



National Agromet Advisory Service Bulletin

Friday 7th December 2018

(For the period 7th to 12th December 2018)



Issued by

India Meteorological Department

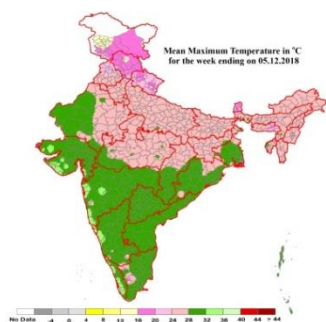
Weblink For

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

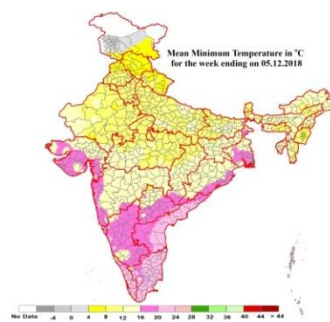
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

Spatial distribution of weather parameters for the week ending on 05.12.2018

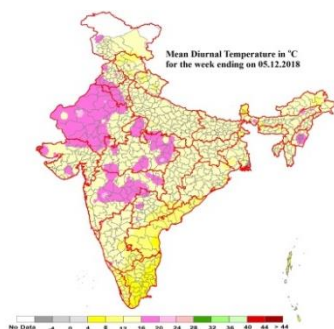
Mean Maximum Temperature (°C) for the week ending on 05.12.2018



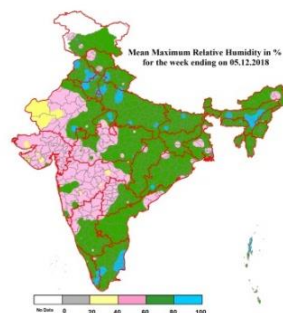
Mean Minimum Temperature (°C) for the week ending on 05.12.2018



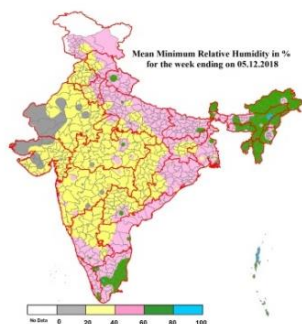
Mean Diurnal Temperature Variation (°C) for the week ending on 05.12.2018



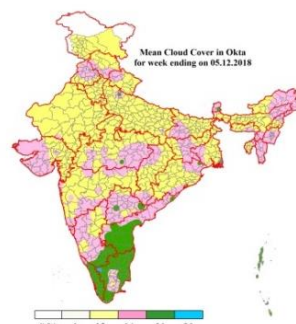
Mean Maximum Relative Humidity (%) for the week ending on 05.12.2018



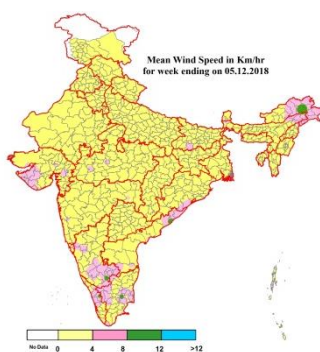
Mean Minimum Relative Humidity (%) for the week ending on 05.12.2018



Mean Cloud Cover (okta) for the week ending on 05.12.2018



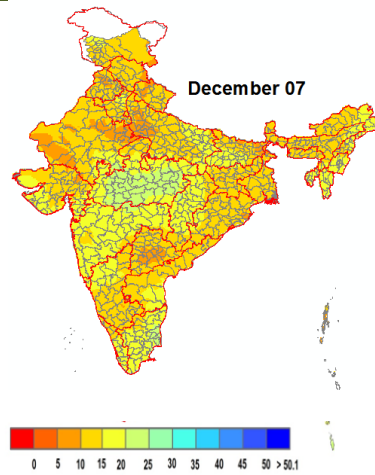
Mean Wind Speed (km/hr) for the week ending on 05.12.2018



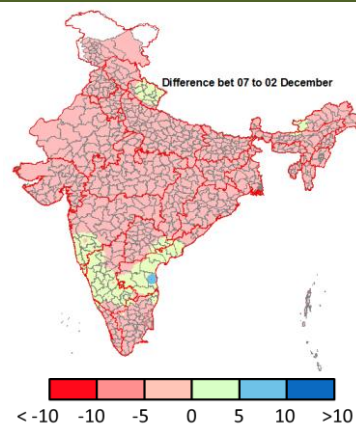
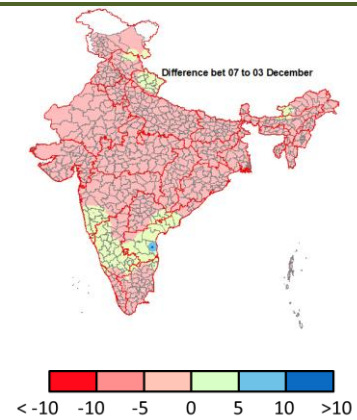
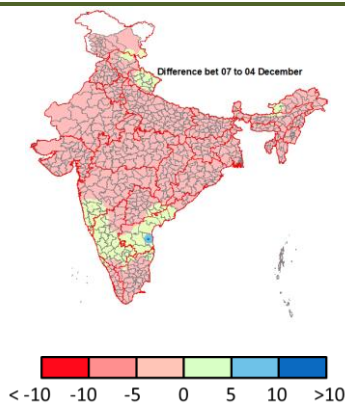
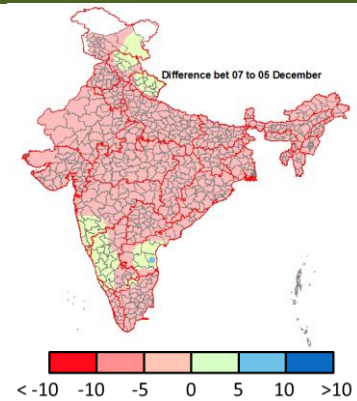
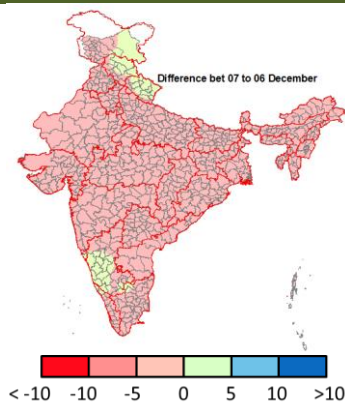
NOAA/VIIRS BLENDED NDVI composite for the week number 48 (26.11.2018 to 02.12.2018) over Agricultural regions of India	Difference in NOAA/VIIRS/BLENDED NDVI between week number 48 and 47
<ul style="list-style-type: none"> Agriculture vigour is good at a few places over Uttarakhand, North Eastern states, Sikkim, Odisha, Konkan & Goa; at one or two places over Himachal Pradesh, Jharkhand and adjoining Chhattisgarh, East Madhya Pradesh, East Rajasthan, Gujarat, Interior Karnataka, North Telangana and Andhra Pradesh. It was moderate over rest of the country. 	<ul style="list-style-type: none"> Moderate difference in agricultural vigour at most places was noticed over Punjab; at many places over Tamilnadu, Haryana, West Madhya Pradesh, interior Maharashtra & Karnataka, Rayalaseema and South Coastal Andhra Pradesh; at a few places over Rajasthan, Gujarat, Jammu & Kashmir, Himachal Pradesh, West Uttar Pradesh & Kerala and at isolated places over rest of the country.

