



National Agromet Advisory Service Bulletin

Friday 30th November 2018

(For the period 30th November to 5th December 2018)



Issued by

India Meteorological Department

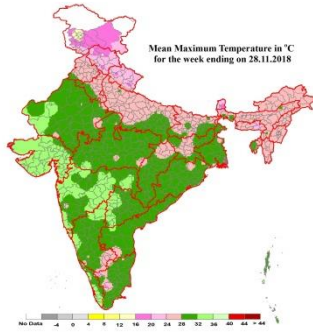
Weblink For

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

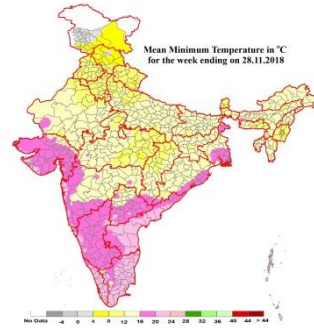
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

Spatial distribution of weather parameters for the week ending on 28.11.2018

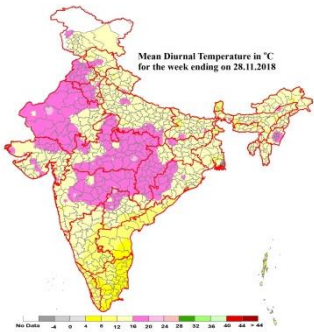
Mean Maximum Temperature (°C) for the week ending on 28.11.2018



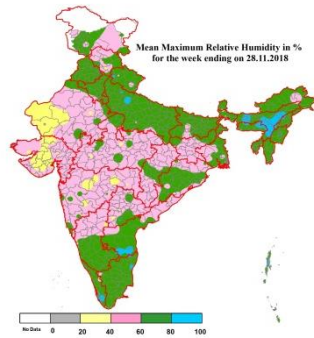
Mean Minimum Temperature (°C) for the week ending on 28.11.2018



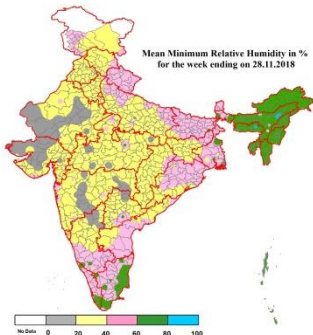
Mean Diurnal Temperature Variation (°C) for the week ending on 28.11.2018



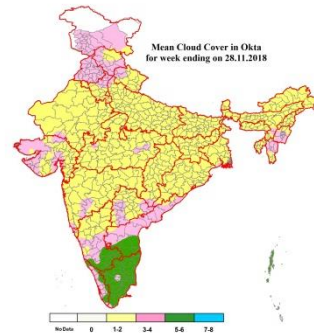
Mean Maximum Relative Humidity (%) for the week ending on 28.11.2018



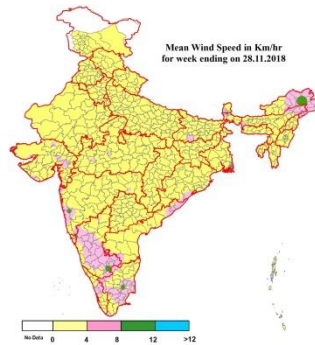
Mean Minimum Relative Humidity (%) for the week ending on 28.11.2018

