



National Agromet Advisory Service Bulletin

Friday 12th January 2018
(For the period 12th to 17th January 2018)



Issued by
India Meteorological Department

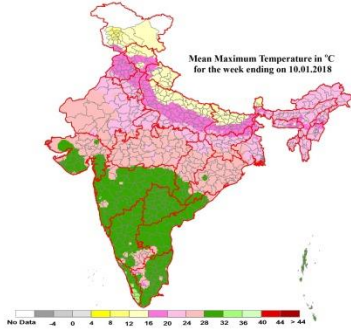
Weblink For

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

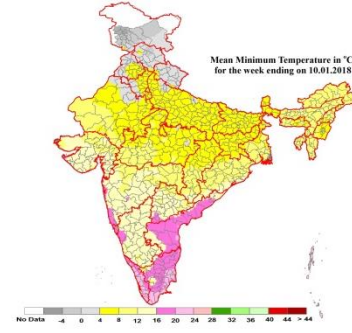
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

Spatial distribution of weather parameters for the week ending 10.01.2018

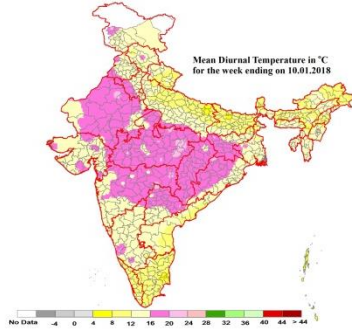
Mean Maximum Temperature (°C) for the week ending 10.01.2018



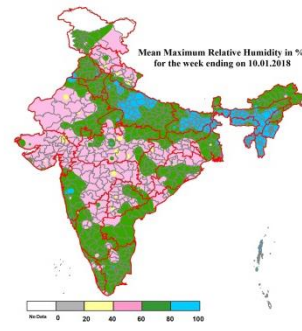
Mean Minimum Temperature (°C) for the week ending 10.01.2018



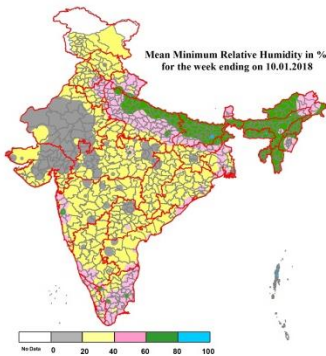
Mean Diurnal Temperature Variation (°C) for the week ending 10.01.2018



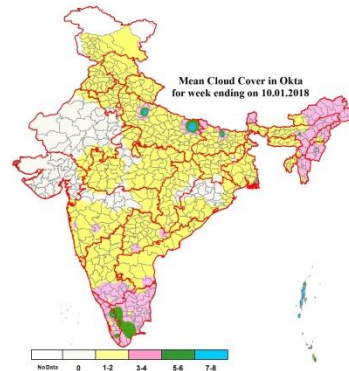
Mean Maximum Relative Humidity (%) for the week ending 10.01.2018



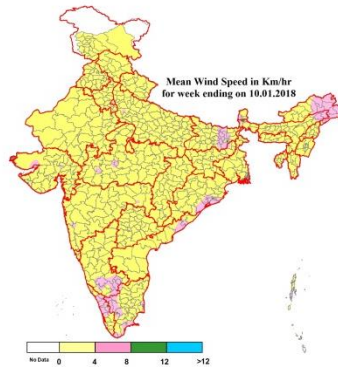
Mean Minimum Relative Humidity (%) for the week ending 10.01.2018



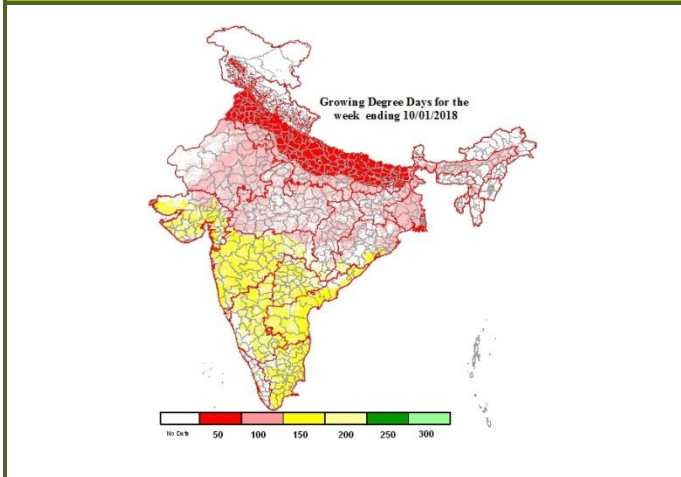
Mean Cloud Cover (okta) for the week ending 10.01.2018



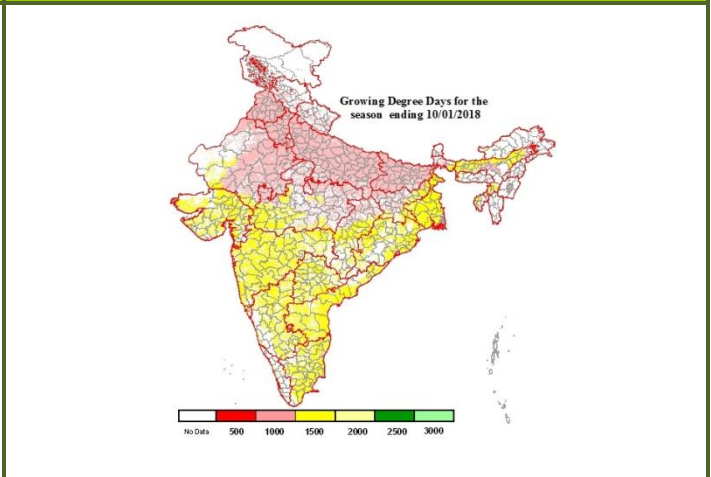
Mean Wind Speed (km/hr) for the week ending 10.01.2018