Standardised Precipitation Index Cumulative 4 weeks for the period 8th November to 5th December 2018	
<p style="text-align: center;">MINISTRY OF EARTH SCIENCES INDIA METEOROLOGICAL DEPARTMENT HYDROMET SECTION, PUNE</p>	
<ul style="list-style-type: none"> Extremely/severely wet conditions experienced in few districts of Arunachal Pradesh; Sant Kabir Nagar district of Uttar Pradesh; Kottayam district of Kerala. Moderately dry conditions experienced in East Kameng district of Arunachal Pradesh; East Khasi Hills district of Meghalaya. Rest of the country experienced moderately wet/mildly dry/mildly wet conditions. 	

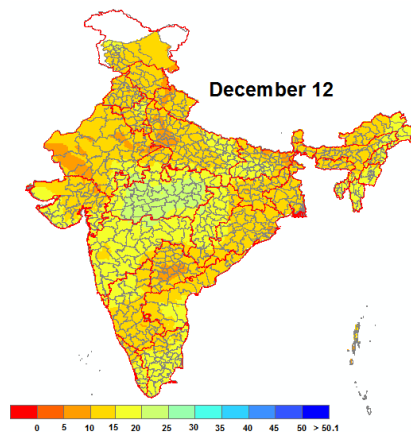
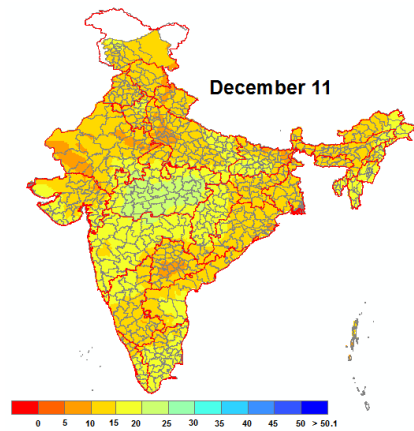
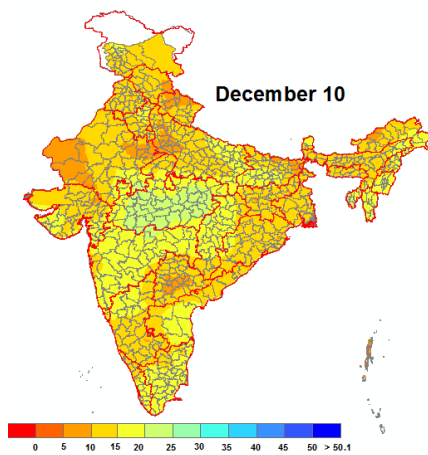
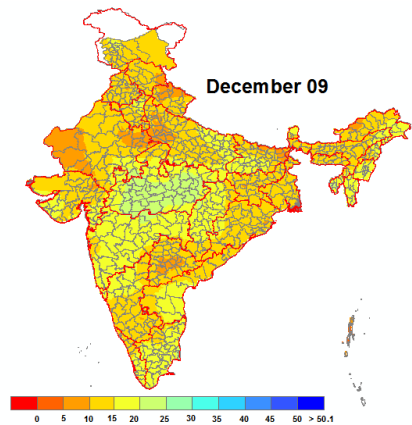
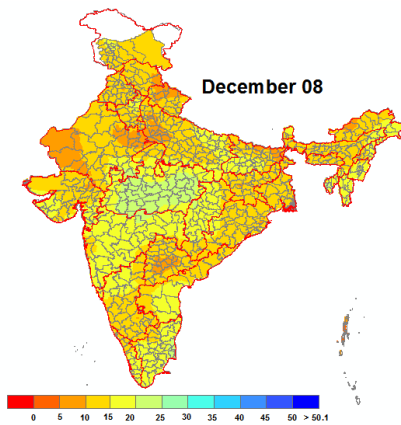
Daily Soil Moisture (mm) for 7th December 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 8th to 12th December 2018 (ending at 0830 IST)
for 60 cm depth**



Weather Forecast for next 5 days valid upto 0830 hours of 12th December 2018

- Meteorological sub-division wise detailed 5 days precipitation forecast is given in Table below.
- Shallow to moderate fog at few places with dense fog at isolated places in morning hours is very likely over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, Himachal Pradesh, Uttarakhand, Coastal Odisha, Bihar and northeastern States during next 3 days and over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during next two days.
- Shallow to moderate fog at isolated places in morning hours is very likely over Bihar during next three days, over north coastal Odisha for one day and over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during on 09th, 10th & 11th December.
- No significant change in minimum temperatures likely over major parts of the country during next 3 days.

