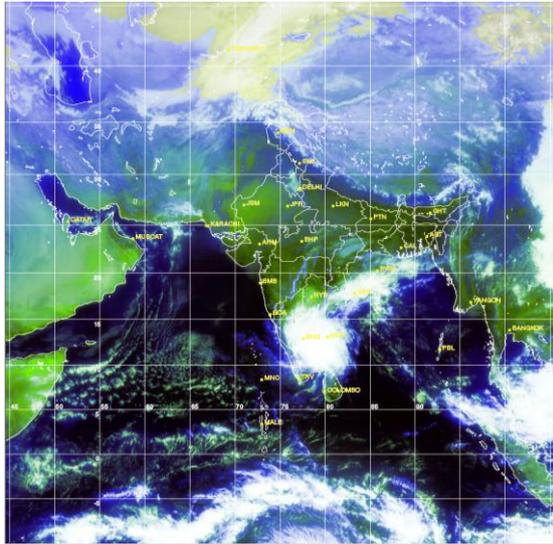




National Agromet Advisory Bulletin

Thursday, 29th December, 2011

(For the period 29th December, 2011 to 2nd January, 2012)



Satellite image 0600 UTC dated 30th December, 2011

The very severe cyclonic storm 'THANE' over southwest Bay of Bengal crossed north Tamil Nadu coast between Cuddalore and Puducherry between 0630 and 0730 hrs IST of 30th December 2011. Under the influence of the system, rainfall at most places with heavy to very heavy falls at a few places would occur over north coastal Tamil Nadu & Puducherry during next 12 hours and over north interior Tamil Nadu during next 24 hours. Rainfall at many places with isolated heavy to very heavy rainfall would occur over south coastal Andhra Pradesh, Rayalseema, north Kerala and south Karnataka. Gale winds reaching 90-100 kmph gusting to 110 kmph is likely along and off north Tamil Nadu and Puducherry coasts and adjoining areas of north interior Tamil Nadu.

Special Advisories for Cyclone 'THANE' North Coastal Tamil Nadu

- Provide adequate drainage for the crops like paddy, sugarcane, banana, black gram and groundnut.
- Postpone irrigation, top dressing of fertilizer and spraying chemicals to the standing crops, sowing of groundnut and black gram and harvesting and drying of *Samba* paddy.
- Provide mechanical support for banana and propping of sugarcane immediately.
- Provide suitable shelters to livestock and poultry birds against rainfall and wind.

South Coastal Andhra Pradesh

- Cover the harvested rice heaps with polythene sheets to avoid the grain discoloration.
- Drain out the water around the heaps immediately.
- Spray 5% salt solution on the sheaves/submerged standing crop at harvesting or pre harvesting stage to avoid sprouting.



Issued by

National Agrometeorological Advisory Service Centre
Agricultural Meteorology Division
India Meteorological Department, Shivajinagar, Pune.

The bulletin is also displayed in the website (<http://www.imdagrimet.gov.in>) of the Division

Executive Summary

The very severe cyclonic storm 'THANE' over southwest Bay of Bengal crossed north Tamil Nadu coast between Cuddalore and Puducherry between 0630 and 0730 hrs IST of 30th December 2011. Under the influence of the system, rainfall at most places with heavy to very heavy falls at a few places would occur over north coastal Tamil Nadu & Puducherry during next 12 hours and over north interior Tamil Nadu during next 24 hours. Rainfall at many places with isolated heavy to very heavy rainfall would occur over south coastal Andhra Pradesh, Rayalseema, north Kerala and south Karnataka. Gale winds reaching 90-100 kmph gusting to 110 kmph is likely along and off north Tamil Nadu and Puducherry coasts and adjoining areas of north interior Tamil Nadu.

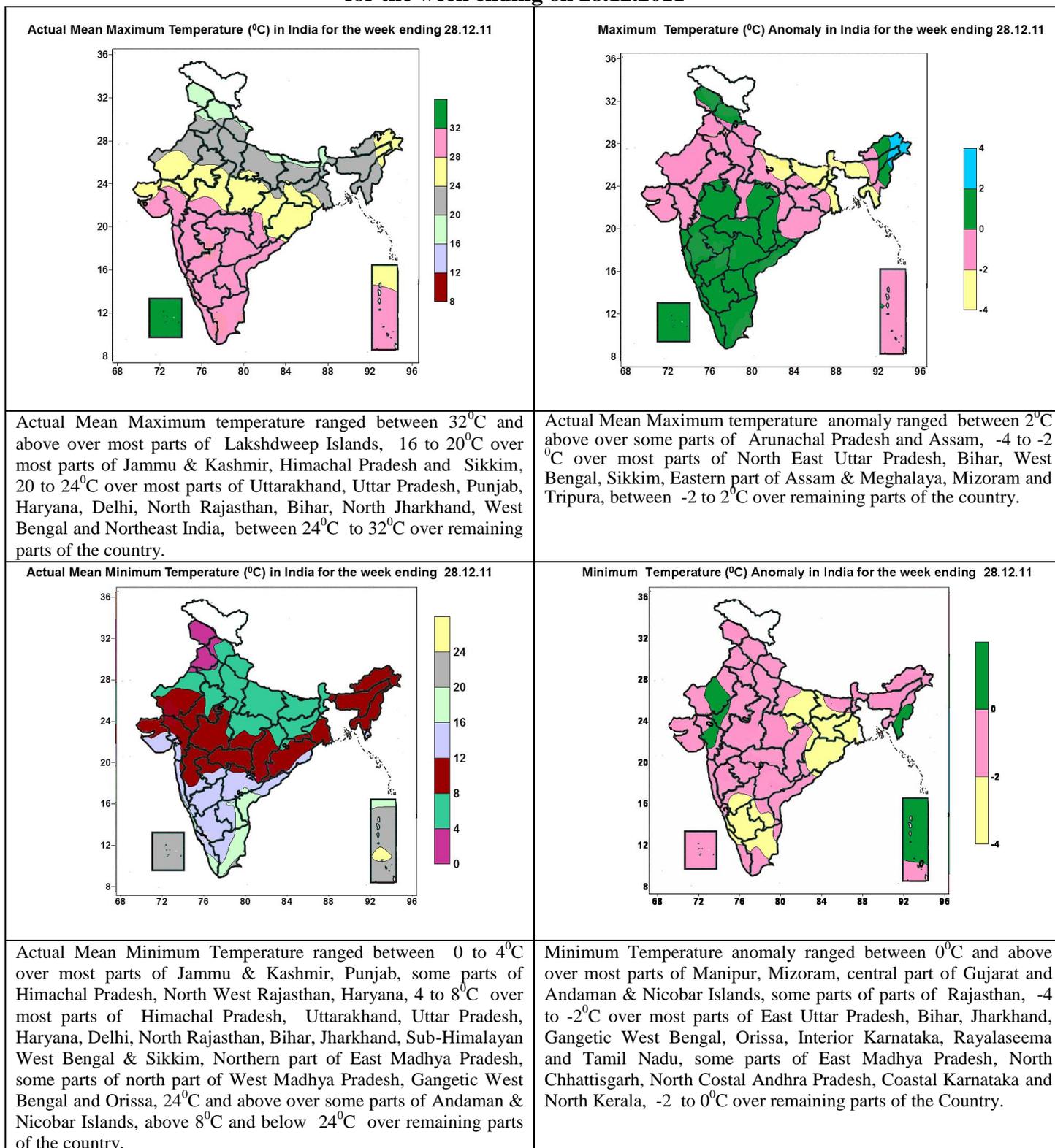
Farmers are advised to follow Special Advisories for Cyclone given in the front page to prevent the damage.

Cold wave conditions prevailed over some or many parts of Punjab, Haryana, Delhi, North Rajasthan, Uttar Pradesh, Sub Himalayan West Bengal, Bihar, Jharkhand, Chhattisgarh, East Madhya Pradesh, Saurashtra & Kutch, interior Karnataka and north Orissa. Minimum temperatures were reported 4⁰C and below over some parts of Northwest India during last week. No significant change in minimum temperatures is likely to occur over northwest and adjoining central India during next 48 hours and rise by 2-4° C thereafter. Farmers are advised to provide light and frequent irrigation as well as arrange for smoking around the fields in these regions to protect standing crops from cold injury and also to protect the animals from cold wave.

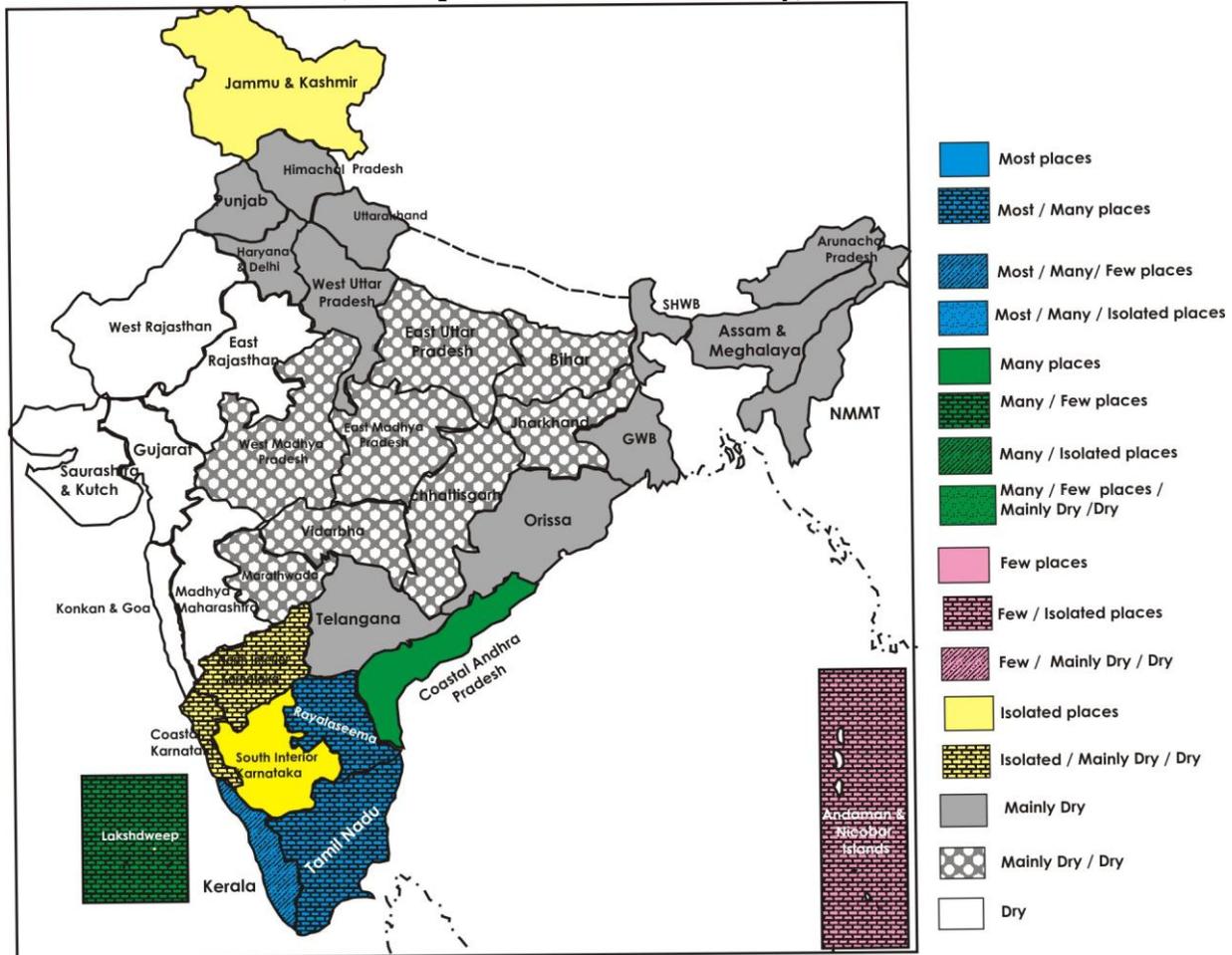
Due to fog conditions in Central Narmada Valley Zone of Madhya Pradesh, chickpea crop is damaged by leaf eating caterpillar. Farmers are advised to monitor chickpea and when the damage reaches ETL, spray Quinalphos 20 E.C @ 2.0 ml. per liter of water.

