



National Agromet Advisory Service Bulletin

Friday 5th January 2018
(For the period 5th to 10th January 2018)



Issued by
India Meteorological Department

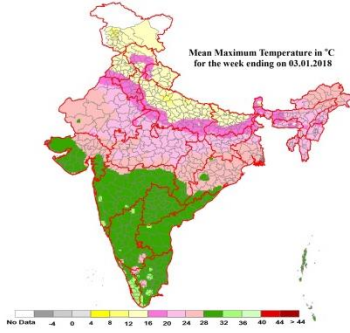
Weblink For

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

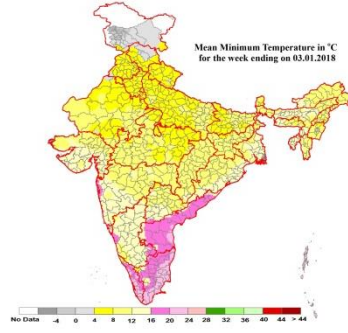
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

Spatial distribution of weather parameters for the week ending 03.01.2018

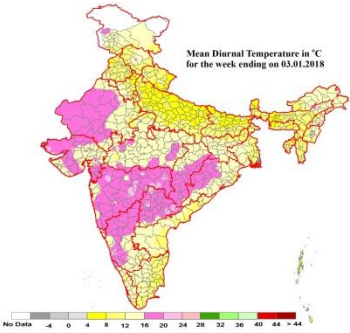
Mean Maximum Temperature (°C) for the week ending 03.01.2018



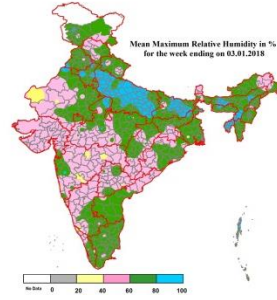
Mean Minimum Temperature (°C) for the week ending 03.01.2018



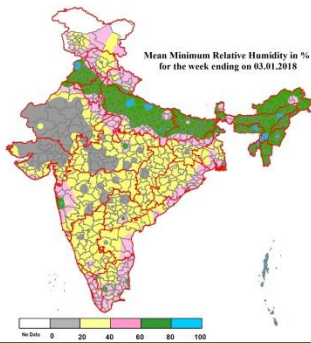
Mean Diurnal Temperature Variation (°C) for the week ending 03.01.2018



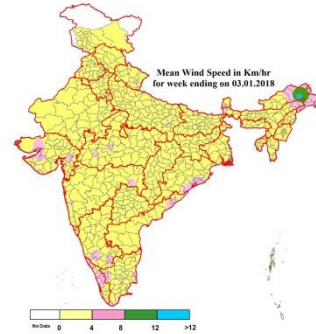
Mean Maximum Relative Humidity (%) for the week ending 03.01.2018



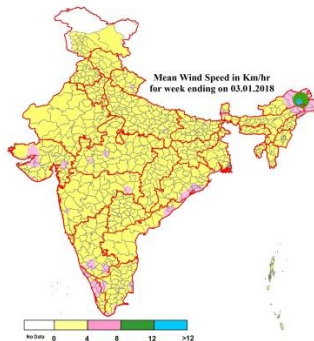
Mean Minimum Relative Humidity (%) for the week ending 03.01.2018



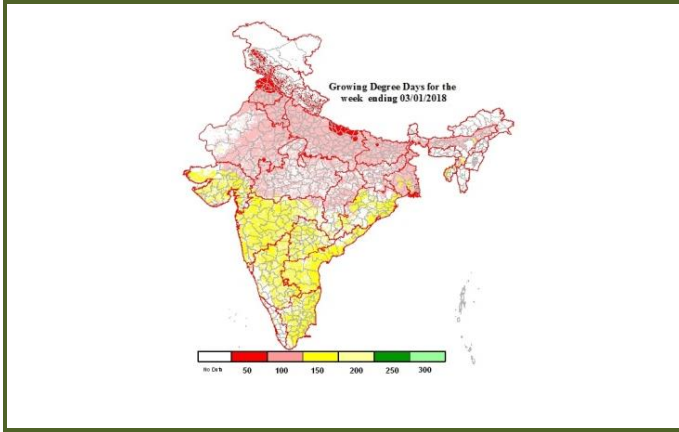
Mean Cloud Cover (okta) for the week ending 03.01.2018



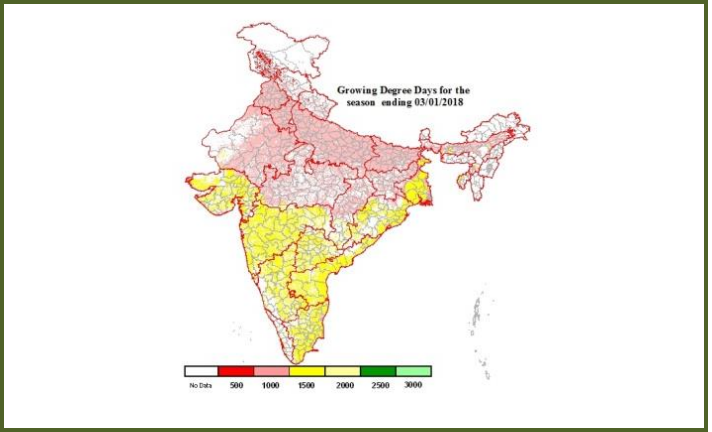
Mean Wind Speed (km/hr) for the week ending 03.01.2018



