

National Agromet Advisory Service Bulletin

Tuesday 16th December 2014
(For the period 16th to 19th December 2014)



Issued by

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



Realised Weather on 16th December 2014

- **Significant weather observations:** Dense/very dense fog has been observed at isolated places over Punjab, Delhi, Rajasthan, East Uttar Pradesh, Sub-Himalayan West Bengal and north Madhya Pradesh in morning hours of today. The visibility recorded 50 m or less are: Amritsar, Bhuntar, Ganganagar, Delhi (Palam), Sultanpur, Varanasi, Bhopal, Damoh, Tikamgarh, Kalimpong, Kota, Ujjain, Shajapur and Rewa. Cold wave conditions are prevailing over isolated pockets of Gujarat state.
- **Rainfall:**(From 0830 hours IST of yesterday to 0830 hours IST of today): Rain/snow has occurred at a few places over Himachal Pradesh and at isolated places over Uttarakhand. Rain/thundershowers has occurred at a few places over East Uttar Pradesh, Bihar, Chhattisgarh, south Karnataka, Lakshadweep and coastal Tamilnadu; at isolated places over Jharkhand, south Andhra Pradesh, Kerala and Andaman & Nicobar Islands. Weather remained dry over rest of the country. The amounts of rainfall (1 cm or more) recorded at 0830 hours IST of today are: Daltonganj and Mukteshwar 3 each; Mangalore 2; Kalpa, Ambikapur, Minicoy, Parangipettai, Carnicobar and Noncowry 1 each.
- **Temperature:** Minimum temperatures are below normal by 2-4°C at many places over Himachal Pradesh, Rajasthan and Gujarat and at a few places over West Madhya Pradesh and at isolated places over Jammu & Kashmir, Uttarakhand and Maharashtra. They are above normal by 2-5°C at many places over northeastern states, West Bengal & Sikkim, Bihar, Jharkhand, peninsular India and near normal over rest part of the country. **The lowest minimum temperature of 3.0°C has been recorded at Amritsar (Punjab) in the plains of the country.**

Weather Forecast

Weather Forecast for next 3 days (upto 0830 hours IST of 19th December, 2014)

- Rain/thundershowers would occur at a few places over Tamil Nadu & Puducherry during the period.
- Rain/thundershowers would occur at isolated places over Arunachal Pradesh during next 24 hours and over Kerala during next 48 hours and at a few places thereafter.
- Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands during next 24 hours and at isolated places thereafter.
- Rain/thundershowers would occur at isolated places over South Interior Karnataka and Lakshadweep during the period.
- Dry weather would prevail over Nagaland, Manipur, Mizoram and Tripura during next 24 hours and rain/thundershowers would occur at isolated places on 17th and dry weather would prevail thereafter.
- Rain/snow would occur at isolated places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand during next 24 hours and dry weather would prevail thereafter.
- Rain/thundershowers would occur at isolated places over East Uttar Pradesh, Bihar, Sub-Himalayan West Bengal & Sikkim and Coastal Karnataka during next 24 hours and dry weather would prevail thereafter.
- Dry weather would prevail over Assam & Meghalaya during next 24 hours; over Andhra Pradesh during next 48 hours and rain/thundershowers would occur at isolated places thereafter.
- Dry weather would prevail over rest parts of the country.
- Fall in minimum temperatures by 2-4°C over many parts of northwest, central and east India and

Weather Warning during next 3 days

- **16 December (Day 1):** Very dense to dense fog (Visibility 200 m or less) would occur at a few places over Punjab, Haryana & Delhi, Rajasthan, Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim. Cold wave conditions would prevail over some parts of Gujarat.
- **17 December (Day 2):** Very dense to dense fog (Visibility 200 m or less) would occur at a few places over Punjab, Haryana & Delhi, Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim.
- **18 December (Day 3):** Very dense to dense fog (Visibility 200 m or less) would occur at a few places over Punjab, Haryana & Delhi, Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim.

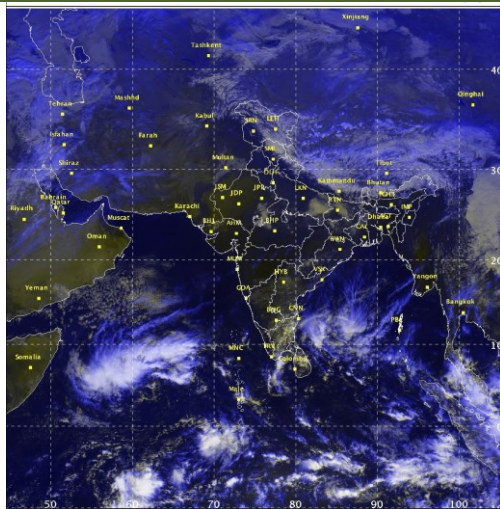
Weather Outlook for subsequent 4 days from 19th December 2014 to 23rd December 2014.

- Rain/thundershowers would occur at a few places over south peninsular India and Andaman & Nicobar Islands and at isolated places over Lakshadweep.
- A fresh western disturbance would affect western Himalayan region from 21st December.
- Weather would be dry over rest of the country.

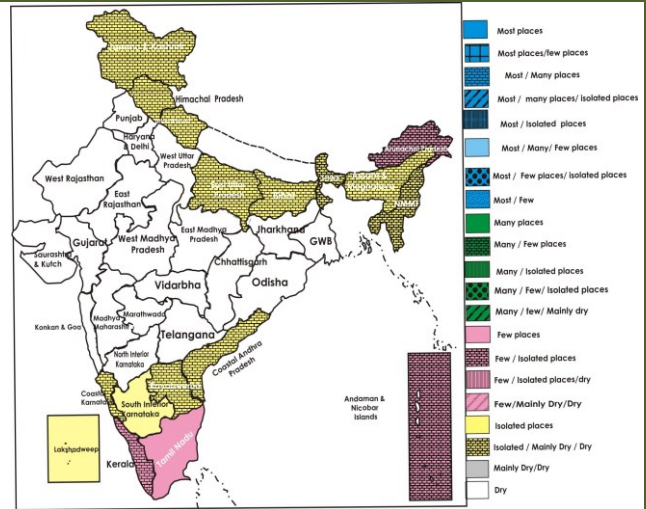
rise in maximum temperatures by 2-5°C over northwest and central India during next 3 days.

- Cold wave conditions would prevail over some parts of Gujarat during next 24 hours.
- Fog would occur at some places over Punjab, Haryana & Delhi, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during next 3 days.