As mainly dry weather prevailed over most parts of the remaining parts of country and mainly dry or dry weather is likely over most parts of the country, farmers are advised to apply irrigation to the standing crops.

Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 28.12.2011



Weather Forecast (Valid upto 1430 hours of 1st January, 2012)



Major Feature of Weather Forecast upto 1430 hours IST of 1st January, 2012

- Fog/dense fog would occur over some parts of plains of northwest India during next 2 days.
- No significant change in minimum temperatures would occur over northwest and adjoining central India during next 48 hours and rise by 24°C thereafter.
- Rain/snow may occur at one or two places over western Himalayan region.
- Rain/thundershowers would occur at most places over Tamilnadu, at many places over Rayalseema and coastal Andhra Pradesh and at a few places over Kerala and Lakshadweep during next 24 hours and increase over Kerala and Lakshadweep thereafter.
- Rain/thundershowers would occur at a few places over central and adjoining east & north peninsular India from 1st January onwards.
- Rain/thundershowers would occur at a few places over Andaman & Nicobar islands during next 24 hours and decrease thereafter.
- Mainly dry weather would prevail over rest parts of the country.

Weather Warning

- Dense fog conditions (visibility reducing to 100 m or less in morning hours) would occur over some parts of Punjab, Haryana, Delhi and Uttar Pradesh during next 48 hours.
- Heavy to very heavy rainfall would occur at a few places with extremely heavy falls (25 cm or more) at one or two places over north Tamilnadu and Puducherry during next 48 hours.
- Heavy to very heavy rainfall would occur at one or two places over south coastal Andhra Pradesh and Rayalseema and south Tamilnadu during next 48 hours.

Weather Outlook up to 1430 hours IST of 3rd January, 2012

- Decrease in rainfall activity over south peninsular India.
- Scattered rain/snow would occur over western Himalayan region.

Zonewise Agromet Advisories

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

- **Realised Rainfall:** Dry weather prevailed over the States of the region during last week.
- **Rainfall Forecast:** Mainly dry weather is likely to prevail over the region during the period.
- **Advisories**
 - As there was no significant rain during last few weeks in most of the districts of the States of the region and no significant rain is likely to occur during the period, farmers are advised to apply irrigation to the standing crops.
 - In Assam, farmers are advised to complete sowing of potato, onion, garlic, tomato, radish, *rabi* pulses, niger, wheat etc.
 - Farmers in Assam are advised to continue preparation of nursery beds for *boro* rice.
 - In the Hill Zone of Assam, farmers are advised to complete planting of potato after harvesting of *Sali* rice.
 - Farmers in Upper Brahmaputra Valley Zone of Assam are advised to continue preparation of nursery beds for *boro* rice and complete sowing of tomato and planting of potato. Farmers are also advised to complete sowing of *rabi* pulses like lentil, rajmah, pea, lathyrus etc.
 - Farmers in Lower Brahmaputra Valley Zone of Assam are advised to complete sowing of wheat.
 - Farmers in Arunachal Pradesh are advised to complete sowing of *rabi* crops like pea and transplanting of vegetables like cabbage, cauliflower, knolkhol and other cole crops.
 - Farmers in Mid Tropical Plain Zone of Tripura are advised to start sowing of *boro rice* in lowland and complete planting of potato. In view of prevailing dry weather, farmers are advised to apply light irrigation to pulse crops at flowering stage and also to sugarcane.
 - Farmers in Temperate Sub Alpine Zone of Meghalaya are advised to complete planting of potato, *rabi* onion etc. and undertake nursery bed preparation and sowing of *boro* rice. Also undertake planting of cashew, apricot and banana. Prepare land for sowing of ladies finger, pumpkin and French bean and continue sowing of late varieties of tomato, cabbage and knol-khol.
 - Farmers of Sub tropical Plain Zone of Manipur are advised to complete transplanting of tomato, onion, cabbage, cauliflower, broccoli etc. and sowing of pea. Also complete planting of potato and undertake sowing of cucurbits like water-melon, cucumber and sponge gourd. Inter-cropping of *rabi* maize may also be done with rapeseed, pea and potato in areas where irrigation facilities are available.
 - Farmers in Mizoram are advised to continue transplanting of cole crops and tomato.
 - In Mild Tropical Hill Zone of Nagaland, in view of prevailing dry weather, farmers are advised to apply light irrigation to pea at flowering / pod formation stage and also to cabbage. Mulch with rice straw or plastic sheet to prevent weed growth and to conserve soil moisture. Intercropping may also be carried out with onion, garlic, tomato, marigold or other crops to minimize insect pests.
 - Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
 - Increase in temperature and cloudy weather is conducive for the attack of aphids in mustard in Mid Tropical Plain Zone of Tripura; to control the attack, spray Monocrotophos @ 2 to 3 ml per liter of water. Due to prevailing foggy condition, there is chance of infestation of fungal disease like early blight in potato. Farmers are

advised to spray Mancozeb @ 2.5 g per litre of water. There is also chance of leaf curl disease in early sown tomato and brinjal. Spray Monocrotophos @ 3 ml per litre of water or Imidacloprid @ 2 g per litre of water to manage the attack. There may also be attack of red mites in brinjal; spray Elemental Sulphur or wettable Sulphur @ 4.5 g per litre of water.

- Decrease in sunshine hours with fluctuation in humidity coupled with cloudy weather is congenial for rust incidence in peas and beans in Mid Tropical Plain Zone of Tripura; same may be controlled by thinning and spraying of Mancozeb 0.2%.
- In Kolasib region of Mizoram, decrease in sunshine hours with fluctuation of humidity is congenial for attack of cut worm, diamond back moth, aphids and thrips in cole crops and tomato; farmers are advised to spray 5% neem extract or spray Endosulphan (35%) @ 12 ml or Dimethoate (30%) @ 10 ml in 10 litres of water to control the attack. Low temperature and cloudy weather coupled with high humidity are congenial for mealy bug in khasi mandarin; put Polythene banding around the trunk to prevent climbing. Low night temperatures are also favourable for the incidence of early blight in tomato and chilli crops; spray Mancozeb @ 1 g per litre of water.
- In Mild Tropical Hill Zone of Nagaland, prevailing dry weather may favour the spread of powdery mildew on pea at flowering stage. Farmers are advised to monitor the crop and take appropriate plant protection measures.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
 - Farmers in Lower, Central and Upper Bramhaputra Valley Zone of Assam are advised to vaccinate poultry birds against ranikhet disease. Provide artificial heating through lighting by electric bulb at poultry house during night time to protect the birds from cold and reduce the incidence of mortality.
 - The farmers in Kolasib region of Mizoram are advised to deworm the calves. Provide warm shed to poultry birds and pigs against cold.
 - The poultry farmers in Nagaland are advised to provide ample quantity of clean drinking water, avoid feeding of mouldy feed and overcrowding and carry out regular deworming to control worms.

EAST INDIA [JHARKHAND, BIHAR, ORISSA, WEST BENGAL &SIKKIM]

- **Realised Rainfall:** Dry weather prevailed over the States of the region during last week.
- **Rainfall Forecast:** Mainly dry weather is likely to prevail over the region during the period.
- **Advisories:**
 - As there was no significant rain during last few weeks in most of the districts of the States of the region and mainly dry weather is likely to prevail during the period, farmers are advised to apply irrigation to the standing crops.
 - Complete sowing of oilseed crops like groundnut in Western Undulating Zone, East and South Eastern Coastal Plain Zone and North Central Plateau Zone of Orissa.
 - Farmers in Western Undulating Zone of Orissa are advised to undertake transplanting of onion. In view of prevailing dry weather condition, farmers are also advised to apply irrigation to oilseed crops.
 - Farmers in North Central Plateau Zone of Orissa are advised to complete sowing of wheat, groundnut and pea. Farmers are also advised to complete sowing of linseed, gram, coriander, cauliflower, cabbage, onion, garlic and planting of potato in the fields after harvesting of low land rice.
 - Farmers in North Eastern Coastal Plain Zone of Orissa are advised to complete sowing of tomato, cauliflower, cabbage, knol-khol, broccoli, radish, marigold, groundnut etc.