Growing Degree Days for the week ending 10.01.2018

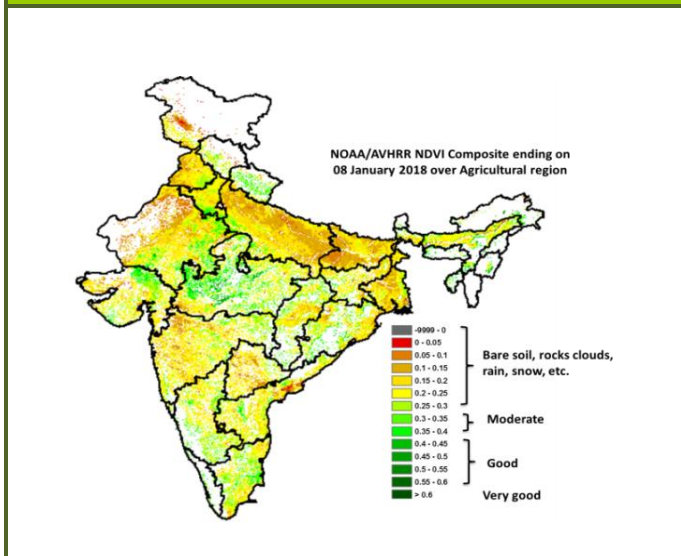


Growing Degree Days for the season ending 10.01.2018

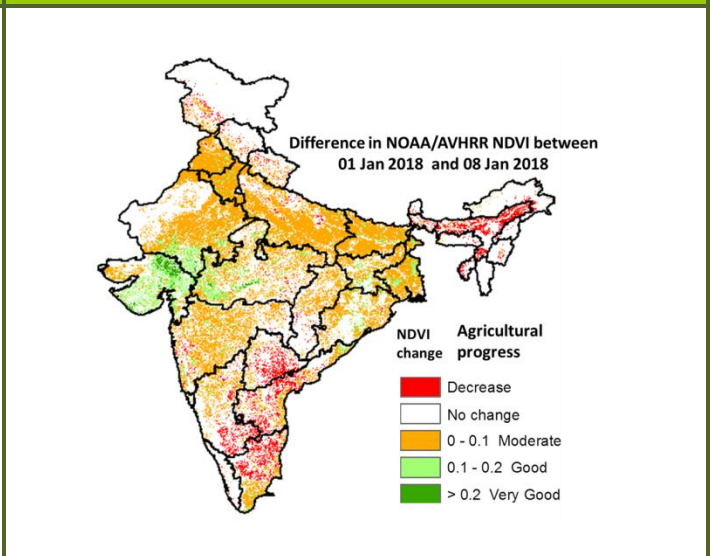


* Base temperature for *Rabi* Season is taken as 05⁰ C

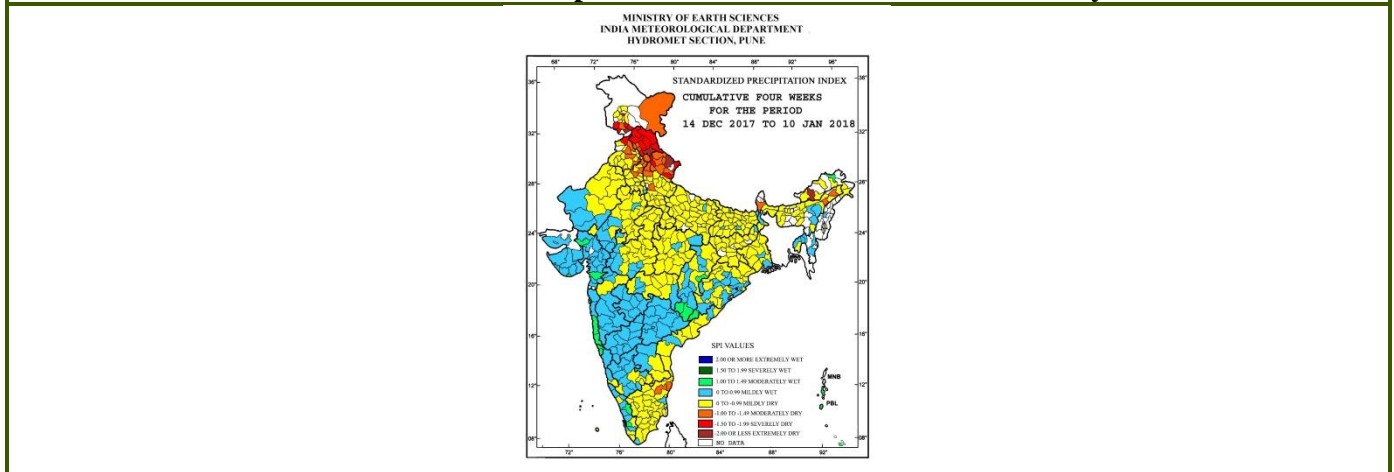
NOAA/AVHRR NDVI composite ending on 8th January 2018 over Agricultural regions of India



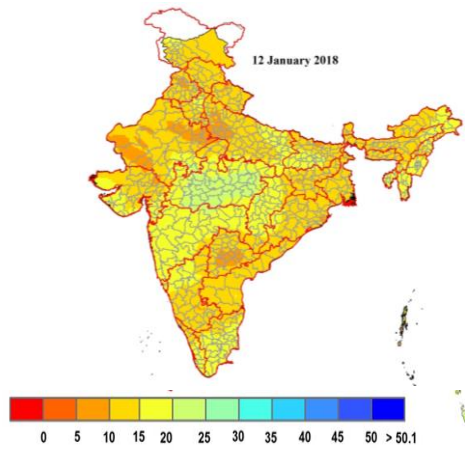
Difference in NOAA/AVHRR NDVI between 1st and 8th January 2018



