



National Agromet Advisory Service Bulletin

Friday 13th December 2019

(For the period 13th to 17th December 2019)



Issued by

India Meteorological Department

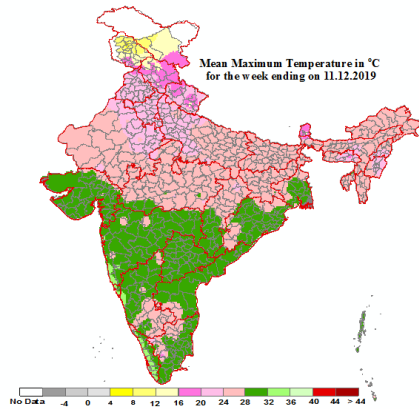
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District AAS Bulletin: <http://www.imdagrimet.gov.in/node/3545>

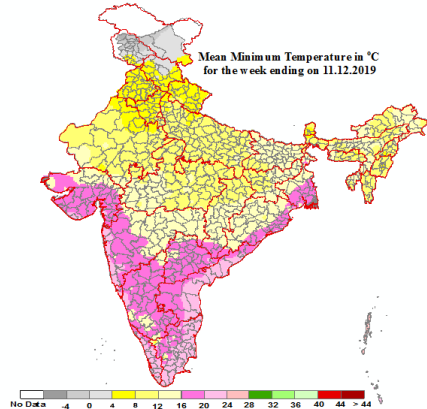
State Composite AAS Bulletin: <http://www.imdagrimet.gov.in/node/3544>

spatial distribution of weather parameters for the week ending on 11.12.2019

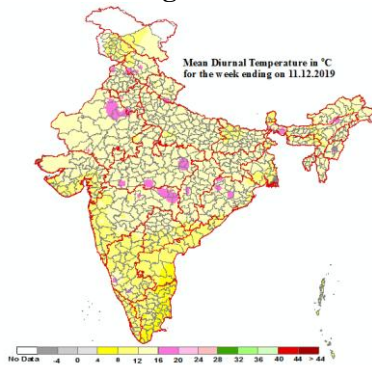
Mean Maximum Temperature (°C) for the week ending on 11.12.2019



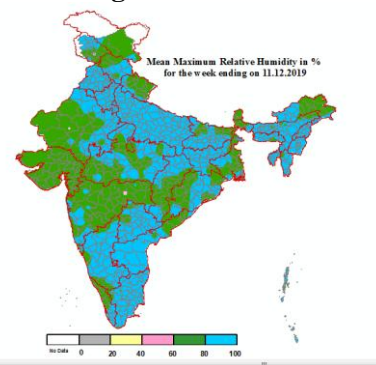
Mean Minimum Temperature (°C) for the week ending on 11.12.2019



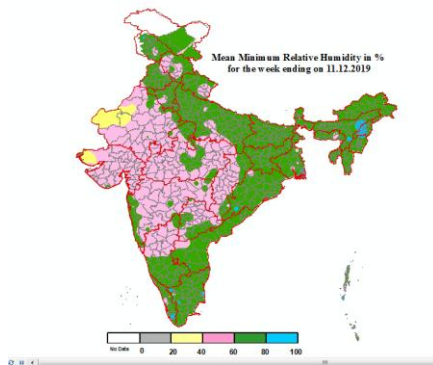
Mean Diurnal Temperature Variation (°C) for the week ending on 11.12.2019



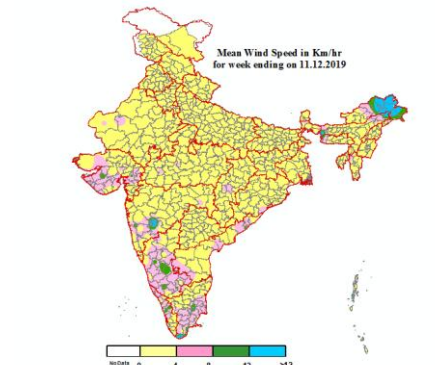
Mean Maximum Relative Humidity (%) for the week ending on 11.12.2019



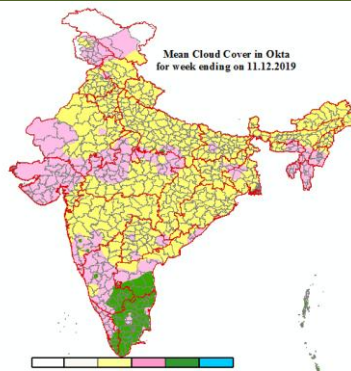
Mean Minimum Relative Humidity (%) for the week ending on 11.12.2019



Mean Wind Speed (km/hr) for the week ending on 11.12.2019

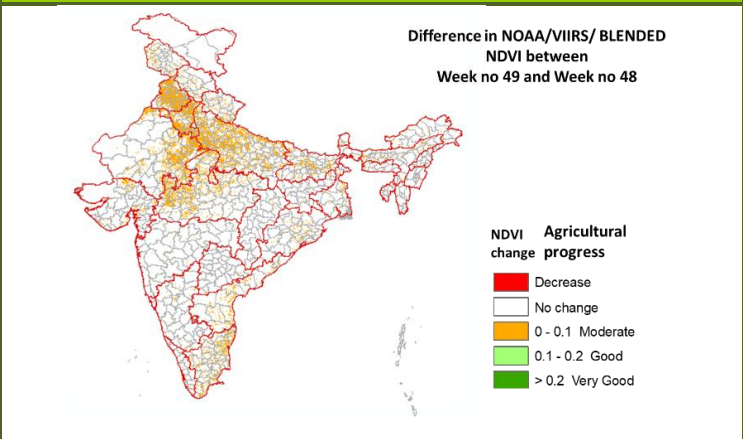
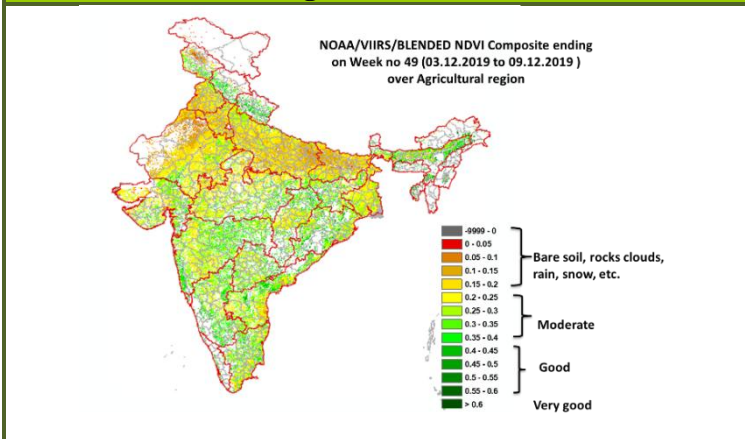