- Farmers in East and South Eastern Coastal Plain Zone of Orissa are advised to complete sowing of pluses, fodder oat, coriander, sunflower and planting of potato and banana.
- Farmers of North Eastern Plateau Zone of Orissa are advised to complete nursery sowing of summer rice.
- Farmers in the districts of North Bihar are advised to complete sowing of *rabi* maize and irrigated wheat and transplanting of late varieties of cauliflower and late and medium varieties of cabbage. As dry weather is prevailing, farmers are advised to apply irrigation in wheat wherever crops are at crown root initiation stage and light irrigation in potato crops, which are at 10-20 days stage for better crop growth and yield.
- Farmers in the districts of South Bihar Alluvial Zone are advised to complete planting of potato and sowing of irrigated wheat, other *rabi* crops and green fodder. Vegetable crops like cauliflower, cabbage, chillies, tomato, palak, carrot, radish, knol-khol, turnip, beet, garlic and spice crops such as coriander, fenugreek etc. should also be sown as early as possible. Also sow the seeds of onion in prepared nursery.
- As dry weather is prevailing during last few weeks, farmers in the districts of South Bihar Alluvial Zone are advised to give irrigation to timely sown wheat, mustard, potato and vegetables. Undertake intercultural operations in vegetables and apply optimum dose of fertilizers.
- Farmers in Central, Western and North Eastern Plateau Zone of Jharkhand are advised to complete sowing of wheat, barley, linseed, gram, pea, lentil and planting of potato.
- Taking the advantage of dry weather, farmers in Central and Western Plateau Zone of Jharkhand are advised to undertake intercultural operations in *rabi* crops.
- Farmers in Central and North Eastern Plateau Zone of Jharkhand are also advised to sow onion, African marigold or French marigold and prepare the field for vegetables like long gourd, round gourd, bitter gourd, sponge gourd, cucumber, water melon and musk melon.
- In Western Plateau Zone of Jharkhand, farmers are advised to sow winter vegetables like cauliflower, cabbage, chilli, tomato etc.
- Farmers in South Eastern Plateau Zone of Jharkhand are advised to complete sowing of wheat, pigeon pea, chick pea and planting of winter vegetables like onion, brinjal, cabbage, cauliflower, tomato, capsicum etc.
- Farmers in New Alluvial Zone of West Bengal are advised to complete sowing of wheat crop. As dry weather is prevailing, irrigate wheat wherever the crops are at CRI stage and. To protect the seedlings of *boro* rice from cold, cover the nursery bed with polythene or keep stagnant water in the nursery bed especially at night-time.
- Taking the advantage of dry weather, farmers in Old Alluvial Zone of West Bengal are advised to undertake earthing up in potato and thinning in wheat at 21 days after sowing.
- As the weather is very dry and there is windy situation, in order to prevent moisture stress in standing crops, irrigate the field as per requirement in New Alluvial Zone of West Bengal.
- Farmers in Coastal Saline Zone of West Bengal are advised to undertake nursery sowing of *boro* rice and complete sowing of lentil, gram, sunflower etc. Protect the young seedlings from cold injury by covering the seed bed by straw ash.
- Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
- There is chance of attack of aphids in oilseeds and pulses in South Bihar Alluvial Zone due to present weather condition; spray Imidachlorprid @ 1 ml in 4 litres of water or Metacystox @ 2 ml / litre of water.

- Infection of early blight may occur in potato and tomato due to high relative humidity and low temperature in South Bihar Alluvial Zone; spray Indofil M-45 @ 2 ml / litre of water.
 - Prevailing foggy condition during last few days is conducive for the attack of late blight disease in potato in Bihar and Jharkhand; spray Mancozeb @ 2.5 g per litre of water to manage late blight disease in potato.
 - As weather is favourable for attack of powdery mildew in green peas in Central and Western Plateau Zone of Jharkhand, farmers are advised to spray Karathen @ 1 ml per litre water or Sulfex @ 3 g per litre water to control the disease. As weather is also congenial for leaf spot disease in wheat, farmers are advised to spray Indofil M-45 @ 2 g per litre water when symptoms appears on the leaf.
 - In North Eastern Plateau Zone of Orissa (Sundergarh district), Helicoverpa is noticed in Bengalgram. Apply Quinolphos @ 2 ml or Acephate @ 1 g per liter of water to control the insect.
 - Cutworm is found in rice in Kendrapara district of Orissa; spray 2 ml Chloropyriphos in 1 litre water during afternoon. Apply Chloropyriphos dust around the bund to prevent the entry of caterpillar to the unaffected fields in early morning.
 - The weather is conducive for powdery mildew disease in green pea in North Eastern Plateau Zone and North Central Plateau Zone of Orissa; spray Karathen @ 1 ml per litre of water or Sulfex @ 3 g per litre of water to control the disease.
 - In Cuttack district in Orissa, pod borer infestation is noticed in medium duration arhar crop; spray 400 ml Endosulphan or 800 ml neem based pesticides or 250 LE NPV in 200 litres water per acre.
 - Infestation of aphids is noticed in mustard in East and South Eastern Coastal Plane Zone of Kendrapara district in Orissa; spray 400 ml Dimethoate in 200 litres of water per acre for controlling aphids.
 - Due to lower night temperature in Old Alluvial Zone and Terai Zone of West Bengal, late bight infestation may occur in potato. To control, apply the mixture of Metalaxyl 8% and Mancozeb 64% @ 1 to 1 ½ g per litre of water alternately at 12-15 days interval by completely wetting the leaves. There is also infestation of aphids in mustard and tomato in Old Alluvial Zone of West Bengal. To control, spray Imidachlorpid @ 1 ml / 5 litres of water or Dimethoate @ 2 ml / litre of water at 10-15 days interval.
 - Due to foggy weather in Coastal saline Zone of West Bengal, tomato may be attacked by downy mildew; spray Diethane M-45 @ 2.5 g / litre of water during afternoon hours.
 - In the present weather situation, Mite or Thrips may appear in potato in New Alluvial Zone of West Bengal; apply Acephate 75 WP @ 0.75 g per litre of water and apply irrigation at an interval of 7 to 10 days.
 - Due to low temperature and fog in morning time, late blight may be appear in potato in Laterite and Red Soil Zone of West Bengal. Apply Mancozeb @ 2.5 g.
 - Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
 - The weather is favourable for attack of F.M.D. in milch animals in Western Plateau Zone of Jharkhand; farmers are advised to take preventive measures to control this disease and animals should be vaccinated twice in a year.
 - Farmers in Central and North Eastern Plateau Zone of Jharkhand are advised to give tetracycline medicine in water to kids of goat, in regular interval to prevent from pneumonia and vaccinate as per prescription of Veterinary Doctor. For domestic animals and birds take preventive measures from cold.

- In North Central Plateau Zone and North Eastern Plateau Zone of Orissa, in the present weather conditions, there is likely attack of F.M.D in milch animals. Vaccinate the animals.

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

- **Realised Rainfall** : Dry weather prevailed over the region during last week.
- **Rainfall Forecast**: Rain/snow is likely to occur at isolated places over Jammu and Kashmir and mainly dry / dry weather is likely over remaining parts of the region. Fog/dense fog would occur over some parts of plains of the region during next 2 days. No significant change in minimum temperatures would occur over the region during next 48 hours and rise by 2-4°C thereafter.
- **Advisory**:
 - Dense fog conditions would occur over some parts of Punjab, Haryana, Delhi and Uttar Pradesh during next 48 hours. Farmers are advised to provide light and frequent irrigation as well as arrange for smoking around the field in these regions to protect standing crops from cold and also to protect the animals.
 - Keeping in view of low temperature in New Delhi, farmers are advised to give light irrigation at evening time to tomato, chilli, capsicum, marigold, peas and other field crops to protect the crops from possible frost injury. Farmers are advised for sowing of late wheat. Light irrigation is advised in pea and gram crop at flowering stage. Transplantation of onion should be done in this week. Transplanting of mature seedlings of cauliflower, cabbage, knolkhol and broccoli crop may be done in the raised beds.
 - As clear weather is expected in coming days, farmers in Punjab and Haryana are advised to apply irrigation to the wheat and barley crop during these days. Give irrigation to normal sown gram, lentil, barley, sugarcane, litchi, raya and mustard crop to save it from possible ground frost. Start harvesting of early maturing varieties of sugarcane. Complete harvesting of toria. Provide polythene sheet/ Sarkanda/Kahi/ rice straw to cover young fruit and vegetable plants to save them from frost.
 - Farmers in Jammu and Kashmir are advised to irrigate the normal sown barley and apply 1st dose of urea as top dressing in early / normal sown barley crop (25-30 days old). Irrigate normal sown wheat crop if the crop is 21-25 days old. Continue the sowing of late sown varieties of wheat and undertake late sowing of barley crop without any further delay. Due to decrease in minimum temperature protect the mustard crop from cold injury by creating smoke around the field of mustard with burning of farm waste. They are also advised sowing of radish and transplanting of onion and knoll khol.
 - In temperate zone of Srinagar, cereal (wheat), oilseeds (brown sarson), pulses (pea), Pulses (lentil), fodder (oat) are in dormant stage, farmers are advised to stop all agronomic activities in the field. In favourable weather, farmers are also advised to continue transplanting of seedlings of onion and planting of bulbs of onion and stecklings of carrot, radish and turnip for seed production, replanting of cabbage, knoll khol and kale for seed production and sowing of spinach and methi.
 - Farmers in Leh region are advised to top dress with nitrogenous fertilizers during hoeing to one month old cabbage, beet leaf, lettuce, kale and Chinese cabbage for proper vegetative growth followed by irrigation if not done. Harvest Chinese cabbage, lettuce, beet leaf var. Mongol.
 - Farmers in Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh are advised that this is optimum time for raising the nursery of winter flowers like

calendula, arctotis, dog flowers, sweet pea, dianthus, petunia, stock and flox in fields. Delay the planting of winter fruit plants viz. peacanut, walnut, almonds, plum, peach, persimmon, pear and kiwi. Farmers in Mid Hills and Sub Humid region of Himachal Pradesh are advised to complete the sowing of peas and cabbage. Apply irrigation to crops. Protect vegetable crops from frost.