Growing Degree Days for the week ending 03.01.2018

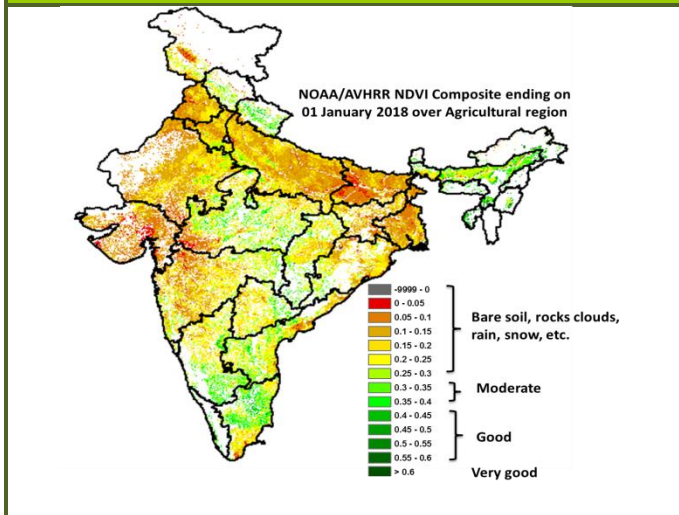


Growing Degree Days for the season ending 03.01.2018

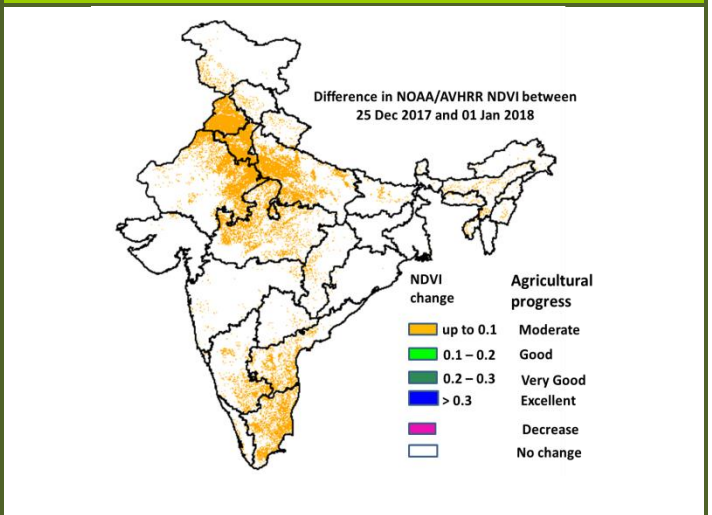


* Base temperature for *Rabi* Season is taken as 05⁰ C

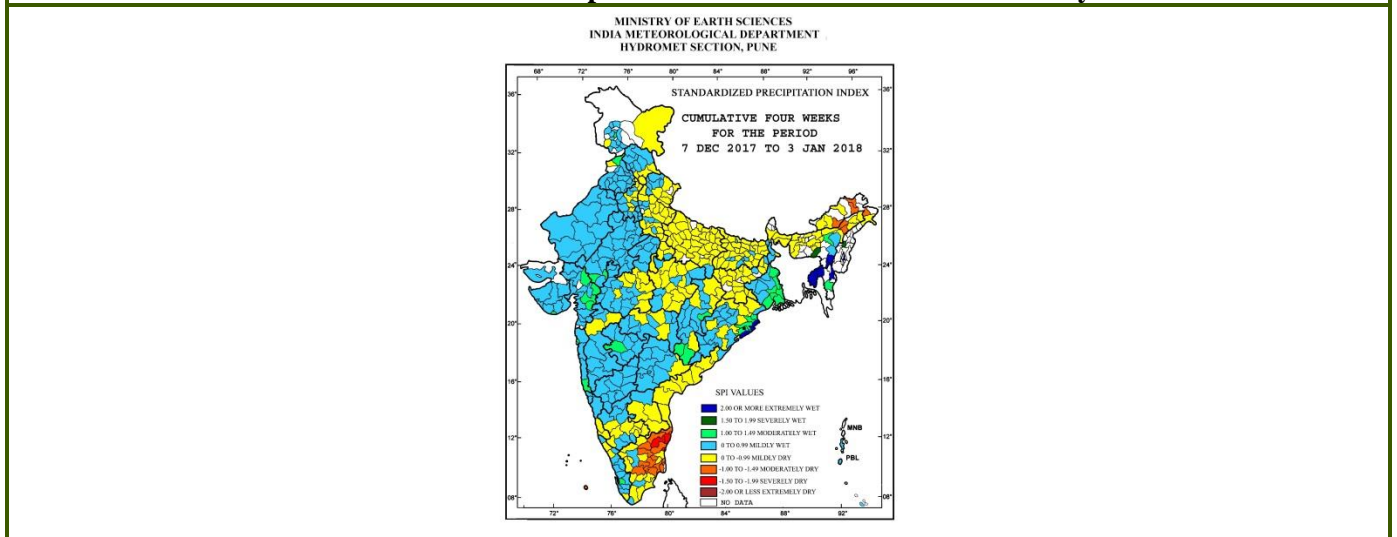
NOAA/AVHRR NDVI composite ending on 1st January 2018 over Agricultural regions of India



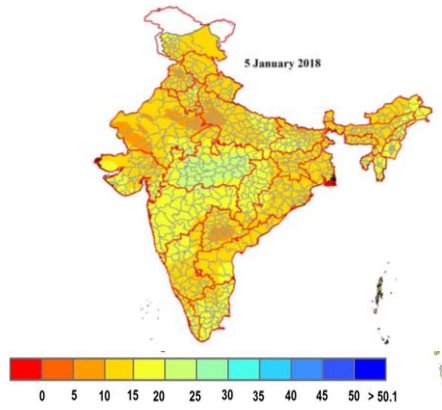
Difference in NOAA/AVHRR NDVI between 25th December 2017 and 1st January 2018



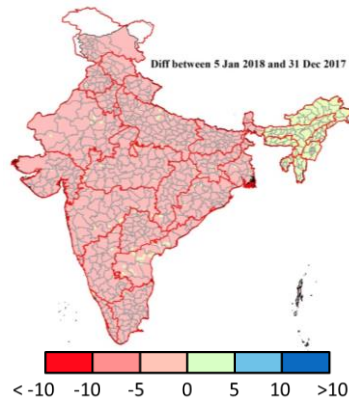
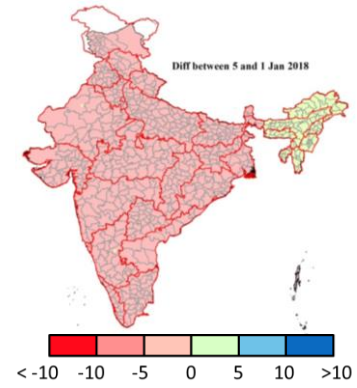
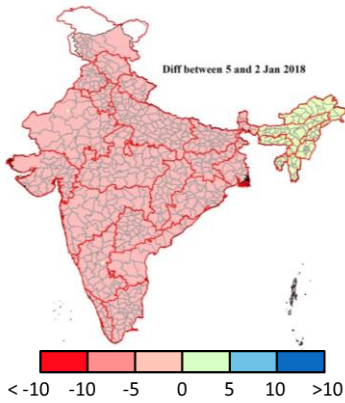
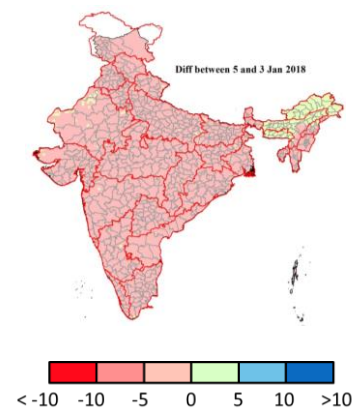
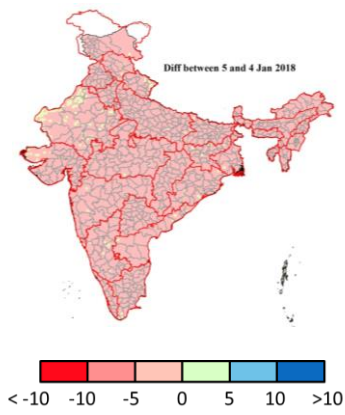
**Standardised Precipitation Index
Cumulative 4 weeks for the period 7th December 2017 to 3rd January 2018**



