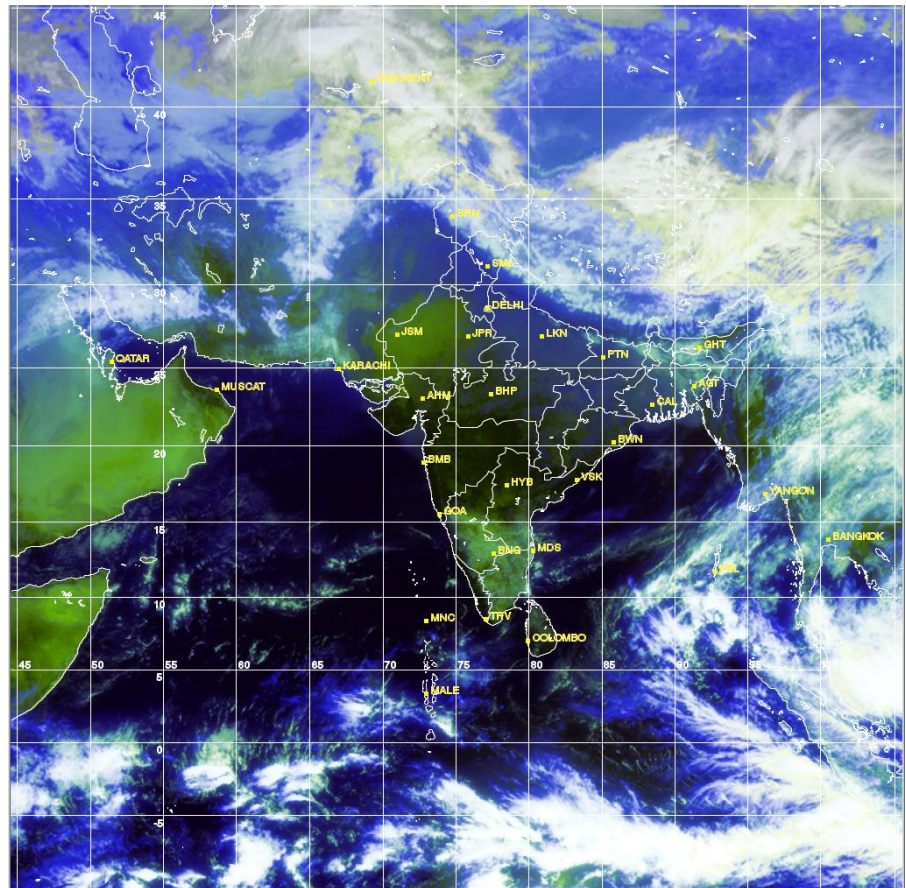




National Agromet Advisory Bulletin

Thursday, 12th January, 2012

(For the period 12th to 16th January, 2012)



Satellite image 0600 UTC dated 13th January, 2012

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

Cold wave conditions are prevailing over many parts of Madhya Pradesh, Chhattisgarh and some parts of Jharkhand, Orissa, Rajasthan, north Maharashtra and isolated pockets of Punjab, Haryana and west Uttar Pradesh. Cold wave conditions would continue over isolated pockets of northwest and adjoining central & east India during next 48 hours. Minimum temperature were reported 4°C or less over isolated pockets of northwest Rajasthan, northwest Punjab, Central Haryana, West Uttar Pradesh, Gujarat, West Madhya Pradesh and north Maharashtra. Ground frost conditions would occur over some parts of Punjab, Haryana, north Rajasthan, Madhya Pradesh and West Uttar Pradesh during next 48 hours. Farmers in these States are advised to keep vigil on the weather conditions, provide light and frequent irrigation and arrange for smoking around the fields to protect standing crops from frost / cold injury.

Rain / thundershowers occurred at many places over Himachal Pradesh, Orissa and Gangetic West Bengal and at a few places over Punjab, Jammu & Kashmir, Uttarakhand and Coastal Andhra Pradesh during last week. Rain / snow also occurred at many places over Uttarakhand during last 24 hours. Farmers in these regions are advised to postpone irrigation to the standing *rabi* crops.

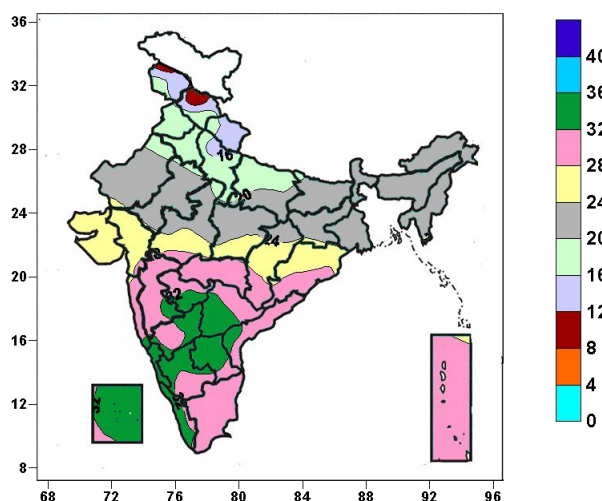
Northeast monsoon rains have ceased over Tamil Nadu & Puducherry, Kerala and adjoining parts of Andhra Pradesh and Karnataka on 10th January 2012. Mainly dry weather prevailed over most of the remaining parts of the country and dry or mainly dry weather is also likely to prevail. Farmers are advised to apply irrigation to the standing crops in these regions.

Farmers are advised to undertake sowing of summer vegetables i.e. water melon, musk melon, okra, chilli, tomato, brinjal etc. in Madhya Pradesh, planting of onion and sugarcane in Chhattisgarh, sowing of pulses like black gram and green gram, irrigated groundnut, fodder jowar / maize and planting of sugarcane in Karnataka. Farmers in Karnataka are also advised to undertake deep ploughing after the harvest of *rabi* crops to conserve soil moisture.

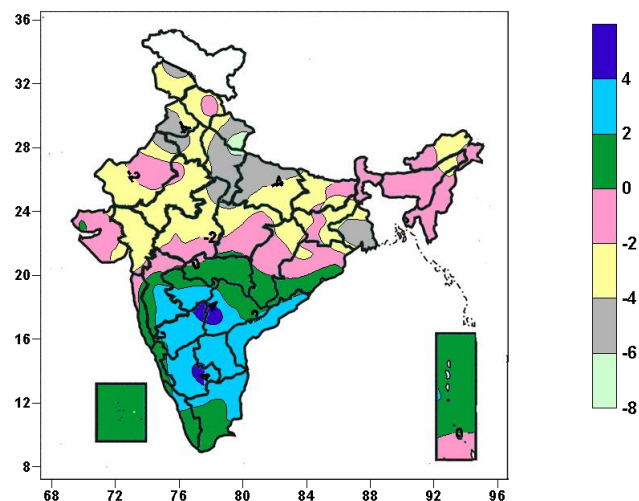
Due to prevailing weather, incidences of semi looper in cauliflower and cabbage crops in Madhya Pradesh, *Helicoverpa* in Bengal gram, tomato spotted wilt virus (TSWV) in tomato, diamond back moth in cabbage and cauliflower and leaf miner in sweet orange in Andhra Pradesh, hoppers and powdery mildew in mango in Karnataka and root wilt in coconut in Kerala are noticed below economic threshold level (ETL). Farmers are advised to undertake appropriate plant protection measures to control the pests and diseases, if their population goes beyond ETL.

Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 11.01.2012

Actual Mean Maximum Temperature ($^{\circ}\text{C}$) in India for the week ending 11.01.2012



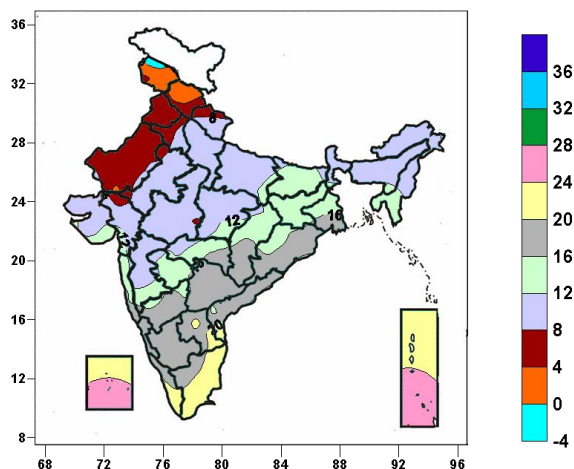
Maximum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 11.01.2012



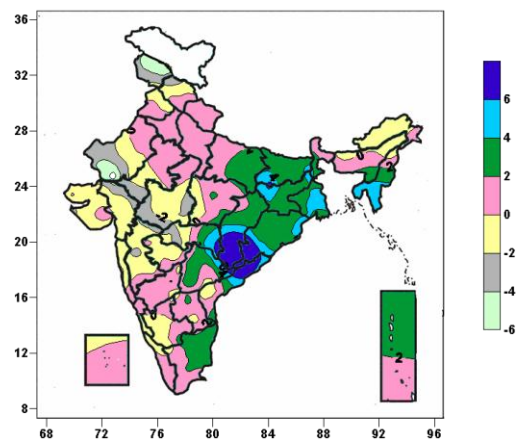
Actual Mean Maximum temperature ranged between 32°C and above over most parts of Karnataka, Marathwada, Telangana, Raylaseema, Kerala, Lakshadweep Islands, 8 to 12°C over some parts of JAMU & Kashmir, Himachal Pradesh, 12 to 16°C over most parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, 16 to 20°C over most parts of Punjab, Haryana, Delhi, Uttar Pradesh, between 20 and 32°C over remaining parts of the country.

Actual Mean Maximum temperature anomaly ranged between 4°C above over some parts of Marathwada, Telanagana, South Inter Karnataka, -6 to -4°C over most parts of Uttar Pradesh, Uttarakhand, Punjab, Gangetic West Bengal, some parts of Jammu & Kashmir, Haryana, West Rajasthan, West Madhya Pradesh, -4 to -2°C over most parts of Gujarat, Rajasthan, some parts of North & North West India, East, Northeast India, Central India, between -2 and 4°C over remaining parts of the country.