Mean Cloud Cover (okta) for the week ending on 11.12.2019



NOAA/VIIRS/BLENDED NDVI composite for the week number 49 (03.12.2019 to 09.12.2019) over Agricultural regions of India

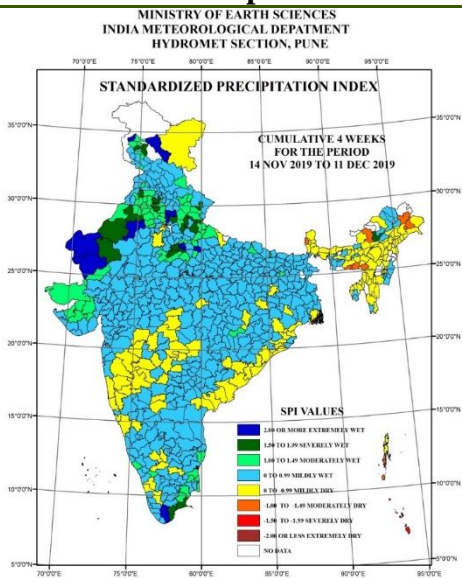
Difference in NOAA/VIIRS/BLENDED NDVI between week number 49 and week number 48



Agriculture vigour was good at many parts of Uttarakhand; over few parts of North Eastern states, Chhattisgarh, Odisha, Andhra Pradesh, Karnataka, South Konkan & East Madhya Pradesh and at isolated places in Sub Himalayan West Bengal, Sikkim, Jharkhand, Kerala, East Vidarbha, Gujarat, Himachal Pardesh, Telangana & Tamilnadu.

Moderate difference in agricultural vigour has been observed at many places over Punjab, Haryana, Uttar Pradesh and at few places over West Madhya Pradesh, East Rajasthan, Bihar. It was isolated over rest of the country.

**Standardised Precipitation Index
Cumulative 4 weeks for the period 14th Nov to 11th Dec 2019**



- Extremely/Severely wet conditions exist in Papumpara district of Arunachal Pradesh; Kaithal district of Haryana; Anantnag, Badgam, Kupwara, Pulwama, Kargil districts of Jammu; Patiala, Moga districts of Punjab; Barmer, Bikaner, Churu, Jaisalmer, Jodhpur, Hanumangarh, Dholpur districts of Rajasthan; Ramanathapuram, Tirunelveli, Toothukudi districts of Tamilnadu; Kannauj, Agra, Baghpat, Bareilly, Firozabad, Meerut, Moradabad, Muzaffarnagar, Sambhal districts of Uttar Pradesh; Udham Singh Nagar, Bageshwar districts of Uttarakhand.
- Moderately dry conditions exist in East Kameng, Lohit, Lower Dibang Valley districts of Arunachal Pradesh; East Khasi Hills districts of Meghalaya; South Andaman districts of Andaman & Nicobar Islands; West Sikkim districts of Sikkim.
- Extremely / Severely dry conditions exist in Nicobar district of Andaman & Nicobar Islands.
- Moderately wet to mildly dry conditions were experienced in remaining districts in the country.

Weather Forecast for next 5 days valid upto 0830 hours of 18th December 2019

- ◆ Meteorological sub-division wise detailed 5 days precipitation forecast is given in Table below.
- ◆ Fall in minimum temperatures by 2-3°C for next 2-3 days over Gujarat; fall in minimum temperatures by 3-5°C over central India and by 2-3°C over east India from 15th December onwards. No large change in minimum temperatures over rest parts of the country during the same period.
- ◆ Shallow to Moderate fog in isolated pockets very likely over east India, east Madhya Pradesh, Vidarbha, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during next 2-3 days.