5 Day Rainfall Forecast (Mid-day) 7th December 2018

Met-Sub-Division	07-Dec Today	08Dec Sat	09Dec Sun	10Dec Mon	11Dec Tue
1. Andaman & Nicobar Islands	SCT	FWS	FWS	FWS	FWS
2. Arunachal Pradesh	ISOL	DRY	DRY	DRY	ISOL
3. Assam & Meghalaya	ISOL	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	ISOL	ISOL
11. West Uttar Pradesh	DRY	DRY	DRY	ISOL	ISOL
12. Uttarakhand	DRY	DRY	DRY	ISOL	ISOL
13. Haryana, Chd & Delhi	DRY	DRY	DRY	ISOL	ISOL
14. Punjab	DRY	DRY	DRY	ISOL	ISOL
15. Himachal Pradesh	DRY	DRY	ISOL	SCT	SCT
16. Jammu & Kashmir	DRY	ISOL	SCT	FWS	SCT
17. West Rajasthan	DRY	DRY	DRY	ISOL	DRY
18. East Rajasthan	DRY	DRY	DRY	ISOL	DRY
19. West Madhya Pradesh	DRY	DRY	DRY	ISOL	DRY
20. East Madhya Pradesh	DRY	DRY	DRY	ISOL	ISOL
21. Gujarat Region	DRY	DRY	DRY	DRY	DRY
22. Saurashtra & Kutch	DRY	DRY	DRY	DRY	DRY
23. Konkan & Goa	ISOL	DRY	DRY	DRY	DRY
24. Madhya Maharashtra	ISOL	ISOL	ISOL	DRY	DRY
25. Marathwada	DRY	DRY	DRY	DRY	DRY
26. Vidharbha	DRY	DRY	DRY	ISOL	ISOL
27. Chhattisgarh	DRY	DRY	DRY	ISOL	ISOL
28. Coastal Andhra Pradesh	ISOL	DRY	DRY	DRY	DRY
29. Telangana	DRY	DRY	DRY	DRY	DRY
30. Rayalaseema	ISOL	DRY	DRY	DRY	DRY
31. Tamilnadu & Puducherry	ISOL	ISOL	ISOL	ISOL	ISOL
32. Coastal Karnataka	ISOL	DRY	DRY	DRY	DRY
33. North Interior Karnataka	ISOL	DRY	DRY	DRY	DRY
34. South Interior Karnataka	ISOL	DRY	DRY	DRY	DRY
35. Kerala	ISOL	ISOL	ISOL	ISOL	ISOL
36. Lakshadweep	ISOL	ISOL	ISOL	ISOL	ISOL

% 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

- **07 December (Day 1):** Shallow to moderate fog at few places with isolated dense fog is very likely over Punjab, Haryana, Himachal Pradesh, Uttarakhand, West Uttar Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.
- **08 December (Day 2):** Shallow to moderate fog at few places with isolated dense fog is very likely over Punjab, Haryana, Himachal Pradesh, Uttarakhand, West Uttar Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Squally weather is likely to prevail over southeast and adjoining Equatorial Indian Ocean. Fishermen are advised not to venture into these areas.
- **09 December (Day 3):** Heavy rain likely at isolated places over Andaman & Nicobar Islands. Shallow to moderate fog at few places with isolated dense fog is very likely over Punjab, Haryana, Himachal Pradesh, Uttarakhand and West Uttar Pradesh. Squally weather is likely to prevail over southeast & central parts of south Bay and adjoining Equatorial Indian Ocean. Fishermen are advised not to venture into these areas.
- **10 December (Day 4):** Heavy rain/snow likely at isolated places over Jammu & Kashmir. Heavy rain likely at isolated places over Andaman & Nicobar Islands. Squally weather is likely to prevail over central parts of south Bay and adjoining Equatorial Indian Ocean. Fishermen are advised not to venture into these areas.
- **11 December (Day 5):** No weather Warning.

Weather Outlook for subsequent 2 days from 12th to 14th December 2018

- Under the influence of the western disturbance, isolated precipitation likely over Western Himalayan region.
- Widespread heavy rainfall activity is likely over Andaman & Nicobar Islands and isolated over south peninsular India.
- Dry weather likely over the rest of the country.

Salient Advisories

- As squally weather is likely to prevail over southeast and adjoining **Equatorial Indian Ocean** on 8th, over southeast & central parts of **south Bay** and adjoining Equatorial Indian Ocean on 9th and 10th December, fishermen are advised not to venture into these areas.
- As rain/thundershowers likely at many places over **Andaman & Nicobar Islands** from 8th to 11th, along with heavy rain likely at isolated places on 9th and 10th, rain/snow likely at many places over **Jammu & Kashmir** on 10th, along with heavy rain/snow at isolated places on 10th December, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops. In Valley Temperate Zone of Kashmir, provide drainage channels in the saffron fields wherever there is probability of water accumulation.
- As shallow to moderate fog at few places with isolated dense fog very likely over **Assam & Meghalaya** and **Nagaland, Manipur, Mizoram & Tripura** on 7th and 8th, over **Punjab, Haryana, Himachal Pradesh, Uttarakhand, West Uttar Pradesh** from 7th to 9th December, 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 appropriate plant protection measures.
- In **Punjab**, due to foggy weather, farmers are advised to monitoring of mustard crop against attack of white rust. If infection is high, spray Dithane-M-45 @ 2 gm/litre of water. Also, monitor the mustard crop against attack of painted bug and aphid.