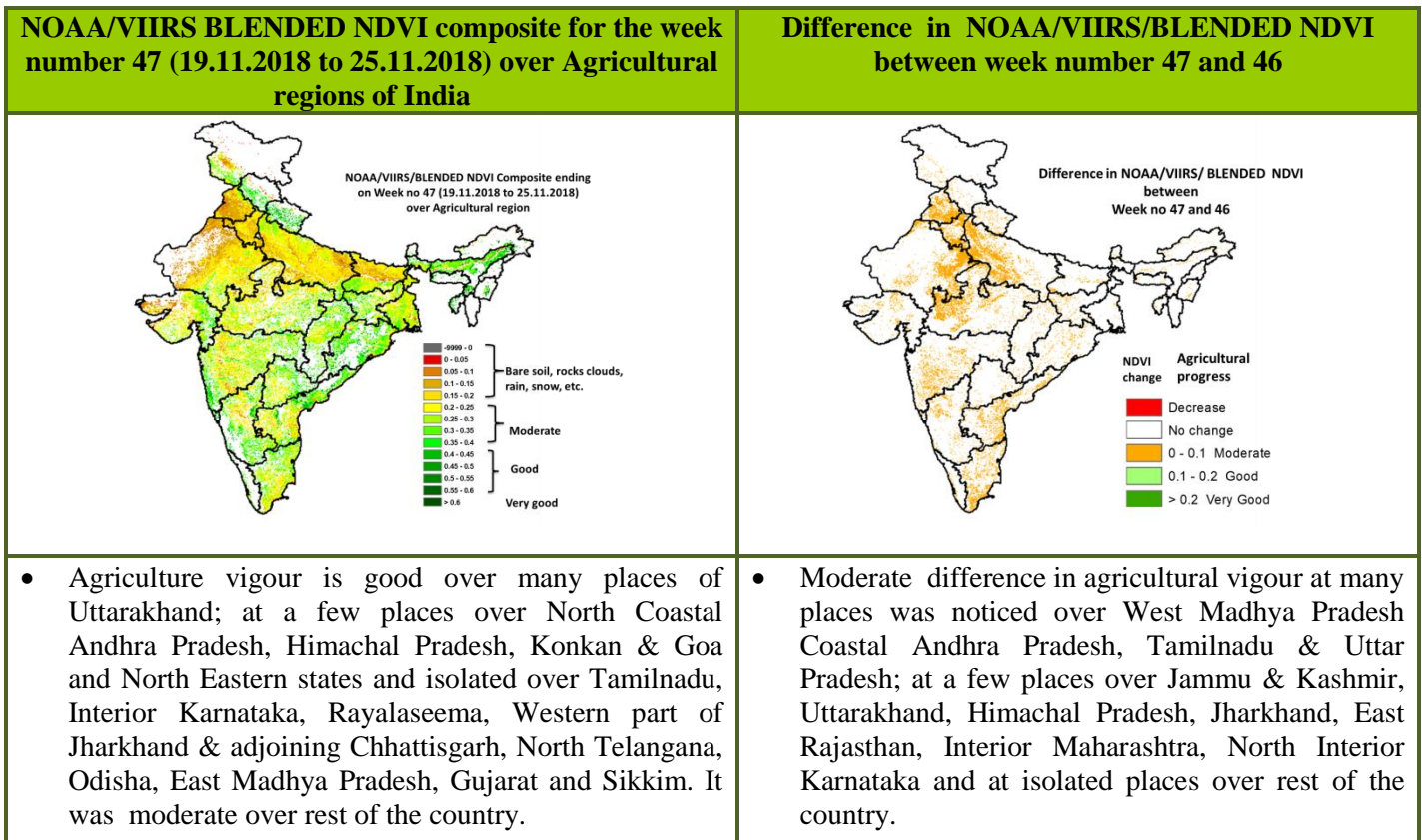


Mean Cloud Cover (okta) for the week ending on 28.11.2018

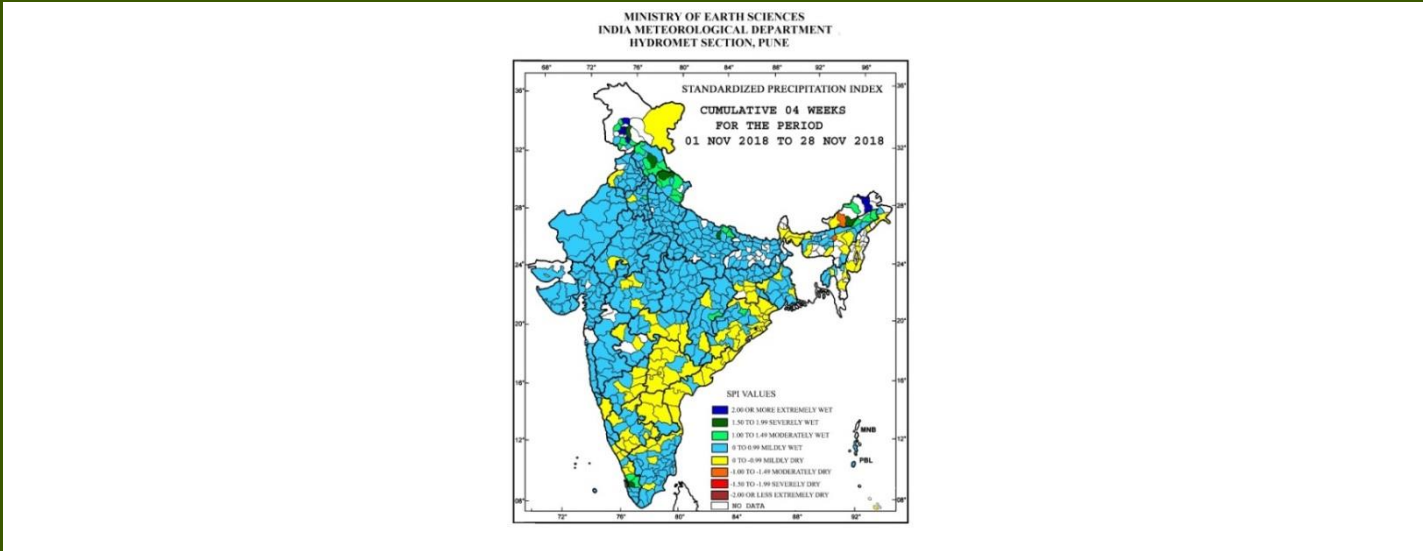


Mean Wind Speed (km/hr) for the week ending on 28.11.2018



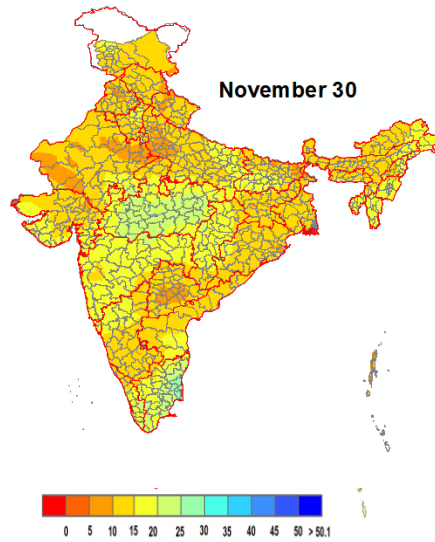


**Standardised Precipitation Index
Cumulative 4 weeks for the period 1st November to 28th November 2018**

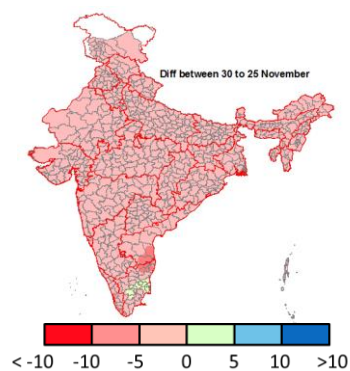
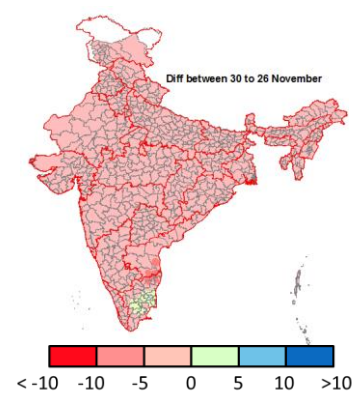
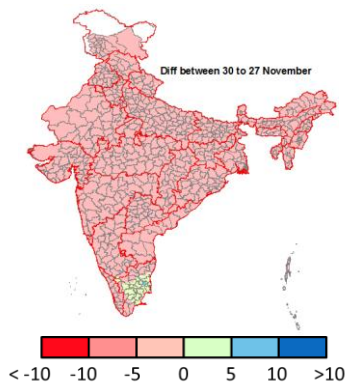
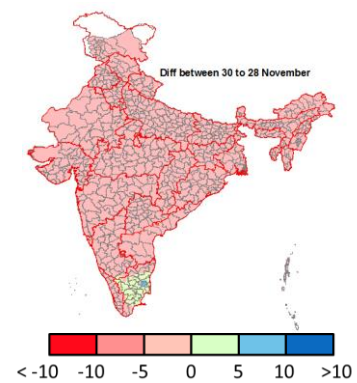
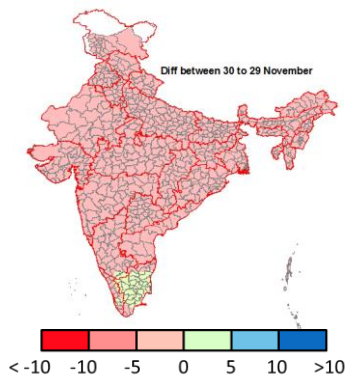