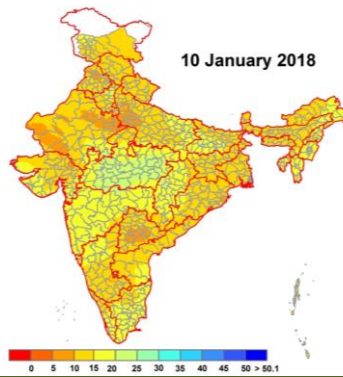
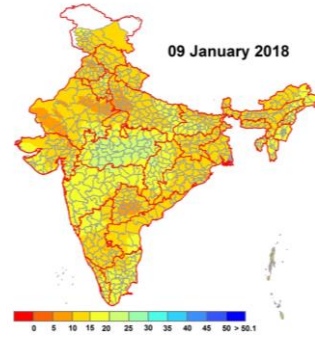
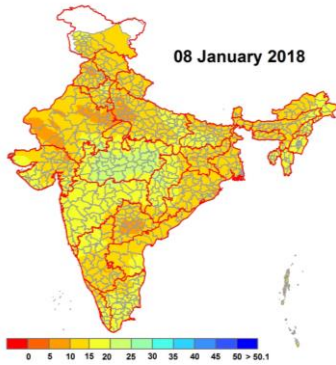
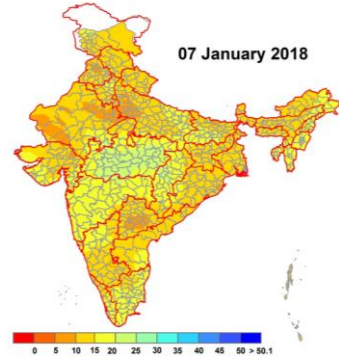
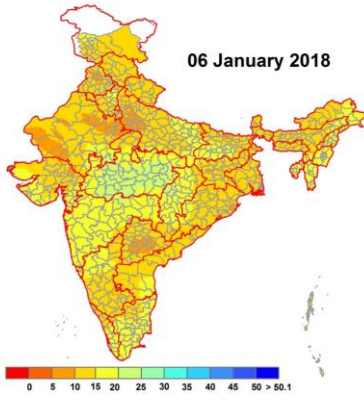
Daily Soil Moisture (mm) for 5th January 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 6th to 10th January 2018 (ending at 0830 IST)
for 60 cm depth**



Weather Forecast for next 5 days valid upto 0830 hours of 10th January 2018

- Meteorological subdivision wise detailed 5 days rainfall forecast is given in Table below.
- Minimum temperatures very likely to fall by 1-2°C over Indo Gangetic plains from tomorrow onwards and no significant change over rest parts of the country during next 3 days.

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

Met-Sub-Division	05-Jan Today	06Jan Sat	07Jan Sun	08Jan Mon	09Jan Tue
1. Andaman & Nicobar Islands	WS	FWS	SCT	SCT	SCT
2. Arunachal Pradesh	ISOL	DRY	DRY	DRY	DRY
3. Assam & Meghalaya	DRY	DRY	DRY	DRY	DRY
4. N. M. M. & T.	DRY	DRY	DRY	DRY	DRY
5. S.H. West Bengal & Sikkim	ISOL	DRY	DRY	DRY	DRY
6. Gangetic West Bengal	DRY	DRY	DRY	DRY	DRY
7. Odisha	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	DRY	DRY	ISOL
17. West Rajsthan	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. 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	ISOL	ISOL
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	ISOL	ISOL	ISOL	ISOL	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

- **05 January (Day 1):** Dense fog at a few places with very dense at isolated places very likely over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh; dense fog at a few places very likely over lower regions of Himachal Pradesh & Uttarkhand, north Madhya Pradesh, Bihar and SubHimalayan West Bengal and isolated over north Rajasthan, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Cold wave conditions very likely at a few places over east Uttar Pradesh and Bihar and at isolated places over East Rajasthan, East Madhya Pradesh, Chhattisgarh, Vidarbha, Jharkhand, Gangetic West Bengal, Odisha and Telangana. Cold day conditions at many places with severe cold day isolated places very likely over East Uttar Pradesh and Bihar;

cold day at a few places with severe cold day at isolated places over Punjab, Haryana, Chandigarh & Delhi and Sub-Himalayan West Bengal. Ground frost conditions very likely at isolated places over east Uttar Pradesh and Bihar and at isolated places over East Rajasthan, East Madhya Pradesh, Chhattisgarh and Jharkhand. Strong winds speed reaching 35-45 kmph occasionally are likely along and off Tamilnadu coast.

- **06 January (Day 2):** Dense to very dense fog at a few places very likely over East Uttar Pradesh and Bihar; dense to very dense fog at isolated places very likely over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan, lower regions of Himachal Pradesh & Uttarakhand, and west Uttar Pradesh, north Madhya Pradesh, SubHimalayan West Bengal, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Cold wave conditions very likely at a few places over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and Bihar and at isolated places over Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, Jharkhand, Gangetic West Bengal, Odisha and Telangana. Cold day conditions at a few places very likely over East Uttar Pradesh and Bihar; cold day at isolated places over Punjab, Haryana, Chandigarh & Delhi and Sub-Himalayan West Bengal. Ground frost conditions very likely at isolated places over Uttar Pradesh and Bihar, East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha and Jharkhand. Strong winds speed reaching 35-45 kmph occasionally are likely along and off Tamilnadu coast.
- **07 January (Day 3):** Dense to very dense fog at a few places very likely over East Uttar Pradesh and Bihar; dense to very dense fog at isolated places very likely over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan, lower regions of Himachal Pradesh & Uttarakhand and west Uttar Pradesh, north Madhya Pradesh, SubHimalayan West Bengal, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Cold wave conditions very likely at a few places over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and Bihar and at isolated places over Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, Jharkhand, Gangetic West Bengal, Odisha and Telangana. Cold day conditions at a few places very likely over East Uttar Pradesh and Bihar; cold day at isolated places over Punjab, Haryana, Chandigarh & Delhi and Sub-Himalayan West Bengal. Ground frost conditions very likely at isolated places over Uttar Pradesh and Bihar, East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha and Jharkhand. Strong winds speed reaching 35-45 kmph occasionally are likely along and off Tamilnadu coast.
- **08 January (Day 4):** Dense to very dense fog at a few places very likely over East Uttar Pradesh and Bihar; dense to very dense fog at isolated places very likely over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan, lower regions of Himachal Pradesh & Uttarakhand and west Uttar Pradesh, north Madhya Pradesh, Sub-Himalayan West Bengal, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Cold wave conditions very likely at a few places over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and Bihar and at isolated places over Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, Jharkhand, Gangetic West Bengal, Odisha and Telangana. Cold day conditions at a few places very likely over East Uttar Pradesh and Bihar; cold day at isolated places over Punjab, Haryana, Chandigarh & Delhi and Sub-Himalayan West Bengal. Ground frost conditions very likely at isolated places over Uttar Pradesh and Bihar, East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha and Jharkhand. Strong winds speed reaching 45-55 kmph occasionally are likely along and off Tamilnadu coast. Fishermen are advised to be cautious while venturing into the sea along and off Tamilnadu coast.
- **09 January (Day 5):** Dense to very dense fog at a few places very likely over East Uttar Pradesh and Bihar; dense to very dense fog at isolated places very likely over Punjab, Haryana, Chandigarh & Delhi, north Rajasthan, lower regions of Himachal Pradesh & Uttarakhand and west Uttar Pradesh, north Madhya Pradesh, SubHimalayan West Bengal, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Cold wave conditions very likely at a few places over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and Bihar and at isolated places over Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, Jharkhand, Gangetic West Bengal, Odisha and Telangana. Cold day conditions at a few places very likely over East Uttar Pradesh and Bihar; cold day at isolated places over Punjab, Haryana, Chandigarh & Delhi and Sub-Himalayan West Bengal. Ground frost conditions very likely at isolated places over Uttar Pradesh and Bihar, East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha and Jharkhand. Strong winds speed reaching 45-55 kmph occasionally are likely along and off Tamilnadu coast. Fishermen are advised to be cautious while venturing into the sea along and off Tamilnadu coast.