Satellite image dated, 16.12.2014, 0630 UTC



Weather Forecast Map (Valid upto 0830 hours of 19th December 2014)



Detailed Zonewise Agromet Advisories

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



Land preparation



Sugarcane



Cotton



Rice Transplanting

- **Realised Weather:** Rain/thundershowers occurred at a few places over south Karnataka, Lakshadweep and coastal Tamilnadu; at isolated places over south Andhra Pradesh and Kerala. Weather remained dry over rest of the region. Minimum temperatures are above normal by 2-5°C at many places over peninsular India.
- **Weather Forecast:** Rain/thundershowers would occur at a few places over Tamil Nadu & Puducherry during the period. Rain/thundershowers would occur at isolated places over Kerala during next 48 hours at a few places thereafter. Rain/thundershowers would occur at isolated places over South Interior Karnataka during the period. Rain/thundershowers would occur at isolated places over Coastal Karnataka during next 24 hours and dry weather would prevail thereafter. Dry weather would prevail over Andhra Pradesh during next 48 hours and rain/thundershowers would occur at isolated places thereafter. Dry weather would prevail over rest parts of the region.
- **Weather Warning:** Nil.
- **Weather Outlook:** Rain/thundershowers would occur at a few places over south peninsular India and at isolated places over Lakshadweep. Weather would be dry over rest of the region.
- **Advisories:**

▪ **Andhra Pradesh:**

- Complete sowing of *rabi* pulses, groundnut and harvesting of *kharif* rice in the Krishna Godavari Zone.
- Complete sowing of *rabi* groundnut in the Southern Zone.
- Prevailing weather is congenial for stem rot incidence in Bengal gram in the Scarce Rainfall Zone. Spray Bavistin @1g per litre of water to manage the incidence.

▪ **Telangana:**

- Complete sowing of *rabi* rice and black gram in the Northern Telangana Zone.
- Prevailing cool and dry weather conditions are congenial for incidence of leaf blight in tomato in the Southern Telangana Zone. Spray Carbendazim 12 % + Mancozeb 63% WP @ 2 g or Mancozeb + Metalaxyl @ 2 g per litre of water.
- Present dry weather conditions are congenial for upward leaf curl in chilli in the Northern Telangana Zone. Spray Fepronil @ 2ml or Diphenthuron @1.25g/ltr. of water to manage the disease.

▪ **Karnataka:**

- Undertake transplanting of rice and sowing of maize in the North East Dry Zone.
- Undertake sowing of pulses like black gram, green gram and green manure crop sun hemp in the Southern Zone.
- Undertake sowing of short duration pulses after immediate harvest of rice and maize in the Southern Transition Zone.
- In the Hill Zone, undertake picking of cotton and sowing of pulses in areas where rice harvesting has been completed.
- In the present weather, pod fly damage in pigeon pea was noticed throughout in all the district in the North East Transition Zone. Spray Thiomethaxam @ 0.25 ml per litre of water for control.

▪ **Kerala:**

- High humidity and temperature is congenial for incidence of bacterial leaf blight in rice, especially in areas where susceptible varieties are grown in the Southern Zone. Spray fresh cow dung extract (20g/litre of water) and put bleaching powder @ 5kg/ha to the irrigation water on a non rainy day.

▪ **Tamil Nadu:**

- Complete transplanting of *thaladi* rice in the Cauvery Delta Zone.
- Due to prevailing humid weather conditions, BPH incidence is noticed in *samba* / *thaladi* rice fields in the Cauvery Delta Zone. Spray Thiamethoxam 40 g/acre or Buprofezin 25 SC 320 ml/acre on a non rainy day.
- Prevailing low temperature and high relative humidity is congenial for incidence of bacterial leaf blight in rice in the Western Zone. Spray Streptomycin Sulphate + Tetracycline combination 300 g + Copper oxychloride 1250 g/ha and repeat 15 days later, if necessary.
- High cloud cover, humidity and decrease in temperature are congenial for the incidence of Sigatoka leaf spot in banana. The disease will spread rapidly during rainy period. Remove and burn the affected leaves and drainout water from the field. If incidence is severe, spray Carbendazim @1 g/ l or Mancozeb @2 g/ using hand sprayer and completely wet the bottom portion of the leaves. Add Teepol 5 ml/ 10 litre of spray fluid. Repeat the spray at monthly interval on a non rainy day.
- Suitable varieties are given in Annexure I.

• **Animal Husbandry**

- Be cautious against the spread of avian flu in the Problem Area Zone due to prevailing humid weather. Disinfect the infected premises to avoid further spread.
- Considering the low minimum temperature, provide nutrient feed to dairy animals in the Western Zone.

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



Rice



Okra



Cole Crops (Nursery)



Green Gram

- **Realised Weather:** Weather remained dry over the region. Minimum temperatures are above normal by 2-5°C at many places over northeastern states.
- **Weather Forecast:** Rain/thundershowers would occur at isolated places over Arunachal Pradesh during next 24 hours and at a few places thereafter. Dry weather would prevail over Nagaland, Manipur, Mizoram and Tripura during next 24 hours and rain/thundershowers would occur at isolated places on 17th and dry weather would prevail thereafter. Dry weather would prevail over Assam & Meghalaya during next 24 hours and rain/thundershowers

would occur at isolated places thereafter.

Fog would occur at some places over Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 3 days.