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

- **Realised Rainfall:** Rainfall occurred in the Alappuzha and Pathanamthitta districts of Kerala, Ariyalur, Cuddalore, Dindigul, Kanchipuram, Karaikal, Nagapattinam, Nilgiris, Perambalur, Puducherry, Pudukottai, Ramanathapuram, Sivaganga, Thanjavur, Tirunelveli, Tiruvallur, Tiruvarur and Trichy districts of Tamil Nadu, Nellore district of Coastal Andhra Pradesh during the week. Weather remained mainly dry/dry over rest of the region.
- **Advisories:**
 - **Kerala:**
 - In High Altitude Zone, continue planting vegetables such as cabbage & cauliflower. Also, there are chances of incidence of sigatoka leaf spot, panama wilt and rhizome rot, for managing sigatoka, remove the affected leaves and spray 0.4% Mancozeb along with sticker at intervals of 2 to 3 weeks. If disease incidence is severe, spray 0.1% propiconazole. For the management of fusarium wilt, remove severely affected plants and drench 1% Bordeaux mixture. To prevent the spread of the disease, drench 0.2% carbendazim or propiconazole 0.1%. For the management of rhizome rot, drench bleaching powder @ 5gm/litre.
 - In Northern Zone, drench the coconut palm basin (2m radius) with 40 litres of 1% Bordeaux mixture or soil drenching of Hexaconazole/contaf 25ml/25 litre of water once in 4 months.
 - In Central Zone, there are chances of army worm in paddy field, spray Chlorantraniliprole @ 3 ml per 10 litre of water in the field, bunds and weeds.
 - **Andhra Pradesh:**
 - In Coastal Andhra Pradesh, continue picking of cotton.
 - In High Altitude Zone, weather is congenial for incidence of diseases on vegetable crops. Monitor the fields regularly and take necessary control measures if diseases are noticed.
 - In Rayalaseema, undertake sowing of groundnut, sunflower, redgram, maize and fodder crops.
 - Weather is favourable for incidence of scale insect and ring spot and rust in sugarcane in North Coastal Andhra Pradesh. For control of scale insect remove dried leaves and spray Dimethoate @ 1.7 ml or Monocrotophos 1.6 ml. or Malathion @ 3.0 g and for ring spot and rust spray Mancozeb @ 3 g or Monocrotophos 1.6 ml per liter of water.
 - **Telangana:**
 - Continue nursery sowing of rice. Early sowing may be taken up to avoid the damage due to unseasonal rains & hailstorms during maturity.
 - Prevailing weather conditions are congenial for Incidence of shoot borer maize. 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 and Anthracnose in grapes, spray Propineb @ 3 g per liter of water within 20 days after pruning. in South Telangana zone.
 - Prevailing weather conditions may be congenial for maruca and helicoverpa in redgram. Spray Chlorpyrifos @ 2.5 ml or Novaluron @ 0.75 ml along with Dichlorvos @ 2.0 ml per litre of water in Northern Telangana zone.
 - **Tamil Nadu:**
 - In High Altitude Hilly Zone, due to the prevailing weather conditions, rust disease in coffee plantation, spray foliar of Bordeaux mixture @ 5 g/litre of water.
 - In Western Zone, since continuous cloudiness with high relative humidity may be favourable for the multiplication of brown plant hopper in rice, farmers are requested to monitor the crop and provide sufficient drainage and ventilation for more aeration. Further if any incidence noticed spray any one of the following chemicals directing the base of the rice crop: Phasalone 1500 ml /ha or Chlorpyrifos 1250ml/ha or Imidacloprid 100to 125ml/ha, Acephate 75 SP 625gm/ha or Dichlorvos 400ml/ha. Also, Present weather is favourable for downy mildew incidence in grapes. Monitor and spray 1% Bordeaux mixture or any other copper fungicide at 0.25%.
 - In Cauvery Delta Zone, leaf folder incidence is being noticed in the *Samba* rice fields and likely to increase in the prevailing weather condition. For control, spray Chlorantraniliprole 18.5 SC @ 60 ml/acre with 200 litre of water.
 - In High Altitude Hilly Zone, to protect the hill horticulture crops from low temperature during the coming months, mulching technique can be done.
 - In High Rainfall Zone, there are chances for increase in the severity of infection of rice stem borer and leaf folder, farmers are advised to spray Chlorantraniliprole 0.3 ml/l or Flubendiamide 0.1ml/litre.
 - **Karnataka:**
 - In North Interior Karnataka, provide protective irrigation to wheat, sugarcane, Bengal gram, niger, pigeon pea and vegetable crops. Spray the chickpea crop with 2% Urea solution at the flowering stage, which helps in increasing the yield. In Sugarcane ratoon crop, spray 0.25% Ferrous Sulphate + 0.5% Zinc Sulphate + 1% Urea in Iron and Zinc deficient soils. Undertake nipping in Bengal gram at 30-40 days after sowing. Carry out

intercultural operations in safflower, sugarcane and sorghum crops. Complete the harvesting of matured sugarcane crop within 8-10 days. Continue picking of matured cotton bolls and harvesting of chilli.

- In South Interior Karnataka, spray 0.25 ml Planofix in 1.0 liter of water against flower drop in pomegranate orchards. Complete harvesting of matured maize, rice, ragi and sugarcane crops. Complete sowing of horse gram, green gram, black gram crops. Apply irrigation to the dry land horticultural crops and other field crops depending on soil and crop condition.
- In Coastal Karnataka, continue cotton picking.
- In North Interior Karnataka, spray Thiamethoxam 25 WDG @ 0.2 g or Imidacloprid @ 0.3 ml / litre of water for controlling brown plant hopper in late transplanted rice crop. Spray Indoxacarb @ 0.3 ml/liter or Spinosad @ 0.2ml /liter of water for control of leaf eating caterpillar in Bengal gram crop.
- In South Interior Karnataka, to manage wilt in tomato, chili and capsicum crops, uproot the affected plants; spray Copper Oxychloride @ 3 g +500 mg Streptomycin Sulphate / liter of water to manage wilt in crops.
- In Coastal Karnataka, for the control of tube rot in pineapple, treat the tubers with 3 g Copper Oxychloride /litre of water and then take up the planting.
- **Animal Husbandry**
- In Karnataka, provide a mineral mixture along with concentrated feeds to milch animals. Vaccinate the livestock for Black Quarter and foot and mouth diseases.