5 Day Rainfall Forecast (MID-DAY)

13th December 2019

Met-Sub-Division	13-Dec Today	14Dec Sat	15Dec Sun	16Dec Mon	17Dec Tue
1. Andaman & Nicobar Islands	ISOL	ISOL	ISOL	SCT	SCT
2. Arunachal Pradesh	ISOL	ISOL	ISOL	ISOL	ISOL
3. Assam & Meghalaya	DRY	DRY	DRY	DRY	DRY
4. N. M. M. & T.	DRY	DRY	DRY	DRY	DRY
5. S.H. West Bengal & Sikkim	SCT	ISOL	DRY	DRY	DRY
6. Gangetic West Bengal	ISOL	ISOL	ISOL	DRY	DRY
7. Odisha	ISOL	ISOL	ISOL	DRY	DRY
8. Jharkhand	ISOL	ISOL	ISOL	DRY	DRY
9. Bihar	FWS	ISOL	DRY	DRY	DRY
10. East Uttar Pradesh	FWS	SCT	DRY	DRY	DRY
11. West Uttar Pradesh	FWS	ISOL	DRY	DRY	DRY
12. Uttarakhand	WS	SCT	DRY	DRY	DRY
13. Haryana, Chd & Delhi	FWS	ISOL	DRY	DRY	DRY
14. Punjab	FWS	ISOL	DRY	DRY	DRY
15. Himachal Pradesh	WS	SCT	ISOL	DRY	DRY
16. Jammu & Kashmir	WS	SCT	ISOL	DRY	DRY
17. West Rajasthan	ISOL	DRY	DRY	DRY	DRY
18. East Rajasthan	ISOL	DRY	DRY	DRY	DRY
19. West Madhya Pradesh	ISOL	DRY	DRY	DRY	DRY
20. East Madhya Pradesh	SCT	ISOL	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	ISOL	ISOL	DRY	DRY	DRY
25. Marathawada	ISOL	ISOL	ISOL	DRY	DRY
26. Vidharbha	ISOL	ISOL	DRY	DRY	DRY
27. Chhattisgarh	SCT	ISOL	DRY	DRY	DRY
28. Coastal A. P. & Yanam	ISOL	ISOL	ISOL	DRY	DRY
29. Telangana	DRY	DRY	DRY	DRY	DRY
30. Rayalaseema	ISOL	ISOL	DRY	DRY	DRY
31. T.N.,Puducherry & Karaikal	SCT	SCT	ISOL	ISOL	ISOL
32. Coastal Karnataka	DRY	DRY	DRY	DRY	DRY
33. North Interior Karnataka	DRY	DRY	DRY	DRY	DRY
34. South Interior Karnataka	DRY	ISOL	ISOL	DRY	DRY
35. Kerala & Mahe	ISOL	ISOL	ISOL	DRY	DRY
36. Lakshadweep	ISOL	ISOL	DRY	DRY	DRY

% Station Reporting Rainfall

% Stations	Category	% Stations	Category
76-100	Widespread (WS/Most Places)	26-50	Scattered (SCT/ A Few Places)
51-75	Fairly Widespread (FWS/ Many Places)	1-25	Isolated (ISOL)
No Rain	Dry		

Weather Warning during next 5 days

13 December (Day 1):

- ◆ **Thunderstorm/hailstorm** accompanied with **lightning** very likely at isolated places over Uttarakhand, Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and East Madhya Pradesh and **Thunderstorm** accompanied with **lightning** at isolated places over West Madhya Pradesh, Vidarbha and Chhattisgarh.
- ◆ **Heavy rain/snow** very likely at isolated places over Jammu & Kashmir, Uttarakhand and Himachal Pradesh and **Heavy rain** at isolated places over Punjab, north Haryana, Uttar Pradesh and Tamilnadu, Puducherry & Karaikal.
- ◆ **Dense fog** in isolated pockets very likely over West Madhya Pradesh, Odisha, south Assam & Meghalaya and Mizoram & Tripura.

14 December (Day 2):

- ◆ **Thunderstorm** accompanied with **lightning** very likely at isolated places over Chhattisgarh.
- ◆ **Dense fog** in isolated pockets very likely over Madhya Pradesh, Vidarbha, Odisha, south Assam & Meghalaya and Mizoram & Tripura.

15 December (Day 3):

- ◆ **Dense fog** at a few places with **very dense fog** in isolated pockets very likely over Punjab and Haryana, Chandigarh & Delhi; **Dense fog** likely in isolated pockets over Rajasthan and Uttar Pradesh.

16 December (Day 4):

- ◆ **Dense fog** at a few places with **very dense fog** in isolated pockets likely over Punjab and Haryana, Chandigarh & Delhi; **Dense fog** likely in isolated pockets over Rajasthan and Uttar Pradesh.

17 December (Day 5):

- ◆ No Weather Warning.

Weather Outlook for subsequent 2 days from 18th December to 20th December, 2019

- ◆ Isolated rain/snow likely over Western Himalayan region. Isolated rainfall is also likely over parts of south Peninsular India.
- ◆ Weather likely to be dry over remaining parts of the country

Salient advisories

- As **thunderstorm/hailstorm** accompanied with **lightning** very likely at isolated places over **Uttarakhand, Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and East Madhya Pradesh** on 13th December, farmers are advised to use hail net for orchard crops to protect from mechanical damage. Keep cattle/goats indoor during thunderstorm.
- As **thunderstorm** accompanied with **lightning** at isolated places over **West Madhya Pradesh and Vidarbha** on 13th December and over **Chhattisgarh** on 13th and 14th December, provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging. Keep harvested produce at safer places.
- As **heavy rain/snow** very likely at isolated places over **Jammu & Kashmir, Uttarakhand and Himachal Pradesh** and **Heavy rain** at isolated places over **Punjab, north Haryana, Uttar Pradesh and Tamilnadu, Puducherry & Karaikal** on 13th; avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops. Provide adequate drainage in crop fields.