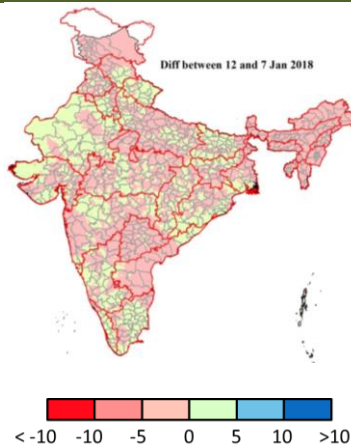
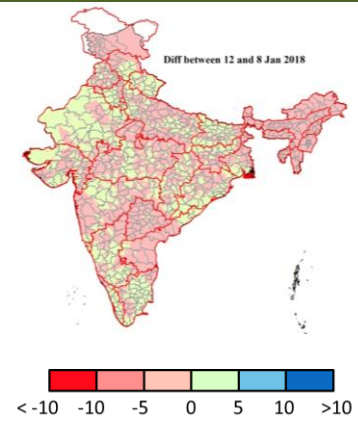
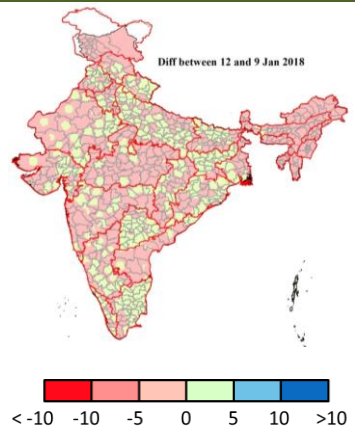
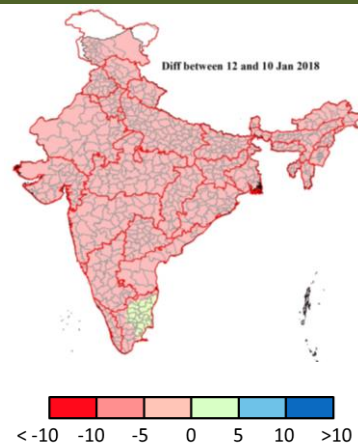
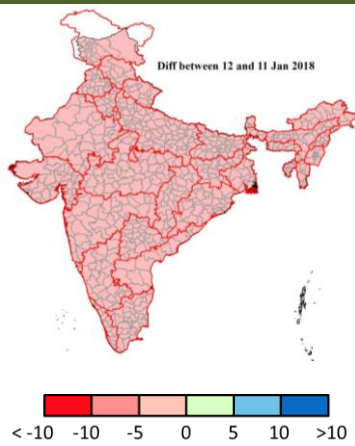
**Standardised Precipitation Index
Cumulative 4 weeks for the period 14th December 2017 to 10th January 2018**



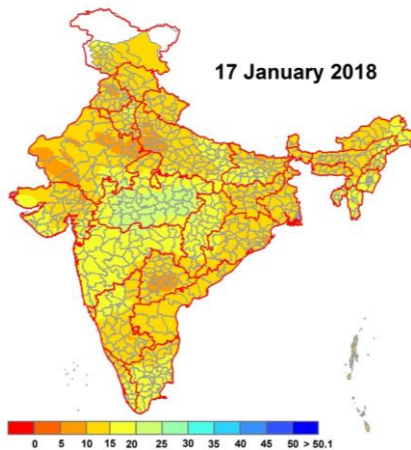
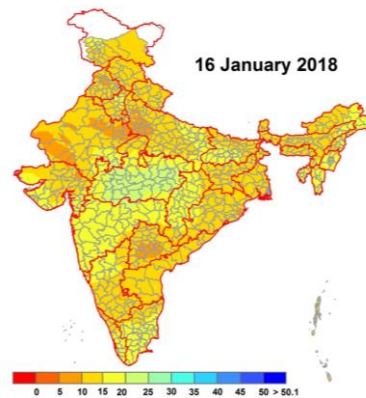
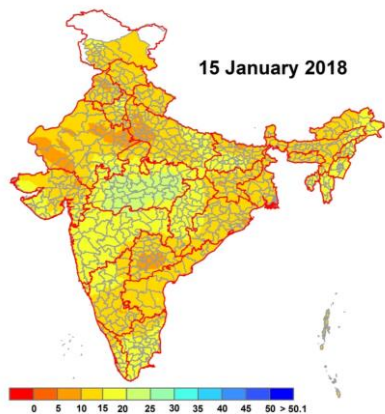
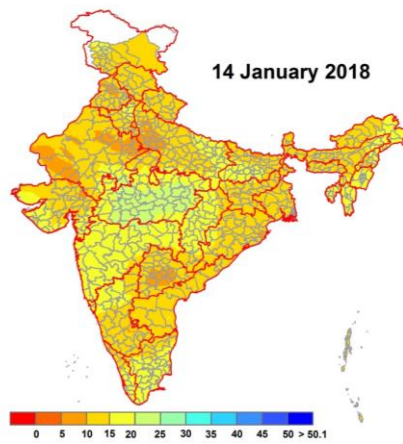
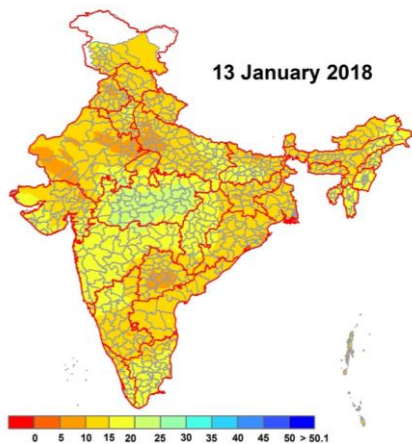
Daily Soil Moisture (mm) for 12th January 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 13th to 17th January 2018 (ending at 0830 IST)
for 60 cm depth**



Weather Forecast for next 5 days valid upto 0830 hours of 17th January 2018

- Meteorological subdivision wise detailed 5 days rainfall forecast is given in Table below.
- Northeast monsoon rainfall is likely to cease over Tamilnadu & Puducherry, Kerala and adjoining parts of Andhra Pradesh and Karnataka from 15 January, 2018.
- No significant change in minimum temperatures are likely over northwest, central, east & northeast India during next 3 days.
- Shallow to moderate fog during late night & morning hours very likely over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan and lower parts of Himachal Pradesh and Uttarakhand during next 24 hours.