- Apply light irrigation to vegetable crops. Weather condition is also conducive for cleaning and preparation of basins in the orchards.
- In Uttar Pradesh, farmers are advised to complete sowing of late varieties of wheat as early as possible in irrigated as well as in sandy fallow land, complete sowing of saunf, fenugreek, palak, coriander, radish, carrot, turnip, beet, jai (fodder) start sowing of cumin, and transplanting of onion, cauliflower, cabbage, tomato, brinjal etc. Undertake 1st cutting of berseem (fodder), digging of matured carrot, raddish, turnip and harvesting of early maturing arhar.
- Farmers in Uttar Pradesh are advised to give irrigation in already sown, normal wheat after 20-25 DAS. To protect *rabi* pulses, *rabi* oilseeds, sugarcane, potato, already transplanted vegetable crops from low temperature/frost injury, they are advised to give light and frequent irrigation and arrange for smoke near the crops in the evening.
- Farmers in Bhabar and Tarai Zone of Uttarakhand are advised to go for 1st irrigation to wheat crop sown in December and give 2nd irrigation in wheat crop of 45-50 days duration, After 4-5 days top dress @35 kg Urea per care and do weeding by hand hoe for better crop growth. Farmers are advised to give irrigation in sugarcane crop of 50 days duration at this stage and then after a week mix 50 kg Urea per acre land area for enhancing the crop growth.
- Farmers in Bhabar and Tarai Zone and Hill Zone (Ranichouri) of Uttarakhand are advised harvesting of toria, sugarcane ratoon, continue digging of matured potato, plucking of matured vegetable pea, irrigation to coriander, spinach, radish etc. for their better growth.
- Due to expected dry weather condition and fall in temperature in Sub humid sub tropic zone of Uttarakhand, farmers are advised not to go for sowing of lentil from this week. Farmers are also advised to weeding in early sown garlic and onion nursery, continue digging of matured potato, plucking of matured vegetable pea, irrigation to coriander, spinach, radish, menthe etc. for their better growth.
- Farmers in Hill Zone (Ranichouri) of Uttarakhand are advised to give irrigation to onion, palak, mustard, raddish, coriander, potato (Kufri Jyoti), winter cauliflower (Pusa Snowball-1) in irrigated hilly areas and also to early transplanted vegetables viz. cauliflower, cabbage, raddish, turnip and carrot. Farmers are also advised sowing of late sown varieties of wheat, winter vegetable pea and fodder jai.
- Farmers in Rajasthan are advised to complete sowing of wheat, start transplanting of *rabi* onion and harvesting of matured tomato and cotton. They are also advised to give light irrigation to timely sown wheat crop, which are about 21-25 days old and are in the CRI stage and top dress 65 kg / ha urea. Farmers are advised to give 1st irrigation to mustard, gram, cumin and barley crop.
- Due to drop in minimum temperature, farmers in Rajasthan are advised to protect mustard, gram, coriander, brinjal, tomato, pea and small fruit plants especially aonla and palm. Following advisory is suggested against frost.
 - **Spray of chemicals:** Spray dilute HCl @ 0.1% (i.e. 1 litre HCl in 1000 litre water) or thiourea @ 500 ppm (500 gm in 1000 litre water) at an interval of 15 days on frost sensitive crops like mustard, rajmash, coriander etc. at flowering stage or spray the same chemical on the evening of forecast of frost occurrence.
 - **Smoke:** On the event of forecast of frost, create, smoke by burning waste materials.

- **Light irrigation:** Give light irrigation to sensitive crops in the event of forecast of frost.
- To protect small fruit plants and nursery from frost cover their north side with thatch (Sarkanda sticks).
- In Kathua district of Jammu and Kashmir, farmers are advised to protect young evergreen plants by providing with thatches prepared from Sarkanda or any other material and to keep open on eastern side to allow sufficient sun shine and air for the plant.
- In Udham Singh district of Uttarakhand, under present weather conditions late blight disease is expected to damage the potato crop. If symptoms of disease are appearing then stop irrigation and application of Urea with immediate effect & spray copper oxychloride @ 2 g per liter of water on potato crop is advised. There are also chances of wheat crop to suffer with Zinc deficiency which can be visualized by turning of leaves to yellow color and growth will cease. If these symptoms are visible in the field then farmers are advised to spray a mixture of 2.5 kg zinc sulphate and 2 kg Urea dissolved in 400 liter of water per area.
- In Udham Singh district of Uttarakhand, low night temperature, fog may damage new plants of mango, guava, litchi and lemon group of fruits. Hence in order to protect them from further damage, farmers are advised to cover them with rice straw or dry leaves of sugarcane and by keeping door open towards west direction so that sunlight will directly reach to these plants. Give need based irrigation in all vegetable crops.
- There is a possibility of pod borer infestation in gram crop in Sub-Humid Southern Plain and Aravali Hill Zone of Udaipur in Rajasthan, to control farmers are advised to spray of Monocrotophos 36 SL 1.0 litre per hectare.
- Due to prevailed humid conditions sawfly infestation may occur in mustard and other brassica in Flood Prone Eastern Plain Zone of Rajasthan (Bharatpur). Farmers are advised to keep watch on the outer boundries of the field and take appropriate protection measures by applying 5% Melathionor 5% Carbaryl powder@20-25 kg/ha.
- In Uttarakhand, spray 5 kg Zinc Sulphate and 16 kg Urea in 800 lit. water per hec. if leaves turning yellow in standing wheat crop due to zinc deficiency.
- Weather is favourable for attack of white rust on mustard crop, late blight on potato crop and incidence of aphids on all *rabi* crops. Farmers are advised to monitor the crops and take proper plant protection measures.
- Farmers in Himachal Pradesh are advised to do pruning in apple orchard, preparation of basins and fertilizer application with optimum moisture, otherwise wait for rains or apply in February-March when snow melts.
- Downy mildew is expected in cruciferous vegetables in Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh, spray redomil M-Z @ 25 g per litre of water at 15 days interval.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandary**
 - In semi-arid western plain zone of Rajasthan and Himachal Pradesh, in view of falling night temperature, livestock farmers are advised to protect their infant animals from pink cold. They are also suggested for deworming of animals except pregnant animals and deworming medicines like Albendazol, Fenbendazol may be given to animals under the guidance.
 - Due to decrease in temperatures in Jammu & Kashmir, cover the poultry shed with gunny bags in order to protect the birds from cold weather. Protect the pregnant and milch animals from cold and feed them mineral mixture regularly.

- In Bhabar & Terai zone of Uttarakhand, due to expected cold conditions during this week in the night, farmers are advised to keep all types of animals inside the shed during night time. Put rice straw at the place of sitting of animals for their better comfort. Keep down curtains in poultry farm in the night for safety of birds from these cold weather conditions.
- Farmers in Uttar Pradesh, bundelkhand zone (Bharari) and also in western plain zone (Modipuram), it is advised to tie young cattle in closed shelter and feed them with big cardamom, ajwain and jaggery, keep cattle shelter clean and take special care of young ones to protect from cold in this season.

SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP, ANDAMAN & NICOBAR ISLANDS]

- **Realised Rainfall:** No significant rainfall occurred in the most states of the region except Thiruvananthapuram in Kerala which received sufficient rainfall.
- **Rainfall Forecast:** Rain/thundershowers would occur at most / many places over Tamil Nadu, Coastal Andhra Pradesh and Rayalaseema; at a few places over Kerala and Lakshadweep during next 24 hours and increase thereafter. Mainly dry weather would prevail over remaining parts of the region.
- **Advisories:**
 - Heavy to very heavy rainfall would occur at a few places with extremely heavy falls (25 cm or more) at one or two places over north Tamil Nadu, Puducherry, Rayalaseema and south coastal Andhra Pradesh, Storm is expected to damage the standing rice, groundnut and maize in coastal districts of Tamil Nadu and rice and groundnut in coastal Andhra Pradesh. Farmers are advised to arrange for drainage facilities and drain out excess water from the field to prevent crop damage, total suspension of fishing operations. Propping of sugarcane and banana may be undertaken to prevent form lodging.
 - Due to Thane cyclone, coastal districts of Andhra Pradesh including coastal areas of West Godavari district may receive low to moderate rain, hence farmers are advised to harvest rice and heaps may be covered with polythene sheets to avoid the grain discoloration, immediately drain out the water if it appears around the heaps and if rains coincide with harvesting or pre harvesting stage, spray 5% salt solution on the sheaves/submerged standing crop to avoid sprouting. In case of rice fallow maize, if rains are moderate it is useful to the crops, otherwise it affects the crop, hence drain out excess water and spray 2% urea. Under expected weather forecast diseases viz., powdery mildew, Cercospora leaf spot may appear and these diseases can be managed by spraying of 1g of corbandazim or 1 ml of carathane or 2 ml of hexaconzole per liter of water two sprayings within 10-15 days interval.
 - Due to the Thane cyclone, farmers in the Cauvery Delta Zone of Tamil Nadu are advised to avoid top dressing with N fertilizer and spraying insecticides as well as fungicides for all crops, efforts may be taken up to provide drainage for crops like paddy, sugarcane, banana and fields sown with irrigated dry crops like groundnut and black gram, postpone harvest of samba paddy and drying of harvested paddy grains, sow irrigated dry crops like groundnut and black gram, efforts may be taken up to provide support with pole for banana trees bearing bunches, propping for sugarcane may be attempted at war foot manner and safety measures may be taken up for the livestock by providing suitable shelters against the rain and wind.
 - As there are chances for rainfall at many places over Kerala after 24 hours, farmers are advised to postpone irrigation to the standing crops.

- Farmers in the North Eastern Zone of Tamil Nadu are advised to avoid water stagnation in the recently sown groundnut field and undertake nursery preparation for paddy cultivation.
- Farmers in the North Western Zone of Tamil Nadu are advised to delay harvesting, since the weather is going to be cloudy and rainy, delay harvest of groundnut to avoid wetness due to cyclonic effect and store the harvested castor, maize and groundnut products in a secure manner without getting affected by the rains or winds.
- As there is forecast for rain in the North Coastal Zone of Andhra Pradesh, farmers are advised to complete heaping or threshing of paddy as early as possible.
- Farmers in the Eastern Dry Zone of Karnataka are advised to postpone the harvesting of finger millet and paddy and safeguard the harvested crops from rains since there is chance of occurrence of rains in coming four days.
- Farmers in the North East Transition Zone of Karnataka are advised to go for planting of sugarcane and raise the seedlings of brinjal, tomato, cabbage in the nursery.
- Farmers in the Hill Zone of Karnataka are advised to undertake plant protection measures, since there is no possibility of rainfall in the district during the coming five days.
- Farmers in the Southern Transition Zone of Karnataka are advised to stop the harvest and processing of matured arecanuts, harvest operations of maize and heap the cobs in protected area and harvest operations of paddy including threshing and winnowing.
- As rainfall is forecasted in the North East Dry Zone of Karnataka, farmers are advised to continue land preparation for paddy, withhold hand picking of cotton and harvesting of red gram and withhold irrigation for another four-five days for fodder jowar/maize sowing. Because of short fall of rainfall, most of the rabi jowar area is not sown. Hence, there will be a possibility of fodder shortage for animals in this region. Bellary has been considered under drought district category for the year-2011.
- Farmers in the High Altitude Zone of Kerala are advised to skip irrigation, as rain is expected during this week.
- Aphid attack is noted in bhindi, cowpea, brinjal etc. in the Southern Zone of Kerala. Farmers are advised to spray beauveria bassiana to control aphid attack and conduct field surveillance for pest and diseases and take plant protection measures. Farmers are also advised to adopt proper control measures against rice bug and sheath rot in paddy, red palm weevil in coconut, sigatoka leaf spot in banana, fungal diseases like downy mildew in vegetables, since dry conditions have been predicted.
- Spodoptera is noticed in groundnut and helicoverpa in the fields of Bengal gram in the Scarce Rainfall Zone of Rayalaseema in Andhra Pradesh. Farmers are advised to spray Chloripyriphos @2 ml or Mocrotophos @ 1.6 ml per liter of water or if matured larvae are observed, apply larval baits prepared by mixing 5 kgs of paddy straw+ jaggery 500g.+ monocrotophos 500ml into small tablets and to be distributed in the field evenly in evening hours. Application of Qunolphos @ 2 ml or Acephate @ 1 g. per liter of water is recommended to control helicoverpa. They are also advised to undertake plant protection measures.
- Incidence of Helicoverpa is observed in red gram and Bengal gram, tikka leaf spot and rust in groundnut, aphids in beans, powdery mildew is noticed in gourds, mites and gummosis is noticed in sweet orange in the Southern Telangana Zone of Andhra Pradesh. Prevailing weather conditions and low night temperatures are congenial for the incidence of various pests and diseases. Farmers are advised to undertake plant protection measures to prevent attack of these pests and diseases.