- Extremely/severely wet conditions experienced in few districts of Arunachal Pradesh; Jammu & Kashmir; Sant Kabir Nagar district of Uttar Pradesh; Uttarkashi district of Uttarakhand; Kullu district of Himachal Pradesh; Kottayam district of Kerala.
- Moderately dry conditions experienced in East Kameng district of Arunachal Pradesh; Morigaon district of Assam.
- Rest of the country experienced moderately wet/mildly dry/mildly wet conditions.

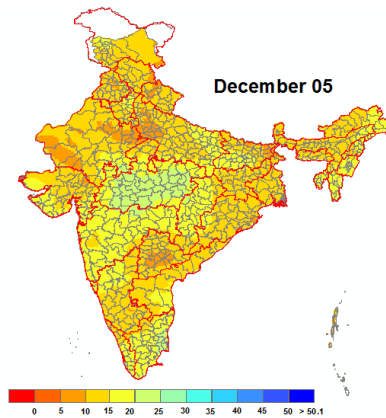
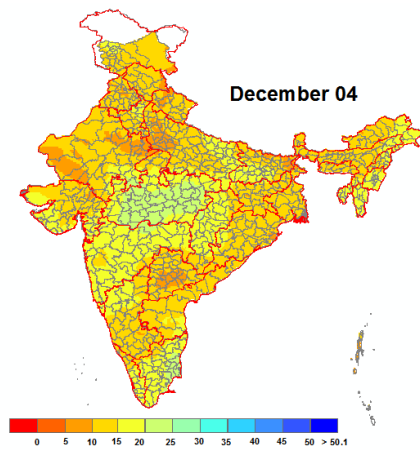
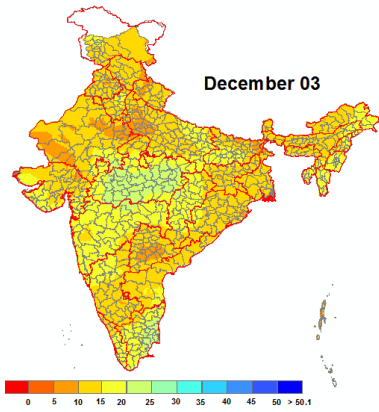
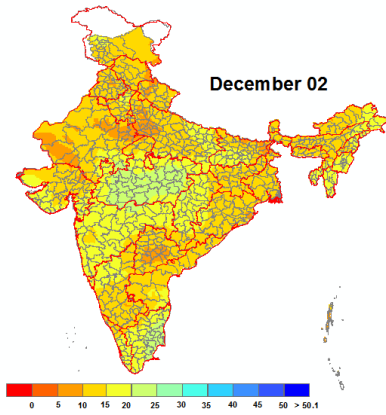
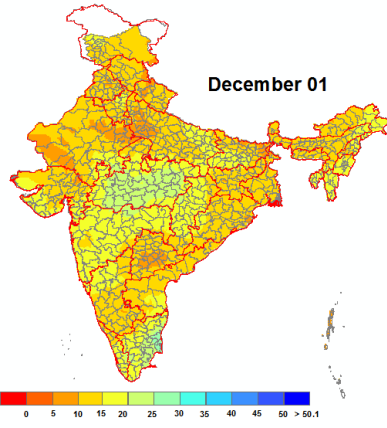
Daily Soil Moisture (mm) for 30th November 2018 (ending at 0830 IST) for 60 cm depth



