

National Agromet Advisory Service Bulletin

Tuesday 13th January 2015

(For the period 13th to 16th January 2015)



Issued by

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



Realised Weather on 13th January 2015

Significant weather observations: Dense/very dense fog has been observed at many places over Punjab, Haryana & Delhi, West Uttar Pradesh; at isolated places over north Rajasthan, Bihar and Madhya Pradesh. The visibility (50 m or less) has been recorded at 0830 hours IST of today; Amritsar, Ludhiana, Patiala, Ambala, Ganganagar, Delhi, Churu, Pilani, Jaipur, Sawai Madhopur, Gwalior, Datia, Sagar, Banda, Kanpur, Barabanki, Behraich, Hardoi, Agra, Aligarh, Bareilly, Meerut, Patna and Purnea. Cold day conditions are prevailing at many places over Vidarbha; at isolated places over Himachal Pradesh, West Uttar Pradesh, north Madhya Pradesh, Odisha, Interior Karnataka and Sub-Himalayan West Bengal & Sikkim.

Rainfall: (From 0830 hours IST of yesterday to 0830 hours IST of today): Rain/thundershowers has occurred at most places over Andaman & Nicobar Islands and weather remained dry over rest of the country. The amounts of rainfall recorded at 0830 hours IST of today is Carnicobar 1.

Temperature: Minimum temperatures are below normal by 5-7°C at many places over Vidarbha; at isolated places over West Uttar Pradesh, Telangana, Interior Karnataka, Madhya Maharashtra and Odisha; by 2-4°C at most places over East Uttar Pradesh, rest West Uttar Pradesh, East Madhya Pradesh, Bihar, Coastal Andhra Pradesh, rest Telangana, Rayalaseema, Tamilnadu, rest Interior Karnataka, rest Vidarbha, Marathwada, rest Madhya Maharashtra and Konkan & Goa; at many places over West Madhya Pradesh, Chhattisgarh and Odisha; at a few places over West Bengal & Sikkim, Jharkhand and Kerala; at isolated places over Punjab, Coastal Karnataka and Gujarat region. They are above normal by 2-5°C at many places over Jammu & Kashmir, Himachal Pradesh and West Rajasthan; at a few places over East Rajasthan, Saurashtra & Kutch and Andaman & Nicobar Islands; at isolated places over Assam & Meghalaya, Bihar and Uttarakhand. **The lowest minimum temperature of 1.8°C** has been recorded at **Najibabad (Uttar Pradesh)** in plains of the country.

Weather Forecast

Weather Forecast for next 3 days (upto 0830 hours IST of 16th January, 2015).

- Rain/thundershowers would occur at many places over Andaman & Nicobar during the period.
- Rain/snow would occur at many places over Jammu & Kashmir during next 24 hours; at most places on 14th and at a few places thereafter.
- Rain/snow would occur at isolated places over Himachal Pradesh during next 24 hours; at many places on 14th and at a few places thereafter.
- Rain/thundershowers would occur at isolated places over Punjab, Haryana & Delhi during next 24 hours; at a few places on 14th and at isolated places thereafter.
- Rain/snow would occur at many places over Uttarakhand during next 24 hours and at a few places thereafter.
- Rain/thundershowers would occur at isolated places over Rajasthan during the period.
- Dry weather would prevail over West Uttar Pradesh, Tamil Nadu & Puducherry during next 24 hours; over Coastal 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 during the period.
- Fog would occur at a few places over Punjab, Haryana & Delhi, Uttar Pradesh, Bihar, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and north Rajasthan.
- Minimum temperatures would rise by 2-4°C over northwest and adjoining central India during next 2-3 days.