- **Weather Warning:** Nil.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Assam & Meghalaya, Arunachal Pradesh:**
 - In Assam, continue harvesting of matured *sali* rice and nursery raising and sowing of *boro* rice.
 - In Upper Bramhaputra Valley Zone and Lower Bramhaputra Valley Zone of Assam, continue sowing of maize and transplanting of cole crops to main field. Complete sowing of rapeseed and mustard.
 - In Central Bramhaputra Valley Zone, Hill Zone of Assam, continue transplanting of cole crop, sowing of *rabi* pulses like lentil, rajmah, pea, lathyrus and oilseeds, wheat and planting of potato.
 - Continue transplanting of *boro* rice of about 45 days old (5- 6 leave stage) seedlings in Lower Bramhaputra Valley Zone of Assam.
 - In Meghalaya, continue nursery preparation of *boro* rice in low lying areas and sowing of Zero tillage pea, lentil and toria. Apply mulching in ginger/ turmeric and potato with locally available weed biomass, maize stalk etc. for conservation of moisture. Apply one irrigation to mustard/rapeseed at flowering stage.
 - In Lower Bramhaputra Valley Zone of Assam, due to foggy and cloudy conditions blight disease may become severe in potato. Spray Mancozeb 75 WP 2g/litre or Ridomil MZ-27 (64% Mancozeb + 8% Metalaxyl) 2g/litre followed by Dithane M-45 @ 2.5 g in 1litre of water for control. Also spray Dithane Z-78 @ 25 g in 10 litre of water against late blight in tomato.
 - Due to foggy weather there is chance of infestation of aphid/ saw fly in rapeseed/ mustard in Hill Zone, Lower Bramhaputra Valley Zone and Barak Valley Zone of Assam. Spray Malathion 50Ec @ 2ml/ litre of water or Dimethoate 30EC or Chloropyrifos @ 0.5l/ha for control.
 - In Hill Zone and Barak Valley Zone of Assam, due to foggy weather, there is chance of late blight in tomato. Apply Ridomil MZ-72 (2g/ litre) and Indofil M-45 2.5 g / litre to prevent the disease.
 - Due to foggy weather condition, there is chance of late & early blight disease in potato in Meghalaya. Spray Mancozeb 75% WP @ 1.5- 2.0 kg/ha or Copper Oxy Chloride 50% WP @ 2.5 kg/ha or Chlorothalonil 75% WP @ 1.25 kg/ha. Also in foggy condition leaf spot disease may spread in ginger and turmeric. To prevent leaf Spot disease, apply Bordeaux mixture (5:5:50) or Captan @ 1.5 g/litre or Carbendazim @ 500g/ha. Also spray/ drench 1% Bordeaux mixture or Dithane M-45 (2.5g/l) to prevent rhizome rot in ginger.
 - **Nagaland, Manipur, Mizoram and Tripura:**
 - In Manipur, continue land preparation for sowing of *rabi* maize and transplanting of tomato. Apply light irrigation in rapeseed / mustard, pea, potato. Undertake transplanting of 50-60 days old seedling of onion.
 - In Mizoram, continue harvesting of rice.
 - In Nagaland, complete sowing of pea. Apply light irrigation in toria. Mulching should be done to conserve moisture.
 - In Mild Tropical Plain Zone of Tripura, apply light irrigation on every alternate day in cole crops and potato, tomato. Mulching must be done after irrigation to reduce evaporative losses.
 - In Tripura, due to the prevailing foggy condition there may be infestation of early blight in potato. Apply Carbendazim @ 1g per litre of water for control of early blight. Also due to decrease in night temperature, there is chance of infestation of Pseudo stem weevils on banana. Apply Dimethoate (Rogor) or Imidacloprid @ 0.8ml per litre of water.
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry**
 - Undertake vaccination in poultry to control ranikhet disease in Upper Bramhaputra Valley Zone of Assam.
 - In Meghalaya and Arunachal Pradesh, provide artificial heating through lighting of electric bulb to protect poultry birds (day old to 25 days old) from low temperature.
 - In Tripura, cover poultry house with gunny bags/ polythene sheets to protect them from cold. Heating during night may also be given to chicks less than 21 days old.

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



Sugarcane

Groundnut

Onion

Rice

- **Realised Weather:** Dense/very dense fog has been observed at isolated places over Sub-Himalayan West Bengal in morning hours of today. Rain/thundershowers has occurred at a few places over Bihar; at isolated places over Jharkhand and Andaman & Nicobar Islands. Weather remained dry over rest of the region. Minimum temperatures are above normal by 2-5°C at many places over West Bengal & Sikkim, Bihar, Jharkhand and near normal over rest part of the region.
- **Weather Forecast:** Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands during next 24 hours and at isolated places thereafter. Rain/thundershowers would occur at isolated places over Bihar, Sub-Himalayan West Bengal & Sikkim during next 24 hours and dry weather would prevail thereafter. Dry weather would prevail over rest parts of the region.
Fall in minimum temperatures by 2-4°C over many parts of east India during next 3 days.
Fog would occur at some places over Bihar, Sub-Himalayan West Bengal & Sikkim during next 3 days.
- **Weather Warning:** Very dense to dense fog (Visibility 200 m or less) would occur at a few places over Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim during the period.
- **Weather Outlook:** Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands. Weather would be dry over rest of the region.
- **Advisories:**
 - **West Bengal:**
 - In Laterite and Red Soil Zone, continue seed bed preparation for nursery sowing of *boro* rice.
 - In New Alluvial Zone, continue seed bed preparation for nursery sowing of *boro* rice and wheat. Undertake land preparation for sunflower and complete the sowing operation of potato within the middle of this month.
 - In Hill Zone, complete the sowing of winter vegetables.
 - In Coastal Saline Zone, continue land preparation for nursery bed preparation of *boro* rice and transplanting of onion. In *boro* rice field keep thin layer of water at evening hours and remove it during morning.
 - In Old Alluvial Zone, continue seed bed preparation for nursery sowing of *boro* rice. Also continue intercultural operation in wheat 21 days after sowing .
 - In Terai Zone, continue planting of potato.
 - In Old Alluvial Zone, due to foggy condition, there is chance of the attack of late blight in potato. Spraying of Mancozeb @ 2 g /litre of water and Blitox @ 4 g/litre of water alternately at 10-12 days interval by completely wetting the leaves is advised.
 - In New Alluvial Zone, Due to foggy condition aphid attack may be seen in mustard. Apply Imidacloprid 17.8 SL @ 3 ml /10 liter or Quinalphos 25 EC @ 2 ml / liter of water.
 - In Terai Zone, due to low temperature and foggy weather, there is chance of attack of late blight in potato. To prevent attack spraying of Mancozeb (2 gm /lt of water) and Blitox (4 gm/lt of water) alternately at 10-12 days interval by completely wetting the leaves are necessary.
 - In Laterite and Red Soil Zone, early morning fog may cause late blight in potato. Apply Mancozeb @ 2.5 g per litre of water to control late blight. In the prevailing maximum temperature, there is chance of outbreak of rust black rust in wheat. To protect the crop from rust infection, spray Manganese-Dithio Carbamate and urea.
 - In Coastal Saline Zone, there is chance of blast and brown spot in *boro* rice due to dense fog and cloudy condition in the morning hours. Apply SAF @ 2 g/litre of water. Also there is chance of stem rot and head borer in cole crops like cabbage and cauliflower due to dense fog and cloudy condition in the morning hours. Spray Diethane M-45 @ 2.5 g/litre of water or Bavistin@1g/liter of water against stem rot and spray B.T.@2ml/liter of water against head borer.
 - **Andaman and Nicobar:**
 - Undertake transplanting of 4-5 weeks old seedlings of cauliflower and cabbage in North and Middle Andaman.
 - **Odisha:**
 - In Western Undulating Zone, continue sowing of groundnut. Continue land preparation for sowing of mustard in residual moisture immediately after harvesting of rice. Apply irrigation in transplanted cabbage, cauliflower and tomato which are at two to three week stage.