Actual Mean Minimum Temperature ($^{\circ}\text{C}$) in India for the week ending 11.01.2012



Minimum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 11.01.2012



Actual Mean Minimum Temperature ranged between 24°C and above over some parts of Lakshadweep, Andaman Nicobar Islands, 0 to 4°C over most parts of Jammu & Kashmir, Himachal Pradesh, 4 to 8°C over most parts of Himachal Pradesh, Punjab, West Rajasthan, some parts of Uttarakhand, Haryana, Delhi, Gujarat, above 8°C and below 24°C over remaining parts of the country.

Minimum Temperature anomaly ranged between 6°C and above over some parts of Chattisgarh, Orissa, Coastal Andhra Pradesh, Telangana, 4 to 6°C over most parts of Mizoram, Tripura, Gangetic West Bengal, some parts of Bihar, Jharkhand, Orissa, Chhattisgarh, Vidarbha, Telangana, Coastal Andhra Pradesh, -6 to -4°C over some parts of Jammu & Kashmir, West Rajasthan, -4 to -2°C over some parts of Jammu & Kashmir, Himachal Pradesh, Rajasthan, Gujarat, Madhya Pradesh, Vidarbha, Madhya Maharashtra, -2 to 4°C over remaining parts of the Country.

Distribution of rainfall of the country during week ending on 11.01.2012

State/Districts	Actual (mm)	% Dep.			
Arunachal Pradesh					
Anjaw					
Changlang	21	74			
East Kameng	3.5	-64			
East Siang	14.8	164			
Lohit	5	-15			
Lower Subansiri	1	-94			
Papumpara	4	-55			
Tawang	3	-58			
Tirap	16.6	121			
Upper Dibang Valley	2	-87			
Upper Siang	39.6	317			
West Kameng	9.3	31			
Himachal Pradesh					
Bilaspur	64.1	499			
Chamba	95.8	276			
Hamirpur	61	380			
Kangra	59.3	178			
Kinnaur	39.8	99			
Kullu	42.1	155			
Lahaul and Spiti	19.5	-38			
Mandi	45.9	198			
Shimla	43.7	284			
Sirmaur	19.5	82			
Solan	24.7	81			
Una	35.7	179			
Punjab					
Amritsar	27	281			
Barnala	9.8	128			
Bhatinda	0.5	-80			
Faridkot	0.5	-86			
Fatehgarh Sahib	0.5	-89			
Ferozpur	2	-52			
Gurdaspur	71.6	459			
Hoshiarpur	33.7	262			
Jalandhar	41	447			
Kapurthala	66	1550			
Ludhiana	4.9	7			
Mansa	0	-100			
Moga	3	-27			
Muktesar	0	-100			
Nawashahar	4.6	-52			
Patiala	1	-85			
Ropar	20.1	78			
Sangrur	0	-100			
Mohali	5.2	-24			
TarnTaran	9.7	36			
Jammu & Kashmir					
Anantnag	56.6	268			
Badgam	13.1	108			
Bandipore					
Baramula	18.8	-17			
Doda	110	258			
Ganderwal	48	375			
Jammu	35	185			
Kargil	0	-100			
Kathua	95.6	351			
Kistwar	**	**			
Kulgam	31.3	103			
Kupwara	40.6	152			
Ladakh(Leh)	0	-100			
Poonch	42	-3			
Pulwama	0.9	-89			
Rajouri	16	-14			
Ramban	148.7	384			
Reasi	67.9	182			
Samba	41.8	240			
Shopian	3	-62			
Srinagar	13.2	31			
Udhampur	3	-88			
Chattisgarh					
Bastar	9.6	210			
Bijapur	0	-100			
Bilaspur	6.2	56			
Dantewara	10.7	721			
Dhamtari	12.4	933			
Durg	8	300			
Janjgir	19	726			
Jashpurnagar	37.2	963			
Kanker	0	-100			
Korba	0	-100			
Koriya	0	-100			
Kawardha	0	-100			
Mahasumund	0	-100			
Narayanpur	0	-100			
Raigarh	27.4	1040			
Raipur	16.6	934			
Rajandgaon	1.6	-38			
Surguja	1	-72			
UttaraKhand					
Almora	14.5	46			
Bageshwar	20.7	109			
Chamoli	22.6	169			
Champawat	23	115			
Dehradun	22.8	139			
Garhwal Pauri	8.2	27			
Garhwal Tehri	21.6	125			
Haridwar	6.3	-3			
Nainital	10.8	16			
Pithorgarh	42.4	429			
Rudraprayag	19	17			
Udham Sing Nagar	3.9	-42			
Uttarkashi	42.4	232			
Orissa					
Angul	100.2	6164			
Balasure	62.4	7700			
Bargarh	56.7	2082			
Bhadrak	56.5	3223			
Bolangir	17.2	421			
Boudh	4.3	88			
Cuttack	78.3	2799			
Deogarh	99.2	2319			
Dhenkanal	112	3633			
Gajapati	22.3	668			
Ganjam	25	559			
Jagatsingpur	11.6	1350			
Jajpur	91.6	3172			
Jharsuguda	28.6	523			
Kalahandi	20.1	1730			
Kandhamal	54.5	2271			
Kendrapara	46.8	1238			
Keonjhar	91.8	2769			
Khurda	22.9	894			
Koraput	7.5	1392			
Malkangiri	0	-100			
Mayurbhanj	68.2	2999			
Nawapara	16.2	363			
Nawarangpur	14.2	200			
Nayagarh	97.2	4758			
Puri	6.6	187			
Rayagada	21.9	775			
Sambalpur	83.2	1928			
Sonepur	42.8	10608			
Sundargarh	20.7	526			
West Bengal					
GWB					
Bankura	33.6	1363			
Birbhum	9.8	159			
Burdwan	20.7	1278			
East Midnapore	60.3	1531			
Hooghly	39.5	1617			
Howrah	84.4	9278			
Kolkata	92.4	2332			
Murshidabad	5	0			
Nadia	11.1	258			
24 Pargana (N)	44.2	569			
Purulia	33.4	1237			
24 Pargana (S)	43.6	1577			
West Midnapore	44.4	1289			
SHWB					
Cooch Behar	0	-100			
Darjeeling	0	-100			
East Sikkim	2.3	-2			
Jalpaiguri	0	-100			
Malda	0.7	-82			
North Dinajpur	0	-100			
North Sikkim	30.2	268			
South Dinajpur	0	-100			
South Sikkim	0	-100			
West Sikkim	3	-63			
Andhra Pradesh					
Coastal Andhra Pradesh					

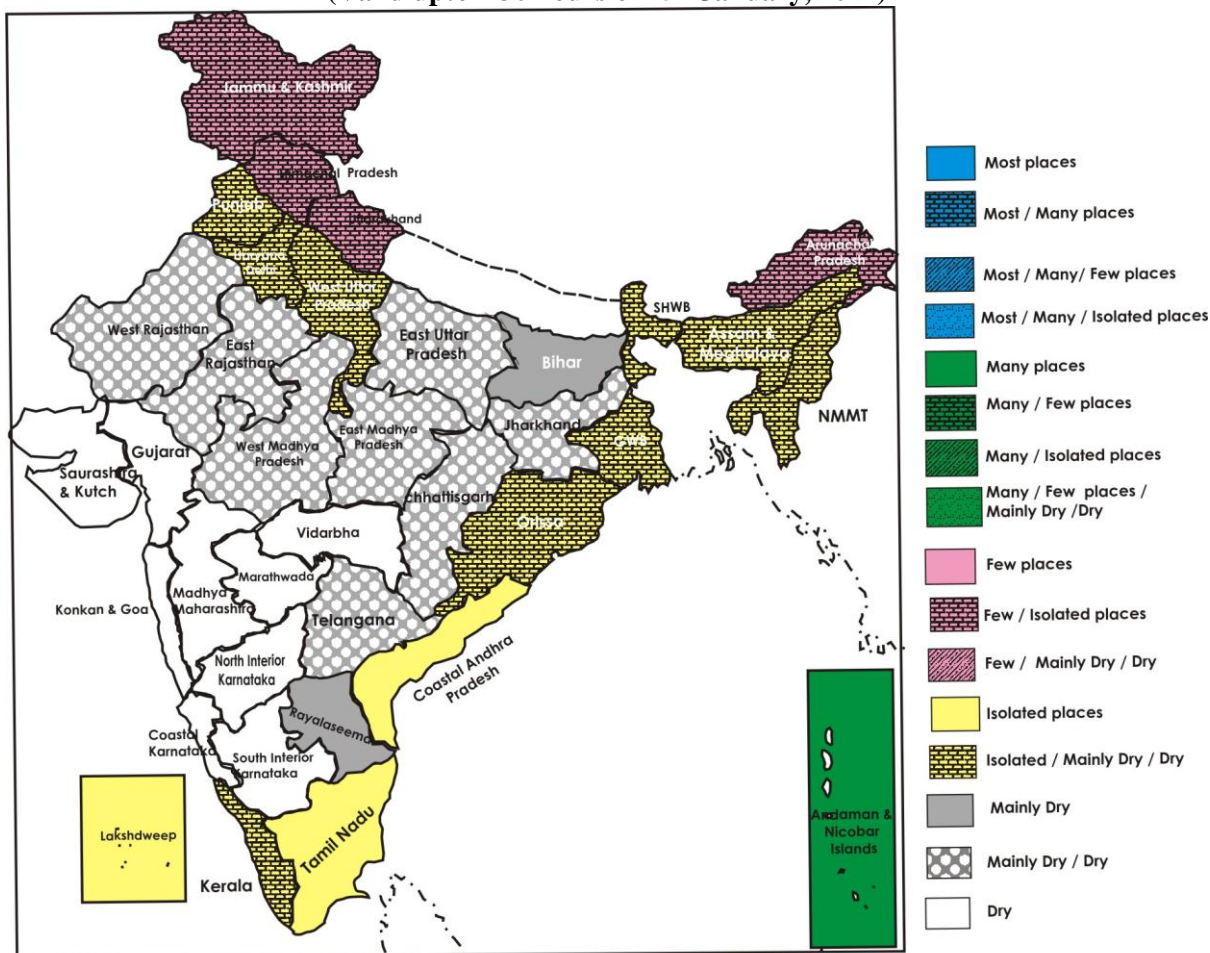
East Godavari	1.7	456
Guntur	32.4	2396
Krishna	20.9	1641
Nellore	29.1	519
Prakasam	7.6	215
Sirkakulam	0	-100
Visakhapatnam	0.6	-35
Vizianagram	6.1	237
West Godavari	3.7	422