- As **dense fog** in isolated pockets very likely over **West Madhya Pradesh, Odisha, south Assam & Meghalaya and Mizoram & Tripura** on 13th and 14th; **dense fog** at a few places with **very dense fog** in isolated pockets likely over **Punjab and Haryana, Chandigarh & Delhi**; **dense fog** likely in isolated pockets over **Rajasthan and Uttar Pradesh** on 15th and 16th, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for early blight disease. If symptoms are noticed, undertake plant protection measures.
- Undertake sowing/ transplanting of following *rabi* crops:
 - In Telangana, continue nursery sowing of short duration *rabi* rice.
 - In North Interior Karnataka, take up new planting of sugarcane; in South Interior Karnataka, go for sowing of Rabi groundnut, sunflower, avare, garlic and water melon and in coastal Karnataka, continue land preparation/sowing of green gram, black gram and sesame crops.
 - In Assam, continue nursery bed preparation/ nursery sowing of *Boro* rice and sowing of wheat, maize, *rabi* pulses and oilseeds crops
 - In Odisha, continue sowing of mustard, groundnut, sesame, sunflower, pea, chickpea, wheat and sweet corn.
 - In Bihar and Jharkhand, undertake sowing of late varieties of wheat.
 - In Sub-Himalayan West Bengal, continue sowing of white mustard, garden pea, wheat crops and planting of potato, cole crops.
 - In South Gujarat, go for intercropping in sugarcane field with crops like onion, garlic, mustard, cabbage, cauliflower, green gram and black gram.
 - In Madhya Pradesh, continue sowing of wheat, gram, pea and lentil. Continue sowing/transplanting of tomato, brinjal, chilli, cauliflower, cabbage, spinach, fenugreek, garlic, radish, pea, carrot, etc.
 - In Chhattisgarh, complete sowing of garlic, wheat, chickpea,,mustard safflower, linseed and lentil.
 - In Jammu & Kashmir, continue planting of garlic and transplanting of onion.
 - In Punjab, continue sowing of wheat, broccoli, Chinese cabbage, radish, spinach, etc. and transplanting of mid-season cauliflower..
 - In Uttar Pradesh, undertake sowing of late wheat varieties.
 - In Haryana and Rajasthan, continue sowing of late sown wheat and barley varieties.

Detailed Agromet Advisories

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

Realised Rainfall : Significant rainfall occurred in Nellore district of Andhra Pradesh; Karaikal, Ramanathapuram, Tirunelveli, Tiruvarur districts in Tamilnadu. Weather remained mainly dry in rest of the region.

Advisories:

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.
- In Problem Area Zone, prevailing weather conditions may favour the incidence of sheath blight in rice, spray Hexaconazole 2ml/ litre of water.
- In Central Zone, there is a chance of leaf folder attack in *mundakan* Paddy. Use trichogramma cards (2CC per one acre). Cut the cards in to small pieces and fix in different regions of the field. If the attack is severe, spray Quinalphos @ 2ml per one liter of water
- In Northern Zone, to control powdery mildew on cucurbits, spray Akomin (@3ml/ litre of water on both surfaces of the leaves, thrice at 15 days interval. Remove and burn out the infested leaves.

Andhra Pradesh

- In North Coastal Zone, undertake harvesting of rice and sugarcane. Weather is congenial for incidence of pod borer in red gram which is at pod development stage. Spray chlorophyriphos @ 2.5 ml per litre.
- In Southern Zone, undertake paddy transplanting. While transplanting leave 20 cm pathways for every 2 m of transplanted crop for better aeration and light penetration. In areas where there is stagnation of water in nurseries and main fields farmers are advised to spray bavistin @ 1 g./L of water
- In Scarce Rainfall Zone of Rayalaseema, complete sowing of groundnut under irrigated condition. The Prevailing weather conditions are favorable for incidence of pest and diseases Helicoverpha, spodoptera exigua in Bengalgram. Spray Thiodicarb 300 grams or Acephate 300 grams or chloropyrifos 500 ml per acre.
- In Krishna Godavari Zone, continue sowing of rabi maize. Present weather conditions are congenial for whitefly incidence in blackgram and greengram, Spray monocrotophos @ 1.6 ml/lit or triazophos @ 1.5 ml/lit or acephate @ 1.0 g/ lit or dimethoate @ 2.0 ml/lit or acetamiprid @ 0.2 g/lit at 7-10 days interval by alternating the chemicals against whiteflies.

Telangana

- Continue sowing of rice nurseries with short duration varieties for rabi season. Cover the polythene sheets or tarpaulin sheets entire nursery bed in the night and remove in the morning to avoid the effect of cool temperatures on germination and growth of nursery. Irrigate the nursery with water in night time and remove water in early morning to speed up nursery growth in cold.
- Prevailing weather conditions are congenial for the incidence of Fall Armyworm (Spodoptera Frugiperda) in Rabi Maize crop. To control, Poison 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 Chlorantriliprole @ 0.3 ml (@60ml/acre) per liter of water into the whorl of the plant..
- Prevailing weather conditions are congenial for incidence of pinkboll worm in cotton. Monitor the pest & control by adopting Arrange pheromone traps 4 per acre for monitoring. If moths are found in trap, spraying thiodicarb @ 1.5 gr per lit of water.

Tamil Nadu

- As heavy rain/snow very likely at isolated places over **Tamilnadu, Puducherry & Karaikal** on 13th; avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops. Provide adequate drainage in crop fields.
- In Western Zone, weather is congenial for blast incidence in rice, spray initially with Tricyclozone @ 1g / litre of water followed by second spray with 1g Carbendazim / litre of water.
- In High Altitude Hilly Zone, foot rot disease in pepper, apply neem cake 0.5 kg per vine + swabbing of Bordeaux paste upto 1 m from the ground.
- In South Zone, due to high humidity over longer periods may cause severe defoliation due to Grey mildew in cotton, spray Carbendazim at 250-375g or wettable sulphur at 1.25-2.0 kg/ha, repeat after a week.
- In High Rainfall Zone, weather is congenial for leaf hopper in mango, spray two rounds of Acephate @ 1 g /litre or Phasolone @ 1.5 ml / litre along with sticking agent @ 10 ml / litre of water for management of leaf hopper.

Karnataka:

- In North Interior Karnataka, continue picking of cotton bolls. Carry out intercultural operations in wheat and chickpea crops. Apply protective irrigation to chickpea crop. Take up new planting of sugarcane @ 10000 to 15000 nodes per acre.
For management of pod borer in chickpea and pigeon pea crops, spray Rynaxypyr 20 SC @ 2 ml or Emamectin Benzoate 5 SG @ 2 g or Flubendimide @ 1.5 ml per 10 litres of water.