- In North Central Plateau Zone, continue sowing of green pea, sunflower, mustard, groundnut, sesame and planting of potato.
- In East and South Eastern Coastal Plain Zone, present weather is optimum for sowing of groundnut, green pea and mustard. Also continue nursery raising of onion. Continue planting of banana and transplanting of cole crops. Undertake sowing of garlic in irrigated upland and medium land. Continue sowing of sesame.
- In North Eastern Plateau Zone, continue sowing of wheat, groundnut, gram, peas and onion. Continue harvesting of rice. As dry weather is prevailing, apply irrigation to potato. Continue transplanting of chilli.
- In North Eastern Coastal Plain Zone of Odisha, continue sowing of rapeseed and mustard.
- In East and South Eastern Coastal Plain Zone of Odisha, the prevailing weather may aggravate the infestation of aphids in pulses and powdery mildew in pulses and cole crops. Spray Imidachloprid @ 5 ml or Metacystox @ 20 ml per 10 litre water to control aphids and spray Sulfex @ 50 g per 10 litre water to control powdery mildew.
- **Bihar:**
 - In North West Alluvial Plain Zone of Bihar, continue sowing of late varieties of wheat up to 25 December. Carry out intercultural operations like weeding and earthing in potato. Apply light irrigation to potato, early sown wheat crop which is in CRI stage, chili and vegetables. Prepare nursery for sowing of *boro* rice.
 - In North East Alluvial Zone of Bihar, continue sowing of late sown irrigated wheat varieties. Apply light irrigation in wheat crop which is about 20-25 days old and also apply urea @ 30 kg/acre after two days of irrigation. Prepare nursery for sowing of *boro* rice.
 - In South Bihar Alluvial Zone carry out intercultural operations like weeding in gram, lentil, pea, tobacco and mustard crops after 25-30 days of sowing. Continue sowing of late sown wheat varieties. Apply light irrigation in timely sown wheat crop which is in CRI stage.
- **Jharkhand:**
 - In Western Plateau Zone of Jharkhand, as dry weather is prevailing apply irrigation to already sown wheat crop and apply urea @ 22 kg per acre after irrigation in 20 - 25 days old crops. Carry out inter cultural operations in pulse and oilseed crops to conserve soil moisture and control weeds. After harvesting of rice, undertake sowing of late irrigated wheat varieties.
 - In South Eastern Plateau Zone of Jharkhand, undertake transplanting of onion and transplanting of cole crops. Continue planting of potato. Timely sown wheat crop is at crown root formation stage. At this stage irrigate the crop.
 - In Central & North Eastern Plateau Zone of Jharkhand, continue sowing of wheat. As dry weather is prevailing apply irrigation to already sown wheat crop at CRI stage. Prepare nursery bed for onion.
 - In South Eastern Plateau Zone of Jharkhand, low temperature and foggy weather is favourable for the attack of early and late blight disease in early planted potato crop; spray Kriilaksil or Ridomil MZ @ 1.5 g per litre of water to control the disease.
 - In Western Plateau Zone and South Eastern Plateau Zone of Jharkhand, high humidity and low temperature is favourable for the attack of powdery mildew disease on pea, spray Karathen @ 1 ml per litre of water or Sulfex @ 3 g per litre of water.
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry**
 - In Coastal Saline Zone and Old Alluvial Zone of West Bengal, there is chance of worm attack in cattle due to cold weather. Undertake de-worming and keep them in proper shed. Keep the newly hatched chicken under overnight bulb light.
 - In Coastal Saline Zone of West Bengal, provide artificial heating through lighting of electric bulb to protect poultry birds (day old to 25 days old) from low temperature.
 - In North East Alluvial Zone of Bihar, protect the milch animals from cold by keeping under covered shelter and provide warm water for drinking for better milk yield.
- **Fishery**
 - In Terai Zone of West Bengal, as temperature is decreasing, do not apply cow dung or any other organic manure and apply lesser quantity of supplementary feed in pond. Apply lime @ 60 kg/bigha with 2.5 m water level.

CENTRAL INDIA [M.P., CHHATTISGARH]