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

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
 - As shallow to moderate fog at few places with isolated dense fog very likely over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura on 7th and 8th December, 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 appropriate plant protection measures.
 - **Arunachal Pradesh:**
 - Continue harvesting of kharif rice at the earliest. Complete harvesting of soybean. Continue sowing of mustard, pea/gram in rice fallow and transplanting of *rabi* vegetables.
 - Spray Indofil-45 @ 2.5g/litre as preventive measure against Alternaria blight and Dimethoate 30 EC @ 3ml/litre for aphid in mustard.
 - **Assam:**
 - Complete planting of potato at the earliest. Transplant seedlings of cauliflower, knolkhol, tomato, brinjal and radish in the main field at 30-35 DAS and due to prevailing dry spell, farmers are advised to provide light irrigation on every alternate day for better establishment and smooth growth. Mulching may be done after irrigation. Continue sowing of rapeseed and mustard, pea, and *rabi* pulses. Continue land preparation and sowing of wheat; continue harvesting of Sali rice and nursery bed preparation/sowing of *Boro* rice in Assam. In Upper and Central Brahmaputra Valley Zone of Assam undertake harvesting of pulse crops like green and black gram.
 - Prevailing weather condition is conducive for the attack of cut worm in cabbage, cauliflower and knol khol. Apply Malathion 5% dust @ 20 kg per ha for effective control of the pest.
 - **Meghalaya:**
 - Continue transplanting of cole crops, cucurbits and sowing of pea. Avoid irrigation in ginger and turmeric fields at rhizome maturity stage.
 - Spray Hexaconazole @ 1ml/litre of water at 15 days interval for control of sheath blight and sheath rot in Sali paddy.
 - **Manipur:**
 - Complete sowing of mustard and rapeseed, pea, lentil, soybean, groundnut, black gram, rice bean etc. and continue nursery raising to land preparation for transplanting of onion. Undertake land preparation and sowing of *rabi* maize.
 - **Mizoram:**
 - Continue harvesting of Upland rice, sowing of radish and leafy mustard and nursery preparation of tomato, crucifer, onion, brinjal and chilli.
 - Due to high humidity the problem of citrus canker get aggravated in acid lime leading to excessive fruit drop. Spray copper oxychloride 180 gms with Streptocycline 6 gms in 60 liters of water to control canker.
 - **Tripura:**
 - Undertake nursery bed preparation for sowing of *Boro* rice. Continue sowing of *rabi* legumes like toria, sesame, lentil and planting of potato.
 - **Nagaland:**
 - Complete transplanting of vegetable crops like cabbage, tomato, radish and broccoli. Continue harvesting of

TRC/WRC rice.

- In the present weather conditions monitor cabbage caterpillar in cabbage. Hand picking and destruction of egg mass and young larvae or apply 4% Neem Seed Kernel Extract (NSKE) and spray 0.05 % Malathion or quinalphos in heavy infestation.
- **Animal Husbandry**
- In Assam, in winter livestock are prone to respiratory diseases and debility. So provide good quality food and necessary supplements to keep them fit. Protect animals from cold weather, keep in well bedded shed. Goats are preferably being kept in raised platform. Keep poultry litter about 3-5 inches height. Care should be taken not to restrict ventilation.
- In North Eastern States, to protect poultry birds from cold winds, gunny bags or plastic sheath curtains should be installed on the side walls of shed house and bedding material (litter) should be increased by six inches. Care should be taken not to restrict ventilation. Undertake vaccination against ranikhet disease in poultry during this period.
- **Fishery**
- In Lower Brahmaputra Valley Zone of Assam, to protect the fish population against various diseases prevalent in winter season apply 1 kg turmeric along with 10 kg lime for 1 bigha pond and mix it uniformly in water.

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

- **Realised Rainfall:** Rainfall occurred in all districts of Andaman & Nicobar Islands during the week. Weather remained mainly dry/dry over rest of the region.
- **Advisories:**
 - As squally weather is likely to prevail over southeast and adjoining Equatorial Indian Ocean on 8th, over southeast & central parts of south Bay and adjoining Equatorial Indian Ocean on 9th and 10th December, fishermen are advised not to venture into these areas.
 - **Odisha:**
 - Harvest paddy crop when 85 % spikelets in the panicle turn grey or golden grey in colour. Sundry for 2-4 days or till 12% moisture in the grain before storing. Prepare the land and sow wheat crop as quick as possible. It is optimum time to sow gram, pea, mustard, linseed, groundnut, sunflower and onion. Take up sowing of Tomato, Cauliflower, Cabbage, Knol Khol, Broccoli, radish, etc.
 - Damping off disease is likely to appear in seedlings and young plants of vegetables. Drench the nursery beds with Copper oxychloride solution @ 4 g/litre of water to protect the seedlings from damping off. To control fruit and shoot borer in brinjal, spray Neem based pesticide 1500 ppm @ 600ml/acre at initial stages. Later on go for alternate spray of Spinosad 45% SC @ 70 ml/acre and Thiodicarb @ 250g/acre at 15 days interval.
 - **Bihar:**
 - Complete the sowing of wheat crop at the earliest. Give light irrigation in early sown wheat crop which reaches Crown Root Initiation (CRI) stage @ 21-25 days after sowing. Complete the sowing of rabi maize, lentil, gram and late varieties of rai at the earliest. Also complete the planting of potato. Carry out weeding followed by light irrigation in onion, garlic and vegetable crops.
 - For cutworm in wheat crop, apply Carbaryl 50% WP @ 800g in 800 liters of water/acre or Dichlorvos 76% EC @ 112-150 ml in 200-400 liters of water/acre. Monitor diamond back moth (DBM) in cauliflower and cabbage fields. Spray Spinosad 1ml/4 litres of water if infestation is observed. Add sticker 1 ml /litre of water for better result.
 - **Jharkhand:**
 - Harvest matured late rice varieties. After threshing, dry the grains and store them at moisture level 8-10%. Undertake timely sowing of irrigated condition improved varieties of wheat and un-irrigated condition cultivate improved wheat varieties. Prepare land for sowing of Rye and mustard. Take up sowing of improved varieties of table pea, lentil and linseed. Cultivate improved varieties of onion and potato. Transplant cabbage and cauliflower seedlings to the main field. Carry out nipping (pruning of upper parts of the plant) of 30 to 40 days (before flowering) old gram crop. It enables the plant to bear more branches and subsequently more flowers and pods.
 - For leaf eating insects in vegetable crops, spray Imidachlorpid @ 1g or Kung fu @ 2 ml per liter of water. For control of mites, jassids and hoppers in Okra, Chilli and cucurbitaceous crops, apply neem oil having concentration of 1500 ppm @ 3 ml per litre of water or chemicals like Omite or Rogar @ 2ml per litre of water. For control of leaf blight in pulse crop, spray Indofil M 45 @ 2 g per litre of water. When flowering in pigeon pea crop is up to 50%, apply three alternate spray of Endoxacarb or Spinosad or Dhawan gold @ 1.5 to 2 ml/litre of water and after 15 days, apply Monocrotophos @ 2 ml /litre of water to prevent pod borer.
 - **West Bengal:**
 - In Sub-Himalayan West Bengal, continue land preparation for potato and sowing of garden pea and cole crops. Continue sowing of lentils after harvesting of Aman rice. Continue sowing of winter vegetable seeds in