- In South Interior Karnataka, complete the harvesting of matured maize, rice, ragi, groundnut, sugarcane and onion crops in clear weather. Go for sowing of Rabi groundnut, sunflower, avare, garlic and water melon. Continue harvesting of areca nut. Manage fruit rot in tomato and capsicum by spraying Indophil M45 @ 3 g per litre of water.
- In Coastal Karnataka, complete the harvesting of paddy. Continue land preparation/sowing of green gram, black gram and sesame crops. Continue picking mature cotton bolls and harvesting areca nut. To control sucking pests like aphids and white fly in pulses and vegetables, spray Imidacloprid @ 1.5ml or Profenofos @ 1ml or Quinalphos @ 1 ml or Dimethoate @ 1ml per litre of water.

Animal Husbandry:

- In Karnataka, vaccinate livestock against BQ and FMD. Maintain optimum room temperature in sericulture, dairy and poultry units.
- In Tamilnadu, to prevent the mastitis in milching cows, the udder cows may be regularly cleaned with potassium permanganate solution before and after milking. Further animals shelters may be cleaned with bleaching powder solution. Since the minimum temperature is around 20°C, feed the dairy animals and poultry with high calorie feeds.
- In Karaikal and Puducherry, as a preventive measure for Babesiasis disease in cattle, apply Butox @ 2 ml/litre of water on cattle and also spray it on the nearby areas of the cattle shed to control ectoparasites.

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

Realised Rainfall: Dry weather prevailed over the region during the week.

Advisories:

- **Dense fog** in isolated pockets very likely over south Assam & Meghalaya and Mizoram & Tripura on 13th and 14th, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for early blight disease. If symptoms are noticed, undertake plant protection measures.

Arunachal Pradesh

- In Arunachal Pradesh, undertake harvesting of rice. In trunk borer attacked orange trees, cleaning of entry hole and treatment with Dichlorvos dipped cotton swabs is advised and also use of light trap to attract adults.

Assam & Meghalaya

- In Assam, continue nursery bed preparation/ nursery sowing of *Boro* rice and harvesting of matured *Sali* rice.
- In Central Brahmaputra Valley, continue sowing of wheat, maize, pulses and oilseeds crops. Take up transplanting of tomato.
- In Upper Brahmaputra Valley Zone, complete the planting of potato by mid of December. Undertake prophylactic measure against late blight disease of the potato crops by spraying Mancozeb @ 2.5 gm/litre of water at stolon formation stage. Spray Chlorpyrifos 20 EC @ 5 ml/litre of water against saw fly infestation in rapeseed and mustard crops at vegetative stage.
- In Barak Valley Zone, complete the sowing of rapeseed/mustard and planting of potato. Spray Malathion 50 EC @ 1.5ml/litre to protect the cole crops from leaf eating caterpillars.
- In North Bank Plain Zone, continue land preparation/ sowing of *rabi* pulses like lentil, rajmah, pea and lathyrus, winter vegetables like cabbage, cauliflower, knolkhol, brinjal, radish and carrot and planting of potato.
- In Hill Zone of Assam, farmers are advised to go for bagging of the banana bunches with muslin cloth or polyethylene before fruit set in order to protect the fruits from the attack of banana fruit and leaf scarring beetle.
- In Meghalaya, carry out harvesting of *Sali*/kharif rice (lowland) and make the field ready for Rabi crops. Go for regular harvesting of ginger, turmeric and Khasi Mandarin fruits.

Manipur, Mizoram, Tripura and Nagaland

- In Nagaland, carry out field control of insect/pests and diseases in time in standing crops by integrating suitable physical, mechanical, bio-logical and cultural management strategies. Apply irrigation at 3 cm depth in sesame at flowering stage and pod formation stage.
- In Manipur, undertake land preparation for sowing of *rabi* maize. Intercrop *rabi* maize with French bean, mustard/rapeseed, coriander, spinach, radish, carrot, lentil. Sprays of neem oil may be given as prophylactic measures against insect pest infestation. In fruit crops and perennial vegetables, apply organic mulches after earthing up and weeding to conserve residual soil moisture as well as to maintain the soil temperature. Light watering during morning hours is advised for the *rabi* crops (especially in vegetative stages) to avoid effects of frost/ fog on crops. Also smoking is advised in and around the crop field during morning and evening hours.
- In Mizoram, in maize field, surface must cover with legume crop and vegetable crops like pumpkin and cucumber for conserving soil moisture. Provide irrigation at three days interval. Use straw mulch where irrigation is not possible.
- In Tripura, prepare field for sowing of *Rabi* crops after harvesting of rice. Farmers may cultivate potato, gram, lentil, pea, etc. under assured irrigation facilities. Treat seeds of pulse crops with *Rhizobium* culture before sowing.

Animal Husbandry

- In Northeastern states, to protect poultry from cold, put gunny bags or plastic sheath curtains on the side walls of shed and increase bedding material by six inches. Care should be taken not to restrict ventilation. Provide adequate feed during cold season. Provide supplement in feed with minerals to avoid stress in cattle and pigs.

Fishery

- In Upper Brahmaputra Valley, during winter season fishes are infested by various bacterial diseases. To control these diseases, apply Potash @ 4-5 mg per litre of water in the pond after consultation with Fishery Extension Officer.

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

Realised Rainfall: Significant rainfall occurred in Nicobar district of Andaman & Nicobar Islands. Weather remained dry/mainly dry over the region.

Advisories:

Odisha

- **Dense fog** in isolated pockets very likely over **Odisha** on 13th and 14th, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for early blight disease. If symptoms are noticed, undertake plant protection measures.
- Continue picking of matured cotton bolls. Continue sowing of mustard, groundnut, sesame, sunflower, pea, chickpea, wheat and sweet corn. Continue transplanting of 3-weeks old tomato, cabbage and cauliflower seedlings. Continue planting of carrot, radish, garlic, legumes and sowing of greens like spinach, amaranths, coriander, etc. Continue planting of potato crop and transplanting of brinjal, chilli and capsicum. Complete the sowing of *Rabi* pulses like green gram and black gram in this week. Undertake nursery sowing of *Rabi* rice as weather is favourable. Take up nursery raising of onion. Apply irrigation to early sown wheat crop at crown root initiation (CRI) stage.