Sugarcane



Land preparation



Okra



Onion

- **Realised Weather:** Dense/very dense fog has been observed at isolated places over north Madhya Pradesh in morning hours of today. Rain/thundershowers has occurred at a few places over Chhattisgarh. Weather remained dry over rest of the region. Minimum temperatures are below normal by 2-4°C at a few places over West Madhya Pradesh and near normal over rest part of the region.
- **Weather Forecast:** Dry weather would prevail over the region. Fall in minimum temperatures by 2-4°C over many parts of central India and rise in maximum temperatures by 2-5°C over central India during next 3 days. Fog would occur at some places over Madhya Pradesh during next 3 days.
- **Weather Warning:** Very dense to dense fog (Visibility 200 m or less) would occur at a few places over Madhya Pradesh during the period.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Madhya Pradesh:**
 - As mainly dry weather is prevailing, apply irrigation in early sown potato and vegetables in Satpura Plateau Zone. Continue sowing of gram, wheat, planting of garlic, and transplanting of onion.
 - Continue sowing of wheat in Bundelkhand Zone. Also continue transplanting of tomato, chilli, brinjal, cauliflower and cabbage on raised beds. As mainly dry weather is prevailing, apply irrigation in early sown wheat and mustard crop. Undertake weeding and hoeing in onion and garlic crops.
 - Continue sowing of wheat and gram in Nimar Valley Zone. Continue sowing of vegetables like coriander, onion, garlic and planting of potato. As dry weather is prevailing, apply 1st irrigation in wheat at CRI stage and in gram.
 - Continue sowing of wheat, green pea and nursery sowing of tomato, chilli, brinjal, cauliflower, cabbage, capsicum, onion, planting of potato, turmeric and ginger in Vindhya Plateau Zone. Continue planting of sugarcane.
 - Continue sowing of carrot, garlic, spinach, fenugreek and radish and planting of potato in Kymore Plateau and Satpura Hill Zone. Irrigate vegetables like tomato, brinjal and chillies and pick up matured fruits.
 - Continue sowing of wheat, pea and planting of potato in Malwa Plateau Zone. Also continue transplanting of onion, tomato, brinjal, chilli, cabbage and cauliflower on the prepared beds. As dry weather is prevailing apply irrigation in wheat, newly planted fruit plants and chickpea.
 - Due to partly cloudy weather, there are chances of attack of stem borer and fruit borer in tomato, brinjal and okra in Vindhya Plateau Zone and Grid Zone; for control spray Trizophos @ 800ml per ha.
 - Due to partly cloudy weather there are chances of attack of semi looper and Diamond back in cauliflower and cabbage crops, for control spray Malathion 50 E.C. @ 2ml/litre of water.
 - **Chhattisgarh:**
 - In North Hill Zone and Plain Zone, continue sowing of wheat, planting of potato, garlic, onion and continue transplanting of vegetables like cauliflower, tomato, brinjal, chilli etc. Undertake sowing of late varieties of chickpea.
 - Continue sowing of toria, green pea, linseed, gram, wheat and nursery sowing of vegetables like, chilli, cauliflower, tomato etc. in Bastar Plateau Zone. As mainly dry weather is prevailing, apply irrigation in wheat (after 20-25 days of sowing), gram and potato.
 - Due to partly cloudy weather, there are chances of attack of powdery mildew disease in green peas in North Hill Zone. Spray Karathen @ 1 ml per litre of water or Sulfex @ 3 g per litre of water
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry**
 - As there is decrease in temperature, protect animals from cold in Madhya Pradesh. Increase light duration in poultry farms.

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



Land preparation



Sugarcane



Bottle Gourd



Onion

- **Realised Weather:** Dense/very dense fog has been observed at isolated places over Punjab, Delhi, Rajasthan, East Uttar Pradesh in morning hours of today. Rain/snow has occurred at a few places over Himachal Pradesh and at isolated places over Uttarakhand. Rain/thundershowers has occurred at a few places over East Uttar Pradesh.

Weather remained dry over rest of the region. Minimum temperatures are below normal by 2-4°C at many places over Himachal Pradesh, Rajasthan and at isolated places over Jammu & Kashmir and Uttarakhand and near normal over rest part of the region. **The lowest minimum temperature of 3.0°C has been recorded at Amritsar (Punjab)** in the plains of the country.

- **Weather Forecast:** Rain/snow would occur at isolated places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand during next 24 hours and dry weather would prevail thereafter. Rain/thundershowers would occur over East Uttar Pradesh during next 24 hours and dry weather would prevail thereafter. Dry weather would prevail over rest parts of the region.

Fall in minimum temperatures by 2-4°C over many parts of northwest India and rise in maximum temperatures by 2-5°C over northwest India during next 3 days.

Fog would occur at some places over Punjab, Haryana & Delhi, Rajasthan and Uttar Pradesh during next 3 days

- **Weather Warning:** Very dense to dense fog (Visibility 200 m or less) would occur at a few places over Punjab, Haryana & Delhi, Rajasthan, Uttar Pradesh during the period.
- **Weather Outlook:** A fresh western disturbance would affect western Himalayan region from 21st December. Weather would be dry over rest of the region.

- **Advisories:**

- **Jammu & Kashmir:**

- Undertake sowing of radish (Japanese White & Minowase) in Intermediate Zone of Jammu & Kashmir. Undertake hoeing cum intercultural operations in mustard within 30 days of sowing and in *rabi* pulses like lentil, pea and gram to control weeds and conserve moisture.
- Continue sowing of peas and planting of garlic in Valley Temperate Zone of Jammu & Kashmir. Apply top dose of urea @ 3.6 kg/kanal. Undertake hand weeding /hoeing in saffron to reduce infestation by weeds .
- Undertake intercultural operation in already sown wheat crops in Sub-tropical Zone of Jammu & Kashmir. For the management of weeds, undertake spraying of Isoproturon @ 0.75kg a.i + 2, 4-D ethyl ester @ 500 ml per hectare (30-35 DAS). Also apply first dose of (25%) urea as top dressing at CRI stage.

- **Himachal Pradesh:**

- Undertake sowing of oilseeds and pulses as mixed/intercrops with wheat in Sub-Montane and Low Hills Sub-Humid Tropical Zone. Undertake intercultural operation in already sown wheat by spraying Isoproturon 75 WP @ 70 g per 30 litres of water.
- In Mid Hills Sub-Humid Zone, continue transplanting of late season cauliflower (Pusa-snowball) and cabbage and planting of onion at a distance of 15X10cm. Complete sowing of pea, radish, turnip, methi and spinach.
- Continue sowing of Chinese cabbage, cabbage and coriander in High Hill Dry Temperate Zone.
- Under prevailing low temperature and cloudy weather there are chances of occurrence of downy mildew in cruciferous vegetables in Sub-Montane and Low Hills Sub-Humid Tropical Zone. Spray redomil M-Z @ 25 g per litres of water at 15 days interval on a non-rainy day. For control of powdery mildew in peas, spray Celfex @ 25 g per 10 litres of water or karathane @ 5 ml per 10 litres of water.
- Under prevailing low temperature condition, there are chances of incidence of canker disease in apple in Mild Hills Sub-Humid Zone. Spray Bordeaux mixture [copper sulphate (2 Kg)+quick lime (2 kg)] in 200 litres of water.
- Under prevailing dry weather condition, there are chances of aphids attack in vegetables in Mid Hills Sub-Humid Zone. Spray Methyl Demeton (Metasystox) @ 10 ml per 10 litres of water.

- **Uttarakhand:**

- Continue sowing of late varieties of wheat in Hill Zone and Sub Humid Sub Tropical Zone of Uttarakhand. Undertake land preparation for sowing of peas. Undertake top dressing of urea @500g per 5 litre of water in vegetables like mustard, raddish, spinach and coriander to conserve soil moisture.
- Undertake harvesting of potato in clear weather in Bhabar and Tarai Zone of Uttarakhand. Apply first irrigation in wheat crop at Crown Root Initiation stage and then top dress @ 2.5 kg Urea per canal when soil moisture is sufficient. Apply 2nd irrigation in wheat crop 40 to 45 days after sowing. Undertake weeding & thinning operations in pea, chickpea, rajmash and garlic.
- Apply irrigation in wheat crop at Crown Root Initiation stage and in sugarcane and light irrigation in mustard, chickpea, potato and pea in Sub Humid Sub Tropical Zone of Uttarakhand.
- Due to humid weather condition, there are chances of attack of leaf eating caterpillar in tomato and brinjal in Sub Humid Sub Tropical Zone of Uttarakhand. Sparay Di-chlorovas @ 1ml per litre of water.