5 Day Rainfall Forecast (Mid day) 12th January 2018

Met-Sub-Division	12-Jan Today	13Jan Sat	14Jan Sun	15Jan Mon	16Jan Tue
1. Andaman & Nicobar Islands	ISOL	ISOL	ISOL	ISOL	SCT
2. Arunachal Pradesh	DRY	ISOL	ISOL	SCT	DRY
3. Assam & Meghalaya	DRY	DRY	DRY	ISOL	DRY
4. N. M. M. & T.	DRY	DRY	DRY	ISOL	DRY
5. S.H. West Bengal & Sikkim	DRY	DRY	ISOL	ISOL	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	ISOL	DRY	DRY	DRY	DRY
13. Haryana, Chd & Delhi	DRY	DRY	DRY	DRY	DRY
14. Punjab	DRY	DRY	DRY	DRY	DRY
15. Himachal Pradesh	ISOL	DRY	DRY	DRY	DRY
16. Jammu & Kashmir	ISOL	DRY	ISOL	DRY	DRY
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	ISOL	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	ISOL	DRY	DRY	DRY
36. Lakshadweep	ISOL	ISOL	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

- **12 January (Day 1):** Dense fog at many places with very dense at a few places very likely over East Uttar Pradesh; dense fog at a few places with very dense at isolated places over Bihar; dense to very dense fog at

isolated places over West Uttar Pradesh, Sub-Himalayan West Bengal & Sikkim and Assam & Meghalaya, Nagaland. Manipur, Mizoram & Tripura and dense fog at a isolated places over lower regions of Himachal Pradesh, Uttarakhand and Northern parts of Punjab, Haryana & Chandigarh, Gangetic West Bengal and Coastal Odisha.

- Cold wave to severe cold wave conditions at isolated places very likely over north Rajasthan; Cold wave at isolated places over Interior Odisha, Bihar, Uttar Pradesh, Himachal Pradesh, Uttarakhand, Punjab and Haryana, Chandigarh & Delhi; Cold day to severe cold day conditions at many places very likely Bihar; at a few places over East Uttar Pradesh, northwest Uttar Pradesh and Sub-Himalayan West Bengal; at isolated places over lower regions of Uttarakhand; Ground frost conditions at isolated places very likely over Jammu & Kashmir, Himachal Pradesh & Uttarakhand and north Rajasthan.
- **13 January (Day 2):** Dense fog at many places with very dense at a few places very likely over East Uttar Pradesh; dense fog at a few places with very dense at isolated places over Bihar; dense to very dense fog at isolated places over West Uttar Pradesh, Sub-Himalayan West Bengal and dense fog at a isolated places over Assam & Meghalaya, Nagaland Manipur Mizoram & Tripura, West Bengal, lower regions of Himachal Pradesh, Uttarakhand and Northern parts of Punjab, Haryana & Chandigarh, Gangetic West Bengal and Coastal Odisha.
- Cold wave to severe cold wave conditions at isolated places very likely over north Rajasthan; Cold wave at isolated places over Interior Odisha, Bihar, Uttar Pradesh, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, Punjab and Haryana, Chandigarh & Delhi; Cold day to severe cold day conditions at many places very likely over Bihar; at a few places over East Uttar Pradesh, northwest Uttar Pradesh and Sub-Himalayan West Bengal; at isolated places over lower regions of Uttarakhand; Ground frost conditions at isolated places very likely over Jammu & Kashmir, Himachal Pradesh & Uttarakhand and north Rajasthan.
- **14 January (Day 3):** Dense fog at many places with very dense at a few places very likely over East Uttar Pradesh; dense fog at a few places with very dense at isolated places over Bihar; dense to very dense fog at isolated places over West Uttar Pradesh, Sub-Himalayan West Bengal and dense fog at a isolated places over Assam & Meghalaya, Nagaland Manipur Mizoram & Tripura, West Bengal, lower regions of Himachal Pradesh, Uttarakhand and Northern parts of Punjab, Haryana & Chandigarh, Gangetic West Bengal and Coastal Odisha.
- Cold wave to severe cold wave conditions at isolated places very likely over north Rajasthan; Cold wave at isolated places over Telangana, Uttar Pradesh, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, Punjab and Haryana, Chandigarh & Delhi; Cold day to severe cold day conditions at many places very likely over Bihar; at a few places over East Uttar Pradesh, northwest Uttar Pradesh and Sub-Himalayan West Bengal; at isolated places over lower region of Uttarakhand; Ground frost conditions at isolated places very likely over Jammu & Kashmir, Himachal Pradesh & Uttarakhand and north Rajasthan.
- **15 January (Day 4):** Dense fog at a few places with very dense at isolated places likely over East Uttar Pradesh and Bihar; dense fog at a few places with very dense at isolated places over East Uttar Pradesh and Bihar; dense to very dense fog at isolated places over Sub-Himalayan West Bengal and dense fog at isolated places over Assam & Meghalaya, Nagaland Manipur Mizoram & Tripura, West Uttar Pradesh, lower regions of Himachal Pradesh, Uttarakhand and Northern parts of Punjab, Haryana & Chandigarh, Gangetic West Bengal and Coastal Odisha.
- Cold wave conditions at isolated places likely over Telangana, Cold day to severe cold day conditions at many places very likely Bihar; at a few places over East Uttar Pradesh, northwest Uttar Pradesh and Sub-Himalayan West Bengal & Sikkim; at isolated places over lower region of Uttarakhand.
- **16 January (Day 5):** Dense fog at a few places with very dense at isolated places likely over East Uttar Pradesh and Bihar; dense fog at a few places with very dense at isolated places over East Uttar Pradesh and Bihar; dense to very dense fog at isolated places over Sub-Himalayan West Bengal and dense fog at a isolated places over Assam & Meghalaya, Nagaland Manipur Mizoram & Tripura, West Uttar Pradesh, West Bengal, lower region of Himachal Pradesh, Uttarakhand and Northern parts of Punjab, Haryana & Chandigarh, Gangetic West Bengal and Coastal Odisha; Cold day to severe cold day conditions at many places very likely Bihar; at a few places over East Uttar Pradesh, northwest Uttar Pradesh and Sub-Himalayan West Bengal; at isolated places over lower region of Uttarakhand.