- Leaf folder incidence is noticed in thaladi paddy in the Cauvery Delta Zone of Tamil Nadu. Farmers are advised to spray Azadiractin or Profenophos at 400 ml/acre (2 ml/liter) to control it.
- Farmers in the South Zone of Tamil Nadu are advised to monitor the incidence of stem borer and BPH in rice, magnesium deficiency in cotton and shoot and fruit borer and leaf spot in brinjal and follow appropriate management practices, since slight cloud cover and moderate humidity forecasted during the coming days are conducive for the incidence of these pests.
- Incidences of pod borer were noticed in pigeon pea in the North East Transition Zone of Karnataka. Farmers are advised to take up spraying of 1 ml methyl parathion or 2 ml Quinolphos or 1g Acephate per litre of water in areas where the incidence is more than the threshold level.
- Tomato crop is infected with early leaf blight (ELB) in the North Transition Zone of Karnataka. Farmers are advised to spray mancozeb @ 2 g/L or cuprous oxide @ 2.5 g/L to control it. In chilli, due to cloudy weather thrips, mites and murda-complex disease are problematic. Farmers are advised to spray 1.7 ml Roger or 1.5 ml Metasystox +2.5ml Dicofol per liter of water to control them. Necrosis problem is noticed in sunflower. Spray 0.25 ml Imidachloprid 17.8 S.L or 1.5 ml Oxidematon methyl 25 EC per liter of water to control Necrosis.
- Farmers in Tamil Nadu, Puducherry, Rayalaseema and Coastal Andhra Pradesh are advised to undertake spraying of chemicals after the current spell of rains.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Dry weather prevailed over Maharashtra and Gujarat State during last week.
- **Rainfall Forecast:** Dry weather is likely to prevail over the States during the period.
- **Advisories:**
 - As there was no significant rain during last few weeks and mainly dry weather is likely during the period over the States, farmers are advised to apply irrigation to the standing crops.
 - Taking the advantage of dry weather, farmers in Madhya Maharashtra, Marathwada and Vidarbha are advised to complete picking of fully opened cotton bolls and continue harvesting of old *adsali* and *pre-seasonal* sugarcane and matured red gram crop. Undertake land preparation and keep the field ready for planting of *suru* sugarcane
 - Farmers in Madhya Maharashtra are advised to apply irrigation to wheat at early tillering/tillering stage and gram and *rabi* jowar crops at flowering and pod / grain formation stage.
 - As mainly dry weather would prevail, farmers in North Konkan region of Maharashtra are advised to apply second dose of nitrogenous fertilizer to snake gourd, ridge gourd, sponge gourd, bottle gourd, pumpkin crops @ 73 kg urea per hectare and cucumber crop @ 98 kg urea per hectare after one month of sowing followed by irrigation.
 - Apply irrigation to wheat crop at booting stage.
 - Farmers in Middle Gujarat Zone are advised to apply irrigation to potato crop and to wheat crop at booting stage. Harvest matured brinjal in early morning and pluck aged leaves of bidi tobacco.
 - Taking advantage of dry weather in Bhal and Coastal Zone, farmers are advised to undertake picking of cotton during late morning hours and harvesting of matured brinjal in early morning.
 - Farmers in South Gujarat Heavy Rainfall Zone are advised to carry out intercultural operations in standing crops.

- Farmers in South Saurashtra Zone of Gujarat are advised to apply irrigation to chickpea/gram, castor, as and when required and to garlic at bulb formation and development stage. Undertake picking of cotton.
- Farmers in North Gujarat Zone are advised to apply irrigation in cotton, castor, mustard and wheat (at tillering stage) to protect from cold. After irrigation, apply split dose of nitrogen. Also apply light irrigation to the fruit crops regularly.
- Farmers in North Saurashtra Zone of Gujarat are advised to complete sowing of isabgul. Apply irrigation at critical stage of flowering and seed filling in gram and in pigeon pea at seed development stage.
- Suitable varieties of the crops for sowing are mentioned in Annexure II.
- Weather is congenial for infestation of pod borer on gram in Madhya Maharashtra Spray Chlorpyrifos (25% E.C) @ 25ml or Prothonophos (40% E.C) @ 25ml per 10 litres of water.
- Due to cloudy weather there may be incidence of thrips and blight on onion in Madhya Maharashtra. Spray chlorothalonil @ 25g or Mancozeb @ 25g or Carbendazim @ 10g + Carbosulfan @ 10ml per 10 litres of water.
- There is possibility of incidence of tea mosquito and thrips on new vegetative shoots as well as inflorescence of cashew in Konkan; spray Monocrotophos 36% @ 15 ml in 10 litres of water or Prothonophos 15% @ 10 ml in 10 litres of water or Lambda Cyhellowthrin 5% @ 6 ml in 10 litres of water.
- Weather is favourable for attack of *Helicoverpa* in red gram during flowering and pod development stage in Pune division. Spray Heliokill 200 ml per 200 litres of water per acre.
- Weather conditions are favorable for development of blight disease in fennel, cumin and potato crops in North Gujarat Zone. Farmers are advised to spray Mencozeb 0.2% @ 30 gram plus 25 ml of concentrated *desi* soap solution in 10 liters of water. Spray next three doses at the interval of 10days on no windy days.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry :**
 - To protect the poultry birds from cold wind in Middle Gujarat Zone, cover the poultry house with cloth / plastic sheets.
 - During this period animals get infected by various diseases. Hence, the animal shed should be kept clean and fresh air should be maintained by providing ventilation facilities in South Gujarat Heavy Rainfall Zone.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Dry weather prevailed over the region.
- **Rainfall Forecast:** Sky will be clear and no rainfall is expected over the region.
- **Advisories:**
 - Farmers in Kymore Plateau and Satpura hills region of Madhya Pradesh are advised that temperatures are favorable for sowing of late sown wheat in irrigated conditions, especially in areas where pea and potato harvesting is completed. Hand weeding and intercultural operations after 20-25 days after sowing in chickpea, mustard and lentil may be done.
 - Farmers in Central Narmada Valley Zone of Madhya Pradesh are advised to provide first irrigation after 21 days of sowing for the timely sown wheat crop. They are also advised to do intercultural operations and give irrigation to coriander, pigeonpea and fenugreek.
 - In view of dry weather conditions and minimum temperature will be decreased by 1°C during next 5 days, farmers in Bundelkhand region of Madhya Pradesh are advised to irrigate the crops. Apply remaining dose of fertilizer after irrigation.

- Farmers in Malwa Plateau of Madhya Pradesh are advised to irrigate wheat crop, prune the newly planted fruit plants for good erect growth and transplant the onion crop.
 - Farmers in Bastar Plateau Zone of Chhattisgarh are advised to complete sugarcane planting at the earliest and earlier planted sugarcane should be irrigated.
 - Farmers in Gird zone of Madhya Pradesh are advised that weather is favourable for attack of early blight disease in tomato and potato; for its control sprays of 2.5g mencozeb per litre of water at the interval of ten days.
 - Due to fog conditions in Central Narmada Valley Zone of Madhya Pradesh, chickpea crop is damaged by leaf eating caterpillar. Farmers are advised to monitor chickpea and when the damage reaches ETL, spray Quinalphos 20 E.C @ 2.0 ml. per liter of water.
 - There may be attack of insects mainly aphids and other sucking type of insects in Malwa Plateau region of Madhya Pradesh. For its control apply Rogor @ 1ml/lit of water if infestation is very high than apply Imidachlopride @ 1ml/3lit of water.
 - Weather is congenial for insect attack in pigeon pea crop in Kymore Plateau and Satpura Hills region of Madhya Pradesh. For its control spraying of Indoxacarb or Quinalphas @ 2.0 ml. per liter may be done. Pheromone or light traps may also be used.
 - Due to cloudy conditions there may be attack of powdery mildew in lathyrus and peas. For its control any sulphur based fungicide can be used in Bastar Plateau Zone of Chhattisgarh.
 - In cashew leaves, the attack of Tea Mosquito Bug is being observed. For its control, Quinolphos @ 2 ml/ litre of water in Bastar plateau zone of Chhattisgarh.
 - In the Kulthi crop (horsegram), alternaria blight and thrips attack is being observed. For its control Copper Oxychloride and Monocrotophos spray should be made.
 - In the mustard and toria crops, caterpillars of black saw fly are being observed. For its control, Endosulfan should be sprayed @ 2 ml/ litre of water. In case of aphid attack in mustard/sarson crop Monocrotophos should be sprayed @ 1 ml/ litre of water.
 - Due to the partial cloudy weather in Chattisgarh Plain Zone, there is possibility of infestation of aphids in mustard and vegetable crops. Farmers are advised for the continuous monitoring of the crop and if needed spray Methyl-demeton or Dimethioate @ 1.5-2.0 ml per litre water. As lady bird beetles are biocontrol agents of aphids, farmers are advised spray safer insecticides in the aphid infested fields where lady bird beetle is there. Farmers are also advised to keep keen watch on the crop for the infestation of linseed bud fly. Spraying of Propanophos @ 800 ml/ha at anthesis will be beneficial to the crop.
- **Animal Husbandry & Poultry**
 - Farmers in Malwa Plateau region of Madhya Pradesh are advised to provide the animals clean water, balanced and nutrients rich food etc. Vaccination of cattle's for Foot and Mouth disease should be done. Arrangement should be done to protect the animals from cold.