Difference of Soil Moisture (mm) for 60 cm depth



**Forecasted Soil Moisture (mm) from 1st to 5th December 2018 (ending at 0830 IST)
for 60 cm depth**



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

- Meteorological sub-division wise detailed 5 days precipitation forecast is given in Table below.
- Shallow to moderate fog at a few places with isolated dense fog in morning hours is very likely over northeastern states during next 3-4 days and shallow to moderate fog at isolated pockets over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh during next 2-3 days.
- No significant change in minimum temperatures are likely over major parts of the country during next 3-4 days.

5 Day Rainfall Forecast (Mid-day) 30th November 2018

Met-Sub-Division	30-Nov Today	01Dec Sat	02Dec Sun	03Dec Mon	04Dec Tue
1. Andaman & Nicobar Islands	FWS	SCT	ISOL	ISOL	ISOL
2. Arunachal Pradesh	DRY	ISOL	ISOL	ISOL	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	DRY	ISOL	ISOL	ISOL	DRY
6. Gangetic West Bengal	DRY	DRY	DRY	DRY	DRY
7. Odisha	DRY	DRY	DRY	DRY	DRY
8. Jharkhand	DRY	DRY	DRY	DRY	DRY
9. Bihar	DRY	DRY	DRY	DRY	DRY
10. East Uttar Pradesh	DRY	DRY	DRY	DRY	DRY
11. West Uttar Pradesh	DRY	DRY	DRY	DRY	DRY
12. Uttarakhand	DRY	DRY	DRY	DRY	DRY
13. Haryana, Chd & Delhi	DRY	DRY	DRY	DRY	DRY
14. Punjab	DRY	DRY	DRY	DRY	DRY
15. Himachal Pradesh	DRY	DRY	DRY	DRY	DRY
16. Jammu & Kashmir	DRY	DRY	DRY	DRY	ISOL
17. West Rajasthan	DRY	DRY	DRY	DRY	DRY
18. East Rajasthan	DRY	DRY	DRY	DRY	DRY
19. West Madhya Pradesh	DRY	DRY	DRY	DRY	DRY
20. East Madhya Pradesh	DRY	DRY	DRY	DRY	DRY
21. Gujarat Region	DRY	DRY	DRY	DRY	DRY
22. Saurashtra & Kutch	DRY	DRY	DRY	DRY	DRY
23. Konkan & Goa	DRY	DRY	DRY	DRY	DRY
24. Madhya Maharashtra	DRY	DRY	DRY	DRY	DRY
25. Marathwada	DRY	DRY	DRY	DRY	DRY
26. Vidharbha	DRY	DRY	DRY	DRY	DRY
27. Chhattisgarh	DRY	DRY	DRY	DRY	DRY
28. Coastal Andhra Pradesh	DRY	DRY	DRY	ISOL	ISOL
29. Telangana	DRY	DRY	DRY	DRY	DRY
30. Rayalaseema	DRY	DRY	DRY	DRY	ISOL
31. Tamilnadu & Puducherry	ISOL	ISOL	ISOL	ISOL	SCT
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	ISOL
35. Kerala	SCT	ISOL	ISOL	ISOL	ISOL
36. Lakshadweep	FWS	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

- **30 November (Day 1):** Squally weather is likely to prevail over southeast Arabian Sea and adjoining Equatorial Indian Ocean. Fishermen are advised not to venture into these areas. Dense fog at isolated places very likely over

Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura in the morning hours.

- **01 December (Day 2):** Dense fog at isolated places very likely over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura in the morning hours.
- **02 December (Day 3):** No weather warning.
- **03 December (Day 4):** No weather warning.
- **04 December (Day 5):** Heavy rain likely at isolated places over south coastal Andhra Pradesh and north Coastal Tamilnadu.