Weather Warning during next 3 days

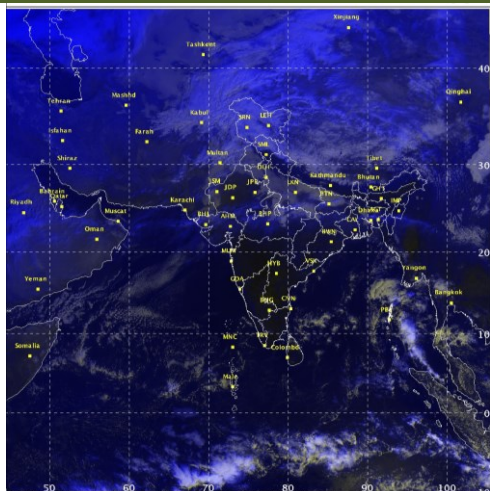
- **13 January (Day 1):** Dense fog would occur at isolated over Punjab, Haryana & Delhi, north Rajasthan, Uttar Pradesh, Bihar, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh. Cold wave conditions would occur at isolated places over south Madhya Pradesh, Vidarbha, Madhya Maharashtra, Telangana, interior Karnataka, Odisha and Chhattisgarh. Heavy rainfall/snowfall would occur at isolated places over Jammu & Kashmir and Himachal Pradesh.
- **14 January (Day 2):** Dense fog would occur at isolated over East Uttar Pradesh, Bihar, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Heavy rainfall/snowfall would occur at isolated places over Jammu & Kashmir and Himachal Pradesh. Cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh. Cold wave conditions would occur at isolated places over south Madhya Pradesh, Vidarbha, Madhya Maharashtra, Telangana, interior Karnataka, Odisha and Chhattisgarh.
- **15 January (Day 3):** Cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh.

Weather Outlook for subsequent 4 days from 16th to 20th January 2015.

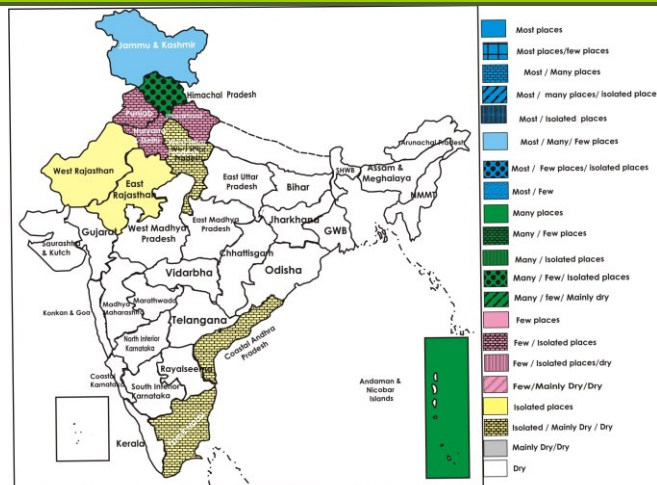
- Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands and at isolated places over

northeastern states & extreme south peninsular India.
 • Weather would be dry over rest of the country.

Satellite image dated, 13.01.2015, 0500 UTC



Weather Forecast Map (Valid upto 0830 hours of 16th January 2015)



Salient Advisories

- As cold wave conditions would occur at isolated places over **Telangana, Interior Karnataka, Odisha, south Madhya Pradesh, Chhattisgarh, Madhya Maharashtra** and **Vidarbha** on 13th and 14th January, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold injury.
- Prevailing cold wave conditions in **North Madhya Maharashtra** may cause fruit cracking especially in black grapes. Protect grapes from cold injury by applying drip irrigation for half an hour during morning hours. Arrange for smoke around the orchards during night hours. Apply mulch with crop residue. For protection of banana, apply mulch of organic material at base of trunk, apply light and frequent irrigation during evening and cover fruit bunch with 2 to 6 % porous plastic bag. Use gunny bags or any other cloth around orchards to protect them from cold winds. In **Vidarbha**, as cold wave conditions would occur during next 48 hours, apply light and frequent irrigation to orange and sweet lime, apply mulch with crop residue to protect the plants from cold. Arrange for smoke around the orchards during night hours.
- As cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and **Uttar Pradesh** during the period, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold/frost injury.
- As rain/snow would occur at many/most places over **Jammu & Kashmir** on 13th & 14th January and over **Himachal Pradesh** on 14th January, along with heavy rainfall/snowfall at isolated places, postpone irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops. Provide adequate drainage in standing crops to remove excess water.