Annexure I

Major Crops

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

- Sugarcane (elongation), *boro* rice (nursery preparation / sowing), wheat (sowing / CRI / tillering), tomato (transplanting / vegetative / flowering / fruiting), *rabi* pulses (sowing / seedling / vegetative), cauliflower, cabbage and knoll khol (transplanting / vegetative / head formation), brinjal (vegetative / flowering / fruiting / harvesting), country bean (vegetative / flowering), winter vegetables, pea (sowing / transplanting / vegetative), onion, garlic (sowing / seedling / vegetative), khasi mandarin (fruit maturity / harvesting), lentil (sowing / seedling / vegetative), potato (planting / vegetative / stolon formation), rapeseed and mustard (vegetative / flowering) and cole crops (transplanting / vegetative) in Assam.
- Rice (Mipun cultivar) (harvesting), cabbage, cauliflower, knolkhol etc. (transplanting / vegetative / head formation), maize (vegetative), mustard (vegetative / flowering / pod formation), potato (vegetative) and pea (sowing / vegetative) in Arunachal Pradesh.
- Cucurbits (sowing), rapeseed / mustard (vegetative / flowering), tomato (transplanting / vegetative), potato (planting / vegetative), cauliflower and cabbage (transplanting / vegetative / head formation), pea (sowing / vegetative / flowering), onion (transplanting), broccoli (transplanting / vegetative) in Manipur.
- *Boro* rice (nursery sowing / seedling), wheat (germination / seedling / CRI), pea, garlic and lettuce (germination / seedling / vegetative), *toria* (vegetative / pod formation / maturity), potato (planting / vegetative / tuber formation / maturity), tomato (vegetative / flowering / fruiting / maturity), Khasi mandarin (flowering / fruiting), lentil, rapeseed (vegetative / flowering), *rabi* onion (vegetative), winter vegetables (vegetative / flowering / fruiting), Bengal gram (vegetative / flowering), mustard (flowering / pod formation), peach (vegetative / fruiting / maturity), cashew, apriot (planting / vegetative), tomato, cabbage and knol-khol (sowing) in Meghalaya.
- Ginger and turmeric (rhizome formation / maturity / harvesting), khasi mandarin (vegetative / fruiting / harvesting), banana (vegetative / fruiting / maturity / harvesting), cole crops and tomato (transplanting / vegetative) and pea, bean (vegetative / flowering) in Mizoram.
- Banana (vegetative / fruiting), cabbage (vegetative / head formation), pea (early sown) (vegetative / flowering / pod formation), pea (germination / vegetative / flowering), pigeon pea (pod filling), rapeseed, mustard (vegetative / flowering), French bean (germination / seedling / vegetative), potato (vegetative / tuber initiation), brinjal (fruiting / harvesting), maize (vegetative) and broccoli (vegetative) in Nagaland.
- *Boro* rice (nursery sowing), cucurbits and other vegetables (flowering / fruiting), pulse crop (vegetative / flowering), ginger and turmeric (rhizome formation / harvesting), mustard (vegetative / flowering), tomato (vegetative / flowering), *toria* (flowering / pod formation), cole crops (vegetative), potato (planting / vegetative), pea, beans (vegetative / flowering) in Tripura.

EAST INDIA [JHARKHAND, BIHAR, ORISSA, WEST BENGAL &SIKKIM]

- Sugarcane (vegetative), *kharif* arhar (pod formation / seed formation), lobia for green fodder (sowing / vegetative), mishrikand (vegetative), onion, radish (sowing / vegetative), cauliflower, cabbage (sowing / transplanting / vegetative / head formation),

fruit trees (transplanting), potato, sweet potato (planting / vegetative), rapeseed, mustard (vegetative / flowering), wheat (sowing / CRI / tillering), vegetables, maize, pulses (sowing / vegetative) in Bihar.

- Pigeon pea (pod formation), turmeric and ginger (vegetative / rhizome formation), elephant foot yam (tuber elongation), potato (planting / vegetative / tuber formation), sweet potato (vegetative / stem elongation / tuber elongation / maturity / harvesting), mustard (vegetative / flowering), linseed (sowing / vegetative), toria (flowering / pod formation), green pea (sowing / vegetative), cauliflower, cabbage, chilli, tomato (transplanting / vegetative), wheat (sowing / CRI / tillering), niger (vegetative), papaya (transplanting), gram, onion, African or French marigold (sowing / vegetative) in Jharkhand.
- Arhar (pod formation / seed formation), mustard (vegetative / flowering), sugarcane (maturity), turmeric and ginger (early vegetative / vegetative), Bengal gram, lentil, linseed, green pea (sowing / vegetative), wheat (sowing / CRI / tillering), banana, potato and marigold (planting), sunflower, garlic, groundnut (sowing / vegetative), tomato, cauliflower, cabbage, knol-khol, onion (transplanting / vegetative) in Orissa.
- *Boro* rice (nursery preparation), winter vegetables (transplanting / vegetative), mustard (vegetative / flowering), wheat (sowing / CRI / tillering), lentil, gram, sunflower (sowing / vegetative), potato (planting / vegetative) in West Bengal.
- Large cardamom (new) (transplanting of suckers from nursery), *rabi* vegetables (vegetative / late Vegetative), orange (harvesting), ginger (harvesting), wheat (sowing / seedling / CRI / tillering), mustard (sowing / germination / vegetative), *rabi* potato (vegetative / tuber formation) in Sikkim.

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

- Wheat (sowing of late varieties), lentil (pod formation), sugarcane (planting), *rabi* onion, cauliflower, cabbage, broccoli, tomato, knolkhol (transplanting), radish, spinach and coriander (vegetative/fruitle) in Delhi
- Wheat (sowing/emergence), vegetables (sowing), garlic, ginger (planting), bhindi, cucurbits (sowing), Khira, summer squash, bitter gourd, tur, brinjal, Shimla mirch, and tomato (sowing / transplanting), Apple (harvesting), arbi, amaranthus, turmeric, rice, maize, barley, radish, onion, pea, garlic, coriander, cabbage, knol khol, parsley, lettuce, fennel, cauliflower, broccoli (sowing / planting) in Himachal Pradesh.
- Very late sown Wheat (sowing / emergence / tillering), early/normal sown wheat (CRI stage / vegetative), early/normal sown barley (CRI stage), late sown barley (sowing / emergence), onion (transplanting), winter vegetable crops viz. potato, radish, carrot, turnip, garlic, spinach, methi, onion (sowing / transplanting / vegetative / fruiting etc.), cole crops viz. early cauliflower, cabbage, knoll khol, broccoli (transplanting/emergence), *rabi* oilseeds i.e. toria (maturity/ harvesting), gobi sarson, mustard normal sown (flowering / pod formation) and early sown mustard (pod formation), late sown mustard (vegetative/ flowering), brown sarson (rosette stage), *rabi* pulses i.e. lentil (sowing / emergence- (germination)/ vegetative), gram (vegetative), pea (sowing / emergence (germination) / vegetative)], fodder crops like oats (emergence / tillering), berseem (vegetative (1st cutting)), Horticultural crops viz. [Apricot, Apple (nursery sowing), orange & guava (fruiting), citrus fruits (harvesting)] in Jammu & Kashmir. Cereal (wheat), Oilseed (*Brown Sarson*), pulse (pea), pulse (lentil) and fodder (Oat) are in dormant stage in Srinagar.

- Chilli, capsicum, cauliflower, broccolli (transplanting), lahi (flowering / fruiting), sugarcane (planting), litchi, loquat, peach, citrus (flowering / fruiting), mango (early varieties) (flowering), foxtail millet, okhra, bottle gourd, bitter gourd, ginger, turmeric, (germination / vegetative), mustard (pod formation/ flowering), toria (maturity/ harvesting), papaya (planting), sorghum, pigeon pea (vegetative), vegetable pea(harvesting), urd, potato, and pearl millets (germination), barley, fodder barseem, sarson (germination/ vegetative), onion (nursery sowing), wheat (germination/crown root initiation), lentil (sowing) in Uttarakhand.
- Wheat (sowing/emergence/crown root initiation/ vegetative growth), winter sugarcane (vegetative growth), summer sugarcane (maturity / harvesting), cucurbits like gourd, bitter gourd, cucumber, etc. and another vegetables like lady's finger, tomato, brinjal, chilli, bhindi etc. (vegetative / flowering / fruiting), coriander (vegetative growth), arhar, toria (seed maturity/harvesting), cabbage, garlic, cauliflower (flowering / fruiting / maturity), onion (transplanting / vegetative growth), rai /mustard/ sarson (vegetative / flowering / pod formation), barley (vegetative growth / tillering), jai, gram, alsi, maize, masoor, pea, pigeon pea, chick pea (vegetative growth / flower initiation), berseem (vegetative growth / 1st cutting), potato (vegetative growth / tuber formation) in Uttar Pradesh.
- Spring sugarcane (sprouting), berseem (vegetative), sugarcane (maturity / harvesting), sugarcane autumn (planting),cotton (boll maturity/picking), gram, lentil, mustard, rape seed (branching/flowering), radish, carrot, turnip, onion, cauliflower (sowing/ transplanting), barley (CRI/tillering), wheat (sowing of late varieties, CRI/tillering in timely sown) in Punjab.
- Sugarcane (spring season) (planting/emergence/early vegetative), barseem (vegetative), pulses, moong, mash, pigeon pea (vegetative), cauliflower, cabbage, carrot, potato (transplanting), mustard , sarson, raya (vegetative/flowering), radish, turnip (sowing), wheat (sowing) in Haryana.
- Wheat (sowing / germination / CRI stage), sweet potato, chilli and cluster bean (vegetative), mustard (vegetative growth / flowering), gram, coriander (germination), barley, oats, lentil, lucerne, taramira, linseed (alsi), opium poppy, vegetables (potato, fenugreek, brinjal, radish, chilli, carrot, palak, berseem, cumin, isabgol, ajwain, garlic (vegetative growth), tomato(picking), errand, cotton (harvesting), green pea (vegetative growth / pod formation), cauliflower, cabbage, *rabi* onion (transplanting) in Rajasthan.

SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP, ANDAMAN & NICOBAR ISLANDS]

- Sugarcane (planting), cotton (boll opening), maize (vegetative/harvesting), sunflower (heading/sowing), bengal gram (fruiting), red gram (pod filling/ harvesting), rabi jowar (sowing/vegetative), late planted paddy (harvest), wheat (vegetative) and safflower (vegetative), finger millet (harvest), pigeon pea(pod filling),ginger (vegetative), vegetable (nursery) and horticultural crops (vegetative growth/ flowering/ fruit development) in Karnataka.
- Groundnut (flowering/pegging), rabi paddy (grain formation), rabi pulses (flowering/ pod formation), Bengal gram (flowering), red gram (pod development), castor (development of third spikelet), sunflower (heading), cotton (boll initiation/boll development), tomato (vegetative / flowering /fruiting), chilli and bhendi (flowering/fruiting), field bean (vegetative/ flowering) in Andhra Pradesh.

- Rice (harvesting), arecanut (harvesting), pepper (harvesting), ginger (early harvest), cardamom (harvesting), nutmeg (maturity/harvest), sugarcane (harvesting/planting), vegetables (planting/seedling), banana (harvesting), mundakan paddy (maturity/harvesting) in Kerala.
- Rice - Samba (flowering//grain formation/maturity), Thaladi (tillering), cotton (boll formation), vegetables (vegetative/ harvest), sugarcane (vegetative/ grand growth/ maturity), maize (grain filling/ harvest), millets (vegetative/ harvest), sorghum (vegetative/ harvest), bengal gram (sowing), pulses (vegetative/flowering/ harvest), groundnut (flowering/harvest), chilli (flowering/fruit formation) in Tamil Nadu.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- Sugarcane (old *adsali*) (grand growth / cane maturity), sugarcane pre-seasonal (elongation / cane maturity), sugarcane (old *suru*) (elongation), sugarcane (new *adsali*) (early vegetative), sugarcane (new pre-seasonal) (sprouting / early vegetative), cotton (boll maturity / picking), red gram (pod development / pod maturity), *rabi* jowar (flowering/grain formation), safflower (vegetative / flowering), irrigated gram (flowering / pod formation), irrigated wheat (early tillering / tillering), sunflower (vegetative/floral bud initiation), maize (vegetative) in Maharashtra.
- Wheat (crown root initiation / early tillering), gram (flowering / pod formation), *rabi* maize (sowing / vegetative), Isabgul (sowing), sugarcane (planting / early vegetative), jowar (seedling / vegetative), cotton (picking), castor (spike initiation / capsule formation), mustard (floral bud initiation), cluster bean, cauliflower, cabbage, sweet corn (sowing / vegetative), potato (planting / emergence / early vegetative) and onion (transplanting) in Gujarat.

CENTRAL INDIA [M.P., CHHATTISGARH]

- Sugarcane (planting), vegetables (fruiting), Mustard (branching/ flowering), wheat (vegetative), maize (tillering), onion, garlic, tomato, brinjal, chilli (sowing / transplanting), cotton (maturity), gram (flowering/pod formation) in Madhya Pradesh.
- Rice (Harvesting), sugarcane (planting), groundnut, arhar, green gram and sesame (vegetative / late vegetative), ginger, turmeric, papaya, mango and guava (vegetative) cauliflower, pigeon pea (pod filling), potato (planting), tomato, brinjal, chilli, niger, horsegram, ramtil, toria, cauliflower, cabbage, niger, kulthi and wheat (sowing) in Chhattisgarh.

Annexure II

List of Varieties

Assam

Boro rice: Boro 1, Boro 2, Mashuri, Proagro-6444, KRH-2, IR-50, Bishnuprasad, Jyotiprasad, Kanaklata, Cauvery, Banglami, Joymati and Dinanath.

Wheat: Sonalika, UP 262, K 7410, WH 291, HDR-77, DBW-14, HUW - 468.

Lentil: B-77, L-9-12, PL 406 and PL 81-4.

Tomato: Punjab Suhara, Avinash, Pusa Ruby, Arka Alok, Sioux, Punjab Keshri, Arka Abhijit, BT-1.

Onion: Pusa Red, Pusa Ratnar, Pusa White, N-53.

Garlic: Eknalio, T-56-4 and other local varieties.

Potato: Kufri Chandramukhi, Kufri Jyoti, Kufri Sindhuri.

Manipur

Pea: Arkel, Azad, Rachana.

Potato: Kufri Megha, Kufri Jyoti.

Water melon :

for small type: Water Baby.

for big type: Madhavi-10.

Mizoram

Cabbage: Golden Acre, Ryozekei, Harnil; **late varieties** – Pusa Drumhead, Drumhead Late.

Broccoli: Pushpa, Pusa Broccoli, Aishwarya and Fiesta.

Cauliflower: Snowball -16, Pusa Early Synthetic-1 and 2, Pusa Shubhra, Pant Gobhi – 2 and Patna Ageti.

Meghalaya

Boro rice: NEH Megha Rice-1, NEH Megha Rice-2.

Potato: Kufri Chandramukhi, Kufri Jyoti, Kufri Megha, Kufri Badshah, Kufri Sindhuri.

Cashew: Ullal-3, Ullal-4, Venguria-1, Venguria-4 and Venguria-7.

Apricot: New castle, Kaisha, Nugget, Shipley, Suffaidda.

Orissa

Sunflower: Morden, Sunrise, Surya and Hybrid varieties like KBSH-1, KBSH-3 and MSFH.

Groundnut: Smruti, TAG-27, TAG – 24, JL-24, AK-12-24 and TMV-2.

Wheat: Sonalika, Kalyansona, UP-262, HD 2733, HD 2824, PBW 343, PBW 443, UP 262, RW 346, HP 1761, HP 1731, K 9107.

Green pea: Rachana, Arkel, T-163.

Banana: Cavendish and Robusta.

Potato: Kufri Chandramukhi, Chamatkar, Kufri Jyoti, Kufri Sinduri and Kufri Alankar.

Bengal gram: Gourav, Annegiri, Radhey.

Summer Rice: Parijat, Khandagiri, Lalat.

West Bengal

Cauliflower: Pusa Dipali, Pusa Chetaki.

Tomato: Baisali, Indam 1116, Akash.

Boro Rice: Supriya, Jamini, Bhupen, IET-2233.

Wheat: PBW-343, K-307, UP-262, Janak, C-306, Raj-911.

Potato: Kufri Jyoti.

Sunflower: Morden, Sidhesor (80-85 days), Pack-36 (104 Days), M.F.S.H.-17 (104 Days), Sungin-85 (80-90 days), B.S.H.-1 (85-90 days).

Lentil: B-77 (Asha), B-256 (Ranjan), Subrata, L-4076 (Mallicka) etc.

Gram: Mahamaya-1, Mahamaya-2, Anuradha etc.

Jharkhand

Green Pea: Swarn Rekha, Arkel, Azad Pea, Kashi Nandini, PE-6, Birsa Matar, Rachna, D.D.R. etc.

Potato:**Short duration:** Kufri Ashoka and Kufri Pukhraj.**Long duration:** Kufri Surya and Kufri Puskar.**Tomato:** Pusa Ruby, Swarna Sampda, Swarn Lalima.**Cabbage:** Golden Acre, Pride of India, Early Drum Head.**Cauliflower:** Pusa Deepali, Patna Early, Hazipur Extra Early, Pusa Ketki.**Papaya:** Pusa Giant, Pusa Dwarf, Honey Dew, Pusa Majesty.**African marigold:** Pusa Narangi, Pusa Basanti.**French marigold:** Petite Orange, Petite Yellow, Rusty Red, Lemmon Drop.**Onion:** Pusa Red, Pusa Ratnar, N-53, Arka Niketan, Arka Kalyan, Agrifound Dark Red.**Gram:** Birsa Chana – 3, B.G. – 372, B.G. – 256, K.W.R. – 108, Pant G. – 108, 114 and Kabuli type varieties like B.G. 1053, 1003, H.K.-94-134 and Kak 2.**Linseed:** Shubhra, T. – 397, Sweta.**Wheat:****Irrigated varieties:** K-9107, HUW-468, HD-2733 and Birsa Genhu-3.**Unirrigated varieties:** H.D.R.-77, K.-8027, C.-306, K.-8962, K.-8027etc.**Lentil:** P.L.-406, P.L.-639, K.L.S-218 and K- 75.**Bihar****Cauliflower:** Aghani, Pusa Dipali, Pusi, Patna Main, Pusa Shuvra, **Late variety** - Maghi, Snow King, Pusa Snow King 1, Pusa 2, Pusa Snow ball 16.**Cabbage:** Late Drum Head and Pusa Drum Head.**Potato:** Kufri Lalima, Kufri Kuber, Kufri Alankaar, Kufri Jyoti, Kufri Chandramukhi, Ranjendra Aloo 1, 2 and 3, Kufri Badshah.**Gram:** Rajendra Chana, Uday, Pusa 256, RAU 52, SG2.**Lentil:** BR 25, Pant L406, 639, Malika, Arun.**Peas:** Ratna, Arpana, Harbhajan, Malbai, Malviyamator 15, Pusa Prabhat.**Maize:** Saktiman 1, 2, 3, 4; Laxmi, Rajendra Shankar Makka 1 and 2, Ganga 11, Deoki, Safed Laxmi, Suwan Peela.**Delhi****Wheat (Late sown):** P.B.W.373, WR-544, U.P.2338, U.P.2425.**Himachal Pradesh****Lettuce:** Iceberg, **Brinjal** : Arka Nidhi, PPC**Ageti bhindi** : P-8, Prabhini kranti, Arka anamika, **Frenchbean** : Contender**Pepper** : Surjmukhi, **Broccoli**: Palam Samridhi, **Rajmash** : Triloki,Jwala,baspa Kailash**Raddish** : japani white and early mino white, **Turnip** :PTWG-1.**Cabbage, coriander:** Snow ball K-1 Palam uphar, golden acre.**Knol khol** : White Bina, **Cauliflower** : Pride of India**Jammu & Kashmir****Wheat:** late sown wheat varieties Raj 3077,PBW-226,PBW-373,PBW-435 and Raj-3765,**Barley** : var. Ratna, Jyoti and Sonu**Mustard:** **RSPR-01**, RLM-514, RLM-619, Pusa-Basant, Pusa-Bahar, Kranti, Varuna, RH –30 and RL 1359.**Vegetable crop** like **radish** (var. Pusa chetki, Japanese white & Pusa reshmi), **carrot** (var.Pusa kesar), **turnip** (var PTWG), **garlic** (var. local, large segmented), **spinach** (prickly seeded) and **methi** (P.E.B.K methi), **Cauliflower** (var. Pusa Dipali), **knoll khol** (White Vienna), **Broccoli** (Early green).**Punjab****Wheat:** PBW621, DBW17, PBW550, PBW502, PBW343, WH542, PDW291, PDW274, PDW233**Radish:** Japanese White, white Icicle,**Turnip:** Golden Ball,**Raya:** PBR-210 and PBR 91 for South Western regions only. 23

Haryana

Wheat: PBW 621, DBW17, PBW550, PBW502, PBW343, WH 542, PDW291, PDW274, PDW233.