Telangana		
Adilabad	0	-100
Hyderabad	0.1	-91
Karimnagar	0	-99
Khammam	14.7	2353
Mehabubnagar	1.3	227
Medak	0	-100
Nalgonda	13.8	1048
Nizamabad	0	-100

Rangareddy	0	-100
Warangal	4.5	81
Rayalaseema		
Anantapur	0.1	25
Chittoor	0	-100
Cuddapah	0	-100
Kurnool	1.6	439

- (20% or more) excess rainfall
- (-60 to -99 %) scanty rainfall
- (-19 to +19%) normal rainfall
- (-100%) no rainfall
- (-20 to -59%) deficient rainfall
- ** Data not available

Weather Forecast (Valid upto 1430 hours of 15th January, 2012)



Major Feature of Weather Forecast upto 1430 hours IST of 15th January, 2012

- Fog/dense fog conditions would occur at isolated pockets in morning hours over Northwest India and some parts of East Uttar Pradesh and Bihar during next 24 hours.
- Rain/snow would occur at one or two places over Western Himalayan region on 14th January and increase thereafter.
- Rain/thundershowers would occur at one or two places over plains of Northwest India on 15th January and increase thereafter.
- No significant change in minimum temperatures over parts of Northwest, adjoining Central and East India during next 24 hours and rise thereafter.
- Cold wave conditions would continue over isolated pockets of Northwest and adjoining Central & East India during next 48 hours.
- Rain/thundershowers would occur at one or two places over parts of East & Northeast India and Coastal Andhra Pradesh during next 24 hours and mainly dry thereafter.
- Rain/thundershowers would occur at many places over Andaman & Nicobar Islands.
- Weather would be mainly dry over remaining parts of the country.

Weather Warning

- Visibility would reduce to 200 m or less in dense fog mainly in morning hours over some parts of East Uttar Pradesh and Bihar during next 36 hours.
- Cold wave along with ground frost conditions would occur over some parts of Punjab, Haryana, North Rajasthan, Madhya Pradesh and West Uttar Pradesh during next 48 hours.
- Cold wave conditions would occur over many parts of Jharkhand, Orissa, Chhattisgarh and Maharashtra during next 48 hours.

Weather Outlook up to 1430 hours IST of 17th January, 2012

- Rain/snow would occur at many places over western Himalayan region and rain/thundershowers would occur at a few places over plains of Northwest India.
- Weather would be mainly dry over remaining parts of the country.
- Fall in minimum temperatures by 2-4°C over parts of Northwest and adjoining Central and East India.

Zonewise Agromet Advisories

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

- **Realised Rainfall:** No significant rain occurred in most of the districts of the States of the region except Upper Siang district of Arunachal Pradesh during last week.
- **Rainfall Forecast:** Rain / thundershower would occur at isolated places over the States of the region during next 48 hours and mainly dry weather will prevail after that.
- **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, farmers are advised to apply irrigation to the standing crops.
 - Farmers in Assam are advised to continue preparation of nursery beds / transplanting for *boro* rice.
 - Farmers in Hill Zone of Assam are advised to harvest matured bolls of cotton, preferably in morning hours to get quality cotton.
 - Farmers of Lower Brahmaputra Valley Zone of Assam are advised to undertake land preparation and start sowing of sugarcane, pointed gourd, musk melon, water melon, pumpkin etc.
 - Farmers in Barak Valley Zone of Assam are advised to harvest the sugarcane crop.
 - Farmers in Mid Tropical Plain Zone of Tripura are advised to undertake sowing of *boro* rice in lowland. As dry weather is prevailing during last few weeks and there is less possibility of significant rainfall, farmers are advised to apply light irrigation to pulse crops at flowering / pod formation 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. Continue planting of cashew, apricot and banana. Prepare land for sowing of ladies finger, pumpkin and French bean. As there is moisture stress in top soil, irrigation may be given immediately to wheat crop.
 - Farmers of Sub tropical Plain Zone of Manipur are advised to complete sowing of pea. Also undertake sowing of cucurbits like water-melon, cucumber and sponge gourd.
 - Farmers in Mizoram are advised to complete transplanting of cole crops and tomato. At tasseling and silking stage, maize crops are more critical to moisture and nutrients. Hence, in view of occurrence of less rainfall, farmers are advised to apply irrigation and undertake nutrient management for high yield and attain full length of cob with grains.
 - 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.
 - Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
 - Due to rainfall, there is chance of attack of late blight in potato at stolon and tuber formation / development stage in North Bank Plain Zone, Central and Upper Brahmaputra Valley Zone of Assam; Spray Mancozeb 75% @ 2.5g / litre of water at an interval of 12 days. It may also be sprayed as prophylactic measure.
 - Due to prevailing weather, there is chance of attack of late blight on tomato crop at vegetative and fruiting stage in Hill Zone of Assam; farmers are advised to apply Ridomil MZ-72 @ 2 g / litre of water and Indofil M-45 @ 2.5g / litre of water.
 - There is attack of wilt disease and aphids on lentil and lathyrus crops at vegetative stages in Central Brahmaputra Valley Zone of Assam. Farmers are advised to drench the soil with Bavistin @ 1 ml / litre of water to protect the crop from wilt and apply Malathion 50 EC @ 2 ml / litre of water. Attack of saw fly and aphids at vegetative and flowering

stages of toria is observed in different places of Nagaon and Marigaon districts; farmers are advised to apply Dimethoate 30 EC or Chloropyriphos 20 EC @ 1 ml per litre of water in toria during afternoon hours to control saw fly and aphids.

- Prevailing weather is favourable for the incidence of early blight in tomato and chilly crops in Mid Tropical Plain Zone of Tripura. Prophylactic spray of Mencozeb @ 1 g per liter of water may be sprayed. There is chance of attack of borer in cabbage. Apply 5% neem extract or Dimethoate (30%) @ 10 ml in 10 litres of water. Prevailing weather conditions are also favourable for late blight and early blight disease in potato. To manage the attack of blight, spray Indofil M-45 or Ridomil or Mancozeb @ 2 g per litre of water, at least twice at an interval of 15 days. Prevailing cloudy and humid weather with low temperature are congenial for powdery mildew on pea and beans. Farmers are advised to spray Wettable Sulphur @ 2 g / litre of water or dust Sulphur at 25 kg / ha.
- In Kolasib region of Mizoram, due to prevailing weather conditions, there is chance of infestation of leaf miner in khasi mandarin; spray with Imidacloprid @ 0.05% to control the attack. 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 / pod formation 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 North Bank Plain Zone, Lower, Central and Upper Bramhaputra Valley Zone of Assam are advised to vaccinate poultry birds against ranikhet disease. Provide artificial heating through lighting electric bulb at poultry house during night time to protect the birds from cold and reduce the incidence of mortality. Due to gradual decline of water level in ponds, fishery owners are advised to take out excess fishes from their ponds and sell.
 - Wet bedding and cold weather are prerequisite for pneumonia; farmers in Arunachal Pradesh are advised to provide dry bedding material to pig / piglets and deworm goat.
 - Prevailing cold weather is favourable for chances of pneumonia in newly born calves; the farmers in Kolasib region of Mizoram and Mild Tropical Plain Zone of Tripura are advised to take special care to avoid cold weather. Provide warm shed to poultry birds and pigs against cold.
 - Farmers in Sub Tropical Plain Zone of Manipur are advised to vaccinate poultry against IBD / Gumboro, Ranikhet disease.
 - The poultry farmers in Nagaland are advised to take precautions against Bacillary white diarrhoea. It can be treated with Furaladone @ 0.5 – 1 g / litre of water for 7 days. Deworm and vaccinate pigs / piglets.

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

- **Realised Rainfall:** Rain occurred in most of the districts of Orissa except Bolangir, Boudh, Gajapati, Jagatsingpur, Koraput, Malkangiri, Nawapara, Nawarangpur and Puri and in most of the districts of Gangetic West Bengal except Birbhum, Murshidabad and nadia districts during last week.
- **Rainfall Forecast:** Either isolated rain / thundershowers would occur or dry or mainly dry weather will prevail over the States of the region during the period.
- **Advisories:**
 - As there was significant rain in most of the districts of Orissa except Bolangir, Boudh, Gajapati, Jagatsingpur, Koraput, Malkangiri, Nawapara, Nawarangpur and Puri and in most of the districts of Gangetic West Bengal except Birbhum, Murshidabad and nadia

districts during last week, farmers are advised to postpone irrigation to the standing crops in these districts. As there was no significant rain during last week in most of the districts of the remaining region and no significant rain is likely to occur during the period, farmers are advised to apply irrigation to the standing crops.