Weather Outlook for subsequent 2 days from 5th to 7th December 2018

- Isolated rain/snow likely over higher reaches of Western Himalayan region.
- Scattered to fairly widespread rainfall likely over Andaman & Nicobar Islands and south peninsular India and isolated rainfall over Lakshadweep Islands.
- Dry weather likely over the rest of the country.

Salient Advisories

- As squally weather is likely to prevail over **southeast Arabian Sea** and adjoining **Equatorial Indian Ocean** on 30th November, Fishermen are advised not to venture into these areas.
- As rain/thundershowers likely at many places over **Andaman & Nicobar Islands** on 30th November, heavy rain likely at isolated places over **south coastal Andhra Pradesh** and **north Coastal Tamilnadu** on 4th December, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- As dense fog at isolated places very likely over **Assam & Meghalaya** and **Nagaland, Manipur, Mizoram & Tripura** in the morning hours on 30th November and 1st December, monitor the standing crops for incidence and spread of pest diseases, potato, tomato and onion crops for early/late blight disease. If symptoms are noticed, undertake appropriate plant protection measures.
- In Cauvery Delta Zone of **Tamil Nadu**, 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 on a non rainy day.
- In **South Interior Karnataka**, to control powdery mildew in mango orchard, spray Carbendazim @1.0 g/litre of water.

Detailed Agromet Advisories

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

- **Realised Rainfall:** Rainfall occurred in all districts of Kerala except Kannur, Palakkad and Thrissur, all districts of Tamil Nadu except Dindigul, Erode, Karur, Madurai, Namakkal, Sivaganga, Theni, Toothukudi and Virudhunagar, in Dakshina Kannada district of Coastal Karnataka, Bangalore Rural and Ramanagara districts of South Interior Karnataka, Nellore district of Coastal Andhra Pradesh, Chittoor district of Rayalaseema during the week. Weather remained mainly dry/dry over rest of the region.
- **Advisories:**
 - As heavy rain likely at isolated places over south coastal Andhra Pradesh and north Coastal Tamilnadu on 4th December, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
 - As squally weather is likely to prevail over southeast Arabian Sea and adjoining Equatorial Indian Ocean on 30th November, Fishermen are advised not to venture into these areas.
 - **Kerala:**
 - In High Altitude Zone, short duration vegetable crops like Amaranthus, cow pea etc. can be cultivated in the interspaces of newly planted banana crop. Spray 1% Bordeaux mixture as a prophylactic measure to control leaf spot in banana on a non rainy day.
 - 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, destroy the affected leaves of banana along with the Spodoptera, if Spodoptera attack is severe, spray Quinalphos @ 2ml per litre of water or Chlorantraniliprole @ 3 ml per 10 litre of water. Also there is a chance of downy mildew attack in vegetables, apply 2.5g Curzate M-8 or one milli Equation pro per one litre of water under the leaves. Undertake plant protection methods on a non rainy day.
- **Andhra Pradesh:**
- In South Coastal Andhra Pradesh, continue sowing of pulses groundnut and Bengal gram. 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 pod borer on redgram in North Coastal Andhra Pradesh, spray Monochrotophas @ 1.6 ml + Dichlorvos @ 1 ml/litre of water or Chlorpyrifos @ 2.5 ml/l + Dichlorvos @ 1.0 ml per litre 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. In view of prevailing dry weather, if the cotton crop is at boll development stage, where ever the irrigation facilities available, give one irrigation for better yield. In view of prevailing dry spell, Redgram which is at bud initiation to flowering stage, where ever the irrigation facilities available, give one irrigation for better yield.
- 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.
- The prevailing weather conditions are congenial for incidence of Fall Armyworm (Spodoptera Frugiperda in Rabi Maize crop. Spray oison baiting with Thiodicarb (mix 10kg rice bran + 2 kg jiggery + 2-3 liters of water; keep the mixture for 24 hours to ferment and add 100 g Thiodicarb just half an hour before the application in the field). The bait application should be done into the whorl of the plant or Spray Emamectin benzoate @ 0.4 g/liter (@80g/acre) or Chlorantraniliprole @ 0.3 ml (@60ml/acre) per liter of water into the whorl of the plant in South Telangana zone
- **Tamil Nadu:**
- In North Western Zone, to improve the yield of cotton by reducing flower drops, farmers are recommended to give foliar spraying with cotton plus @ 2.5 kg / acre in 200 liters of water along with wetting agent under rainfed condition by using forthcoming rainfall.
- In High Altitude Hilly Zone, due to the prevailing weather conditions, there are chances for increase in the severity of infection of rice stem borer and leaf folder, spray Chlorantraniliprole 0.3 ml/l or Flubendiamide 0.1ml/litre of water on a non rainy day.
- In Western Zone, due to continuous wet weather vegetative growth is observed in mango and to induce flowering spray paclobutrazole 10g ai or 1% KNO₃ on a non rainy day.
- 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 on a non rainy day.
- In Puducherry, as a prophylactic measure to manage diseases in rice; foliar application of *Pseudomonas fluorescence* @ 0.5% (5 g / ml per litre) may be done commencing from 45 DAT with 10 days interval for 3 times
- **Karnataka:**
- In North Interior Karnataka, carry out intercultural operations in 25-30 days old chickpea, safflower and sorghum crops. Continue picking of matured cotton bolls and harvesting of chilli. Avoid picking of cotton during early morning hours. Clipping in chickpea is advised in 35 to 40 days old crop which helps in increasing the yield. Continue pruning in grape orchards. After pruning, smear 2 % Hydrogen Cyanamide paste to the terminal 3-4 buds; which facilitate sprouting of buds.
- In South Interior Karnataka, complete harvesting of matured groundnut, maize, rice, ragi crops and arecanut, pepper. Complete sowing of sunflower, chickpea, safflower, field bean, cowpea, ragi, maize, Bengal gram, finger millet, 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 North Interior Karnataka, incidence of Fall Army worm in sorghum is noticed in sorghum crop; spray the crop with 5% Azadiractin @3ml /litre of water; if incidence is moderate to high, spray the crop with Lambda Cyahalothrin @1 ml or 0.4 g Emamectin Benzoate/liter of water.
- In Coastal Karnataka, there is chance of attack of stem borer in ginger, turmeric and cardamom; for control, spray Monocrotophos @1.2 ml or Chloropyrifos @ 2 ml per litre of water.
- In South Interior Karnataka, spray Carbondenizim @1.0 g/litre of water against powdery mildew in mango orchard.