the nursery bed. Before sowing treat the seed bed with fungicide Copper-oxochloride @ 4g/litre of water. Carry out manuring in large cardamom and follow it up with irrigation. Continue harvesting Mandarin orange fruits as per the elevation. Carry out careful rouging and destruction of infected ginger and turmeric plants.

- In Gangetic West Bengal, continue nursery sowing of boro paddy. Maintain a thin layer of water over the seed bed. If possible, arrange polythene shade over seed bed. Continue planting potato and sowing of lentil. Cover the fencing around betel vineyard with cotton cloths like sari as a protection from strong Northern wind. Continue transplanting of seedlings of cauliflower, cabbage, broccoli and tomato on raised beds. Continue sowing of rabi onion, rabi garlic, coriander, fenugreek, turnip, spinach and radish. Apply light irrigation to wheat and mustard crops.
- In Sub-Himalayan West Bengal, to control Downey mildew in cucurbits, spray Metaloxy + Mancozeb @ 2.5 g/litre of water. For management of insect/pest attacks during early stage of vegetables crops, apply Chlorpyrifos 50% + Cypermethin 5% @ 1.5 ml/liter of water. For aphids, hoppers, white fly and thrips in chilli crop, apply Imidacloprid 17.8 SL @ 1ml/5 litres or Thiomethoxam 0.3 SG @ 1g/3 litres of water.
- In Gangetic West Bengal, collect and destroy the affected fruits and plant parts of brinjal. Spray Neem Seed Kernel Extract solution @ 50 ml/litre of water. Spray Acephate @ 1 g per litre of water for white fly in cabbage, cauliflower and tomato. Spray Dimethoate 30% EC @ 1ml/litre of water at clear weather condition for thrips in chilli crop. Collect and destroy the infected tomato fruits and spray Quinolphos 25 EC @ 1ml/litre of water at clear weather condition to prevent fruit borer.

▪ **Andaman & Nicobar Islands:**

- As rain/thundershowers likely at many places over Andaman & Nicobar Islands from 8th to 11th, along with heavy rain likely at isolated places on 9th and 10th December, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- In the Andaman Islands, keep open the bunds in rice main field to drain out excess rainwater as moderate rainfall is expected. Remove unwanted fallen leaves and other material from coconut field to avoid the growth of rhinoceros beetle.
- In the Nicobar Islands, remove unwanted fallen leaves and other material from coconut field to prevent the growth of rhinoceros beetle.

• **Animal Husbandry**

- In Odisha, clean the shed and de-worm the animals. Give 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 Bihar, falling trend of temperature may adversely affect the milk production of milch animals. Farmers are advised to give protein enriched diets to the animals. Do not keep the animal in the open.
- In Jharkhand, keep animals in a covered shed/area during night to protect them from a sudden drop in temperature. Keep the animal bedding dry. Vaccinate against FMD, Haemorrhagic Septicaemia (HS), Black Quarter (BQ), Enterotoxaemia during this month. To prevent poultry birds from cold, cover the windows and doors with gunny sheet and if the all chicken comes under the brooder, increase the temperature by addition of more bulbs in brooder.
- In West Bengal, vaccinate cattle against FMD. Keep the cow shed clean and dry. Vaccinate poultry birds against Ranikhet disease. Considering the fall in night temperatures, keep the new born chicks under bulb. To protect animals from sudden drop in temperature, keep the animals in a covered shed/area during the night.
- In the Andaman & Nicobar Islands, remove the wet litter from poultry shed and put dry fresh litter to avoid growth of any pathogens and provide light during cloudy days.

• **Fisheries**

- In Odisha, there is a possibility of “EUS” disease in fish. Apply ‘Cifax’ @ 400 ml mixed with 40 litre of water in one acre pond area as a preventive measure. Feed the fishes daily with oil cake bran mixture at the rate of 2-3 % of their total biomass.
- In West Bengal, apply CIFAX @ 1lit/ha-m for three months as required to control ulcer disease of fish.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

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

• **Advisories:**

▪ **Maharashtra:**

- In South Konkan, continue nursery bed preparation for *rabi* rice. Continue preparatory tillage operations for *rabi* groundnut. In North Konkan, complete nursery bed preparation for *rabi* rice before 20th December. Apply irrigation to groundnut crop at 10-12 days interval. Apply straw mulch in newly planted mango orchards. Also apply irrigation. Apply irrigation to vegetables at 5 to 6 days interval; to grafts and sapling of fruit nursery.
- In Madhya Maharashtra, continue harvesting and threshing of matured rice. Complete sowing of wheat before

15th December. For late sowing irrigated wheat use NIAW-34 and AKAW-4627 varieties. Apply irrigation to 18 to 21 days old wheat crop. Undertake intercultural operations like hoeing in 20 days old gram crop. Also apply protective irrigation as per requirement of crop. Undertake mulching with dry leaves, dry grass, straw (7 to 8 cm layer) in mango orchards, to reduce soil moisture loss by evaporation. Complete harvesting and threshing of matured *kharif* rice. Keep the harvested produce in safer place. Complete sowing wheat. Apply irrigation with 50% urea to 21 Days of sowing (DAS) old crop.