Weather Outlook for subsequent 2 days from 10th to 12th January 2018

- Rainfall activity likely to increase over extreme south peninsular India. Rainfall at a few places likely over Andaman & Nicobar Islands and Lakshadweep Islands.
- Weather likely to be dry over remaining parts of the country.
- Minimum temperatures are likely to remain below normal over northwest, Central and east India.

Salient Advisories

- As strong winds speed reaching 35-45 kmph occasionally are likely along and off **Tamilnadu coast** from 5th to 7th and strong winds speed reaching 45-55 kmph occasionally are likely along and off Tamilnadu coast on 8th and 9th January. Fishermen are advised to be cautious while venturing into the sea along and off Tamilnadu coast.
- As cold wave conditions very likely at a few places over **East Uttar Pradesh** on 5th, over **Punjab, Haryana, Chandigarh & Delhi** and **Uttar Pradesh** and at isolated places over **Rajasthan** from 6th to 9th January, cold wave conditions very likely at a few/isolated places along with ground frost conditions over **Bihar** and **Jharkhand** during the period, cold wave conditions at isolated places over **Gangetic West Bengal, Odisha, Vidarbha** and **Telangana** during the period, cold wave and ground frost conditions very likely at isolated places over **East Madhya Pradesh** on 5th, over **Madhya Pradesh** from 6th to 9th, over **Chhattisgarh** during the period, 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 fog at isolated places very likely over **Punjab, Haryana, Chandigarh & Delhi** and **Uttar Pradesh** on 5th, dense to very dense fog very likely at a few places over **East Uttar Pradesh** and at isolated places over **Punjab Haryana, Chandigarh & Delhi, north Rajasthan** from 6th to 9th, dense fog at a few/isolated places over lower regions of **Himachal Pradesh & Uttarakhand**, dense fog at a few places very likely over **Bihar** and at a few/isolated places over **Sub-Himalayan West Bengal** during the period, 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 **South Telangana Zone**, to overcome cold wave conditions 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.
- As rainfall is very likely at most/many places over **Andman & Nicobar Islands** on 5th & 6th January, avoid intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- In Sub Humid Southern Plain and Aravalli Hill Zone of **Rajasthan**, 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 ml/ litre of water is recommended. In Mustard and Fenugreek, for control of moyala, application of Dimethoate 30 EC @ 1Litre /ha is advised.
- In the Hill Zone of **Assam**, foggy weather may cause blight disease in tomato. Alternate application of Ridomil MZ-72 (2g/litre) and Indofil M-45 2.5g/litre of water at 15 days interval can prevent the disease. Keeping in view of high relative humidity, farmers are advised to do monitoring of late blight in potato & advised to spray Dithane-M-45@ 2g/litre of water.
- In view of the cold wave conditions in **Punjab, Haryana, Chandigarh & Delhi, north Rajasthan, Vidarbha, Bihar, Jharkhand, Odisha, East Madhya Pradesh** and **Chhattisgarh** during the period, keep animals inside the sheds during night and provide dry bedding to protect them from cold. Animals should be given mineral mixture along with salt regularly and wheat grains, jaggery etc. may be provided @ 10%-20% in the daily ration during winter season to meet the energy requirement of the animals, 10% extra dry matter should be provided over and above the total requirement to fulfill the extra energy requirement in winter. In Poultry, keep the chicks warm by providing artificial light in the poultry sheds.

