer rice. Apply irrigation in wheat (tillering stage), mustard, linseed and vegetable crops as per requirement.
- In Central and North Eastern Plateau Zone, undertake transplanting of summer rice. Apply irrigation in wheat. Continue field preparation for sowing of vegetable like long gourd, round gourd, bitter gourd, sponge gourd, cucumber, water melon and musk melon.
- In Western Plateau Zone, undertake nursery sowing of summer rice. Undertake sowing of seeds of cucurbits in polythene (filled with soil and FYM) and keep it at warmer place. Continue harvesting of matured toria
- In Central and North Eastern Plateau Zone, due to foggy weather and decrease in temperature, there are chances of infestation of early and late blight disease in potato, spray Endofil M-45 or Redomil MZ @ 2g/litre of water.
- **West Bengal:**
- In Coastal Saline Zone, carry out main field preparation and start transplanting Boro rice. Complete the sowing of sunflower at optimum soil moisture conditions. Apply irrigation to potato crop after earthing up operation.
- In the Hill Zone, apply irrigation after weeding to cabbage and cauliflower crops, potato and large cadamom. Provide light irrigation to mustard and wheat. Continue harvesting of ginger and turmeric seed rhizome.
- In Laterite and Red Soil Zone, to protect the rice seedlings from cold, cover the nursery bed with polythene. Keep stagnant water in the nursery bed especially in the night time. Undertake main field preparations for transplanting. Apply light irrigation to wheat 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 Mancozeb @ 2.5 g /litre of water in 10-15 days interval for early and late blight and Acephate 75% WP @ 0.75 g/litre of water for mites and thrips in potato crop. Spray Mancozeb 75 Wettable Powder @ 2g/litre of water for yellow rust in wheat crop.
- In the Coastal Saline Zone, for late blight in potato crop, apply Di-ethane M-45 @ 2.5g per liter of water. For thrips attack in onion crop, spray Imidachlorpit @3ml/10 liters of water.
- 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:**
- In North and Middle Andaman, undertake transplanting of 40 to 45 days old seedlings of brinjal at a spacing of 75 x 60 cm by making ridges of 25 cm height. Carry out earthing up and hand weeding in cowpea, tomato and beans.
- In the Nicobar Islands, clean the crown of coconut tree, as well as community garden to avoid breeding and growth

of pests.

- **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, Provide mineral mixture @ 25 g per day for 3 weeks to the pregnant cows.
- 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 fulfill 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 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:**

- **Madhya Pradesh:**

- In Satpura Plateau Zone, undertake field preparation for summer vegetables like pumpkin, bitter gourd, bottle gourd, okra, watermelon, muskmelon etc.
- In Central Narmada Valley Zone, apply irrigation in wheat. Continue intercultural operations in vegetables and chickpea.
- In Nimar Valley Zone and Vindhya Plateau Zone, apply 3rd irrigation in wheat crop after 60-65 days of sowing.
- In Malwa Plateau Zone, continue earthing up in potato. Continue transplanting of onion and intercultural operations in vegetables.
- In Jhabua Hill Zone, apply irrigation in wheat at booting stage. 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 late and early blight disease in potato, spray Mancozeb @ 2.5 g/litre of water.
- 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.
- In Bundelkhand Zone, there are chances of attack of alternaria disease in tomato and chilly. Spray Mencozeb @ 2.5 g per litre of water.

- **Chhattisgarh:**

- In Chhattisgarh Plain Zone, undertake intercultural operations in vegetables and apply nitrogenous fertilizers.
- In North Hill Zone, apply 2nd irrigation in wheat at tillering stage and then apply 30 kg nitrogen per hectare. Undertake sowing of leafy vegetables and sowing of cucurbitaceous crops in polythene bags. Undertake 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:** Weather remained dry over the region during the week.

- **Advisories:**

- As cold wave conditions very likely at isolated places over Uttarakhand, Punjab and East Uttar Pradesh on 19th and 20th 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 a few/isolated places over Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Punjab on 19th and 20th 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 East Uttar Pradesh during the period and at isolated places over West Uttar Pradesh on 20th and 21st, dense fog at isolated places over Punjab, Haryana, Chandigarh & Delhi on 20th and 21st 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.
- As hailstorm at isolated places likely over West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh, Punjab, Himachal Pradesh and Jammu & Division on 23rd January, farmers are advised to use hail net for orchard crops to protect from mechanical damage. Provide support to young fruit plants.
- **Jammu & Kashmir:**
 - In Sub Tropical Zone, apply urea @ 2.5 kg /kanal as 1st top dressing in late sown wheat crop 25-30 DAS. 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, continue light weeding and hoeing in vegetables followed by irrigation depending upon soil moisture conditions. In lower mid hills undertake 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, keeping in view of low minimum temperatures, farmers are advised to prepare seedling of early cucurbitaceous crops in small polythene bags in poly houses. Undertake transplanting of onion. Apply second irrigation in timely sown wheat crop, which is at tillering stage.
- 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, prevailing weather conditions are favourable for attack of thrips in timely sown onion crop. Spray Confidor @ 0.5 ml per 3 litre of water with sticky material (Tipol 1 gram /litre of water).
- 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 Eastern Plain Zone, continue intercultural operations in vegetables and apply light irrigation during evening hours to protect from cold injury.
 - In Kanpur district of Central Plain Zone, apply irrigation in late sown wheat at CRI stage. Undertake transplanting of onion. Undertake nursery preparation of summer vegetables. In Varanasi district undertake transplanting of onion and apply irrigation in wheat as per requirement.
 - 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 Arid Western Plain Zone, apply 3rd irrigation in normal sown wheat, 2nd irrigation in late sown wheat and 2nd irrigation in barley.
 - In Flood Prone Eastern Plain Zone, continue weeding in wheat, spray a solution of Metasulfuron Methyl @ 4g ai/ha in 500 litre water to control broad leaved weed.
 - In Flood Prone Eastern Plain Zone, spray a solution of Mancozeb @ 2g/litre of water to manage early blight in potato crop.
 - 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 Chloropyriphos (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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