- **Punjab, Haryana and Delhi:**

- In Western Zone of Punjab, continue sowing of wheat of late varieties, raya, gobhi sarson, onion, carrot, tomato. Apply light irrigation to early sown wheat and to sugarcane.
- In Western Plain Zone of Punjab, apply irrigation to sugarcane crop to protect from frost. Provide polythene sheet/Sarkanda/Kahi/ rice straw to save the vegetables from frost. Dwarf vegetable varieties can be saved from frost injury with 100 gauge thick white plastic bags of 35 x 25 cm size. Young non-bearing fruit plants should covered with sarkanda or parali to protect from the adverse effect of frost.
- In Undulating Plain Zone of Punjab, apply light irrigation to mustard crop. Cover the newly planted mango/lichi plants with thatches for protection from cold and apply frequent light irrigation.

- In Western Semi-arid Zone of Delhi, undertake sowing of late varieties of wheat at seed rate of 125 kg seed per hectare. Also undertake transplanting of mature seedlings of tomato, cauliflower, cabbage, knolkhol and broccoli crop in the raised bed.
- Under prevailing dry weather condition, continue harvesting of rice in Western Zone of Haryana. As temperatures are conducive, continue sowing of wheat. Undertake transplanting of onion, tomato, cauliflower, & cabbage.
- In Eastern Zone of Haryana, apply light irrigation to wheat at CRI stage. Undertake harvesting of matured sugarcane.
- Present foggy weather is favourable for incidence of diamond back moth or tobacco caterpillar on cauliflower and cabbage in Western Zone of Punjab. To control spray Dipel 8L @ 300 ml/acre or Halt WP7 @ 300 g using 80-100 litres of water and repeat at 7 day interval.
- Due to foggy weather conditions, there is chance of incidence of late blight disease in potato in Western Zone of Punjab. To control, spray Indofil-M-45/Kavach/Antracol @500-700g/acre at weekly interval.
- High relative humidity is favourable for white rust in mustard crops in Western Semi-arid Zone in Delhi; spray Dithane-M-45 @ 2 gram/ litre of water.

▪ **Uttar Pradesh:**

- Continue sowing of late varieties of wheat with seed drill method and complete sowing of normal varieties of wheat in Bundelkhand Zone. Undertake harvesting of matured cauliflower, cabbage, tomato, chilli, brinjal in clear weather.
- In Central Plain Zone of Uttar Pradesh, apply irrigation in toria at flowering/pod formation stage. Undertake harvesting of cauliflower, gourd, brinjal and tomato in clear weather. Raise the nursery of onion.
- Undertake sowing of late varieties of wheat and harvesting of medium duration cabbage in Eastern Plain Zone of Uttar Pradesh.
- Undertake sowing of sunflower and continue sowing of late varieties of wheat in Western Plain Zone of Uttar Pradesh. Apply irrigation to early sown wheat after 21 days after sowing and to sugarcane crops at 20 days interval.
- Foggy weather is conducive for the incidence of blight disease in potato in Central Plain Zone of Uttar Pradesh. For control, spray Macozeb or Blitox 0.2 % @ 2 g per litre of water.
- Under low temperature condition, there are chances of incidence of powdery mildew disease in wheat in Central Plain zone. Apply 75% Isoproturan @ 1.5kg per hectare or sulfofuran 75WG @ 33gm dissolved in 500-600 litre water before first irrigation on 30 days after sowing.
- Under foggy weather condition, there are chances of attack of aphids in toria in Central Plain Zone of Uttar Pradesh. Spray Methyl-O-Demeton 25% EC or Chloropyriphos 20% EC @ 1 litre per 600-700 litres of water per hectare.
- Under prevailing dry weather condition, there are chances of attack of aphids in toria in Ballia and Deoria districts of Eastern Plain Zone of Uttar Pradesh. Spray Malathion 50 EC @ 2 litres or Monocrotophos 36 SL 600-800 ml in 600-800 litres of water per hectare.

▪ **Rajasthan:**

- Undertake weeding in early sown wheat crop in Flood Prone Eastern Plain Zone of Rajasthan by spraying a solution of Metasulfuron Methyl @ 20g/ha in 500 litre water. After irrigation and nitrogen application, earthing up is recommended at 30-35 days after planting of potato crops.
- Undertake sowing of late varieties of wheat and barley after seed treatment in Arid Western Plain Zone. Apply second irrigation in wheat after 40-45 days in Jodhpur Arid Western Plain Zone.
- Undertake sowing of late varieties of wheat after seed treatment In Semi-Arid Eastern Plain Zone of Rajasthan. Apply irrigation in wheat at CRI stage after 20-23 days of sowing.
- Complete sowing of gram and apply irrigation after 45 days of sowing in South eastern Humid Plain Zone of Rajasthan. Complete sowing of wheat upto end of December. Apply first irrigation in mustard after 35-40 days of sowing and then undertake application of nitrogen.
- Continue sowing of wheat, barley, fenugreek, lucerne in Transitional Plain Zone of Inland Drainage.
- In Arid Western Plain Zone of Rajasthan, there are chances of aphid attack in cabbage. Apply Dimethoate @ 30 E.C. per litre of water.
- Suitable varieties are given in Annexure I.

• **Floriculture**

- Current temperature is favourable for nursery raising of winter flowers in poly houses in Sub Montane and Low Hills Sub-Tropical Zone of Himachal Pradesh. Present weather is conducive for attack of mites in carnation. For control, spray Cypermythrin @ 0.05 % at 15 days interval.

• **Animal Husbandry**

- Due to fall in night temperature, keep cows in their cowshed to protect them from cold in Himachal Pradesh and Central Plain Zone of Uttar Pradesh. Also give 40-50g mineral mixture with the daily feed. Due to fall in temperature, make the arrangements for protection of cold in the poultry houses in Sub-Montane and Low Hills Sub-Humid Tropical Zone of Himachal Pradesh. Undertake vaccination for IBD and Ranikhet disease as there are chances of spread of these diseases.
- In Western Plain Zone of Punjab, keep the animals under covered and warm shed during night and in the sun

during day. 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. Keep the animals in dry place and change the bedding material as and when required.