- In Marathwada, continue picking of cotton. Complete sowing of wheat before 15th December. For late sowing of wheat crop use 125 to 150 kg/ha seed rate. Apply protective irrigation in sapota orchard. Also undertake mulching to maintain soil moisture.
- In West Vidarbha, continue picking of cotton. For delayed sowing of irrigated wheat (upto December 15). Follow seed treatment with Carbendazim @ 2.5 g / kg seed. Apply protective irrigation to pigeon pea, maize and sorghum. In East Vidarbha, Continue sowing of gram, mustard and linseed. Continue harvesting of matured varieties of rice. Continue nursery sowing of onion.
- In Vidarbha, if incidence of sap sucking aphids particularly in irrigated/late sown safflower is observed for above ETL level (30% infested plants), spray Dimethoate 30% EC @ 13 ml per 10 litres of water.

▪ **Gujarat:**

- In Middle Gujarat, complete sowing of maize crop. Apply irrigation in potato, wheat (at CRI stage) and cluster bean crops. Continue picking of matured cotton bolls.
- In North Gujarat, complete sowing of cumin, wheat, gram, dill seed, coriander and fenugreek crops. Undertake harvesting of custard apple, pomegranate and aonla fruits.
- In Saurashtra & Kutch, apply irrigation in wheat, castor, coriander, garlic, chick pea and vegetable crops at regular interval. Complete sowing of pea and carrot for vegetable purpose. Continue picking of matured cotton bolls.
- In South Gujarat, undertake mulching in sugarcane crop with its leaves for control of stem borer and with fodder in vegetable crops to prevent moisture loss in the field. Complete sowing of wheat, sorghum, gram, Indian bean, green gram, pea, lentil and corn crops. Carry out intercultural operations in pigeon pea crop.
- In South Gujarat, for control of stem rot in banana drenching with Carbendazim 0.05% @ 1 gm/litre of water is advised.

• **Animal Husbandry**

- In Gujarat, keep young calves indoors during night time to avoid cold stress.

CENTRAL INDIA [M.P., CHHATTISGARH]

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

• **Advisories:**

▪ **Madhya Pradesh:**

- In East Madhya Pradesh, continue sowing of gram, lentil and linseed. Continue planting of potato and garlic. Continue nursery preparation for *rabi* vegetables. Continue sowing of carrot, beetroot, radish, spinach, fenugreek etc. Continue sowing of wheat. Apply first irrigation in wheat crop where it has reached CRI stage. Complete sowing of late maturing varieties of pea.
- In West Madhya Pradesh, continue sowing of wheat. Continue harvesting of green chilli, okra and cucurbit crops. Continue sowing of garlic. Continue planting of sugarcane and potato. Continue thinning in mustard. Apply irrigation in vegetables, gram, mustard and in wheat at CRI stage.
- In Central Narmada Valley Zone, to control Purple blotch attack in onion crop, apply Copper Oxy Chloride @ 40 g and Streptocyclin @ 2 g per 15 litres of water.
- In Satpura Plateau Zone, to control pod borer in pigeon pea, spray Indoxacarb @ 120 g/acre dissolved in 200 litres of water.

▪ **Chhattisgarh:**

- Continue harvesting of matured rice crop. Complete sowing of early maturing varieties of wheat by 10th December. Continue sowing of gram, safflower, linseed, sunflower, groundnut and lentil crops. Continue planting of potato and garlic and seed bed preparation for onion. Undertake intercultural operations in oilseed crops and pulses. Continue transplanting of cauliflower, tomato, brinjal, chilli etc. in the main field. Apply irrigation in wheat at CRI stage.
- In Bastar Plateau Zone, continue sowing of wheat and gram. Apply irrigation in vegetables. Undertake field preparation for planting of *rabi* colocasia and bunda.
- In North Hill Zone, to control powdery mildew disease in green pea, spray Karathen @ 1 ml per litre of water or Sulfex @ 3 gm per litre of water.

• **Animal Husbandry**

- In Madhya Pradesh, newly borne calves should be protected from cold. For this floor should be covered with paddy straw litter which provides a thermal mulch. All milk animals should be kept in specially protected and

safe cattle sheds during night. Provide 4-5 hours light in poultry houses during night.

- In Chhattisgarh, due to decrease in temperature and its possible adverse effects, dairy farmers are advised to keep the animals in the cattle shed with concrete/brick roof. Give protein enriched diet to the animals.

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 shallow to moderate fog at few places with isolated dense fog is very likely over Punjab, Haryana, Himachal Pradesh, Uttarakhand, West Uttar Pradesh from 7th to 9th December, 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 appropriate plant protection measures.

- **Jammu & Kashmir:**

- As rain/snow likely at many places over Jammu & Kashmir on 10th, along with heavy rain/snow at isolated places on 10th December, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- In Intermediate Zone, carry out hoeing and weeding operations wherever wheat crop is one month old after current spells of rain. Undertake transplanting of onion and sowing of garlic in the well prepared beds. Provide sprinkle irrigation the next day of sowing/transplanting. Undertake transplanting of late cauliflower (Snow Ball group) in the field, keeping distance of 60 x 45 cm apart. Apply irrigation as per the requirement in vegetable fields.
- In Valley Temperate Zone, provide drainage channels in the fields wherever there is probability of water accumulation during winter months. Maintain field sanitation and proper drainage in saffron fields to avoid water logging. To control rodents, identify live burrows. Place aluminium phosphide pouches (5-10g) in these live burrows @ 1pouch/burrow.

- **Uttarakhand:**

- In Hill Zone, undertake transplanting of onion seedling after root treatment by fungicides, pesticides and bio agents.
- Complete sowing of late wheat crop as early as possible. Seeds should be treated with Bavistin or Thiram @ 2-2.5 g per kilogram of seed. Carry out mulching in Cole crops in valley region.
- Prepare layouts and pits for new orchard in temperate zone. Build the basin around main stem of fruit bearing trees and clean the shrubs/herbs/grasses and leaf litter.
- In Sub Humid Sub Tropic Zone, continue sowing of late varieties of wheat. Maintain proper soil moisture before sowing of wheat. Harvest mature sugarcane crop and send to the sugar mills/crushers. Undertake sowing of wheat after harvesting of ratoon crop of sugarcane at the earliest. Apply irrigation if required.