- Undertake sowing of oilseed crops like summer 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 planting of onion. In view of prevailing dry weather condition, farmers are also advised to apply irrigation to oilseed crops.
- Farmers of North Eastern Plateau Zone of Orissa are advised to complete nursery sowing of summer rice.
- Farmers in Western Undulating Zone of Orissa are advised for planting of Sugarcane.
- In view of prevailing dry weather, farmers in North Eastern Plateau Zone of Orissa are advised to irrigate the mustard field at the time of flowering (for late sown crop) or pod initiation (for early sown crop).
- The farmers of East and South Eastern Coastal Plain Zone of Orissa are advised to transplant summer rice, as it is recommended for high yield, less water use and low vulnerability to adverse weather at grain filling stage.
- The farmers of East and South Eastern Coastal plain zone of Orissa are advised to undertake sowing of the crops like summer sunflower and groundnut.
- As dry weather is prevailing, farmers in the districts of North Bihar are advised to apply irrigation in wheat wherever crops are at crown root initiation stage and light irrigation in potato crops for better crop growth and yield.
- As dry weather is prevailing during last few weeks, farmers in the districts of South Bihar Alluvial Zone are advised to apply irrigation to timely sown wheat, mustard, potato and vegetables. Undertake intercultural operations in vegetables and apply optimum dose of fertilizers. It is also advised to apply light irrigation and burn stubbles, grasses around standing potato, pulses and oilseeds crop fields to save from cold conditions.
- 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.
- Farmers in Central and North Eastern Plateau Zone of Jharkhand are advised to undertake intercultural operations in timely sown wheat, gram and pigeon pea.
- Farmers in Old Alluvial Zone of West Bengal are advised for nursery sowing of *boro* rice. To protect the seedlings of *boro* rice from cold, cover the nursery bed with polythene or keep stagnant water in the nursery bed especially for the night-time.
- In view of receiving good rainfall; farmers in Coastal Saline Zone of West Bengal are advised to transplant *boro* rice and Chilli. Protect the young seedlings from cold injury by covering the seed bed by straw ash.
- Farmers in Laterite and Red soil zone of West Bengal are advised to start nursery bed preparation of *boro* rice and maintain 2-3 cm of standing water.
- Suitable varieties of the crops for sowing or transplanting are mentioned in Annexure II.
- There is chance of infestation of powdery mildew disease in early pea crop in North West Alluvial Plain Zone of Bihar. Farmers are advised to apply Karathane @ 1 ml per litre of water or Sulfex @ 3 g per litre of water to protect the crop against this disease. There is also chance of infestation of pod borers in early pigeon pea crop which is in flowering and pod formation stage. Farmers are advised to apply Endosulphan 35 EC @ 1 to 1.5 ml per litre of water to protect the crop against this insect.

- 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 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.
- Due to cool, humid and foggy conditions in the morning and later on clear sunny weather in South Eastern Plateau Zone of Jharkhand, attack of aphid is seen in toria; spray Rogar (Dimethoate) @ 2 ml or Monochrotophos @ 1 ml per litre of water.
- In some areas of Western Plateau Zone of Jharkhand, mustard is severely attacked by aphids; spray Monocrotophos @ 2 ml per litre of water or Imidachlorpid @ 1 ml per litre of water to control them during clear weather.
- Aphid infestation has been noticed in mustard in East and South Eastern Coastal Plane Zone of Orissa; spray 4 ml neem based pesticides or 2 ml Metacystox or 2 ml Rogor per litre water. Alternaria leaf spot infestation has been noticed in potato; spray 2 g Saaf or sixer or companion in each litre water.
- Cold and cloudy weather may favour the infestation of powdery mildew in green gram, black gram and pea in East and South Eastern Coastal Plain Zone and North Eastern Plateau Zone of Orissa. To control powdery mildew, spray 1 kg Sulfex WP in 200 litres of water per acre.
- Current cloudy and rainy weather favours the infestation of aphids and thrips in East and South Eastern Coastal Plain Zone of Orissa; spray 400 ml Dimethoate or 50 ml Imidachlorpid in 200 litres of water per acre.
- There is infestation of aphids in mustard 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. There is also possibility of downy mildew in cucumber in Terai Zone of West Bengal. To control the disease, spray Mancozeb @ 2 g / litre or Metalaxyl 8% and Mancozeb 64% @ 1-1.5 g / litre of water.
- Due to foggy weather in Coastal Saline Zone of West Bengal, tomato may be attacked by downy mildew; spray Dithane M-45 @ 2.5 g / litre of water during afternoon hours. Pulses may be attacked by brown rust disease; spray Dithane M-45 @ 2.5 g per litre of water.
- Due to foggy and cloudy weather in New Alluvial Zone of West Bengal, attack of early blight may be severe. To control the disease, spray 2 g Mancozeb per litre of water.
- Due to low temperature and fog in morning time, late blight may appear in potato in Laterite and Red Soil Zone of West Bengal. Apply Mancozeb @ 2.5 g / litre of water.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
 - During prevailing cold condition in Western Plateau Zone of Jharkhand, goats may be attacked by C.P.C. disease in which animals suffering with high fever, infected nose with continuous secretion of jelly like liquid and animals remain very inactive. Against this disease, animals should be vaccinated with Enrofloxasyl.
 - In North Central Plateau Zone and North Eastern Plateau Zone of Orissa, protect the animals from cold condition. In the present conditions there is likely attack of F.M.D to the milch animals. Vaccinate the animals.

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

- **Realised Rainfall:** Most of the districts of Jammu & Kashmir and Himachal Pradesh and few districts of Punjab and Uttarakhand received rainfall. There was no significant

rainfall in Uttar Pradesh, Haryana and Delhi. Dry weather prevailed over rest part of the region during last week.

- **Rainfall Forecast:** Rain/snow would occur at isolated places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand during next 48 hours and increase thereafter. Rain/thundershowers is likely to occur at isolated places over Punjab, Haryana, Delhi, West Uttar Pradesh after next 48 hours. Mainly dry / dry weather is likely to occur over remaining parts of the region.
- **Advisory:**
 - Cold wave conditions are prevailing over many parts of Rajasthan and isolated pockets of Punjab, Haryana and West Uttar Pradesh. Cold wave conditions would continue over isolated pockets of northwest India during next 48 hours. Minimum temperature were reported 4°C or less over isolated pockets of northwest Rajasthan, northwest Punjab, Central Haryana and West Uttar Pradesh. Ground frost conditions would occur over some parts of Punjab, Haryana, north Rajasthan and West Uttar Pradesh during next 48 hours. Farmers in these States are advised to keep vigil on the weather conditions, provide light and frequent irrigation and arrange for smoking around the fields to protect standing crops from frost / cold injury.
 - Rain / thundershowers occurred at many places over Himachal Pradesh and at a few places over Punjab, Jammu & Kashmir and Uttarakhand during last week. Rain / snow also occurred at many places over Uttarakhand during last 24 hours. Farmers in these regions are advised to postpone irrigation to the standing rabi crops.
 - Farmers in New Delhi are advised to give light irrigation at evening in tomato, chilli, capsicum, marigold, peas and other field crops to protect the crops from possible frost injury. In timely sown wheat crop, second irrigation may be given. First irrigation should be given to late sown wheat crop if it is 25 days old. After 3-4 days of irrigation last dose of nitrogenous fertilizer is advised. Also transplant onion, late cauliflower (snowball), cabbage and knolkhol and intercultural operations should be done in carrot, radish, turnip and sweet potato crops.
 - In Sub Tropical Zone of Jammu and Kashmir, farmers are advised to transplant tomato & onion crop, postpone the sowing of radish, beans, potato when soil is in batter condition and sowing of very late sown wheat varieties. Due to decrease in minimum temperature, they are advised to protect the mustard crop from frost by burning farm waste for creating smoke around the field and also 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 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 onion, planting of garlic, sowing of leafy vegetables (orach, spinach and methi) in poly house. In high frost conditions, farmers are advised to mulch seed crops of Knol Khol, cabbage and root crops. Due to freezing temperature, farmers are advised to stop pruning activities in fruit crops and not to go for new planting.
 - Farmers in Leh region are advised to harvest Chinese cabbage, lettuce, beet leaf var. Mongol at weekly interval and also capsicum from green houses in lower belts. They are also advised to mulch the garlic crop with grass for moisture conservation in protected structures.
 - Farmers in Himachal Pradesh are advised to plant winter flowers like Calendula, Aster, larkspur, dianthus, African daisy, Stasis, lupines, petunia, flox, nicotiana, vanadium and torinia in fields. Protect the flower bulb from direct contact with air / snow by covering with soil. Delay the planting of winter fruit plants viz. peacannut, walnut, almonds,

plum, peach, persimmon, pear and kiwi. Farmers are also advised to sowing of potato. Skip irrigation to crops. Protect the Nurseries of vegetables and forest plants and crops from Frost in lower regions. Cover Nursery with polythene sheet to protect from frost. Farmers are also advised to harvest ginger and peas after irrigation, cleaning and preparation of basins in the orchards.