Raya: PBR-210 and PBR 91 for South Western regions only.

Radish: Japanese White, white Icicle,

Turnip: L-1, Carrot: Selection 21 and PC-34

Sugarcane: CoJ85.CoJ64, CoJ83

Uttarkhand:

Barley: Jyoti, Vijaya, or Jagrati and Oat varieties like UPO-50, UPO-212, JHO-822, Kent etc.

Potato: Kufri Bahar, Kufri Jawahar, Kufri Ashok, Kufri Anand.

Wheat: UP-2338, UP-2425, UP-2526, PBW-373, UP-2565, UP2572, UP2584, UP1109, PBW343

Sarson: Jai 56, 85, 01, Pant masoor 4, 5, BL masoor 125, 126.

Pea : BL matter 3, 7, Vivek matter 6, varun kanti.

Uttar Pradesh:

Wheat: Malviya – 234, UP-2338, PVW-373, UP-2425, Narendra wheat-2036, 1014, K-9533, K-9162, HD-2428, HD-2189, HD -2733, UP.-2425, PBW-343, HD-2428, Raj-3765, HI-1077, UP-2425, PBW-435

For sandy fallow land : K.R.L.-19, 210, 213, K-8436 (Prasad), N.W.-1067, 1076, Raj-3077, Lok-1, P.B.W.-65

Cumin : RS1,NC43

Rajasthan

Wheat: Raj-3765, Raj-3777, Raj-3077, & Lok-1, HI-8498, PBW-373

Onion: Pusa Red, Pusa Madhavi, Arka, Niketan, Local Red and Pusa white.

Karnataka

Sunflower-KBSH-1, KBSH-42, KBSH-44.

Gujarat:

Wheat (late sown): Lok-1, GW-120, GW-173, GW-405.

Rabi Maize: Ganga Safed-2.

Cluster bean: GC-1, 2.

Onion: Pusa Red, Nashik Lal, N 53 and H 48.

Potato: Kufri Badsaha, Kufri Pokhraj, Kufri Lokar.

Spices: Methi Kasuri or Pusa Early Branching (Fenugreek), Guj. Coriander 1 or 2 (Coriander), Guj. Cumin 1, 2, 3, 4 (Cumin).

Isabgul: Isabgul 1, Isabgul 2.

Maharashtra:

Suru sugarcane : Co 86032(Neera),Co 94012(Savitri),Co M 0265(Phule265).

Madhya Pradesh

Wheat- Early sown varieties: Sujatha, HW 2004 or HI 1500 HI -1500, HI-1531 and HD 2004, JWS-17, HD-4672. Jaki 9218 MP-1142, MP-4010, MP-1201, MP-1202

Wheat- Late sown varieties: GW -173, DL-788-2, **Sugarcane-** CoJN 86032, CoJN 86582

Garlic-G-283, G-1, G-41 or G-323

Linseed-PKDL-21, JL-1, JL-3, Mallika, JLS-1, IPL-81, **Lentil-**JLS-03

Maize-JVM -421, JM-16, **Pea-** Jawahar pea land 2, **Gram-**Late sown variety: JG-14

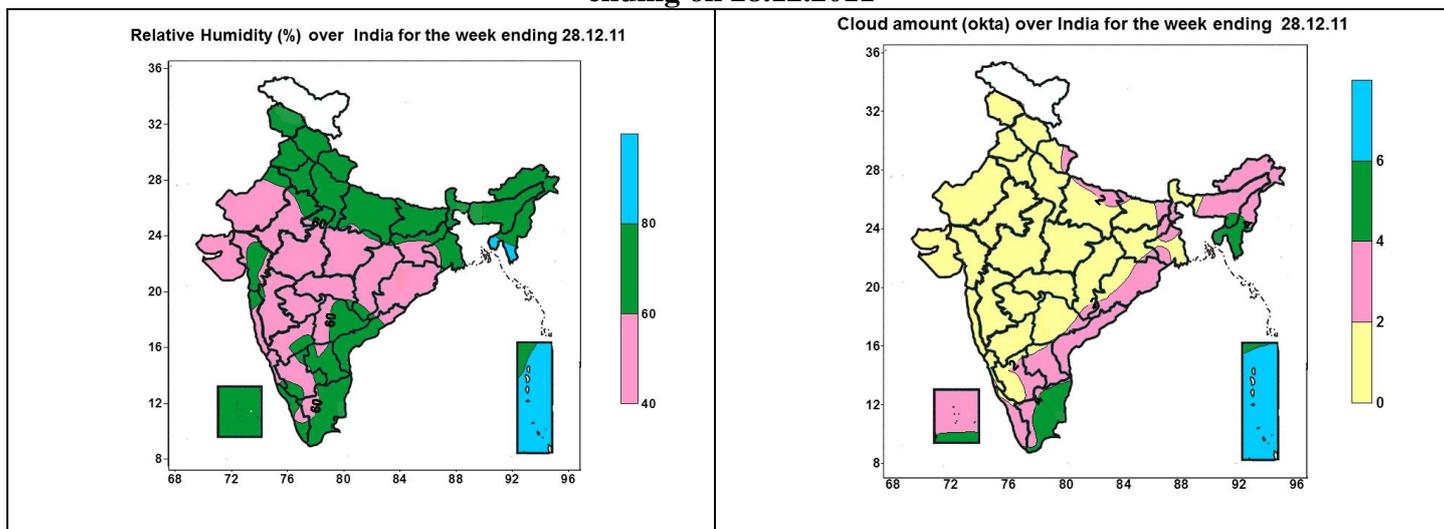
Chattisgarh

Wheat-GW-273

Potato-Kufari Lalima, Kufari Pukhra

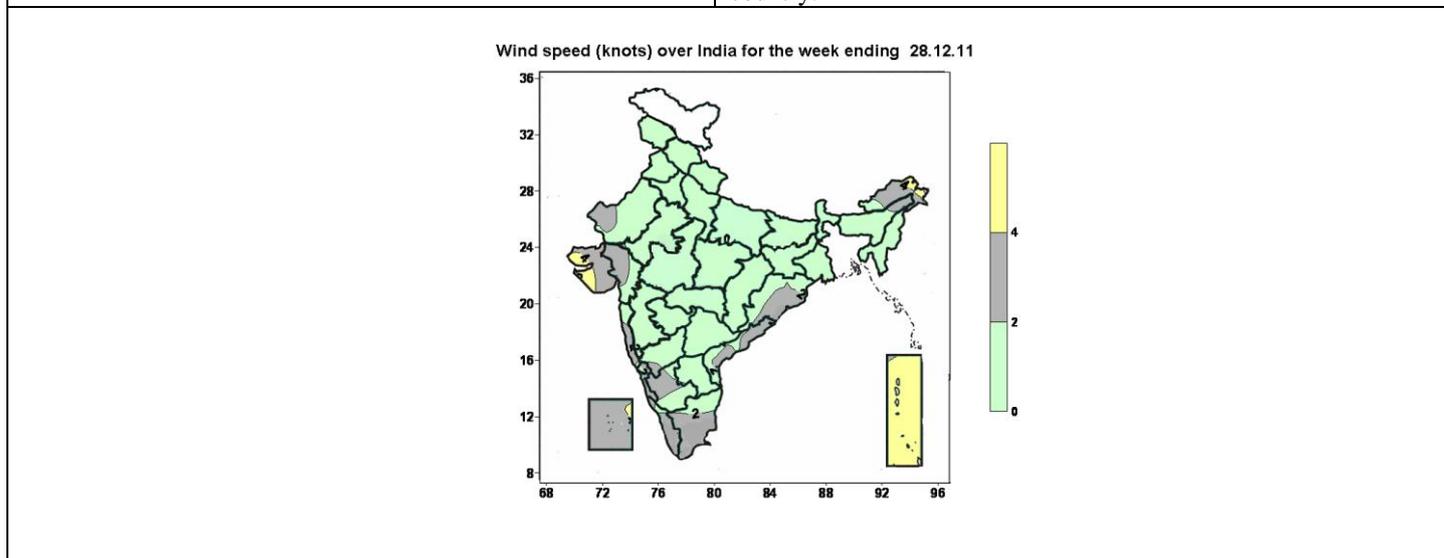
Sugarcane- Co 86032, Co 86141

Annexure III
Contour maps for Relative Humidity, Cloud Amount and Wind speed for the week ending on 28.12.2011



Relative humidity ranged between 80% and above over most parts of Mizoram, Tripura, Andaman & Nicobar Islands, 40 to 60% over most parts of over most parts of Rajasthan, Jharkhand, Orissa, Central India, Saurashtra & Kutch, Maharashtra, Karnataka, some parts of Gangetic West Bengal, Gujarat, Andhra Pradesh, Tamil Nadu, Kerala, 60 to 80% over remaining parts of the country.

Cloud amount 6 okta and above over most parts of Andaman & Nicobar Islands, 4 to 6 okta over most parts of Mizoram, Tripura, and Tamil Nadu, some parts of Meghalaya, Manipur, Lakshdweep Islands, 2 to 4 okta over most parts of West Bengal, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Orissa, Coastal Andhra Pradesh, Rayalaseema, Kerala, Lakshdweep Islands, some parts of Uttarakhand, East Uttar Pradesh, Bihar, Jharkhand, Chattisgarh, Telengana and South Interior Karnataka, 0 to 2 okta over remaining parts of the country.



Wind speed ranged between 4 knots and above over most parts of Andaman & Nicobar Islands, some parts of Saurashtra & Kutch and Arunachal Pradesh, 2 to 4 knots over some parts most parts of Arunachal Pradesh, Gujarat, Saurashtra & Kutch, Orissa, Coastal Andhra Pradesh, Konkan & Goa, Coastal Karnataka, South Interior Karnataka, Tamil Nadu, Kerala, Andaman & Nicobar Islands, some parts of Assam, West Rajasthan and North Interior Karnataka, 0 to 2 knots over remaining parts of the country.