- **Animal Husbandry**
- In Karnataka, keep the cattle shed clean & warm.
- In Tamil Nadu, due to the current weather condition the Hoof disorder disease may spread widely in cattle. The disease spread through bacteria. Hence, the hoofs should be periodically curtailed and cleaned.

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

- **Realised Rainfall:** Weather remained dry over the region during the week.
- **Advisories:**
 - As dense fog at isolated places very likely over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura in the morning hours on 30th November and 1st 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 Indofilm-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 weather, 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 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 Spreptocycline 6 gms in 60 liters of water to control canker.
 - **Tripura:**
 - Continue nursery bed preparation for sowing of *Boro* rice. Continue sowing of *rabi* legumes like 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:** Weather remained mainly dry/dry over the region during the week.

- **Advisories:**

- **Odisha:**

- Drain our water from the field and carry out harvesting of matured rice crop. Current temperature is favourable for wheat sowing in inland districts. Now it is optimum time for nursery raising of high yield onion varieties. Grow high yielding sesame varieties @ seed rate 4 kg seeds/acre after seed treatment with 1.5 g Carbendazim or 3 g Thiram/kg of seeds. This is right time to sow potato tubers @ seed rate 6-8 q/acre with each 25 g size. Treat the seed material with 10 liters of water mixed in 20 g Mancozeb and 1 g Streptocyclin mixture for 30 minutes. Undertake sowing of high yield varieties of green peas, garlic, rabi groundnut, mustard and sunflower. Go for pyra cropping of lathyrus, green gram, black gram and green pea at saturated condition in field. It is the ideal time for growing tomato, cauliflower, cabbage, Knol Khol, broccoli, radish, etc. Use low cost polythene cover above the vegetables nursery to avoid poor germination due to low temperature. When the seedlings are at 4-5 leaf stage, transplant in main field.
- 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. For caterpillar attack in groundnut field, spray Quinalphos 20% EC @ 2 ml/litre of water. Current weather may favour blast disease in Ragi. If observed, spray Carbendazim 50% WP @ 1.5 g/litre of water.

- **Bihar:**

- Complete the planting of potato at the earliest. Complete the sowing of rabi maize by the end of this month. Complete the sowing of wheat by the 1st week of December for better growth and more yield. Complete sowing of gram by the 2nd week of December. Carry out weeding in rai, onion, garlic and vegetables crops. Apply light irrigation to potato, onion, garlic and vegetable crops.
- Monitor diamond back moth (DBM) in cauliflower and cabbage fields. Spray of Spinosad 1ml/4 litres of water if infestation is observed. Add sticker 1 ml /litre of water for better result.

- **Jharkhand:**

- Harvest mature crop of 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 tomato, cabbage, cauliflower, onion and potato. 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 Omitec 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 Endoxcarb 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. Rapeseed/mustard crops at flowering stage are vulnerable to the attack of Aphids. To control, spray Monocrotophos @ 2 ml or Imidachlorpyrid @ 1 ml per litre of water. Occurrence of white rust disease (white powder appears on leaves and stem) may take place in rapeseed/ mustard crop. Spray fungicide Redomyl M-Z @ 1.5 gm per litre of water immediately as and when symptoms appear.