Weather Outlook for subsequent 2 days from 17th to 19th January 2018

- Another Western Disturbance is likely to affect parts of northwest India from 17th January.
- Isolated rainfall activity likely over Andaman & Nicobar Islands.
- Weather likely to be dry over remaining parts of the country.

Salient Advisories

- As cold wave to severe cold wave conditions very likely at isolated places over **north Rajasthan** from 12th to 14th, cold wave conditions very likely at isolated places over **Uttar Pradesh, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Chandigarh & Delhi** from 12th to 14th and over **Jammu & Kashmir** on 13th and 14th, over **Interior Odisha** and **Bihar** on 12th and 13th and over **Telangana** on 14th and 15th 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 rice nursery beds with straw/ polythene sheets during night hours and remove in the morning. Irrigate the 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** and **north Rajasthan** from 12th to 14th 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. In north Rajasthan, to protect sensitive crops like mustard, Rajmash, potato and gram from frost attack, spray dilute Sulphuric Acid @ 0.1% (1 litre H₂SO₄ in 1000 litre water) or thiourea @ 500 ppm (500 gm thiourea in 1000 litre water) at flowering stage.
- As dense fog at many/at a few places with very dense fog at isolated places very likely over **East Uttar Pradesh**, dense fog at a few places with very dense at isolated places very likely over **Bihar** during the period, dense to very dense fog at isolated places very likely over **Sub-Himalayan West Bengal**, dense fog at isolated places very likely over **Gangetic West Bengal** and **Coastal Odisha** during the period, dense to very dense fog at isolated places over **West Uttar Pradesh**, dense fog at isolated places over lower regions of **Himachal Pradesh, Uttarakhand** and Northern parts of **Punjab, Haryana & Chandigarh**, 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.
- In North East Alluvial Zone of **Bihar**, in the prevailing foggy weather, infection of blight may occur in potato. If symptoms appear then spray Carbandizam @ 1 gm/litre of water or Dithane-M-45 @ 2 gm/litre of water for control.
- In view of the cold wave conditions in **north Rajasthan, Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi** and **Bihar** from 12th to 14th 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.

Detailed Zonewise Agromet Advisories

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

- **Realised Rainfall:** Rainfall occurred in Karaikal district of Puducherry and Cuddalore, Nagapattinam and Thiruvarur districts of Tamil Nadu and weather remained mainly dry/dry over rest of the region during the week.
- **Advisories:**
 - As cold wave conditions very likely at isolated places over Telangana on 14th and 15th 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.
 - **Kerala:**
 - 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, 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.

- In the Southern Zone, spray fish jaggery extract 6 ml/litre to control rice bug during panicle initiation stage in paddy crop. Try to complete the spray before 9 am. For powdery mildew disease in bottle gourd and bitter melon, spray *Trichoderma viridae* 2 g per litre as foliar sprays at 14 days interval. To control leaf rot disease in coconut, spray Dithane M45 @ 4 gm per litre.
- 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 Krishna Godavari Zone, continue harvesting of rice. Keep harvested paddy in the field for 2-3 days for drying.
- 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 Diphenthiuron @ 1 gm 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 Chloropyriphos @ 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 South Telangana Zone, to overcome low minimum temperature and for better nursery growth in rice nurseries, cover the nursery beds with polythene sheet during night and remove in the morning. Irrigate the nursery bed every day in the evening and let out the water in the morning.
- 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 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 aphids in sorghum 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/ liter of water for early blight in tomato crop.

▪ **Tamil Nadu:**

- 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 Wettable 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 Southern Zone, harvest matured Cotton during 7 to 11 in the morning and after 3-6 Pm in the evening.
- In the South Zone, in the prevailing weather having light to moderate cloud cover and humidity, there is incidence of American boll worm. For controlling this pest, spray Chlorantraniliprole 18.5% SC 150 ml/ha or Chlorpyriphos 20% EC 1250 ml/ha. Head borer incidence was noticed in sunflower. For controlling this pest, hand pick & destroy of *Helicoverpa* larvae and spray Dichlorvos 76EC 500ml/ha.

▪ **Karnataka:**

- In Southern Dry Zone, undertake 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, undertake nursery preparation of rice. Continue harvesting of matured sugarcane. Complete sowing of short duration pulses like horse gram, chickpea, green gram and black gram crops
- In Central Dry Zone, apply light irrigation in chickpea before flowering. Undertake harvesting of matured fruits of chilli.

- In North East Transition Zone, undertake harvesting of matured pigeon pea. Continue new planting of sugarcane (variety Co-86032) crop.
- In North East Dry Zone, complete harvesting of matured red gram and Bengal gram crops. Complete last picking of cotton in early sown cotton and third picking of seed cotton in late sown cotton.
- In Eastern Dry Zone, provide irrigation to *rabi* crops. Remove the weeds such as lantana which are growing under the mango tree.
- In Hill Zone, complete sowing of green gram and black gram. Apply irrigation to arecanut plants to avoid cold effect.
- In Southern Dry Zone, to manage wilt disease in tomato, chilli and capsicum, uprooted the affected plants; spray Copper Oxy-Chloride @ 3 gm +500 mgm Streptomycin Sulphate / 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.
- In North East Transition Zone, incidence of wilt and root rot has been noticed in chickpea crop; uproot the affected plants and destroy; drenching with combi product (Carbendazim+Mancozeb) @ 2g/liter of water is recommended. Incidence of leaf webber has been noticed in some of the mango growing belts; for effective management, spray Nuvan @ 0.5ml/litre of water.
- In North Transition Zone, due to low minimum temperature, there is a chance of infestation of powdery mildew in mango; for control, spray 0.5 ml Phosphamidon 86 WSC with 1.0 g Hexaconzole 5 EC/litre of water. There is a chance of leaf reddening in late sown cotton due to lower temperatures; for control, spray 1% MgSO₄ or 2% Urea/DAP.
- **Animal Husbandry**
 - In the Southern Zone of Tamilnadu, allow cattle for grazing 2 hrs after sunrise. Cover the cow shed with gunny bags, keep the floor in dry condition and provide dry feed and greens without moisture to avoid the fungal infection.
 - In Southern Dry Zone of Karnataka, maintain optimum room temperature in poultry and sericulture unit.