- **Poultry**

- In Western Plain Zone of Punjab, use curtains to cover the poultry sheds to save birds from sudden downfall of temperature.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]



Onion

Sugarcane

Cotton

Mango

- **Realised Weather:** Cold wave conditions are prevailing over isolated pockets of Gujarat state. Weather remained dry over the region. Minimum temperatures are below normal by 2-4°C at many places over Gujarat and at isolated places over Maharashtra.
- **Weather Forecast:** Dry weather would prevail over the region. Cold wave conditions would prevail over some parts of Gujarat during next 24 hours.
- **Weather Warning:** Cold wave conditions would prevail over some parts of Gujarat on 16th December.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Maharashtra:**
 - In Konkan, as there was rain on 13th December, farmers are advised to postpone irrigation to standing crops, clean the orchards by collecting the infested fruits, leaves and branches to avoid further infestation (further spread of pest and disease). Continue sowing of *rabi* groundnut. Continue planting of watermelon variety 'Sugar Baby' on one side of ridges with a spacing of 4 x 1 m.
 - In Madhya Maharashtra, as there was unseasonal rain accompanied by hail during last 3-4 days in some pockets of Nasik, Jalgaon districts, farmers are advised to postpone irrigation to standing crops, clean the banana, grapes and pomegranate orchards by collecting the infested fruits, leaves and branches to avoid further infestation (further spread of pest and disease). As minimum temperature prevails below normal in some parts of North Madhya Maharashtra, to protect grapes from cold (fruit cracking especially in black grapes), apply drip irrigation for half an hour during morning hours / apply mulch of crop residue. For protection of banana, apply mulch of organic material at base of trunk, apply light irrigation during evening and cover the trunk with dried leaves. Wind breaks/shelter belts may be planted around orchards. Apply irrigation to vegetables, sugarcane, safflower, *rabi* jowar, gram, wheat and grapes, banana and pomegranate orchards excluding Nasik, Jalgaon, Sangli and Pune districts. Continue intercultural operations like weeding and apply fertilizer application in sugarcane, vegetables, *rabi* jowar, safflower, gram and wheat. Continue picking fully opened cotton bolls during morning hours. Continue the harvesting of already matured sugarcane.
 - In Marathwada, due to untimely rain there is fruit cracking in grapes, remove cracked & damaged fruit and spray Chlorine dioxide 50 ppm to control bacterial infestation. Apply irrigation to sugarcane, *rabi* jowar, safflower, gram, vegetables and wheat excluding Aurangabad district. Continue intercultural operation like hoeing, weeding to sugarcane, *rabi* jowar, wheat, gram and vegetables. Continue picking fully opened cotton bolls during morning hours. Continue harvesting of already matured sugarcane.
 - In Vidarbha, apply irrigation to wheat, gram, vegetables and orange, sweet lime orchards excluding Buldhana district. Apply fertilizers and continue intercultural operations in vegetables and orchards. Continue picking fully opened cotton bolls. Avoid irrigation during boll bursting. Undertake nursery sowing of *rabi* rice. For better germination of seed cover nursery bed with plastic or dried fodder.
 - Prevailing partly cloudy weather in south Konkan is favourable for attack of tea mosquito, leaf miner and leaf cutting/eating beetle on new vegetative flush of cashew; spray Monocrotophos 36 WSC @ 14 ml per 10 litres of water. For control of tea mosquito bug on inflorescence, spray 35 per cent Profenophos @ 10ml/10 litres of water.
 - Due to high humid weather in Marathwada region there may be more infestation of anthracnose in mango; spray Carbendazim @1 g per litre of water.
 - **Gujarat:**
 - As cold wave conditions are prevailing and likely to continue during next 24 hours over Gujarat State, arrange for smoking around the fields during night, apply light and frequent irrigation /sprinkler irrigation in the evening to protect the crops from cold injury. To protect young fruit plants from chilly winds, cover young fruit plants

- with straw/polythene sheets/ gunny bags.
- Complete sowing of wheat, continue transplanting of onion and sowing of gram in South Gujarat Heavy Rainfall Zone. As mainly dry weather is prevailing, apply irrigation to wheat (timely sown at CRI stage). Irrigate the newly planted mango orchard at regular interval. Carry out hand weeding and intercultural operations in vegetables and gram.
 - Continue sowing of wheat in Middle Gujarat Zone and planting of sugarcane in South Gujarat Zone,
 - In North Gujarat Zone, continue sowing of isabgol, carry out weeding and intercultural operations in cumin, mustard, fennel and vegetable crops. Apply irrigation in potato crop (sandy soil) at an interval of 6 to 7 days, in loamy soil at 8 to 10 days and in vegetable crops (brinjal, chilli, tomato, cabbage and cauliflower). Undertake sowing of isabgol in North West Zone.
 - Complete picking of matured bolls of cotton in North Saurashtra Zone. Continue harvesting of matured onion. Apply irrigation in wheat at CRI stage and in cotton through drip system or irrigate alternate beds through flood irrigation.
 - Complete sowing of wheat, chickpea and picking of matured bolls of cotton in South Saurashtra Zone. Apply irrigation in cotton at boll formation stage.
 - Carry out hand weeding in castor, intercultural operations and weeding in vegetable crops and apply irrigation in cotton at 15- 20 days interval in Bhal and Coastal Zone.
 - In North Saurashtra Zone, present weather is congenial for attack of fruit borers in brinjal and tomato, monitor the crops and use pheromone traps 4-6 per acre. Spray Spinosad @ 3.0 ml/10 litre of water.
 - Suitable varieties are given in Annexure I.
 - **Animal Husbandry**
 - In Gujarat, provide warm water to lactating animals. Keep the animals inside the sheds and provide dry bedding and use heaters inside cattle sheds to protect them from cold. Increase protein level and minerals in the feed concentrate to keep the animals healthy to cope up with the situation. Keep the chicks warm by providing artificial light in the poultry sheds.
 - **Poultry**
 - In some parts of Maharashtra, as minimum temperature is likely to fall by 2-4 °C, protect poultry birds from cold winds by providing curtain/clothing from outside the poultry shed. Provide proper heat to small chicks of poultry with the help of electric bulbs.