- **West Bengal:**

- In Sub-Himalayan West Bengal, continue land preparation for potato and sowing/planting 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-oxychloride @ 4g/litre of water.
- In Gangetic West Bengal, complete the harvesting of Aman paddy. Prepare nursery bed for boro paddy where irrigation facility available. Complete the sowing mustard, gram and field pea. Continue planting potato. 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

Chlorantaniliprole 0.4%GR @ 10 gram per sq m as soil application on the seed bed. For Aphid, 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 Quinalphos 25 EC @ 1ml/lit of water at clear weather condition to prevent fruit borer.
- **Andaman & Nicobar Islands:**
- As rain/thundershowers likely at many places over Andaman & Nicobar Islands on 30th November, avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- In the Andaman Islands, take all the harvested rice to nearby shelter as good amount of rainfall is expected. Grow seedlings of vegetable on raised bed after treatment of seeds with bio-control agent/ Carbendazim @ 1 g/ kg of seed under the rain shelter.
- In the Nicobar Islands, improve drainage facility in the vegetable field to avoid stagnation of water.
- **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, do not keep animals in the open at night in view of falling night temperatures. Hygiene should be maintained at the place where animals are housed.
- 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), Enteroxemia 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. Calf should be fed with calf starter for 3-4 days after birth. This will enhance digestive system and help to maintain body heat during winter. Mix essential salts with the feed given to the animals.
- 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, according to the acidity, apply lime @ 250-500 Kg/Ha. Administer the feeding on sunny days. Agitate water and provide false netting for better growth of fish. Provide feed @ 2-3 % of body mass of fish.
- In West Bengal, apply cow dung @ 100kg/bigha monthly basis in fish culture pond to enhance the growth of phytoplankton which will be consumed by fish.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Weather remained mainly dry/dry over the region during the week.
- **Advisories:**
 - **Maharashtra:**
 - In South Konkan, continue nursery bed preparation of *rabi* rice. Continue preparatory tillage operations for *rabi* groundnut.
 - In Madhya Maharashtra, continue picking up of cotton. Continue harvesting of matured *kharif* rice. Continue transplanting of onion, at the time of transplanting dip roots of onion seedlings in Dithane M- 45 @ 2.5 g or Carbendazim @ 1 g per litre solution.
 - In Marathwada, continue picking of cotton. Undertake top dressing of nitrogen @ 20 kg Nitrogen (44 kg Urea) per acre in one month old wheat crop. Sowing of wheat crop can be done up to 15th December. Apply protective irrigation to vegetables and orchards.
 - In West Vidarbha, continue picking of cotton. Undertake intercultural operations like weeding in safflower, maize and chickpea. Undertake transplanting of brinjal, tomato, cabbage and cauliflower. In East Vidarbha, Continue sowing of gram, mustard and linseed. Continue harvesting of matured varieties of rice. Continue nursery sowing of onion.
 - In Marathwada, to control pod borer in chickpea, spray Quinalphos 25 % @ 400 ml or Emamectin Benzoate 5 % @ 80 ml per acre.
 - In Konkan, if incidence of anthracnose and powdery mildew observed on new flush of mango, spray

Thiophenate methyl and Carbendanzim 1% @ 1 g per litre of water.

▪ **Gujarat:**

- In Middle Gujarat, complete sowing of wheat, maize crops and undertake sowing of potato crops. Continue picking of matured cotton bolls. Under soil moisture stress condition, apply irrigation in alternate rows for development of new cotton bolls. Apply regular irrigation in cluster bean crop at pod development stage.
- In North Gujarat, complete sowing of cumin, wheat, potato, gram and fenugreek crops and continue transplanting of cabbage crops. Continue picking of matured cotton bolls.
- In Saurashtra & Kutch, complete sowing of wheat, garlic, chickpea, mustard, coriander, cumin crops and continue sowing of pea and carrot for vegetable purpose. Apply irrigation in chick pea at branching stage. Continue picking of matured cotton bolls.
- In South Gujarat, undertake planting of sugarcane crop. Complete sowing of wheat, sorghum, gram, Indian bean, green gram, pea, lentil and corn crops. Carry out intercultural operations in pigeon pea crop.
- In Saurashtra & Kutch, under present weather conditions, attack of thrips has been reported in onion; alternate spray of Imidacloprid 30.5 SC @ 3 ml and Profenofos @ 20 ml in 10 liters of water at 10 days interval is recommended.
- In Middle Gujarat, spray insecticides like Methyl-o-Ddemeton 25 EC or Dimethoate 30 EC @ 15 ml in 10 liters of water after well mixing against leaf curl in tobacco crop.

• **Animal Husbandry**

- In Gujarat, provide ad lib warm water to lactating animals. 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 Kymore Plateau and Satpura Hill Zone, undertake harvesting of rice.
- 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.
- In Bundelkhand Zone, there are chances of attack of alternaria disease in tomato crop, spray Mencozeb @ 2.5 g/litre of water.
- 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.