Bihar

- Take up sowing of Bengal gram, chick pea and late varieties of wheat. Apply irrigation to timely sown wheat crop at CRI stage. Continue transplanting of 50-55 days old onion seedlings. Spray Malathion 50EC @ 2 ml or Dimethoate 30 EC @ 1ml per liter of water for infestation of insects/pests in cabbage and cauliflower crops.

Jharkhand

- Undertake sowing of late varieties of wheat. Apply irrigation to potato crop at 10 days interval. Irrigate the timely sown wheat crop after carrying out intercultural operation. Go for nipping in chick pea crop at 30 DAS for more branching and subsequently more flowering. Go for cultivation of hybrid varieties of leafy vegetables like sarso sag, bathua sag, spinach, methi, coriander, etc. Continue transplanting of cabbage, cauliflower and tomato.

To control aphid attack in mustard crop at flowering stage, spray Monocrotophos @ 2ml or Imidacloprid @ 1ml per litre of water.

West Bengal

- In Sub-Himalayan West Bengal, complete the harvesting of rice, large cardamom and Mandarin orange. Continue sowing of white mustard, garden pea, wheat crops and planting of potato, cole crops. Carry out sowing of lentil after harvesting of rice crop.

In Sub-Himalayan West Bengal, to manage cabbage butterfly, spodoptera and other sucking pests, apply combined formulation of Thiomethoxam+ Lamda Cyhalothrin @ 1.5 ml/litre of water.

- In Gangetic West Bengal, complete the harvesting of Aman rice and sundry it in the farm yard. Complete the planting of potato and transplanting of seedlings of late variety cauliflower, cabbage, broccoli, tomato and sowing of French beans. Prepare field for sowing of mustard and lentil. Cover the fencing around betel nut vine with clothes to prevent strong northern winds.

Spray Imidacloprid @ 5.0 ml/15 litres of water or Acetamiprid @ 1.5 g/litre of water for whitefly attack followed by Fipronil @ 2.0 ml/litre for thrips attack in chilli and tomato seedlings.

Andaman & Nicobar Islands

- Prepare the field for sowing of pulses as the weather is conducive. Apply vermin-compost @ 8 tonnes/ha as basal dose in transplanted brinjal and apply irrigation depending on moisture.
- To reduce the borer pest in tomato, place pheromone traps and light traps @ 1/100 per sq. meter. Set up Rhinolure pheromone trap @ 1-2 /ha to trap and kill the beetles in coconut garden.

Animal Husbandry

- In Bihar, to control external parasites in animals, provide Butocus medicine.
- In Jharkhand, feed milch animals with silages/green fodder in limited quantity to prevent occurrence of diarrhoea and acidosis. Supplement feed with additional 1.5-2 kg concentrates during first 30-45 days of calving
- In Andaman & Nicobar Islands, feed piglets with colostrum (first milk) for half to 1 hour after birth.
- In West Bengal, make arrangements to protect livestock from cold winds. Make use of bulbs to maintain proper temperature in the poultry house.

Fishery

- In West Bengal, apply CIFAX @ 1litre/ha-m for three months or as required to control ulcer disease infish.
- In Odisha, feed the fishes with oil cake bran mixture @ 2-3% of their biomass daily.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

Realised Rainfall: Weather remained mainly dry/dry over the region.

Advisories:

Maharashtra

- As **thunderstorm** accompanied with **lightning** at isolated places over Vidarbha on 13th December, provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging due to strong winds. Keep harvested produce at safer places.
- In Konkan, continue nursery bed preparation for *Rabi* rice and land preparation of groundnut. Apply irrigation to crops like horse gram, cowpea and Kadava Wal. To control mango hopper on inflorescence leaf and fruits in mango, spray Thiophenate Methyl and Carbendanzim 1% @ 1 gram per liter of water.

To control tea mosquito bugs on the inflorescence of cashewnut, spray Profenophos 50 % EC @ 10 ml per 10 liters of water. To control leaf folder on horse gram, spray Dimethoate 30% EC @ 20 ml or Profenophos 50% EC @ 20 ml per 10 liter of water.

- In Madhya Maharashtra, complete harvesting of rice. Keep harvested produce in safer place. Continue picking of cotton. Undertake intercultural operation like weeding or hoeing in in rabi crops like sorghum (Jowar), wheat & gram. . To minimize moisture stress in mango orchards, apply mulch with dry leaves, dry grass, straw (7 to 8 cm layer). To control thrips in onion, spray Dimethoate 30 % EC @ 15 ml or Lambda Cyhalothrin 5% EC @ 6 ml in 10 liters of water using sticker (0.1%). To control aphid and jassid in wheat crop, spray *Metarhizium Anisopliae* @ 50g in 10 liters of water. To control powdery mildew in grape, spray Dithane Corteva @ 0.5 ml per litre of water OR Myclobutani @ 0.4 gm per litre of water. To control pod borer in gram crop, spray 5% neem extract. Erect “T” shaped bird perches in the field.
- In Marathawada, undertake intercultural operation like weeding and apply protective irrigation to citrus orchards. To control stem fly in wheat crop, spray Cypermethrin 10 % EC @ 11 ml per 10 liters of water. To control pyrilla in sugarcane crop, spray Chloropyriphos 20 % EC @ 30 ml per 10 liters of water.
- In Vidharbha, as thunderstorm accompanied with lightning at isolated places over Vidarbha on 13th December, avoid picking of cotton during inclement weather. For delayed sowing of irrigated wheat (up to December 15) use varieties - AKW 4627, PDKV Sardar, AKW-381, HI-977, AKW-1071(Purna), HD 2501. Undertake intercultural operations like weeding in early sown safflower, linseed, mustard maize, *rabbi* sorghum and gram. To control pod borer in pigeon pea, spray of 5% neem seed kernel extract.