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

- **Realised Rainfall:** Rainfall occurred in Upper Siang district of Arunachal Pradesh during the week and weather remained mainly dry/dry over rest of the region.
- **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 matured rice. Harvest mature crop of ginger/turmeric. Cover newly emerged banana bunches with locally available sack to protect from cold. Carry out harvesting of mature citrus fruits. Apply light irrigation to cole crops.
 - In Meghalaya, continue harvesting of French bean, rajmash and coe pea crops. Provide irrigation and mulching to cabbage, cauliflower and broccoli crops. Undertake nursery raising for tomato crop.
 - In Lower Brahmaputra Valley Zone of Assam, considering the prevailing and predicted low temperature, the Boro paddy nursery beds should be covered with portable polytunnel structures constructed with polythene sheet fixed to bamboo frame to maintain favourable temperature. As dry weather is expected, irrigation should be provided to the seed beds/nursery beds of Boro rice and surrounding furrows to keep the soil under saturated condition. Seedlings of age about 30 days or 45 days (for hybrid varieties) with 5-6 leave stage are ready for transplanting in the main field. 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. Apply irrigation to lentil crop at pod filling stage. Undertake sowing of okra varieties like Pusa Sawani, Arka Anamika, Parbhdani Kranti and local cultivars.
 - In the Barak Valley Zone of Assam, 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, undertake transplanting of Boro rice seedlings in the main field. Undertake transplanting of late cole crop seedlings. Some of the popular varieties of late cole crops are :Pusa Snow Ball K-1, Snow Ball-16 and Hissar-1 for cauliflower; Drum Head for Cabbage and Purple Viena for Knolkhol. Complete sowing of wheat and rabi pulses like lentil, rajmah, pea and lathyrus during this week.
 - In the Central Brahmaputra Valley Zone, carry out land preparation in the main field for transplanting Boro rice. For enhancing yield of rapeseed-mustard crops through increased pollination, 5 honey bee colonies/ha may be placed in the field after flowering. Provide irrigation to wheat crop at 20-25 days from sowing.
 - In the Hill Zone of Assam, keeping in view of low temperature and humidity, farmers are advised to monitor the crop in seedling stage and observe the presence of thrips on leaves during morning hours. Provide irrigation to rape

seed and mustard crops at 50% flowering stage. Undertake transplanting of six weeks old onion seedling in this week.

- In the Lower Brahmaputra Valley Zone, to protect cole crops from leaf eating caterpillars, spray Malathion 50 EC @ 1.5 ml/litre of water. For controlling aphids, jassids and beetles in French bean crop, spray Dimethoate or Malathion @ 1-1.5 litre in 800-1000 litres of water/ha.
- In the Barak Valley Zone, spray Dimethoate 30 EC or Ragor @ 2 ml per liter of water to control aphids and saw fly in rape seed 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 Central Brahmaputra Valley Zone, to control cutworm infestation in wheat crop, spray Quinolphos/ Chloropyriphos @ 2 ml/litre water in the evening hours.
- **Nagaland, Mizoram, Manipur and Tripura:**
- In Manipur, provide light irrigation to Rabi maize. 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.
- In Mizoram, continue harvesting of matured kharif rice. Carry out field preparation for cole crops and continue planting of potato, tomato and chilli. Carry out weeding, thinning and earthing up operations in *rabi* maize, black/green gram, toria and French bean crops.
- In Tripura, carry out weeding, thinning, watering in the nursery Boro paddy field. Nursery bed may be covered during the night to protect the seedlings from dew. Prepare main field for transplanting. Provide light irrigation to toria, sesame, lentil, etc after carrying out weeding and thinning.
- In Nagaland, carry out thinning, weeding and earthing up in *rabi* maize. Continue transplanting cabbage and cauliflower. Carry out mulching in lentil and linseed.
- In Manipur, for organic control against aphids in lentil, black gram, pea, rape seed and mustard crops, spray Azadirachtin, neem oil or Pyrethrin and spray Neem Seed Kernel Extract at 5% concentration for powdery mildew and nimbidin (0.3%) to control rust disease. Apply Dichlorovos @ 0.5ml/litre of water or Imidachlorpid @ 2ml/ 5 litres of water for early blight in tomato crop. Also apply Dithane M 45 @ 2g/litre of water.
- In Tripura, spray Mancozeb @ 2gm per liter of water to manage black spot disease in leafy vegetables and Cole crops. Apply Cymoxanil+ Mancozeb or Metalaxyl+ Mancozeb @ 1.5gm 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 proper bedding materials especially to new-born piglets and lukewarm food & water. Deworm animals with anti helminthic drugs (particularly Tapeworms) viz. Fento Plus @ 1 tablet per 30 kg body weight. In present weather conditions vaccinate against swine fever (Vaccines available in State Veterinary Depts). Vaccinate 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 poultry birds against Ranikhet disease.
- 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, maintain the quality of water and provide good nutrition to prevent Saprolegniasis fungal disease occurring in fishes. Avoid over-crowding prevent injury. Common treatments include potassium permanganate, formalin and povidine iodine solutions.
- 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 water level 2-3 cm for first 8-10 days and increase the level up to 5 cm. Complete the sowing of groundnut as early as possible. Apply irrigation at an interval of 10-12 days. Also undertake

gap filling in the crop. Complete the sowing of sunflower and mustard as early as possible. Also apply irrigation to sunflower and mustard crop.