Detailed Zonewise Agromet Advisories

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



Sorghum



Sugarcane



Chilli



Rice Transplanting

- **Realised Weather:** Cold day conditions are prevailing at isolated places over Interior Karnataka. Weather remained

dry over the region. Minimum temperatures are below normal by 5-7°C at isolated places over Telangana, Interior Karnataka; by 2-4°C at most places over Coastal Andhra Pradesh, rest Telangana, Rayalaseema, Tamilnadu, rest Interior Karnataka; at a few places over Kerala; at isolated places over Coastal Karnataka.

- **Weather Forecast:** Dry weather would prevail over Tamil Nadu & Puducherry during next 24 hours; over Coastal 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 during the period.
- **Weather Warning:** Cold wave conditions would occur at isolated places over Telangana and interior Karnataka on 13th and 14th January.
- **Weather Outlook:** Rain/thundershowers would occur at isolated places over extreme south peninsular India. Weather would be dry over rest of the region.
- **Advisories:**
 - As cold wave conditions would occur at isolated places over Telangana and interior Karnataka on 13th and 14th January, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold injury.
 - **Andhra Pradesh:**
 - Undertake intercultural operations in groundnut in the Southern Zone.
 - Present dry weather conditions are highly congenial for attack of pod borer in red gram in the Southern Zone. Spray Tiodicarb @ 1g or Noveluron @ 1mm/litre of water.
 - In the Scarce Rainfall Zone, powdery mildew incidence is observed on mango crop in Anantapur district which is likely to spread in the present humid weather and low temperature conditions. For control, spray Karathane @ 1.0 ml or wettable Sulphur @ 3.0 g per one litre of water.
 - **Telangana:**
 - In Telangana, to protect rice nurseries from cold injury and for better nursery growth, adopt the following measures;
 - Cover the nursery beds with polythene sheet during night and remove in the morning.
 - Irrigate the nursery bed every day in the evening and let out the water in the morning.
 - Apply 2 kg urea for 200 m² nursery area at 10-15 days after sowing.
 - To prevent the incidence of rice stem borer in Southern Telangana Zone, apply Carbofuran 3G @ 160 g in one cent of nursery at 10-12 days after sowing.
 - Prevailing low minimum temperature is congenial for flower and fruit drop in chilli in the Northern Telangana Zone. Spray NAA 10 mg/litre of water to manage the incidence.
 - Prevailing humid weather condition is congenial for incidence of leaf hopper, leaf webber and tikka leaf spot in groundnut in Southern Telangana Zone. To control leaf hopper, spray Dimethoate @ 2 ml per litre of water, Quinolphos @ 2 ml per litre of water to manage leaf webber and Mancozeb @ 2.0g + Carbendazim @ 1.0g or Hexaconazole @ 1.0 ml per litre of water to manage tikka leaf spot.
 - **Karnataka:**
 - Complete harvesting of ragi and continue sowing of sunflower, groundnut, maize and ragi under irrigated condition in the Eastern Dry Zone.
 - As dry weather is prevailing, protective irrigation may be given to wheat and sorghum in North East Transition Zone, North Transition Zone and North Dry Zone.
 - Undertake planting of sugarcane in North Transition Zone after proper set treatment.
 - Continue harvesting of chilli and cotton in the North Transition Zone and North Dry Zone.
 - In the Hill Zone, continue cotton picking and continue sowing of pulses in areas where rice harvesting has been completed.
 - Undertake nursery preparation for summer rice and sowing of summer maize in the Southern Transition Zone.
 - Low temperature and high humidity in the morning hours is congenial for incidence of powdery mildew disease and leaf hopper in mango orchard in the Eastern Dry Zone, North East Dry Zone, Hill Zone and Southern Dry Zone. Spray Carbaryl WP @ 4 g/ litre of water or Carbendazim @ 1 g / litre of water to manage the incidence.
 - Present weather is congenial for the incidence of *Helicoverpa* in Bengal gram in the North East Transition Zone. Spray Profenophos or Chlorpyrifos @ 2 ml/litre or Spinosad @ 0.2 ml per litre of water for control.
 - **Kerala:**
 - Continue harvesting of *Mundakan* rice in the Southern Zone.
 - Prevailing humid condition is congenial for increase in population of insect vectors which spread viral diseases in vegetables and leaf eating caterpillar in coconut in the Southern Zone. Apply Dimethoate @ 1.5 ml/ litre of water against insect vectors and Malathion @ 1ml/ litre of water to manage leaf eating caterpillar.
 - Due to high temperature, there is chance of increase of mite population in coconut in the Central Zone. Apply 2% neem oil-garlic-soap emulsion in the crown of young bunches to prevent mite attack.
 - **Tamil Nadu:**
 - Continue sowing of rice fallow pulses under waxy condition in *samba* rice fields under rice fallow condition in the Cauvery Delta Zone.
 - Continue cultivation of short duration and disease resistant varieties of green gram and black gram in the North Western Zone.