Gujarat

- In Middle Gujarat, irrigate wheat crop at crown root initiation (CRI) stage. Take up sowing of chickpea. Apply irrigation to chilli and cucurbits as per requirement. Carry out picking of mature cotton bolls in time.
Use pheromone traps to monitor fruit borer in brinjal and, if borer population crosses ETL, spray Spinosad @ 3 ml per 10 litres of water.
- In North Gujarat, continue harvesting of matured fruits of custard apple, pomegranate, aonla and picking of matured bolls of cotton. Apply irrigation to potato and wheat crops. As weather is favourable, go for sowing of onion seeds @ seed rate 10-12 kg per hectare. Treat seeds with Captan @ 2.5 g/ kg of seeds before sowing.
Spray neem seed extract 5% and Thiomethoxam 5 gm per 10 litres of water for aphids and thrips in cumin seed crop. Also, to prevent blight disease infestation in cumin, spray Mencozeb 27 gm in 10 liters of water at 10 days interval as a precautionary measure.
- In South Gujarat, go for intercropping in sugarcane field with crops like onion, garlic, mustard, cabbage, cauliflower, green gram and black gram.
To control aphids in vegetable crops at vegetative stage, apply foliar spray of Neem oil @ 40 ml/10 litres of water. If the infestation is severe, apply Acephate 75% SP (10 ml/10 litres of water) or Thiamethoxam 25% WG (3 gm in 10 litre of water).
- In Saurashtra & Kutch, continue sowing of cumin. Irrigate wheat crop at CRI stage. Apply irrigation to pigeon pea crop through drip system. Apply irrigation to garlic and coriander crops at regular intervals. Continue picking of matured bolls of cotton.
To control purple blotch disease in onion crop, spray 25 gm Mancozeb and 15 ml Hexaconazole in 10 litres of water at 10-15 days interval.

Animal Husbandry:

- Vaccinate cattle against FMD. Spray Deltamethrin or Amitraz 2 ml/litre of water to control ticks.

CENTRAL INDIA [M.P., CHHATTISGARH]

Realised Rainfall: Dry weather prevailed over the region during the week.

Advisories:

- **Thunderstorm/hailstorm** accompanied with **lightning** very likely at isolated places over East Madhya Pradesh and **thunderstorm** accompanied with **lightning likely** at isolated places over West Madhya Pradesh on 13th December, farmers are advised to use hail net for orchard crops to protect from mechanical damage. Provide mechanical support to young fruit plants, banana and carry out staking of vegetables as well as propping up in sugarcane to prevent crops from lodging due to strong winds. Keep harvested produce at safer places. Keep cattle/goats indoor during thunderstorm.

Madhya Pradesh

- In Vindhya Plateau Zone, continue sowing of improved varieties of wheat, gram and lentil after necessary seed treatment. Undertake transplanting of onion, tomato, brinjal, chilli, cabbage and cauliflower. In Malwa Plateau Zone, continue sowing of wheat and chickpea. Continue planting of mango, guava and citrus fruits in new orchards.
- In Central Narmada Valley Zone, continue sowing of wheat and gram. Take up nursery raising of tomato, brinjal and chilli and sowing of cucurbit vegetables.
- In Bundelkhand, continue sowing of wheat. Continue raising onion nursery. Monitor the timely-sown mustard, pea, chickpea and lentil crops for pest and disease infestation.
- In Jhabua Hill Zone, continue sowing of wheat and gram. Prepare nursery for winter vegetables like tomato, brinjal, chilli, cauliflower, cabbage, spinach, fenugreek, garlic, radish, pea, carrot etc. To control leaf eating caterpillar in guava, ber, custard apple, citrus fruits, etc., spray Trizophos @ 2 ml/litre of water.

Chhattisgarh

- In Chhattisgarh Plain Zone, complete sowing of wheat, chickpea, safflower, linseed and lentil. Start transplanting of cabbage, cauliflower and knolkhol. Continue nursery sowing of tomato, brinjal, chilli and capsicum after seed treatment by Thiram @ 2 gram/ kg seeds.
- In Northern Hill Zone, complete sowing of chickpea and mustard. Take up sowing garlic. Go for nursery raising of onion seedlings. Start transplanting of winter vegetables like cauliflower, cabbage, chilli, tomato, brinjal, etc. and directly sowing the seed of radish, turnip, spinach, carrot, etc. after treatment with fungicide.
- In Bastar Plateau Zone, complete sowing of wheat, moong, urad, sunflower, lathyrus, gram, safflower, lentil, pea, etc.

Animal Husbandry

- In Chhattisgarh, provide concentrate feed to milch animals mixed with dry & green fodder.

NORTH INDIA [JAMMU & KASHMIR, HIMACHAL PRADESH, UTTARAKHAND, PUNJAB, HARYANA, DELHI, UTTAR PRADESH & RAJASTHAN]

Realised Rainfall : Significant rainfall occurred in Chamba, Hamirpur, Kangra and Kullu districts of Himachal Pradesh; all the districts of Jammu & Kashmir except Bandipore, Baramulla, Kargil, Kathua, Leh and Poonch. Significant rainfall also occurred in Almora, Chamoli, Garhwal Pauri, Garhwal Tehri, Nainital, Rudraprayag and Udham Singh Nagar districts of Uttarakhand. Weather remained dry over rest of the region.

Advisories:

- As **thunderstorm/hailstorm** accompanied with lightning very likely at isolated places over **Uttarakhand, Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh** on 13th December, farmers are advised to use hail net for orchard crops to protect from mechanical damage. Keep cattle/goats indoor during thunderstorm.
- As **heavy rain/snow** very likely at isolated places over **Jammu & Kashmir, Uttarakhand and Himachal Pradesh** and **Heavy rain** at isolated places over **Punjab, north Haryana, Uttar Pradesh**

on 13th; avoid irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops. Provide adequate drainage in crop fields.