- In Uttar Pradesh, farmers are advised to complete sowing of cumin. 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 light and frequent irrigation and arrange for smoke near the crops in the evening in normal wheat, *rabi* pulses, *rabi* oilseeds, sugarcane, potato, already transplanted vegetable crops to protect from low temperature/frost injury. Also advised to go for topdressing of Urea for enhancing the growth of rajmaha and other crops.
- Farmers in Rajasthan are advised to complete sowing of wheat, They are also advised to irrigate normal sown wheat crop at tillering stage (45-50 DAS), gram at pod formation stage (80-90 DAS) and first irrigation in late sown wheat at crown root initiation stage (20-23 DAS).
- Due to drop in minimum temperature, farmers in Rajasthan are advised to protect sensitive crops like mustard, rajmah, potato, gram from frost attack, spray dilute sulphuric acid @ 0.1% (1 litre H₂SO₄ in 1000 litre water) or thiourea @ 500 ppm (500 gm thiourea in 1000 litre water) at flowering stage of these crops or on the day of forecast of frost or give light irrigation to these crops. Sudden drop in temperature, very low wind velocity and clear sky are indication of frost attack.
- Farmers in Valley Temperate Zone of Srinagar are advised to maintain orchard sanitation and in case of heavy rainfall / snow, drainage channels should be dug so as to avoid water stagnation.
- Due to low mean temperature & high relative humidity in Sub Tropical Zone of Jammu & Kashmir, there are chances of blight disease in potato crop, so farmers are advised to cut the leaves of potato crop in order to protect the crop from late blight disease of potato crops.
- In Bhabar and Tarai Zone of Uttarakhand, due to foggy, cloudy and low temperature conditions, avoid harvesting of main sugarcane crop during this week also. Continue harvesting of ratoon sugarcane crop and do not burn dry leaves i.e. trash of sugarcane in field, but spread a uniform and thin layer of trash in the field in order to avoid the geminated tissues affected by cold or frost.
- In Flood Prone Eastern Plain Zone of Rajasthan, due to continuous cool humid and cloudy weather, there are chances of black spot disease in mustard at pod formation stage. Farmers are advised to spray 2 % Mencozeb 30 EC solution to manage the disease.
- In Semi-Arid Eastern Plain Zone of Rajasthan, Gram and late pea is likely to be attacked by Gram pod borer (*Heliothis* spp.). Farmers are advised to dust Methyl parathion 2% or Carbaryl 5 % @ 20-25 kg/ha before flowering or after pod formation and Spray Melathion 50 EC or Quinalphos 25 EC @ 1.00 litre or N.P.V. 250 L.E. @ 125 ml per hectare basis. Repeat spray after an interval of 15 days. Light traps can be used to catch adult moth of these insects.
- Weather is favourable for the attack of late blight on potato crop. Farmers are advised to irrigate, every 10 to 15 days to protect the crops in Central Plain Zone of Uttar Pradesh.
- Protect the sugarcane seed crop against frost by giving frequent irrigations. Frost injury results in low germination of sugarcane. For avoiding aphid attack in raya, spray 40 g Actara 25 WG in 80-125 litres of water per acre. Rogor and Metasystox can be used to control leaf miner in Western Plain Zone of Punjab.

- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandary**
 - In Semi-Arid Eastern Plain Zone of Rajasthan, due to cold winds milch and baby animals are likely to be affected with infection of respiratory tracts. If symptoms like droppings from nose, fever etc. are seen in animals, a three day course of Ciprofloxacin, Anorflaxin or Sulpha is advised under the guidance of veterinary doctor.
 - Newly born calves need special care during cold weather as they are susceptible to attack of pneumonia. Keep them warm by providing clean & dry bedding in Punjab and Haryana.
 - Farmers in Bundelkhand zone and in western plain zone in Uttar Pradesh are 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 most states of the region except Guntur and Nellore in Coastal Andhra Pradesh which received sufficient rainfall.
- **Rainfall Forecast:** Isolated rain/thundershowers would occur over Tamil Nadu and Kerala during next 24 hours and mainly dry thereafter. Rain/thundershowers would occur isolated places over coastal Andhra Pradesh during next three days. Weather would be mainly dry over remaining parts of the country.
- **Advisories:**
 - As no significant rainfall occurred in most states of the region, apply irrigation to the standing crops. Postpone irrigation to the crops in Guntur and Nellore in Coastal Andhra Pradesh which received sufficient rainfall.
 - Farmers in the Eastern Dry Zone of Karnataka are advised to continue the harvesting and threshing of finger millet and paddy, since there is no forecast of rain and in areas where paddy harvesting has already been completed, farmers are advised to take up the sowing of pulses like black gram and green gram.
 - Farmers in the North Dry Zone of Karnataka are advised to continue sowing of groundnut and transplanting of onion under irrigated conditions and complete harvesting of chickpea, sorghum and sunflower as early as possible, since clear sky with bright sunshine is forecasted during the next five days .
 - Farmers in the Coastal Zone of Karnataka are advised to undertake protective irrigation for arecanut, since water is scarce and spray potassium borax @2g/ lit of water on arecanut plants affected with nut splitting.
 - Farmers in the Southern Transition Zone of Karnataka are advised to undertake sowing of pulses like black gram, green gram and also use green manure crop sun hemp to utilize residue moisture after harvest of the paddy in the paddy field. In paddy fields where there is no residue moisture, farmers are advised to take up deep ploughing, so that the soil pathogens will die and in turn it will help to reduce pest incidence for the next paddy crop, remove ripened areca nut for making chali preparation and start irrigating the arecanut, coconut and pepper gardens.
 - Farmers in the North East Dry Zone of Karnataka are advised to continue land preparation and transplanting of paddy, picking up of cotton, harvesting of red gram, deep ploughing of red gram in deep black soils, sowing of fodder jowar/ maize wherever irrigation facility is available and harvest onion/chilli.

- Farmers in the Northern Zone of Kerala are advised to take necessary measures to cope with the ill effects of coming summer season, start giving irrigation to the crops, mulch the soil to prevent evaporation loss of water, cultivate pulses/leguminous cover crops also as intercrops in places where irrigation facilities are available and plant vegetables as intercrops in coconut gardens with irrigation facilities.
- Farmers in the Problem Area Zone of Kerala are advised to increase frequency of irrigation to vegetables and banana, since temperature and wind speed is likely to increase in the zone.
- Incidence of helioverpa is observed in bengal gram in the Southern Telangana Zone of Andhra Pradesh. Farmers are advised to spray Chlorpyrifos @ 2.5 ml or Quinalphos @ 2 ml per litre of water to control helioverpa. Prevailing weather conditions and low night temperatures are congenial for the incidence of aphids and alternaria leaf spot in safflower, jassids in rabi castor, thrips and leaf miner in groundnut, powdery mildew in coriander and gourds, aphids in beans, powdery mildew and gemini virus in chillies, hoppers and powdery mildew in mango, downy mildew in grapes. Farmers are advised to undertake plant protection measures to prevent attack of these pests and diseases and monitor the incidence of spodoptera in groundnut.
- Helioverpa is noticed in Bengal gram in the Scarce Rainfall Zone of Rayalseema in Andhra Pradesh. Farmers are advised to apply Quinalphos @ 2 ml or Acephate @ 1 g. per liter of water to control it. The present weather conditions are conducive for powdery mildew disease in coriander and mango, spodoptera and sucking pests in groundnut and bacterial blight in pomegranate. Farmers are advised to undertake plant protection measures.
- Farmers in the Northern Telangana Zone of Andhra Pradesh are advised to undertake plant protection measures in green gram and black gram to protect them from stem fly, pod borer, tobacco caterpillar, powdery mildew, anthracnose, corynespora and alternaria leaf spot and rust.
- Farmers in the North Eastern Zone of Tamil Nadu are advised to spray Coragen 60 ml/acre to control leaf folder pest in paddy fields.
- Farmers in the North Western Zone of Tamil Nadu are advised to harvest maize only after allowing maize crop to become dry to maximum extent possible in the plant itself, since this saves labour for drying separately and increases the quality of the maize as well. Paddy straw can be sprinkled with salt (1kg/100kg) while making a stack. This will not only increase the taste of the straw, but will increase the voluntary feed intake in cattle and buffaloes, which in turn, can increase the quality and quantity of milk.
- Farmers in the High Altitude Hilly Zone of Tamil Nadu are advised to monitor late blight in potato, blister blight in tea and mites in tea.
- Mango plant is affected with hoppers and powdery mildew disease before flowering and fruit setting stage in the Coastal Zone of Karnataka. Farmers are advised to spray of Carbaryl 50 W.P. @ 4g/litre of water and protect cashew nuts from T-mosquito bug.
- Due to partial cloudy weather, sucking pest problem is noticed in cotton, black rot on cabbage and necrosis problem in sunflower in the North Transition Zone of Karnataka. Farmers are advised to spray one month old cotton crop with 1.7 ml Dimethoate 30 EC or 2.0 ml methyl demeton in one liter of water to protect against sucking insects, 0.25 ml Imidachloprid 17.8 S.L or 1.5 ml Oxidemeton methyl 25 EC per liter of water to solve necrosis problem and tetra cycline hydroxide @ 10 mg or Agrimycin -100 @ 10 mg per litre to control black rot .
- Present weather is conducive for the incidence of powdery mildews in cucurbits, aphid attack in bhindi, cowpea, brinjal etc. bugs and leaf thrips in paddy for the areas where emergence of panicle is already occurred in the in the Problem Area Zone of Kerala .

Farmers are advised to undertake plant protection measures to prevent the attack of those pests.

- Incidence of root wilt disease in coconut palms is noticed in the Central Zone of Kerala. Farmers are advised to control all pests and diseases and impart natural resistance and health to the palms through proper manuring and agronomic practices.
- **Animal Husbandry:**
 - Farmers in the North East Dry Zone of Karnataka are advised to vaccinate the animals against Foot and Mouth disease as there are reports of incidences in the zone.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** Dry weather prevailed over the region during last week.
- **Rainfall Forecast:** Dry weather is likely to prevail over the region during the period.
- **Advisories:**
 - As there was no rain during last few weeks and dry weather is likely to prevail during the period over the region, farmers are advised to apply irrigation to the standing crops.
 - As cold wave conditions are prevailing over the parts of North Madhya Maharashtra, farmers are advised to protect the grapes from cold by applying light irrigation and arranging for smoking at night. Wherever possible fertilizers may be applied with more Nitrogen. Use of transparent plastic may be done as mulch which will help in maintaining soil temperature.
 - Cold may affect growth of banana in North Madhya Maharashtra and Marathwada; farmers are advised to apply irrigation in the evening and arrange for smoking in the orchards at night.
 - Taking the advantage of dry weather, farmers are advised to continue harvesting of already matured tur in Madhya Maharashtra, Marathwada and Vidarbha and sugarcane in Madhya Maharashtra and Marathwada.
 - Farmers of Madhya Maharashtra and Marathwada are advised to complete preparatory tillage for planting of *suru* sugarcane.
 - In view of prevailing dry weather, farmers of South Konkan and East Vidarbha region in Maharashtra are advised to maintain water level 2 to 3 cm for first 8 to 10 days and increase up to 5 cm after that in transplanted rice field. Spray '*Ambrashakti*' a liquid fertilizer for enhancement of fertilization and to minimize fruit dropping in mango in South Konkan.
 - As dry weather is prevailing, farmers in Middle Gujarat Zone are advised to apply irrigation in wheat, pluck aged leaves of bidi tobacco and dry them under shade. Sowing of summer groundnut may be carried out.
 - In Bhal and Coastal Zone, farmers are advised to apply irrigation in wheat, castor and cumin. Smoking / fumigation in evening in cumin is advised to avoid powdery mildew and blight infestation.
 - Farmers in North West Zone of Gujarat are advised to apply light irrigation to cumin crop.
 - As dry weather is prevailing, farmers in South Gujarat Heavy Rainfall Zone are advised to apply irrigation in wheat and banana. After irrigation, apply split dose of nitrogen in castor.
 - Farmers in South Saurashtra Zone of Gujarat State are advised to apply irrigation to wheat, gram, castor and garlic. Undertake picking of cotton.
 - Farmers in North Gujarat Zone are advised to apply light irrigation in wheat, castor and mustard. Apply supplementary dose of Nitrogen @ 30 kg N/ha to maize and 15 kg N/ha to isabgol.