- In Madhya Maharashtra, as dry weather is prevailing and likely to continue during next 5 days, apply irrigation to rabi crops, orchards and vegetables. Undertake land preparation for planting of *suru* sugarcane. Complete land preparation for summer groundnut (varieties are Phule Unnati, TAG24, TG26, TPG41, JL501). Undertake sowing of summer groundnut between 15th January to 15th February. Undertake harvesting of matured pigeon pea.
- In Marathwada, as dry weather is prevailing, apply irrigation to standing crops like wheat, vegetables and orchards. If the soil moisture stress is observed in late sown gram crop during flowering to pod initiation stage, apply light irrigation. If attack of pod borer is observed in gram, spray Chlorpyrifos 20 EC @ 25 ml or Deltamethrin @ 5 ml per 10 liter of water. Apply 40 kg/ ha of Urea in pre-seasonal sugarcane crop sown in the month of November. Also apply irrigation to the crop. Undertake preparatory tillage operation for sowing of *suru* sugarcane. Undertake light pruning and apply 325 : 250 : 250 g (NPK) per plant to ambe bahar pomegranate orchard.
- In Vidarbha, as dry weather prevailed and expected to prevail during next 5 days, apply irrigation to standing crops, vegetables and orchards. Continue transplanting of 22-25 days old rice seedlings. Apply 50 kg nitrogen, 50 kg phosphors and 50 kg potash at the time of puddling for paddy. Continue harvesting of matured pigeon pea.
- 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. The application of Imidacloprid should be done only once in the mango season to avoid resurgence of pests.
- In Marathwada, to control rust in wheat crop, spray Mancozeb @ 25 g per 10 liter of water.
- **Gujarat:**
 - In South Gujarat Heavy Rainfall zone, undertake land preparation for transplanting of summer rice.
 - In Bhal and Coastal Zone, apply irrigation in mustard, castor and fruit crops (mango, citrus, pomegranate and sapota). Continue harvesting of matured cotton bolls.
 - In North Gujarat Zone Gujarat, continue harvesting of matured spikes of castor. Apply light irrigation in castor, fennel crop and pomegranate orchard.
 - 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 South Gujarat Zone, apply irrigation in gram.
 - In North Gujarat Zone and North West Zone of Gujarat, complete sowing of water melon.
 - In North Saurashtra Zone and South Gujarat Zone, apply irrigation in wheat.
 - In Middle Gujarat Zone, undertake intercultural operations in chickpea, cumin and wheat. Apply irrigation to pigeon pea, cumin, chickpea and castor crops as per requirement.
 - 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 South Gujarat Zone, weather condition is congenial for outbreak of powdery mildew in field pea; spray the crop with wettable Sulphur @ 0.25% or Dinocap @ 0.05% in clear weather.
 - 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, keep young calves indoors during night time to avoid cold stress. Provide dry fodder to animals twice a day.

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

- **Realised Rainfall:** Rainfall occurred in all districts of Andman & Nicobar Islands during the week and weather remained dry over rest of the region.
- **Advisories:**
 - As cold wave condition at isolated places likely over Interior Odisha and Bihar on 12th and 13th 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 fog at a few places with very dense at isolated places very likely over Bihar during the period, dense to very dense fog at isolated places very likely over Sub-Himalayan West Bengal during the period and dense fog at isolated places very likely over Gangetic West Bengal and Coastal Odisha 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, complete sowing of pre germinated rice seed in puddled nursery bed. Provide light and frequent irrigation to vegetable crops and rice nursery as cold wave conditions are likely to prevail. Prepare the main field for transplanting at three week stage of seedling. Undertake harvesting of matured pods of pigeon pea.
- In East and South Eastern Coastal Plain Zone, complete nursery sowing of rice. As temperatures are likely to remain low, cover the fresh nursery of rice with paddy straw.
- In West Central Table Land Zone, continue nursery sowing of rice. Complete earthing up in late planted potato and apply irrigation as per requirement.
- In North Eastern Ghat Zone, continue sowing of summer sunflower and groundnut. Undertake weeding and hoeing in potato.
- In North Central Plateau Zone, undertake field preparation for transplanting of rice and undertake transplanting with two seedlings per hill in erect & shallow position at a spacing of 15 cm x 10 cm. Apply irrigation in wheat at CRI stage. Undertake field preparation for sowing of summer moong.
- In Eastern Ghat High Land Zone, undertake field preparation for 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. Continue sowing of green pea in the fallow uplands. Apply light and frequent irrigation in vegetables.

▪ **Bihar:**

- In North West Alluvial Plain Zone, as cold wave conditions likely to prevail, apply light and frequent irrigation in vegetables. Apply irrigation in wheat crop at tillering stage.
- In South Bihar Alluvial Zone, apply irrigation in timely sown wheat at tillering stage and at CRI stage in late sown wheat. Continue thinning and weeding in mustard. 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 Carbandizam @ 1.0 gm/litre of water or Dithane-M-45 @ 2 gm/litre of water.

▪ **Jharkhand:**

- In South Eastern Plateau Zone, undertake 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, continue nursery raising of summer rice with improved varieties like IR 36, IR 64, Naveen, Lalat and Parijat. Apply irrigation in wheat. Undertake 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, apply irrigation in vegetables, gram, potato and lentil crops as per requirement. Undertake 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, complete seed bed preparation and sowing of Boro rice. Apply water during afternoon and drain it during morning. Stop irrigation if seedlings turn reddish. Make shade by polythene over seed bed. Undertake main field preparation and start transplanting seedlings in 2-3 days. Continue sowing of sunflower varieties like Kaberi, Abinash-2, ganga, j.K. etc.
- 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, carry out hand weeding in potato fields and apply light irrigation. 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 crop.
- In New Alluvial Zone, undertake sowing of spinach, coriander and fenugreek may be done in present weather conditions.
- In Laterite and Red Soil Zone, spray Imidacloprid @ 1ml/1.5 lit of water to control aphids in mustard. Spray Spray Ridomil MZ @ 2g/litre of water in 10-15 days interval for early 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 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 cultivation of bitter gourd, bottle gourd and snake gourd as weather is conducive.
- In the Andamans, spray Mancozeb @ 0.2 % at 15 to 20 days interval for control of downy mildew disease in cauliflower and cabbage.