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

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
 - As strong winds speed reaching 35-45 kmph occasionally are likely along and off Tamilnadu coast from 5th to 7th and strong winds speed reaching 45-55 kmph occasionally are likely along and off Tamilnadu coast on 8th and 9th January. Fishermen are advised to be cautious while venturing into the sea along and off Tamilnadu coast.
 - As cold wave conditions very likely at isolated places over Telangana during the period, 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 Problem Area Zone, continue harvesting of mature nutmeg fruits. Maintain water level at 5 cm in rice fields and keep rice fields weed free. To prevent viral diseases in cow pea, prepare neem oil emulsion by diluting 65 ml of neem oil in 1 litre of water with bar soap as emulsifying agent. Use fruit traps or tulsii traps in bitter gourd to control fruit flies.
 - In the Southern Zone, spray Malathion 400 ml in 200 litres of water to control rice bug during panicle initiation stage. Try to complete the spray before 9 am. If there is the symptoms of Kokkan disease in banana plantation, apply Rogor 1.5 ml/1 litre of water to control vectors. Leaf spot disease in amaranthus can be controlled by spraying 8g baking soda, 32g turmeric powder @ 4 g/ litre of water.
 - In the Northern Zone, for control of Mosquito bug – blight disease in cashew plantation, spray the solution of lamda cyhalothrin insecticide 3ml+ copper oxychloride fungicide 5g dissolved in 5 litres of water. Feeding by hopper causes yellowing followed by browning of leaves in okra. Spray Nimbicidin @ 4 ml/ litre or Thiomethoxam @ 2ml/ 10 litres of water.
 - In the Central Zone, apply neem based pesticides @ 3 ml per liter of water for rice bug infestation. Pesticides application should be done either before 9 am or after 3 pm. To control white fly, spray mixture of 2% neem oil emulsion with 20 g of biocontrol agent (Verticillium) on lower sides of leaves. If infestation of pseudostem weevil is noticed, the leaf axils and holes on pseudo stem will be drenched with chlorpyrifos 2 ml or quinalphos 2 ml per litre of water.
 - **Andhra Pradesh:**
 - In the North Coastal Zone, harvest sugarcane crop to ground level. Ratoon immediately after harvesting. Spray Chlorpyrifos @ 2.5 ml/litre or Acephate @ 1.5 g/litre of water for aphids and maruca pod borer in red gram and for control of sucking pests in groundnut crop, spray Dimethoate @ 2 ml/litre of water.
 - In the Krishna Godavari Zone, carry out harvesting of paddy when rice when at least 80% of grains have matured. Keep harvested paddy in the field for 2-3 days for drying.
 - In the Krishna Godavari Zone, after 120 days of cotton sowing, spray two times synthetic Pyrethroid products like Cypermethrin 1.0 ml or Lamda – Cyhelomethrin 1.0 ml /litre of water for protection against pink boll worm. Spray Monocrotophos 1.6ml or Acephate 1.0 g or Fipronil 1.5ml or Dimethoate 2 ml or Spinosad 0.3ml or Acetamiprid 0.2 g per litre of water for thrips in Rabi pulses like black gram/green gram. Spray Monochrotophos 1.6ml or Acephate 1.0g or Quinolphos 2 ml or Thiodicarb 1 g per liter of water for Spodoptera exigua in chick pea crop.
 - In the Scarce Rainfall Zone, prevailing conditions are favorable for incidence of spotted pod borer and helicoverpa in red gram, spray Chloropyrifos @1.5ml/ Novaluron @1ml / Flubendamide @0.2 ml + Nuvan @1ml per one litre of water. For the incidence of bacterial wilt and fungal disease in pomegranate, spray Carbendazim @ 1 g/litre + Streptocyclin 0.5 g/1 litre of water is recommended. If Incidence was noticed immediately spray Quinalphos @ 2ml/litre or Chlorpyrifos @ 2.5 ml or Thiodicarb @1.5 g per litre of water is recommended. Incidence of pod borer and tobacco caterpillar is observed and the present weather conditions are favorable for further spread of the pests. For control, farmers are advised to spray Novaluron@1ml or Thiodicarb@1.5gm or Rynoxypyr@0.2ml per litre of water.
 - In the Southern Zone, spray Dithane M-45 3 g. or Redomil MZ 2g per litre of water for control of leaf blight in tomato. Spray Tricyclozole (Beem) @ 0.6 g per litre of water to control blast disease and spray Chloripyriphos @ 2.5 ml. (or) Cartap Hydrochloride @ 2 g. (or) Acephate @ 1.5 g per litre of water (or) Flubendamide @ 40 ml. or 40 g./acre to control leaf folder and stem borer in paddy. At present, as redgram crop is at pod formation stage, the weather conditions are favourable for pod fly occurrence. To control spray, Monocrotophos @ 1.6 ml + DDVP @ 1 ml/litre of water. To control spray Monocrotophos @ 1.6 ml.(or) Imidachloprid @ 0.3 ml./Litre of water.
 - **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, to avoid the salt injury in nursery paddy, frequently drain out the water and apply higher dose of nitrogen to speed up growth. Provide irrigation during flowering and grain filling stage in sorghum crop, two

irrigations at flower initiation stage in Bengal gram crop and one irrigation at pod development stage in red gram crop.

- In South Telangana Zone, incidence of shoot borer is noticed in maize. To control, spray Chlorpyrifos @ 2.0 ml or Acephate @ 1.5 g per litre of water at 10-15 days after sowing. If crop is at 25-30 days stage apply Carbofuran 3G granules @ 3-4 kgs per acre in leaf whorls. 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 Western Zone, since, the wind speed is 10-12 kmph, double line propping may be given to late planted sugarcane against lodging. Prepare the land for planting early season sugarcane.
- 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, due to high relative humidity and optimum low temperature, Cercospora leaf spot is seen in the irrigated tapioca crops. Spray mancozeb 2g/litre of water twice at 15 days interval.
- In the Southern Zone, prevailing weather conditions are congenial for occurrence of Stem borer in cotton. To manage this soil application of Carbofuran 3G 30 kg may be done on 20 days after sowing.
- In the South Zone, thrips incidence was noticed in chilli. For controlling this pest, spray Imidachloprid 17.8 % SL @ 3 ml/ 10 litre of water or Dimethoate 30 % EC @ 1.0 ml/litre. 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 Chlorpyrifos 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 North Transition Zone, provide irrigation to wheat, sorghum and Bengal gram crops as per requirement. undertake repeated intercultural operations to create soil mulch.
- In Southern Transition Zone, complete sowing of short duration pulses like horse gram, chickpea, green gram and black gram crops. Undertake harvesting of matured sugarcane.
- In North East Dry Zone, complete harvesting of matured red gram and Bengal gram crops. Continue last picking of cotton in early sown cotton and third picking of seed cotton in late sown cotton.
- In Hill Zone, continue sowing of green gram and black gram. Apply irrigation to arecanut plants.
- In Southern Dry Zone, deep ploughing in rice fields is recommended which helps to reduce pest incidence for the next rice crop.
- In Eastern Dry Zone, clear the weeds in mango, guava, sapota orchard; put it under the basin as mulch.
- In North East Transition Zone, continue planting of sugarcane (variety Co-86032) crop.
- 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 /liter of water.
- In North Transition Zone, there is a chance of leaf reddening in late sown cotton due to lower atmospheric temperatures; for control, spray 1% MgSO₄ or 2% Urea/DAP. 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 Hexaconazole 5 EC / litre 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 50EC @ 2 ml or Monocrotophos 36SL @ 1.5 ml or Phosphamidon 40EC @ 0.5 ml /litre of water.
- In Coastal Zone, for effective management of tea mosquito bug in cashew, spray Imidacloprid @ 0.5 ml/ liter of water. For management of budrot in coconut, scrape the infected part and apply a mixture of Metalaxyl + Mancozeb @ 2 g / liter of water or apply 1 percent Bordeaux paste.

• **Animal Husbandry**

- In North and South Telangana Zones, treat/vaccinate cattle against FMD and HS; vaccinate sheep/goat against sheep pox disease, ET and PPR and vaccinate poultry birds against Ranikhet disease.
- 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. In North East Transition Zone of Karnataka, for effective management of livestock ectoparasites, application of Flumethrin 1% is recommended.