- **Himachal Pradesh:**

- In Sub-Montane & Low Hills Sub-Tropical Zone, carry out thinning and weeding in timely sown mustard crop.
- Add mulch in space between two rows of vegetables crops for conservation of soil moisture and maintenance of soil temperature.
- Carry out weeding and hoeing operations in all crops and vegetables for optimum growth.
- Carry out earthing-up in potato if crop has attained a height of 15-22 cm. If required, the practice may be repeated after 15 days.
- In Mid Hills Sub-Humid Zone, undertake transplanting of onion nurseries in well prepared fields so that the rain water may be used for irrigation.
- Due to high relative humidity, infection of blight may occur in potato and tomato. Constant monitoring is advised. If symptoms appear then spray Carbendazim @ 1.0 gm / litre of water or Dithane-M-45 @ 2.0 gm / litre of water.

- **Punjab, Haryana & Delhi:**

- In Punjab, complete the sowing of raya and wheat. Continue harvesting of matured maize, green gram. Continue planting of early varieties of potato and pea. Complete sowing of spinach, radish, turnip and carrot. Continue planting of early varieties of sugarcane. Continue planting of seedlings of onion. Complete transplanting of Pea, tomato and provide polythene sheet/Sarkanda/Kahi/ rice straw to save the plants from frost. Undertake late sown short duration varieties of wheat.
- In Haryana, continue intercultural operations in vegetables and mustard. Continue field preparation for sowing of mustard. Continue harvesting of timely sown bajra, guar, green gram, black gram and picking up of matured cotton bolls. Undertake sowing of mustard, barley, gram, wheat and oats. Complete the sowing of berseem.
- In Delhi, continue planting of winter sugarcane at optimum soil moisture for better seed germination. Continue sowing of gram and sowing of garlic on raised bed. Continue sowing early mustard, pea and planting of early

potato. Continue transplanting of onion. Continue sowing of sarsonsaag, radish, spinach, coriander. Continue transplanting of cauliflower, cabbage, broccoli and tomato. Continue sowing of carrot on raised bed. Continue field preparation for sowing of wheat. Undertake sowing of oat and barseem. Undertake late sowing of wheat crop with recommended varieties PBW 373, WH 1021, WH 1124, Raj 3765.

- Due to foggy weather, farmers are advised to monitoring of mustard crop against attack of white rust. If infection is high, spray Dithane-M-45 @ 2 gram/ litre of water. Monitor the mustard crop against attack of painted bug and aphid.

- **Uttar Pradesh:**

- In East Uttar Pradesh, continue sowing of coriander, spinach, radish, carrot, fenugreek, fennel etc. Continue planting of sugarcane, potato, ginger and turmeric. Continue sowing of wheat and barley. Apply 1st irrigation in gram, pea, lentil, rai, garlic. Undertake transplanting of onion, keep transplanting distance at 15x10 cm. Undertake intercultural operation in vegetables.
- In West Uttar Pradesh, continue sowing of recommended wheat varieties. Apply light irrigation to late-sown toria crop. Continue sowing of recommended varieties of mustard, pea, gram, lentil and winter vegetables like radish, carrot, fenugreek, coriander, etc. Continue nursery raising of recommended onion varieties. Continue transplanting of matured seedlings of brinjal, cabbage, cauliflower, tomato and capsicum. Continue sowing of garlic in raised bed. Continue earthing up in potato. Continue weeding in vegetables.
- There are chances of attack of tunnel pest in toria, apply Monocrotophos 36% SL @ 500 ml per hectare or Cloropyrifos 20% EC @ 1litre per hector. There are chances of attack of saw fly in mustard, apply Melathian 50% EC @1.5 litre/hectare or Qunalfos 25% EC @1.25 litre/hectare.

- **Rajasthan:**

- In Flood Prone Eastern Plain Zone and Semi Arid Eastern Plan Zone, it is optimum time for the sowing of late sown wheat, treat the seeds with 2 gm Mencozeb or 3 gm Thiram and Fipronil 5 SC @ 6 ml per kg of seed before sowing. Use 125 kg seed rate per hectare for the sowing of the same.
- In Arid Western Plain Zone, weather conditions are favourable for sowing of wheat and barley. Therefore, prepare for the sowing of wheat and Barley and arrange seed, fertilizer and chemicals for seed treatment and sowing of wheat and barley.
- In Sub Humid Southern Plain and Aravali Hill Zone, continue sowing of wheat and barley.
- In Semi Arid Eastern Plain Zone, leaf curl & Mosaic diseases may affect papaya crop, therefore at the initial appearance of this disease, uproot & burn the affected plants & to check further spread of disease spray Dimethoate 30EC or Methyl Demeton 25 EC @ 1.0 ml per litre water.

- **Animal Husbandary**

- In Uttar Pradesh, vaccinate cattle against FMD and BQ. Provide them clean drinking water. Keep poultry houses clean. Give salt and minerals in addition to dry/green fodder to the cattle. Give balanced feed to the poultry birds.
- In Uttarakhand, undertake vaccination of Brucellosis vaccine in 4-6 month old female calves for increasing the resistant power. Do not vaccinate the male calves. De-worming should be done before 1-2 weeks of vaccination. Dew appearing grasses/herbs should not be given to goat/sheep as fodder. Protect the animals from cold by covering gunny bags during night and give some sunbath during day time. Install electric bulb in chicken poultry to maintain night temperature.
- In Haryana, due to fall in night temperature, keep the animals under shed. Provide 50 grams iodized salt and 50 to 100 grams mineral mixture daily with animal feed/fodder to keep them healthy.

- **Apiculture**

- Transfer the honey bee colonies from hilly regions to plains in order to avoid mortality due to decline in temperature. To avoid robbing and insect pest infestation, seal all cracks, crevices and holes of honey bee colonies with wet soil.
- In case of mite infestation, place one apistron strip vertically in the centre of 6 to 8 frames per colony and do not open the honey bee colonies for at least 7 days. There should be sufficient honey /food during the placement of apistron strip. In case of insufficient nectar or honey in the apiary, artificial feeding (sugar) may be given to honey bees.

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