- Farmers in South Gujarat Zone are advised to apply irrigation to wheat. Remove suckers in banana crop regularly.
- Farmers in North Saurashtra Zone of Gujarat are advised to complete sowing of isabgul. Apply irrigation to gram and pigeon pea.
- Suitable varieties of the crops for sowing are mentioned in Annexure II.
- Due to cloudy weather prevailed during last week, there may be attack of pod borer in gram in Marathwada region; spray Imamectin Benzoate @ 3 g or Heliokil @ 20 ml in 10 litres water.
- As cloudy weather prevailed during last week, there may be infestation of rust in wheat in Madhya Maharashtra; spray Mancozeb 75% @ 1500 g / ha in 500 litres of water with 10 kg urea.
- Under prevailing weather conditions, there may be incidence of anthracnose on new vegetative flush and mango inflorescence in South Konkan region of Maharashtra; spray Carbendazim @ 10 g or Thiophenate methyl @ 10 g or Propineb @ 20 g per 10 litres of water. Also there may be incidence of tea mosquito bug in cashew; spray 35% Profenophos @ 10 ml per 10 litres of water.
- Due to cloudy sky conditions, there is a chance of outbreak of blight disease in fennel, cumin, potato and tomato in North Gujarat Zone. Farmers are advised to spray Mancozeb (0.25%) @ 30 g plus 20 ml desi soap solution in 10 liters of water to control the disease. Also there is a possibility of powdery mildew in cucurbitaceous vegetables. Spraying of wettable sulphur (0.2%) is advised for its control.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry:**
 - To protect the poultry birds from cold wind in Middle Gujarat Zone and Bhal and Coastal Zone, cover the poultry house with cloth / plastic sheets.
 - Do not allow the animals to drink the highly cold water and keep away the new born animals from the cold condition in South Gujarat Heavy Rainfall Zone.
 - Udder of milking animals must be properly cleaned with insecticide; Zinc Oxide or Boric powder should be used. The beaks of birds in the poultry under age of 15 Weeks should be cut. Entry of visitors of poultry should be prevented. Rats in the poultry should be destroyed in North West Zone of Gujarat.

CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Rain/thundershowers occur at one or two places over north Madhya Pradesh and at a few places thereafter. Mainly dry weather prevailed over rest part of the region.
- **Rainfall Forecast:** Possibility of dry weather and clear sky condition over the region.
- **Advisories:**
 - Cold wave conditions are prevailing over many parts of Madhya Pradesh, Chhattisgarh. Cold wave conditions would continue over isolated pockets during next 48 hours. Minimum temperature was reported 4°C or less over isolated pockets of West Madhya Pradesh. Ground frost conditions would occur over some parts of Madhya Pradesh during next 48 hours. Farmers are advised to keep vigil on the weather conditions, provide light and frequent irrigation and arrange for smoking around the fields to protect standing crops from frost / cold injury.
 - In view of falling minimum temperature farmers in Bundelkhand region are advised to irrigate the crops and stop the hoeing and weeding in the crops. Transplant the cauliflower and tomato in main fields and light irrigation should complete.

- Farmers in Satpura Plateau region of Madhya Pradesh are advised if sufficient soil moisture is available; give top dressing of urea in wheat as per the requirements. Also do intercultural operations and top dressing of fertilizer in sugarcane.
- Farmers in Jhabua Hills region of Madhya Pradesh are advised to give second irrigation in full irrigated wheat and maize crops 40-45 DAS, also give recommended dose of fertilizer. They are also advised to arrange seed of summer vegetables i.e. cucurbitecae family, water melon, musk melon, okra, cilli, tomato, brinjal etc. and when temperature increase and fallow field available then sown these crops.
- Due to dry weather forecast farmers in Nimar Valley region of Madhya Pradesh are advised to irrigate wheat and gram crop also start sowing of vegetables and planting of sugarcane crop.
- In view of dry weather conditions and minimum temperature will be around 8°C farmers in Central Narmada Zone of Madhya Pradesh are advised to irrigate the crops. Hand weeding and intercultural operations should be done after 20-25 days after sowing/germination in chickpea, wheat and lentil. They are also advised for top dressing of urea in wheat as per the requirements in rainfed areas.
- Farmers in Malwa Plateau Zone of Madhya Pradesh are advised to apply irrigation in wheat crop. Looking to the minimum temperature there is possibility of frost in chickpea hence apply control measures to prevent the crop from frost such as irrigation and create smoke near the bunds of the field by burning waste materials. Application of Sulphuric acid @ of 1ml/lit of water can also be done to prevent the crop from frost. Prepare nursery for onion and transplanting of winter season Brinjal can be start now.
- Wheat sown during the first week of December is at crown root initiation stage which is the most critical stage of the crop. Looking to the clear weather condition in coming days farmers are advised for top dressing of Nitrogen in Chattisgarh Plain Zone with soil moisture available due to rains during last week.
- Present weather conditions are favourable for planting of onion during this week in Chattisgarh Plain Zone hence it is advised to complete the planting of onion seedlings.
- Farmers in Bastar Plateau Zone of Chhatisgarh are advised to complete sugarcane planting at the earliest and earlier planted sugarcane should be irrigated.
- Farmers in Kymore Plateau and Satpura Hills region of Madhya Pradesh are advised that weather conditions are favourable for the infestation of aphids in mustard. Hence, farmers are advised for the monitoring of the crop and if the infestation is above ETL, spray Metasystox @2 ml/liter water solution followed by spraying of Dimethioate @ 2ml/liter water solution after 15 days of first spraying is advised.
- Farmers in Bundelkhand region are advised that there is attack of semi looper in cauliflower and cabbage crops, for control measure spray with Malathion 50E.C. @ 2ml/L of water. Do not pick up cuds within one week of the spray. Also due to foggy and cloudy condition in last week potato crops may be affected by late blight hence, farmers are advised to spray redomil @ 2.0 g per liter of water for their effective control.
- Farmers in Malwa Plateau of Madhya Pradesh are advised that present weather favors Potato Blight so use preventive measures for this and apply copper fungicide. Coriander must be treated by Thyrum @ 3 gm/Kg of seed before sowing.
- Due to cloudy weather condition prevailed in Chattisgarh Plain Zone, aphids in vegetables and mustard, *Heliothis* in gram and pigeon pea, fruit and shoot borer in brinjal, thrips in groundnut may occur. Hence, farmers are advised to keep keen watch over the crops and adopt integrated pest management practices like light trap, pheromone trap, bird prech etc. for initial control and if necessary spray recommended insecticides in consultation with the nearest official of Agriculture department/ Scientist of the University.

- **Animal Husbandry & Poultry**

- Farmers in Kymore Plateau and Satpura Hills region, Bundelkhand region, Satpura Plateau Zone and Central Narmada Valley Zone of Madhya Pradesh are advised to keep cattle in dry and clean place to protect from mosquitoes and other deleterious insects. Burn neem leaves to create smoke in night to protect from mosquitoes and bees.
- Farmers in Bundelkhand region are advised to cover the poultry shed with gunny bags in order to protect the birds from cold weather. The night temperature is around 5 °C and there is forecast of moderate wind speed; hence the newly born calves may be protected from the cold wind.