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

- **Realised Rainfall:** Rainfall occurred in Dimapur district of Nagaland 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, as mainly dry weather would prevail, continue harvesting of matured rice. 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 Sali/kharif rice. Continue harvesting of ginger and turmeric crops. Continue transplanting of 3-5 weeks old seedlings of cabbage, cauliflower and broccoli.
 - 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 wheat crop 25 days after sowing.
 - 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 Hill Zone of Assam, continue nursery sowing of Boro paddy varieties like Mahsuri, IR-50, Dinanath, Bishnuprasad, Jyotiprasad, Kanaklata and Dinanath in nursery bed during this month. Provide irrigation to rape seed and mustard crops at 50% flowering stage. Undertake harvesting of mature Sali rice and matured balls of cotton.
 - In the North Bank Plain Zone, undertake transplanting of Boro rice seedlings in the main field. Complete sowing of wheat and rabi pulses like lentil, rajmah, pea and lathyrus during this week.
 - In the Upper Brahmaputra Valley Zone, continue transplanting of Boro paddy in the main field. Carry out manual weeding at 40-45 days after transplanting followed by light irrigation in the cole crops like cabbage, cauliflower, knol-khol etc. Continue pruning of tea crop up to mid-January. Prune at 2 cm above the previous pruning height.
 - In the Upper Brahmaputra Valley Zone, spray potato crop with Mancozeb @ 2.5gm/litre of water as prophylactic measure against late blight disease. Spray Indofil M-45 @ 2.5g/litre of water for blight disease in tomato. To protect the cole crops from leaf eating caterpillar, spray Malathion 50EC @ 1.5ml/litre of water. Due to favourable weather alternaria blight disease may occur in the rapeseed crop. For effective control spray Dithane M-45 @ 2kg in 1000 litre of water per hectare at 10 days interval as soon as the symptoms start appearing on the plants.
 - In the Central Brahmaputra Valley Zone, carry out land preparation in the main field for transplanting Boro rice. Remove dead and dry leaves of sugarcane and tie 4-5 canes together to prevent lodging. For enhancing yield of rapeseed-mustard crops through increased pollination, 5 honey bee colonies/ha may be placed in the field after flowering.
 - In Meghalaya, undertake sowing of mustard, rapeseed, pea, lentil and chickpea crops. Carry out weeding, thinning & gap filling 10-15 days after sowing. Maintain proper soil moisture in the field by applying irrigation. Maintain proper soil moisture with the help of irrigation and mulching in cabbage, cauliflower and broccoli. Undertake harvesting of French bean, rajmash and cowpea crops. Undertake nursery bed preparation for tomato and capsicum.
 - In the Lower Brahmaputra Valley Zone, to protect cole crops from leaf eating caterpillars, spray Malathion 50EC @ 1.5 ml/litre of water.
 - 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. For effective control of fruit and shoot borer in brinjal apply Furadon @ 2.5 g/plant at 20 days after transplanting. For effective control of the wilting disease in brinjal crop, drench the soil using Streptocycline 6gm/20 litre of water.
 - In the Central Brahmaputra Valley Zone, to contro cutworm infestation in wheat crop, spray Quinolphos/ Chloropyriphos @ 2 ml/litre water in the evening hours.
 - In the North Bank Plain Zone, apply Dimethoate 30EC or Chloropyriphos @ 2ml/l with a spray volume of 500-700 litres/ha for hand sprayer & 200-250 litres/ha for power sprayer to control aphids in rape seed and mustard.

- In the Hill Zone of Assam, keeping in view of high relative humidity, farmers are advised to do monitoring of late blight in potato & advised to spray Dithane-M-45@ 2g/litres of water.
- In Arunachal Pradesh, apply need-based foliar spray of Sulfex@2g/litres water to control powdery mildew in black/green gram/pea.
- **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 and weeding in mustard field. Carry out thinning, weeding and earthing up in Rabi maize. Continue transplanting cabbage and cauliflower. Continue sowing of lentil and linseed in rice field under zero tillage. Open a narrow furrow between two rows of rice crop and sow the seed.
- In Manipur, for organic control against aphids in lentil, black gram, pea, rape seed and mustard crops, spray Azadirachtin, neem oil or Pyrethrin. 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 Ridomil or Indofil or Mancozeb @ 2 gm per liter of water to manage blight disease in tomato crop.
- **Animal Husbandry**
- In Arunachal Pradesh, provide proper bedding materials especially to new-born piglets and lukewarm food & water. Deworm animals with anti helmetic 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.
- In Mizoram, provide glucose/electral along with vitamin supplements @5- 6ml/100 birds with adequate potable water to poultry birds.
- In Nagaland, protect poultry birds from cold by covering the exposed windward areas using gunny bags and other locally available materials. De-worm the birds once every 2 months.
- **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 Upper & Central Brahmaputra Valley Zone and North Bank Plain Zone of Assam, apply Potash @ 4-5 mg/lit of water, Sukrena WS @ 1 lit per bigha of water and lime in required doses to protect the fish population against various bacterial diseases prevalent in winter season.
- In Tripura, cover poultry house with gunny bags/ polythene sheet to prevent the expose of animal to cool night. Heating during night may also be given to less than 21 days old chicks.
- 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:**
 - As cold wave conditions very likely at isolated places over Vidarbha during the period, 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.

▪ **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. As dry weather is prevailing apply irrigation to groundnut, sunflower and mustard.
- In Madhya Maharashtra, as dry weather is prevailing, apply irrigation to standing rabi crops, vegetables and orchards during evening hours. Complete picking of cotton. As minimum temperature is expected below 10°C during next 2-3 days apply irrigation to *rabi* crops, vegetables, grape vines and orchards during evening hours to protect from cold. Cover the banana bunch with 6% perforated white plastic bag.
- In Marathwada, apply irrigation to banana orchard early in the morning to protect the crop from low temperature. Also apply irrigation to grape vines and vegetables. Continue harvesting of matured early sown pigeonpea crop.
- In Vidarbha, as dry weather prevailed during last week, irrigate *rabi* crops and vegetables as per requirement. Apply second dose of nitrogenous fertilizer @ 50 kg per hectare to wheat crop if not given earlier. In Madhya Maharashtra, for control of aphids in cabbage and borer in cauliflower, spray Malathion 50 EC @ 20 ml per 10 litre of water or apply 4 % neem extract. If attack of aphids noticed in sorghum & safflower, spray 25 WG Thiamethoxam @ 50 g or Diamethoate 30 EC @ 725 ml or 20% Acetamiprid @ 100 ml per 500 litre of water per hectare.
- In Marathwada, if attack of aphids noticed in *rabi* sorghum, spray Dimethoate 30 % @ 10 ml per 10 liter of water.
- In Vidarbha, to control aphids in wheat, spray Dimethoate 30 EC @ 10 ml or 25 WG Thiamethoxam @ 50 g in 10 litres of water. To control pod borer in gram, spray Quinolphos 25% SC @ 20 ml or chlorpyrifos 20 SC @ 25 ml per 10 liter of water.