• **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 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 Old Alluvial Zone of West Bengal, apply CIFAX @ 1 liter/ha pond area, per meter water or Sukrena W.S. @ 500-1000ml /Acre pond area to control “EUS” disease of fish.
- 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 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, apply irrigation in late sown wheat after 21-25 days of sowing. Continue earthing up in potato. Continue transplanting of onion. Continue intercultural operations in vegetables.
- In Jhabua Hill Zone, apply 2nd irrigation in wheat and give 1/3dose of urea as top dressing. 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, continue harvesting of matured pea. Apply irrigation in vegetables, mustard and chickpea.
- 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.

▪ **Chhattisgarh:**

- In Chhattisgarh Plain Zone, continue preparation of seedlings of cucurbits in polythene bags. Apply irrigation in wheat. Apply irrigation in mango orchard after 50% flowering at 15 days interval.
- In Bastar Plateau Zone, as temperature is low, apply irrigation in standing *rabi* crops.
- In North Hill Zone, apply 2nd irrigation in wheat at tillering stage and then apply 30kg nitrogen per hectare. Continue intercultural operations in vegetables and apply light irrigation.
- In North Hill Zone, there are chances of attack of pod borer in pigeon pea, spray Cartap Hydrochloride @ 1.5ml/litre of water.

• **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 to severe cold wave conditions very likely at isolated places over north Rajasthan from 12th to 14th, cold wave conditions very likely at isolated places over Uttar Pradesh, Himachal Pradesh, Uttarakhand, Punjab and Haryana, Chandigarh & Delhi from 12th to 14th and over Jammu & Kashmir on 13th and 14th 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 and north Rajasthan from 12th to 14th January, apply light and frequent irrigation in standing crops. In cash crops, spray of 0.1 percent H₂SO₄ should be done.
 - As dense fog at many/at a few places with very dense fog at isolated places very likely over East Uttar Pradesh during the period, dense to very dense fog at isolated places over West Uttar Pradesh during the period and dense fog at isolated places over lower regions of Himachal Pradesh, Uttarakhand and Northern parts of Punjab, Haryana & Chandigarh 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.
 - **Jammu & Kashmir:**
 - In Sub Tropical Zone, apply light and frequent irrigation in standing crops and vegetables to protect the crops from cold/frost injury. Undertake hoeing, weeding and thinning operation in very late sown mustard crop.
 - In Intermediate Zone, in view of prevailing dry weather and cold wave condition, apply irrigation to late sown wheat crop. Continue light weeding and hoeing in vegetables followed by irrigation depending upon soil moisture conditions. Undertake 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. Undertake mulching in vegetables to protect from frost.
 - In Sub Tropical Zone, to control early blight in tomato and potato, spray Mancozeb @ 0.25% at 15 days interval.
 - **Uttarakhand:**
 - In Sub Humid Sub Tropic Zone, apply light irrigation during evening hours in frost sensitive crops. Continue digging up of matured tubers of early sown potato.
 - In Hill Zone, apply irrigation in wheat and barley as per requirement. Undertake straw mulching in potato to conserve soil moisture.
 - In Bhabar and Tarai Zone, continue weeding and hoeing in sugarcane crop and apply remaining dose of nitrogen. Undertake intercultural operations in vegetables and apply light irrigation during evening hours.
 - 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.
 - 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 & Delhi:**
 - In Western Zone of Punjab, apply light irrigation in mustard, vegetables and fruit plants to protect from low temperature. Complete planting of spring potato and transplanting of onion in first fortnight of January.
 - In Western Plain Zone of Punjab, continue harvesting of sugarcane. Apply irrigation in mustard to save from frost and undertake thinning and weeding in late sown mustard. Avoid sowing of sunflower till cold wave conditions persists.
 - 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. Undertake harvesting of matured sugarcane.
 - 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. Continue transplanting of seedlings of late varieties of cabbage, cauliflower, knolkhol etc. Continue sowing of spinach, coriander and fenugreek.
 - 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).
- **Uttar Pradesh:**
 - In Eastern Plain Zone, apply irrigation in wheat and apply 2nd dose of urea. Undertake intercultural operations in vegetables and apply light irrigation during evening hours to Protect from cold injury.
 - In Central Plain Zone, apply irrigation in wheat at CRI stage. Undertake harvesting of matured sugarcane. Undertake weeding and apply light irrigation in gram, mustard and lentil crops.
 - 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, undertake nursery raising of tomato. To protect sensitive crops like mustard, Rajmash, potato, gram from frost attack, spray dilute Sulphuric Acid @ 0.1% (1 litre H₂SO₄ in 1000 litre water) or thiourea @ 500 ppm (500 gm thiourea in 1000 litre water) at flowering stage.
 - In Sub Humid Southern Plain and Aravalli Hill Zone, as ground frost is expected, apply light and frequent irrigation in standing crops. In cash crops, spray of 0.1 percent H₂SO₄ should be done. Late sown wheat is at CRI stage, hence irrigation should be done and top dress 65 kg/ha urea.
 - In Bikaner district of Arid Western Plain Zone, apply 2nd irrigation in wheat and barley. Apply irrigation in mustard.
 - In Flood Prone Eastern Plain Zone, apply irrigation in wheat and continue weeding. Apply light irrigation in standing crops to protect from frost.
 - In Sub Humid Southern Plain and Aravalli Hill Zone, in present weather condition, constant monitoring of aphid is advised in mustard crop. If insect population is above ETL, then spraying of Rogar or Quinalphos @ 2.0 ml/ litre of water is recommended. In Mustard and Fenugreek for control of moyala, application of Dimethoate 30 EC @ 1litre /ha is advised.
 - In Flood Prone Eastern Plain Zone, spray a solution of Mancozeb @ 2g/litre of water to manage early blight in potato crop.
- **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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