▪ **Chhattisgarh:**

- Continue harvesting of matured rice crop. Continue sowing of wheat, gram, safflower, linseed and lentil crops. Continue planting of potato and garlic and seed bed preparation for onion. Undertake intercultural operations in toria. Continue transplanting of cauliflower, tomato, brinjal, chilli etc. in the main field. Undertake sowing of sunflower and groundnut.
- In Bastar Plateau Zone, continue sowing of wheat and gram. Apply irrigation in vegetables. Undertake earthing up in banana.
- 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.
- 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 isolated pockets over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh during next 2-3 days, 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:**

- In Intermediate Zone, undertake sowing of wheat crop (varieties- VL 907, HS 507 and HPW 349) under irrigated/rainfed conditions up to 800 - 1000 m amsl, variety PBW-175 up to 1000 m amsl under rainfed condition only and VL 804, HS 507 and HPW 349 under irrigated/rainfed conditions up to 1000 -1350 m amsl) in mid to high altitude areas of the district. Sowing should be done only after ensuring appropriate moisture level in the soil.
- Complete sowing of mustard crop (varieties- RSPR01, Kranti and Pusa Bold under lower/plain areas and varieties Kranti, RLM 619, Varuna and RH 30 under intermediate areas of the district). Sowing should be done only after ensuring appropriate moisture level in the soil. Carry out hand weeding and hoeing in *rabi* pulses, where the crop is one month old.
- 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.

▪ **Uttarakhand:**

- Keeping in view gradual decrease in temperature in Hill Zone, complete sowing of *rabi* crops as early as possible. Seeds should be treated with Bavistin or Thiram @ 2-2.5 g per kilogram of seed. Undertake transplanting of onion seedling after root treatment by fungicide. Undertake transplanting of 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.

▪ **Himachal Pradesh:**

- In Sub-Montane & Low Hills Sub-Tropical Zone, before sowing of *rabi* crops, after cleaning the fields, add decomposed FYM or compost, as it improves the physical and biological properties of soil and thus increases the water retention capacity as well as nutrient status of the soil.
- Complete sowing of gram and lentil in lower areas.
- Carry out thinning and weeding in timely sown mustard crop. Monitor the mustard crop against attack of painted bug and aphid. Keeping in view the relative humidity, monitor the mustard crop against attack of white rust. If infection is high, spray Dithane-M-45 @ 2 gram/ litre of water.
- 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.
- To control shoot and fruit borer in brinjal and tomato crops, infested fruits and shoots should be collected and buried inside the soil. Also install pheromone trap @25 per hectare. If pest population is high, spray spinosad 48 EC @ 1 ml/4 litres of water when sky is clear.
- Undertake direct sowing of radish, carrot, turnip, palak, methi carrot, broccoli, lettuce in mid hill areas of the State.
- 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.
- Due to high relative humidity, infection of blight may occur in potato and tomato. Constant monitoring is advised. If symptoms appears then spray Carbandizam @ 1.0 gm / litre of water or Dithane-M-45 @ 2.0 g/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. Undertake transplanting of tomato.
- 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.
- 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.

▪ **Uttar Pradesh:**

- In East Uttar Pradesh, continue sowing of coriander, spinach, radish, carrot, fenugreek, fennel etc. Continue sowing of mustard, gram, lentil, pea and planting of sugarcane, potato, ginger and turmeric. Continue sowing of wheat and barley.
- 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. Undertake weeding in vegetables.
- There are chances of attack of tunnel pest in toria, apply Monocrotophos 36% SL @ 500 ml per hectare or Chlorpyrifos 20% EC @ 1litre per hectare. 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, sowing of wheat may be undertaken at the earliest to facilitate the extended vegetative and reproductive growth phases, it escapes terminal heat damage during maturity phase.
- In Arid Western Plain Zone, weather conditions are becoming favourable for sowing of mustard and gram. Therefore, arrange seed, fertilizer and chemicals for seed treatment for sowing. Also, harvest mature groundnut and undertake sowing of garlic. Undertake field preparation and sowing of wheat and barley as this is the best optimum time of sowing for wheat and barley when average daily temperature remains between 20-25° C.
- In Sub Humid Southern Plain and Aravali Hill Zone, undertake sowing of wheat and barley.
- In Semi Arid Eastern Plain Zone, protect the wheat crop from seed borne disease farmers are advised to treat seeds with Mencozeb @ 2 gm per kg seed before sowing. To control termite attack, treat seeds with Fipronil 5 SC @ 6 ml per kg seed or Clothidin 50 WDG @ 1.5 gram per kg seed should be mixed in appropriate quantity of water to spray on seeds and after spray dry the seeds in shade.

• **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.

• **Horticulture**

- In Jammu & Kashmir, to control the stem rot disease in apple and seed bearing fruits, remove soil from the surrounded area of stem in the affected fruit trees so that sun rays may enter directly in the stem of affected tree. Remove the affected bark. Drenching of 0.3 % Copper-oxchloride per plant should also be done. Spray 5% Urea in the leaves of apple before one week of falling leaves stage.
- In high hills, collect and dry the seeds of wild apricot, peach, apple etc. Undertake sowing after suitable seed treatment. Arrange fertilizers, compost, fungicides/insecticides which are mixed in soil while filling the pits in sufficient quantity. Reserve improved varieties of deciduous plants. Start preparation of basins.

• **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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