▪ **Gujarat:**

- In South Gujarat Heavy Rainfall zone, undertake transplanting of cole crops. Complete nursery sowing of summer rice. Continue new plantation of sugarcane. Carry out intercultural operations in pulse crops.
- In South Saurashtra Zone, continue picking of cotton during morning hours and undertake picking of matured clusters of castor. Apply irrigation to wheat, pigeon pea, cumin, garlic, onion and coriander crops at regular interval.
- In North Gujarat Zone Gujarat, undertake harvesting of matured spikes of castor. Apply light irrigation in wheat crop and pomegranate orchard.
- In North Gujarat Zone and North West Zone of Gujarat, continue sowing of water melon and harvesting of mature fruits of vegetable and fruit crops.
- In North Saurashtra Zone and South Gujarat Zone, apply irrigation in wheat.
- In Middle Gujarat Zone, undertake intercultural operations in chickpea, wheat. Apply irrigation to wheat, pigeon pea, cumin, chickpea and castor crops.
- In Bhal and Coastal Zone, apply irrigation in mustard, wheat and castor. Undertake harvesting of cotton. Carry out intercultural operations in vegetable (brinjal, chilies, tomato and cabbage) crops.
- 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, for effective control of pod borer in chickpea, spray Fenvalerate @ 20 ml /10 liters of water.
- In North 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.
- In Bhal and Coastal Zone of Gujarat, to control powdery mildew in cucurbits, spray the dust 20 kg/ha 300 mesh sulphur to manage the disease.

• **Animal Husbandry**

- In Gujarat, keep young calves indoors during night time to avoid cold stress. Provide dry fodder to animals twice a day.
- In Vidarbha, use electric bulbs in poultry and apply two drops of Eucalyptus oil in the nose of animals for protection against cold.
- In Marathwada, due to low temperature animals like goats, sheeps may suffer from nasal discharge or blowing of nose, put two drop of eucalaptus oil in nose or apply vicks vaporub on nostril in kids.

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 rainfall is very likely at most/many places over Andman & Nicobar Islands on 5th & 6th January, avoid intercultural operation and application of plant protection measures and fertilizers to the standing crops.
 - As cold wave conditions very likely at a few/isolated places along with ground frost conditions over Bihar and Jharkhand during the period and cold wave conditions at isolated places over Gangetic West Bengal and Odisha during the period, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold/frost 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 very likely over Bihar and at a few/isolated places over 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 North Central Plateau Zone, continue land preparation and nursery sowing of *rabi* paddy in irrigated areas Use var. like Pyari, Lunasankhi, Lalata, Naveen, Konark, MTU-1010, MTU-7029, Vijeta etc. Apply irrigation in wheat at CRI stage.
 - In Western Undulating Zone, continue sowing of pre germinated rice seed in puddled nursery bed. Prepare the main filed for transplanting at three week stage of seedling. Continue harvesting of matured rice. Continue transplanting of onion. Continue plucking of matured castor and harvesting of sugarcane. Provide light and frequent irrigation to vegetable crops and paddy nursery seedlings as dry weather is prevailing and night temperature may drop to 9^oC.
 - In North Eastern Coastal Plain Zone, continue nursery sowing of SRI rice. As temperature will remain low, cover the nursery bed with FYM & paddy straw/banana leaves after sowing. Complete sowing of groundnut.
 - In North Eastern Plateau Zone, complete nursery sowing of rice. Apply irrigation in wheat at CRI stage. Complete sowing of pulses and groundnut.
 - In Mid Central Table Land Zone, continue harvesting of matured rice. Complete sowing of pulses and groundnut at the earliest.
 - In South Eastern Ghat Zone, complete nursery raising of summer rice. As temperature will remain low cover the nursery beds for better germination and growth of seedlings. Continue weeding in groundnut.
 - In Eastern Ghat High Land Zone, continue harvesting of matured rice. Continue nursery sowing of summer rice. Continue sowing of green pea in the fallow uplands. Apply light and frequent irrigation in vegetables in morning and evening hours to protect from low temperature.
 - In North Central Plateau and Mid Central Table Land Zone, to control fruit and shoot borer in brinjal, spray Neem based pesticide 1500 ppm @ 600ml/acre at initial stages. Spray Spinosad 45% SC @ 70ml/acre and Thiodicarb @ 250g/acre at 15 days interval alternately.
- **Bihar:**
 - In North West Alluvial Plain Zone, under the prevailing low temperature and cold wave condition, apply light and frequent irrigation in vegetables. Apply irrigation in wheat crop at tillering stage.
 - In South Bihar Alluvial Zone, apply irrigation at tillering stage in timely sown wheat and at CRI stage in late sown wheat. Continue thinning and weeding in mustard.
 - In North East Alluvial Zone, continue transplanting of seedlings 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 @ 2.0 gm/litre of water.
 - In South Bihar Alluvial Zone, apply Mancozeb or Zineb or Copper Oxychloride @ 3 kg per 1000 litre of water per hectare to protect the tomato crop from late blight disease.
- **Jharkhand:**
 - In South Eastern Plateau Zone, keep inputs ready for raising summer rice nursery. Apply irrigation in wheat (CRI stage), mustard and linseed crops as per requirement. Undertake intercultural operations in pea.
 - 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 at CRI stage.
 - In Western Plateau Zone, those farmers facing potato infestation with late blight are advised to apply Krilaksil or Ridomil MZ chemical @ 1.5 g per liter of water to check it from further spreading. In some places potato is at vegetative growth stage and curling of leaves is seen. To control this, Caldan 50 SP @ 1 g per liter of water should be sprayed.
 - In South Eastern Plateau Zone, there are chances of attack of aphids in mustard (high humid, foggy weather and partial cloudy condition), spray Rogor (Dimethoate) @ 2 ml or or Monocrotophos 36 EC @ 1 ml/litre of water during evening time.
 - 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. 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. Carry out weeding followed by irrigation in the Mandarin orange the orchard. Apply irrigation to wheat at 21 days after sowing. Provide light irrigation to mustard and undertake earthing up operation in potato. Continue harvesting of ginger and turmeric seed rhizome.
 - In Laterite and Red Soil Zone, carry out hand weeding in potato fields. Apply light irrigation to potato crop.
 - In New Alluvial Zone, undertake sowing of spinach, coriander, fenugreek may be done in present weather

conditions.

- In Old Alluvial Zone, spray Nemastra (Nemastra = 5 kg Neem leaf + 5 liter cow Urine + 2 kg row cow dung) @10ml/liter of water in the evening hours to control different insects & pests transplanted cabbage, cauliflower, brinjal, chilli, etc. To avoid the incidence of Alternaria blight of Mustard, spray Copper Oxy- chloride @ 3-4gram /liter of water. If after germination lentil plants show yellowing leaves, spray Carbendazim @ 2 gram/liter water. For each spraying take 5stanks of water (15 liter) for one bigha.
- In the New Alluvial Zone, spray Carbendazim @ 1.0 gm / litre of water or Dithane-M-45 @ 2.0 gm / litre of water if infection of blight occurs in potato. 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 Laterite and Red Soil Zone, spray Imidacloprid @1ml/1.5 lit of water to control aphids in mustard. Spray Neem Seed Kernal Extract solution @ 30ml/litre of water for aphids and Neem Seed Kernal Extract solution @ 50ml/litre of water for Diamond Blackmoth in cabbage/cauliflower.