Annexure I List of varieties

Tamil Nadu

Late Samba/ Thaladi rice: ADT 38, ADT 46, ADT 49, Improved white Ponni, IR 20, ASD 19, Paiyur1, TRY 1, TRY 3, CO 48, CO 49, BPT 5204 and CO 50

Direct seeded rice: (White Ponni or ADT 39)

Assam

Green gram: T-44, Kopergaon, K-851, ML-56, ML-131 etc.

Black gram : T-9, T-27, Pant U-19, T-122.

Radish : Pusa Deshi, Pusa Chetki, Pusa Himani

Cauliflower : Improved Japanese, Pusa Synthetic, Pusa Snowhall and Main Crop Patna.

Early maturity Cabbage varieties : Golden Acre, Pride of India, Pusa Mukta (Sel – 8).

Early maturity Knol Khol : White Vienna.

Winter brinjal : Pusa Kranti, Pusa Purple Long, Pusa Purple Round, Pusa Vairab, Pant Samrat

Meghalaya

Pigeon pea: short duration : UPAS-120, ICPL 87. long duration WB 20, Pusa 9 & Sarita.

Cabbage: H-139, Pride of India

Cauliflower: Meghalaya Local

Carrot: New Karoda, Nantesh

Radish: Local genotype

Broccoli: Puspa, Aiswarya

French bean: Naga Local

Pea: Arkel (for vegetables), TRC P8, TRC P9, Prakash, Rachna.

Potato: Kufri Joyti, Kufri Megha, Kufri Giriraj, Kufri Girdhari, Kufri Himsona, Kufri Himalini.

Pea: Arkel (for vegetables), TRC P8, TRC P9, Prakash, Rachna.

Tripura

Tomato: Trishul, Allrounder, T- 1408, T- 1458, Anup.
Cauliflower: CFL- 4048, Pusa early synthetic, Kamaya, Suhasihi.
Cabbage: BC- 76, Pusa Drum Head, Pusa Synthetic.
Broccoli: Everest, Ayeshwaria.

Odisha

Sesame: Kanak, Kalika, Uma, Usha, Tilotama, Nilima, Prachi
Greengram: K-851, PDM-11, PDM-54, OUM-11-5
Blackgram: T-9, Pant U-11, Pant U-19, Pant U-30
Cowpea: SEB-2, Pusa Barsati Niger: Deomali, Niger-1 and for Okra: Utkal Gourav.

West Bengal

Banana: Mortoman, Chapa, Kathali, Singapuri.
Tomato: Avinash-2, 448.
Cabbage: Pride of India, Pusa early, Kranti.
Cauliflower: Jawhar moti, Bharat Jyoti, Early banaras

Bihar

Shakarkand: Rajendra Shakarkand- 5, Rajendra Shakarkand-35, Rajendra Shakarkand-43, Rajendra Shakarkand-47, Kalmegh and Rajendra Shakarkand-92.
Pigeon Pea: arhar: Bahar, Pusa 9, Narendra Arhar 1
Urd: T-9, Pant U-19, Pant Urd 31, PDU-1
Radish: Pusa Chetki, Pusa Himani, Pusa Rashmi, Japani Saphed
Pointed gourd: Rajendra Parwal-1, Rajendra parwal-2, FP1 and 3
Boro rice: Gutum, Prabhat, Richaria, Dhanlaxmi, Saroj Rajendra Bhagvati, and R.A.U

Jharkhand:

Urd: T 9, Pant U 19, 30, 35 and Birsa urd 1
Moong: Pusa Vishal, S M L 668, K 885, P S 16, Pant Moong 2 and P D M 11.
Arhar: Birsa Arhar (210 days), Bahar (240 Days) and ICPH 2671 (210 days),
Maize: short duration variety: Birsa Vikas Maize-2 and medium duration variety: Birsa Maize-1.

Madhya Pradesh

Gram: JG-130, JG-11, JG-315, JG-16
Wheat: Sujata, HW-2004, HI-1500
Winter Sugarcane: KJN 86-572, KJN 86-141
Green Pea: Arkel, PSM-3, Jawahar Pea 1, Jawahar Pea 2
Chickpea: J.G-11, J.G-74

Chhattisgarh

Gram: JG-16, JG-11, JG-74, Vaibhav
Linseed: RLC-92, Indira-32
Wheat: GW-273, Lok-1
Mustard: Pusa Bold

Jammu & Kashmir

Berseem: Mescavi, Pusa Giant, BL-1 and Vardan

Uttarakhand

Pea: VL Ageti Mater-7, Vivel Mater-10, Pant Subjee Mater-3, Azad Mater-3 and Arkel
Potato: Kufri- Jyoti, Ashok, Anand
Toria : Pant Toria-30, 303, 507 or local varieties.

Himachal Pradesh

Peas: Palam Triloki, Arkel, VL-7 and Matar Ageta
Late variety of Cauliflower: broccoli

East Uttar Pradesh

Cabbage: Imprabad Japani, Pusa chipali and Pusa kartiki
Radish: Japani white, Pusa chetakij, Hisar Muli No.1 and kalyanpur-1
Toria: T-9, T-36, Pant -30,303, B-9
Potato: Kuferi - Chandramukhi, Bahar
Mustard: Basati, Maya, Kanti, Urvashi, Narendra, Swarna-8, Narendra Ageti-4
Ageti Matar: Kashi - Nandini, Uday, Mukti, Arkel, Azad-3

West Uttar Pradesh:

Toria: Sangam, TL-17, 67

Ageti matar: Azad P-3, Arkel

Maharashtra

Madhya Maharashtra

rabi jowar: Selection-3, Phule Mauli, Phule Anuradha in light soil, Phule Chitra, Maldandi-35-1 in medium soil and Phule Vasudha, Phule Yashodha in black soil

Safflower: Bhima or Phule Kusuma

Marathwada

Jowar: Parbhani Moti or Parbhani Jyoti.

Gujarat:

Wheat: GW-173 or Lok-1 GW172, 11 (for late sowing).

Chickpea: Gujarat chickpea-1, 2, 3, Dahod yellow, Chaffa or ICC-4.

Isabgol: Gujarat Isabgol 2 or Gujarat Isabgol 3.

Cumin: Guj. Cumin-2, 3, 4.

Sugarcane: Co-740, Co-1219, Co-1145, Co-5714, Co-86032 (for summer season growing).