Annexure I

Major Crops

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

- Sugarcane (old) (harvesting), sugarcane (new) (land preparation / planting), *boro* rice (nursery preparation / sowing / transplanting / seedling), sunflower, ridge gourd (sowing), wheat (CRI / tillering), tomato (vegetative / flowering / fruiting), *rabi* pulses (vegetative / flowering / pod formation), cauliflower, cabbage and knoll khol (vegetative / head formation / harvesting), brinjal (vegetative / flowering / fruiting / harvesting), country bean (vegetative / flowering), winter vegetables, pea (vegetative / flowering / pod formation), onion, garlic (vegetative), khasi mandarin (fruit maturity / harvesting), lentil (vegetative / flowering / pod formation), potato (stolon formation / tuber development), rapeseed and mustard (flowering / siliqua formation) and other cole crops (vegetative / head formation / maturity / harvesting), *rabi* maize (vegetative), pointed gourd, musk melon, water melon, pumpkin (sowing) in Assam.
- Cabbage, cauliflower, knolkhol etc. (vegetative / head formation / maturity / harvesting), maize (vegetative / tasseling / silking), mustard (vegetative / flowering / pod formation), potato (vegetative / tuber formation) and pea (sowing / vegetative / flowering / pod formation), turmeric, ginger (maturity) in Arunachal Pradesh.
- Cucurbits (sowing), rapeseed / mustard (flowering / pod formation), tomato (vegetative / flowering), potato (vegetative / tuber formation), cauliflower and cabbage (vegetative / head formation), pea (sowing / vegetative / flowering / fruiting), onion (vegetative), broccoli (vegetative / head formation / harvesting), *rabi* maize as inter-crop (sowing) in Manipur.
- *Boro* rice (nursery sowing / seedling / tillering), wheat (CRI / tillering), pea, garlic and lettuce (seedling / vegetative), toria (pod formation / maturity), potato (planting / vegetative / tuber formation), Khasi mandarin (flowering / fruiting), lentil, rapeseed (vegetative / flowering / fruiting), *rabi* onion (vegetative / bulb formation), winter vegetables (vegetative / flowering / fruiting), Bengal gram (flowering / pod formation), mustard (flowering / pod formation), peach (vegetative / fruiting / maturity), cashew, apricot (planting / vegetative), cabbage and knol-khol (vegetative / head formation / maturity) in Meghalaya.
- Ginger and turmeric (rhizome formation / maturity / harvesting), khasi mandarin (vegetative), banana (vegetative / fruiting / maturity / harvesting), cole crops (vegetative / head formation) and tomato (vegetative / flowering / fruiting) and pea, bean (vegetative / flowering), maize (tasseling / silking) in Mizoram.
- Banana (vegetative / fruiting), cabbage (vegetative / head formation), pea (flowering / pod formation), rapeseed, mustard (vegetative / flowering / siliqua formation), French bean (vegetative / flowering), potato (vegetative / tuber initiation), brinjal (flowering / fruiting / harvesting), maize (vegetative / tasseling / silking) and broccoli (vegetative / flowering) in Nagaland.
- *Boro* rice (nursery sowing), cucurbits and other vegetables (flowering / fruiting), pulse crop (vegetative / flowering / pod formation), ginger and turmeric (rhizome formation / harvesting), mustard (flowering / pod formation), tomato (vegetative / flowering), toria (flowering / pod formation), cole crops (vegetative / head formation), potato (vegetative / tuber formation), pea, beans (vegetative / flowering), banana (vegetative / flowering) in Tripura.

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

- Sugarcane (vegetative), *khariif* arhar (seed formation), lobia for green fodder (vegetative), mishrikand (vegetative), onion, radish (vegetative), cauliflower, cabbage (vegetative / head formation), pigeon pea (pod formation / seed formation), fruit trees (transplanting), potato, sweet potato (vegetative / tuber formation), rapeseed, mustard (flowering / pod formation), wheat (CRI / tillering), vegetables, maize, pulses (vegetative / flowering) in Bihar.
- Pigeon pea (flowering / pod formation), turmeric and ginger (vegetative / rhizome formation), elephant foot yam (tuber elongation), potato (vegetative / tuber formation), sweet potato (stem elongation / tuber elongation / maturity / harvesting), mustard (flowering / pod formation), linseed (flowering / pod formation), toria (pod formation), green pea (pod formation), cauliflower, cabbage (vegetative / head formation), chilli, tomato (vegetative / flowering), wheat (CRI / tillering), niger (vegetative), papaya (transplanting), gram (vegetative / flowering / pod formation), onion, African or French marigold (sowing / vegetative) in Jharkhand.
- Arhar (seed formation), mustard (flowering / pod formation), sugarcane (maturity), sugarcane (new) (planting), Bengal gram, lentil, linseed, green pea (vegetative / flowering / pod formation), wheat (CRI / tillering), banana and marigold (vegetative), potato (vegetative / tuber formation), sunflower, garlic, groundnut (sowing / vegetative), tomato (vegetative / flowering), cauliflower, cabbage, knol-khol (vegetative / head formation), onion (vegetative) in Orissa.
- *Boro* rice (nursery preparation), winter vegetables (vegetative / flowering / fruiting), mustard (flowering / pod formation), wheat (CRI / tillering), lentil, gram, sunflower (vegetative / flowering / pod formation), potato (vegetative / tuber formation) in West Bengal.
- *Rabi* vegetables (vegetative / flowering / fruiting / harvesting), orange (harvesting), ginger (harvesting), wheat (CRI / active tillering), mustard (flowering / pod formation), *rabi* potato (vegetative / tuber formation) in Sikkim.

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

- Wheat (early varieties - vegetative stage and germination of late varieties), lentil (pod formation), sugarcane (planting), *rabi* onion, cauliflower, cabbage, broccoli, tomato, knolkhol (transplanting / early vegetative), radish, spinach and coriander (vegetative/fruiting) in Delhi.
- Wheat (emergence/ early vegetative/ vegetative), vegetables (bhindi, cucurbits)(sowing), Khira, summer squash, bitter gourd, tur, brinjal, Shimla mirch, and tomato (sowing / transplanting), Apple and other temperate fruits (dormant stage in High Hill Temperate Dry Zone), 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), early/normal sown wheat (CRI stage / vegetative), early/normal sown barley (jointing), late sown barley (CRI stage), onion (transplanting), winter vegetable crops viz. potato, radish, carrot, turnip, garlic, spinach, methi, onion (sowing / transplanting / vegetative etc.), cole crops viz. early cauliflower, cabbage, knoll khol, broccoli (transplanting/emergence), *rabi* oilseeds i.e. toria (maturity/ harvesting), gobi sarson, mustard early / normal sown (pod formation), late sown mustard (flowering), brown sarson (rosette stage), *rabi* pulses i.e. lentil, gram, pea (vegetative)],

fodder crops like oats (tillering), berseem (vegetative), 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), sugarcane (planting), litchi, loquat, peach, citrus (flowering / fruiting), mango (early varieties) (flowering), foxtail millet, okhra, bottle gourd, bitter gourd, ginger, turmeric (germination / vegetative), mustard (Siliqua formation), toria (maturity/ harvesting), papaya (planting), sorghum, pigeon pea (vegetative), urd, and pearl millets (germination), potato (maturity / digging), barley, sarson (germination/ vegetative), fodder barseem, (vegetative/ 1st cutting), onion (transplanting/germination), wheat (germination/crown root initiation / late tillering), lentil (sowing) in Uttarakhand.
- Wheat (crown root initiation/ vegetative growth), winter sugarcane (vegetative growth), cucurbits like gourd, bitter gourd, cucumber, etc. and another vegetables like lady's finger, tomato, brinjal, chilli, bhindi etc. (vegetative / flowering / fruiting), coriander (vegetative), cabbage, garlic, cauliflower (flowering / fruiting / maturity), onion (transplanting / vegetative growth), rai /mustard/ sarson (flowering / pod formation), barley (vegetative / 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 autumn (tillering), gram, lentil, barley, mustard, rape seed (branching/flowering), radish, carrot, turnip, onion, cauliflower (transplanting/vegetative), barley / wheat (CRI/tillering - timely sown) in Punjab.
- Sugarcane (spring season) (early vegetative), barseem (vegetative), moong, mash, pigeon pea (vegetative), cauliflower, cabbage, carrot, potato (transplanting), mustard, sarson, raya (vegetative/flowering), radish, turnip (sowing), wheat (germination/CRI/tillering) in Haryana.
- Wheat (sowing / germination / CRI stage / tillering), sweet potato, chilli and cluster bean (vegetative), mustard (flowering / siliqua formation), gram, coriander (germination), barley, oats, lentil, lucerne, taramira, linseed, 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 (flowering/square formation), maize (vegetative/ harvesting), sunflower (heading), Bengal gram (pod formation), red gram (pod filling/ harvesting), rabi jowar (milky), late planted paddy (harvest), wheat (grain formation), safflower (flowering), finger millet (harvest), black gram (sowing), green gram (sowing), mango (flowering), chilli (flowering), ginger (vegetative), vegetable (nursery) and horticultural crops (vegetative growth/ flowering/ fruit development) in Karnataka.
- Groundnut (flowering/pegging), rabi paddy (tillering/panicle initiation), maize (vegetative), sunflower (heading), jowar (panicle formation/ grain setting), rabi rajmah (sowing), rabi pulses (vegetative/flowering), rice fallow maize (seedling), rice fallow jowar (seedling), rice fallow pulses(seedling), bengal gram (flowering), red gram (maturity/harvesting), castor (development of third spikelet), cotton (harvesting), tomato

(flowering /fruiting), chilli (vegetative/flowering) and bhendi (fruiting), field bean (flowering/fruiting/harvesting), mango(flowering) in Andhra Pradesh.

- Rice (tillering / panicle initiation), arecanut (harvesting), pepper (harvesting), ginger (harvest), cardamom (harvesting), nutmeg (maturity/harvesting), sugarcane (harvesting/ planting), vegetables (seedling/flowering), banana rainfed (harvesting), banana irrigated (vegetative), mundakan paddy (harvesting), virippu paddy(sowing), coconut (harvesting), virippu paddy (sowing) in Kerala.
- Rice - Samba (flowering/grain formation), Thaladi (panicle initiation), cotton (boll formation), vegetables (vegetative/ harvest), sugarcane (various stages), maize (various stages), millets like sorghum (vegetative), pulses (vegetative), groundnut (various stages), chilli (flowering) in Tamil Nadu.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- Sugarcane (old *adsali* and old pre-seasonal) (cane maturity / harvesting), sugarcane (old *suru*) (elongation / cane maturity), sugarcane (new *adsali*) (early vegetative), sugarcane (new pre-seasonal) (sprouting / early tillering), *Kharif* red gram (pod maturity / harvesting), *rabi* jowar (flowering / grain formation), safflower (floral bud formation / flowering), irrigated gram (flowering / pod formation), irrigated wheat (active tillering / ear head emergence), sunflower (flowering / head formation), maize (vegetative growth / tasseling and silking), summer rice (seedling / transplanting in South Konkan and East Vidarbha), summer groundnut (sowing / germination) in Maharashtra.
- Wheat (crown root initiation / tillering / booting), gram (flowering / pod formation), *rabi* maize (vegetative), Isabgol (sowing / branching), sugarcane (planting / early vegetative), jowar (seedling / vegetative), cotton (picking), castor (spike initiation / capsule formation / maturity), mustard (flowering / pod formation), vegetables (vegetative / flowering / fruiting), cluster bean, cauliflower, cabbage, sweet corn (vegetative) and potato (vegetative / tuber development) in Gujarat.