▪ **Andaman & Nicobar Islands**

- In North and Middle Andaman, undertake land preparation and sowing of seeds of bitter gourd, bottle gourd and snake gourd as the 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 during rain free days.
- In the Nicobar Islands, make basin around the coconut tree to harvest rain water.

• **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 Andaman and Nicobar Islands, provide Amprolium oral medicine and sulfa drugs after consultation with nearby veterinary clinic to cure coccidiosis in poultry birds, Provide at least 16 hrs light during cloudy weather to poultry and back yard rearing by providing bulbs in the shed during night.
- 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:**

- As cold wave and ground frost conditions very likely at isolated places over East Madhya Pradesh on 5th, over Madhya Pradesh from 6th to 9th, over Chhattisgarh during the period, apply light and frequent irrigation/sprinkler irrigation in the evening to protect the crops from cold/frost injury. To protect young fruit plants from chilly winds, cover young fruit plants with straw/polythene sheets/gunny bags.

▪ **Madhya Pradesh:**

- In Bundelkhand Zone, apply irrigation in wheat at tillering stage and then apply remaining dose of fertilizer.
- In Central Narmada Valley Zone, apply irrigation in wheat. Continue intercultural operations in vegetables and chickpea.
- In Nimar Valley Zone, apply 30kg Urea per acre after first irrigation in wheat crop.
- 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 cotton bolls. Apply irrigation and recommended dose of fertilizers in winter vegetable i.e. tomato, cauliflower, cabbage, potato, pea, fenugreek, spinach, radish etc. 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 Nimar Valley Zone, there are chances of attack of pod borer in arhar, spray Indoxacarb @ 1 ml/litre of water.
- In Bundelkhand Zone, due to foggy sky and increased humidity potato crop may be affected by early blight, spray Mencozeb @ 2.5 ml per 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 gram, lathyrus and lentil crops 40-45 days after sowing.
 - In Bastar Plateau Zone, apply irrigation in wheat.
 - In North Hill Zone, apply 2nd irrigation in wheat at tillering stage and then apply 30kg nitrogen per hectare. Undertake intercultural operations in vegetables.
 - 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 conditions very likely at a few places over East Uttar Pradesh on 5th, over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh, at isolated places over Rajasthan from 6th to 9th 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 East Rajasthan and Uttar Pradesh during the period, apply light and frequent irrigation in standing crops. In cash crops, spray of 0.1 percent H₂SO₄ should be done.
 - As dense fog at a few places with very dense fog at isolated places very likely over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh on 5th, dense to very dense fog very likely at a few places over East Uttar Pradesh and at isolated places over Punjab Haryana, Chandigarh & Delhi, north Rajasthan from 6th to 9th, dense fog at a few/isolated places over lower regions of Himachal Pradesh & Uttarakhand, monitor the standing crops for incidence and spread of pest diseases, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake plant protection measures.
 - **Jammu & Kashmir:**
 - In Sub Tropical Zone, apply 2nd dose of urea (25% of basal dose) as top dressing in wheat. Undertake hoeing, weeding and thinning operation in very late sown mustard crop.
 - 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. Apply 3rd dose of nitrogenous fertilizer in cabbage, cauliflower and broccoli in green houses.
 - In Intermediate Zone, as clear weather conditions are prevailing, carry out intercultural operation (hoeing) in one month old wheat crop. Continue light weeding and hoeing in vegetables followed by irrigation depending upon soil moisture conditions.
 - In Valley Temperate Zone, provide drainage channels in wheat, lentil, oat, pea fields wherever there is probability of water accumulation during winter month. Complete transplanting of onion. Provide proper drainage in apple orchards.
 - In Sub Tropical Zone, to control early blight in tomato and potato, spray Mancozeb @ 0.25% at 15 days interval.
 - In Intermediate Zone, weather conditions are favourable for the attack of alternaria blight in mustard crop. If observed in the crop, apply Mancozeb @ 2.5 g/liter of water and Ridomil MZ @ 2.5 g/liter of water.
 - **Uttarakhand:**
 - In Sub Humid Sub Tropic Zone, as mainly dry weather would prevail, apply light irrigation in oat and wheat. Undertake digging up of matured tubers of early sown potato.
 - In Hill Zone, apply light irrigation in potato, continue intercultural operations in vegetables.
 - In Bhabar and Tarai Zone, continue weeding and hoeing in sugarcane crop and apply remaining dose of nitrogen. 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.
- In Solan Shimla, Bilaspur and Sirmour districts of Mid Hills Sub Humid Zone, continue transplanting of onion. To protect the nursery of mango, litchi and citrus fruits etc. against frost, keep the soil well moist, apply light irrigation and cover the nursery bed with shed net. Continue cultivation of mushroom.
- In Sub-Monate 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.

▪ **Punjab & Delhi:**

- In Western Zone of Punjab, apply irrigation in wheat and apply second dose of nitrogen. Apply light irrigation in mustard, vegetables and fruit plants to protect from low temperature.
- In Western Plain Zone of Punjab, apply 2nd irrigation in timely sown wheat and 1st irrigation in late sown wheat and apply second dose of nitrogen. Continue harvesting of sugarcane. Apply irrigation in mustard to save from frost and undertake thinning and weeding in late sown mustard.
- In Undulating Plain Zone of Punjab, apply irrigation in wheat, sugarcane, oilseeds and vegetables. Continue intercultural operations in vegetables and oilseeds. Cover young fruit plants and nursery plants with thaches /sarkanda/plastic sheet to save from low night temperature.
- In Delhi, apply 1st irrigation in late sown wheat. Undertake 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 the crop with Indofil M-45/Markzeb/Kavach @ 500-700 g in 250-350 litres of water per acre.
- In Delhi, spray Dithane-M-45 @ 2 g/litre of water or Carbandazim @ 1 g/litre of water along with Tepol (sticky material) in the seed potato crop for control of late blight.

▪ **Uttar Pradesh:**

- In Central Plain Zone, apply irrigation in wheat at CRI stage. Continue transplanting of onion. Continue harvesting of matured vegetables.

▪ **Rajasthan:**

- 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. In Jodhpur district undertake nursery sowing of vegetables like brinjal and tomato.
- In Flood Prone Eastern Plain Zone, apply irrigation in wheat and continue weeding.
- 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 Punjab, keep the chicks warm by providing artificial heat. Keep the animals under roof at night time. Dry bedding should be provided to animals to save them from cold.
- 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 of brood area, if needed at the start of the month. Sulphur dusting should be continued at fortnight interval.

- The Agromet Products in this Bulletin are generated by Agrimet Division, weather forecast issued by NWFC, New Delhi and Agromet Advisories are prepared based on the DAAS Bulletins issued by different Agrometeorological Field Units.