- Undertake land preparation for sowing of sorghum and maize in the Western Zone.
- As dry weather is expected in the coming days, undertake harvesting of sorghum and maize crop in the South Zone.
- Incidence of pod borer is noticed in red gram crop due to prevailing dry weather in the Cauvery Delta Zone. To control, spray Diclorvas @ 250 ml/acre or Aszophos @300 ml/ acre in 200 litres of water.
- **Animal Husbandry**
- Prevailing low temperature condition is congenial for *kokkera* disease in poultry in the Northern Telangana Zone. Vaccinate the birds as per the recommended age, provide clean and fresh water daily and provide artificial heating through lighting of electric bulb during night time to protect the poultry birds (day old to 25 days old) from low temperature.

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



Rice transplanting



Mustard



Potato



Cabbage

- **Realised Weather:** Weather remained dry over the region. Minimum temperatures are above normal by 2-5°C at isolated places over Assam & Meghalaya.
- **Weather Forecast:** Dry weather would prevail over the region during the period. Fog would occur at a few places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- **Weather Warning:** Dense fog would occur at isolated over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura on 13th and 14th January.
- **Weather Outlook:** Rain/thundershowers would occur at isolated places over northeastern states.
- **Advisories:**
 - **Assam & Meghalaya, Arunachal Pradesh:**
 - Continue transplanting of *boro* rice of about 45 days old (5- 6 leave stage) seedlings in Assam. Farmers are advised to maintain 6 cm of standing water in the main field of transplanted *boro* rice. Continue gap filling in *boro* rice after 10-15 days after transplanting.
 - In Lower Bramhaputra Valley Zone of Assam, apply irrigation in wheat at CRI stage.
 - In Hill Zone of Assam, continue picking of matured cotton balls in morning hours.
 - In Meghalaya, continue transplanting of *boro* rice. Apply irrigation to mustard/rapeseed at flowering stage and cole crops. Also prepare basin around plants of khasi mandarin followed by mulching with local grasses and apply irrigation at 15-20 days interval to avoid moisture stress.
 - In North Bank Plain Zone, Barak Valley Zone and Upper Bramhaputra Valley Zone of Assam, due to foggy conditions, blight disease may become severe in potato and tomato. 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 1 litre 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 saw fly in rapeseed / mustard in Meghalaya, Upper Bramhaputra Valley Zone, North Bank Plain Zone, Central Bramhaputra Valley Zone, Lower Bramhaputra Valley Zone and Barak Valley Zone of Assam. Spray Malathion 50 EC @ 2 ml/ litre of water or Dimethoate 30 EC or Chloropyrifos @ 0.5 litre / ha for control.
 - In Hill Zone and Lower Bramhaputra 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 or Dithane Z-78 @ 25 g in 10 litre of water 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.
 - **Nagaland, Manipur, Mizoram and Tripura:**
 - In Manipur, apply light irrigation in rapeseed / mustard, pea, lentil, potato.
 - In Mizoram, apply irrigation to banana, brinjal, early cole crops, pea, tomato, mustard and toria.
 - In Nagaland, apply light irrigation in toria, pea, vegetables and cole crops.
 - In Mild Tropical Plain Zone of Tripura, apply light irrigation on every alternate day in cole crops, mustard and lentil. Mulching is essential after irrigation to conserve moisture. Undertake land preparation for transplanting of *boro* rice. Rice bed may be covered during the night to protect the seedlings from dew. Weeding, thinning,

irrigation may be done in the nursery field.