- **Dense fog** at a few places with **very dense fog** in isolated pockets likely over **Punjab and Haryana, Chandigarh & Delhi** and **dense fog** likely in isolated pockets over **Rajasthan and Uttar Pradesh** on 15th and 16th, monitor the standing crops for incidence and spread of pest & diseases and monitor tomato and potato crops for early blight disease. If symptoms are noticed, undertake plant protection measures.

Jammu & Kashmir

- In Sub Tropical Zone, carry out hoeing and weeding operation in chick pea, pea and lentil. Carry out earthing up operation in potato. Undertake pruning in citrus orchard.
- In Intermediate Zone, install yellow sticky traps @ 40/hectare to control attack of aphids in toria. In case of severe attack, apply Dimethoate 30 EC/ Rogor @ 1 ml/litre of water. Carry out hoeing and weeding operations in mustard. Continue transplanting of onion and planting of garlic.

Himachal Pradesh

- In Mild Hills Sub-Humid Zone, whitewash apple tree stems with lime and Copper Sulphate to protect against various fungal diseases. To protect the pomegranate plants from direct sun shine which may cause canker disease, white wash the stem up to first branch and also on branches of sunny side with the solution of 15 kg white wash + 5 kilogram copper sulphate +2 litres linseed oil in 50 litres of water. Carry out pruning in cherry trees.
- In High Hill Temperate Dry Zone, continue digging pits for new apple plantations.

Punjab, Haryana and New Delhi

- In Punjab, considering the possibility of rain, avoid irrigating crops and keep harvested materials at safe places. Continue sowing of wheat, broccoli, Chinese cabbage, radish, spinach, etc. and transplanting of mid-season cauliflower. Harvest (for mill purpose) early maturing varieties of sugarcane. Complete the transplanting of tomato seedlings in the first fortnight of this month. Provide polythene sheet/Sarkanda/Kahi/ rice straw to protect the plants from frost.
- In Undulating Plain Zone, withheld sowing, avoid irrigation and fertilizer application in case of rainfall. Undertake intercultural operations in orchards on a non-rainy day.
- In Western Zone of Haryana, considering the possibility of variable weather and rain, withhold the late sowing of wheat crop, intercultural operations, irrigation upto 13th December. Complete sowing of late sown wheat and barley crop on a non-rainy day. Undertake intercultural operations for conserving the moisture and removing weeds in mustard crop on a non-rainy day and regularly check the mustard crop for pest population.
- In Eastern Zone of Haryana, due to possibility of variable weather and rain, avoid irrigation and spraying to the crops.
- In Delhi, avoid irrigation and spraying in standing crop and vegetables. Continue sowing of gram, pea and lentil; transplanting of onion seedling in the prepared fields and planting of early potato. Undertake transplanting of mature seedlings of cauliflower, cabbage, broccoli and tomato. Continue sowing of wheat, transplanting of marigold in raised bed and sowing of gladiolus in prepared fields. Undertake intercultural operations in vegetables and monitoring the crop against attack of painted bug.

Uttar Pradesh

- In East Uttar Pradesh, go for sowing of late wheat varieties after seed treatment. Carry out thinning and weeding in timely-sown mustard crop. Carry out intercultural operation in tomato crop. Apply light irrigation to standing potato crop.
- In West Uttar Pradesh, apply irrigation to timely-sown wheat and field pea crops at 20-25 DAS. Apply irrigation to timely-sown mustard and Bengal gram crops at 33-35 DAS. Take up raising of onion nursery. Complete the transplanting of brinjal, tomato, chilli, cauliflower and cabbage. Undertake harvesting of Toria crop in stages. Spray neem-based pesticides to control various pests and diseases arising due to

moist and foggy weather. Apply Chlorpyrifos 20EC @ 2 litre per hectare diluted in 700-800 litres of water to control cutworm in potato crop.

Uttarakhand

- In Sub-Humid Sub-Tropic Zone, postpone irrigation to wheat crop. Carry out weeding operation in potato. Carry out weeding and thinning operations in mustard.
- In Bhabar and Tarai Zone, carry out weeding operation in pulses 35-40 days after sowing, at an interval of 20-25 days. Carry out hoeing and weeding in barley crop. Apply light irrigation in toria and yellow mustard during grain filling stage. Undertake transplanting of onion seedlings. Undertake sowing of garlic. Apply light irrigation frequently in potato to save it from frost.
- In Hill Zone, postpone irrigation in onion as proper soil moisture is available in the field.

Rajasthan

- In Arid Western Plain Zone, undertake sowing of wheat and barley (late sown varieties).
- In Flood Prone Eastern Plain Zone, apply 5% Melathion or 5% Carbaryl powder @ 20-25 kg/ha for sawfly infestation in mustard and other brassica.
- In Semi-Arid Eastern Plain Zone, undertake sowing of late sown wheat after seed treatment with Fipronil 5 SC @ 6 ml per kg of seeds. To protect aonla trees at fruiting stage from the attack of pomegranate butterfly, spray Imidachlorpid @ 0.3 ml per litre water. This butterfly causes rotting of Aonla fruits.
- In Sub Humid Southern Plain and Aravali Hill Zone, weather is conducive for powdery mildew disease in peas, cauliflower, cabbage, reddish, spray Karathane 1 ml / litre of water or other sulfur based fungicides for controlling of powdery mildew.

Animal Husbandry

- In Uttar Pradesh, give proper & balanced diet to farm animals and protect them from cold.
- In Hill Zone of Uttarakhand, protect cow/ buffalo calves from cold. Give balanced diet to the animals. Wheat straw should be added with 60 % green fodder.

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