CENTRAL INDIA [M.P., CHHATTISGARH]

- Sugarcane (planting), vegetables (fruiting), Mustard (branching/flowering), wheat (crown root initiation), maize (tillering), onion, garlic, tomato, brinjal, chilli (sowing / transplanting), cotton (maturity), gram (branching/flowering) in Madhya Pradesh.
- 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), linseed (flowering stage) tomato, brinjal, chilli, niger, horsegram, ramtil, toria, cauliflower, cabbage, niger, kulthi (sowing), wheat (crown root initiation), onion (planting) in Chhattisgarh.

Annexure II List of Varieties

Assam

Sunflower: Jwalamukhi.

Ridge gourd: Pusa Nasdar.

Musk melon: Pusa Sharbati, Hara Madhu, Punjab Sunehri, Durgapur Madhu, Arka Rajhans and Arka Jeet.

Water melon: Asahi, Pusa Bedana, Sugar Baby, Faizabadi.

Sugarcane: Kolong, Luhit, Dhansiri, Doris, Co 1148.

Manipur

Pea: Arkel, Azad, Rachana.

Water melon :

for small type: Water Baby.

for big type: Madhavi-10.

Meghalaya

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

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

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.

Summer Rice: Parijat, Khandagiri, Lalat, Naveen.

Sugar cane: CO 740, CO 6304, CO7219, COT 8201, Neelamadhava and Sabita.

West Bengal

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

Jharkhand

Papaya: Pusa Giant, Pusa Dwarf, Honey Dew, Pusa Majesty.

Onion: Pusa Red, Pusa Ratnar, N-53, Arka Niketan, Arka Kalyan, Agrifound Dark Red.

Summer Rice: MTU 1010, IR 36, 64, Naveen, Lallat.

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

Barley : var. Ratna, Jyoti and Sonu

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

Radish: Japanese White, white Icicle,

Turnip: Golden Ball,

Raya: PBR-210 and PBR 91 for South Western regions only. 23

Haryana

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.

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:

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

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

Andhra Pradesh

Paddy- MTU 1010, MTU 1001 and Pushkala

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

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 pea1 and 2

Gram-Late sown variety: JG-14

Sugarcane- CoJN 86032, CoJN 86582

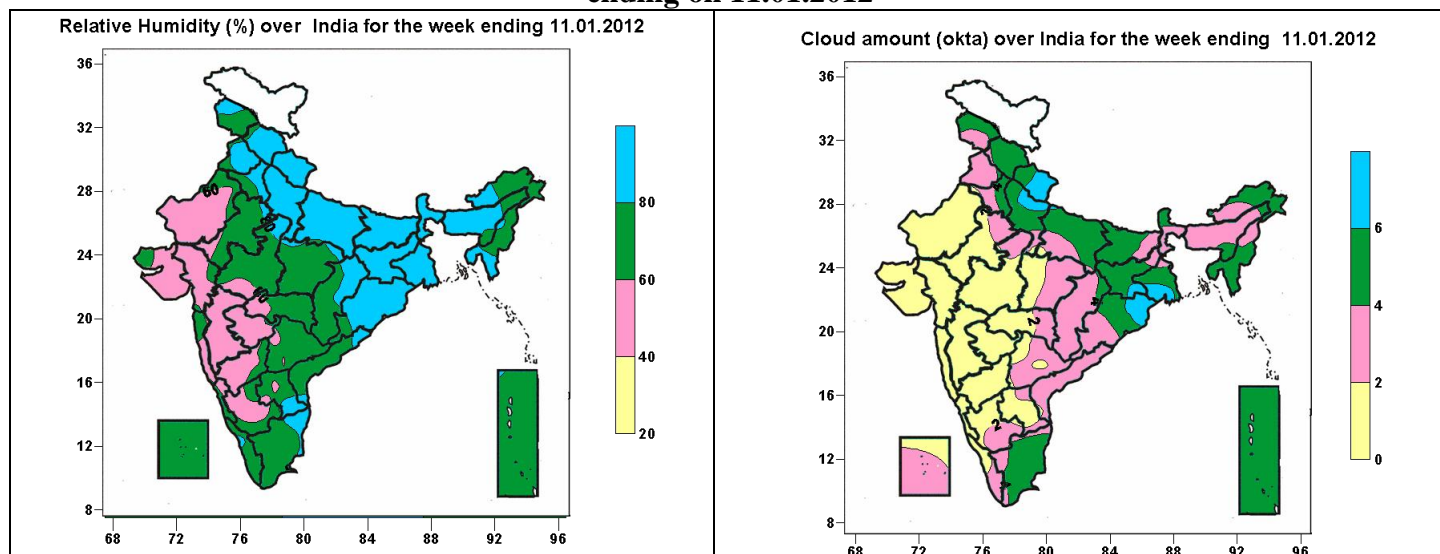
Chattisgarh

Wheat-GW-273

Potato-Kufari Lalima, Kufari Pukhra

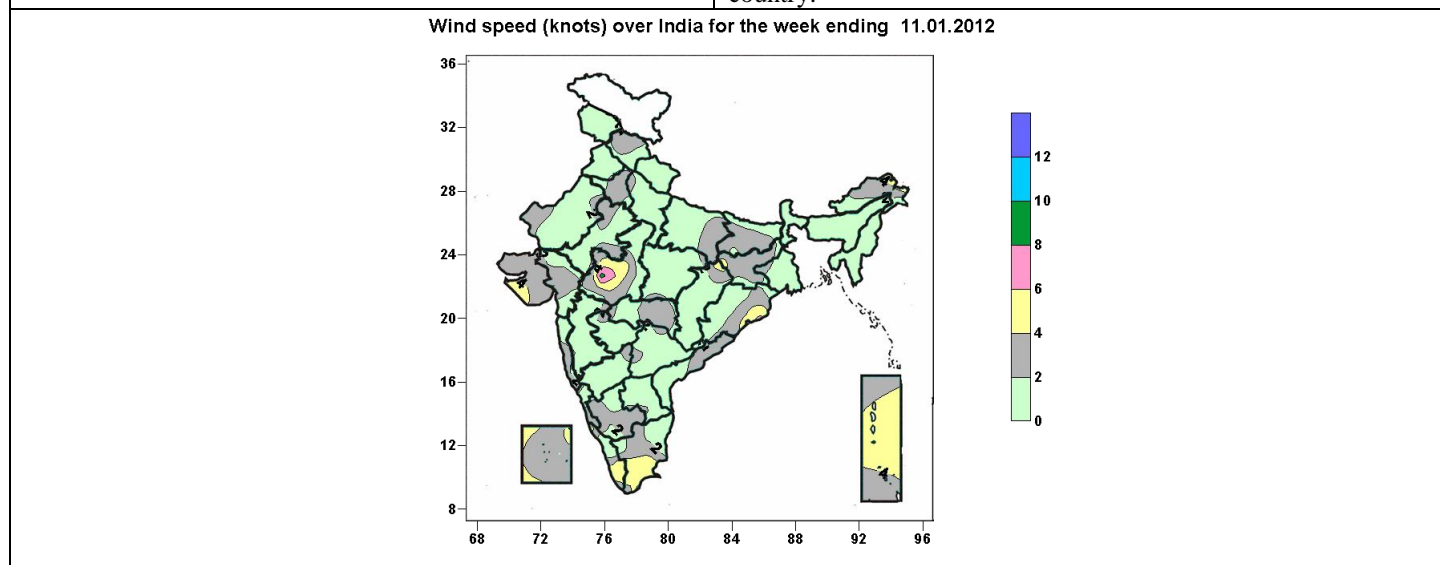
Sugarcane- Co 86032, Co 86141

Annexure III
Contour maps for Relative Humidity, Cloud Amount and Wind speed for the week ending on 11.01.2012



Relative humidity ranged between 80% and above over most parts of Himachal Pradesh, Uttarakhand, Punjab, Haryana, Uttar Pradesh, West Bengal & Sikkim, Bihar, Jharkhand, Orissa, Assam & Meghalaya, Tripura, some parts of Delhi, East Rajasthan, Arunachal Pradesh, Chattisgarh, Madhya Pradesh, Coastal Andhra Pradesh, Raylaseema, Tamil Nadu, Kerala, 40 to 60% over most parts of West Rajasthan, Gujarat, Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra, Marathwada, Karnataka, some parts of West Madhya Pradesh, Vidarbha, Telengana, Raylaseema, 60 to 80% over remaining parts of the country.

Cloud amount 6 okta and above over most parts of Uttarakhand, some parts of West Uttar Pradesh, Jharkhand, Gangetic West Bengal, Orissa, 4 to 6 okta over most parts of Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, Sikkim, Manipur, Mizoram, Tripura, Tamil Nadu, Andaman & Nicobar Islands, some parts of Punjab, Haryana, Delhi, Orissa, Assam & Meghalaya, Arunachal Pradesh, 0 to 2 okta over most parts of Rajasthan, Gujarat, Saurashtra & Kutch, Maharashtra, Karnataka, West Madhya Pradesh, Rayalaseema, some parts of East Madhya Pradesh, Telangana, Kerala, Lakshdweep Islands, 2 to 4 okta over remaining parts of the country.



Wind speed ranged between 4 knots and above over most parts Andaman & Nicobar Islands, some parts of Saurashtra & Kutch, West Madhya Pradesh, Orissa, Jharkhand, Chattisgarh, Tamil Nadu, Kerala, Lakshadweep Islands, 2 to 4 knots over most parts of Himachal Pradesh, Harayan, Delhi, Gujarat, Saurashtra & Kutch, Bihar, Jharkhand, South Interior Karnataka, Lakshadweep Islands, some parts most parts of Uttar Pradesh, Gangetic West Bengal, Arunachal Pradesh, Orissa, Chattisgarh, Andhra Pradesh, Coastal & North Karnataka, Rajasthan, Madhya Pradesh, Vidarbha, Konkan & Goa, Andaman & Nicobar Islands, 0 to 2 knots over remaining parts of the country.