- In Tripura, due to the prevailing foggy condition there may be infestation of early blight in potato. Apply Cymoxanil+ Mancozeb or Metalaxyl+ Mancozeb @ 1.5 g per litre of water for control of early blight. Due to cloudy and humid weather there is chance of attack of leaf blight in maize. Spray Zineb @ 3g per litre of water to manage the attack.
- In Mizoram, due to foggy weather condition, there is chance of infestation of aphids in pea. For control, apply Imidachloprid @ 1.5 ml/litre of water.
- Suitable varieties are given in Annexure I.
- **Animal Husbandry**
- In Northeastern States, provide artificial heating through lighting of electric bulb to protect poultry birds (upto 25 days old) from low temperature. Cover poultry and pig house with gunny bags/ polythene sheet to prevent the expose of animal to cool night.
- **Fishery**
- During winter season, apply Potash @ 4-5 mg/litre of water /Sukrena WS @ 1 litre per bigha of water/ lime in required doses to protect the fish population against various bacterial diseases in Lower and Upper Bramhaputra Valley Zone and North Bank Plain Zone of Assam.

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



Sugarcane

Wheat

Rice transplanting

Onion

- **Realised Weather:** Dense/very dense fog has been observed at isolated places over Bihar. Cold day conditions are prevailing at isolated places over Odisha and Sub-Himalayan West Bengal & Sikkim. Rain/thundershowers has occurred at most places over Andaman & Nicobar Islands and weather remained dry over rest of the region. Minimum temperatures are below normal by 5-7°C at isolated places over Odisha; by 2-4°C at most places over Bihar, at many places over Odisha; at a few places over West Bengal & Sikkim and Jharkhand. They are above normal by 2-5°C at a few places over Andaman & Nicobar Islands; at isolated places over Bihar.
- **Weather Forecast:** Rain/thundershowers would occur at many places over Andaman & Nicobar Islands during the period. Dry weather would prevail over rest parts of the region during the period. Fog would occur at a few places over Bihar.
- **Weather Warning:** Dense fog would occur at isolated places over Bihar on 13th and 14th January. Cold wave conditions would occur at isolated places over Odisha on 13th and 14th January.
- **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 Old Alluvial and Terai Zone, continue nursery sowing of *boro* rice. Cover the nursery bed with polythene or apply water in the nursery bed at night and draining the water at morning to protect the seedlings from cold injury. Continue main field preparation for transplanting of *boro* rice.
 - In Laterite and Red Soil Zone, complete transplanting of *boro* rice.
 - Due to high humidity, there is chance of attack caterpillars and diamond back moth in vegetables during its fruiting stage in Hill Zone. To control caterpillar, apply Chloropyriphos 50 EC@2 ml/litre of water, Lamda Cyhalothrin @10 ml/15 litres of water for control of diamond back moth.
 - In Laterite and Red Soil Zone, early morning fog may cause attack of saw fly and aphids in mustard. For controlling of mustard saw fly dusting with 2% Methyl Parathion @20-25 kg /ha and for aphids, spraying Malathion 50 EC @ 0.005%.
 - In Old Alluvial Zone and Terai Zone, due to low temperature and foggy weather, there is chance of attack of late blight in potato. For control, spray Mancozeb @2 g /litre of water and Blitox @ 4 g/litre of water alternately at 7-10 days interval by completely wetting the leaves.
 - In New Alluvial Zone, due to prevailing foggy weather condition, attack of aphid and early blight may be found in mustard and potato. For prevention of aphid attack, apply Imidacloropid 17.8 SL @ 3 ml. /10 litres of water or Quinalphos 25 EC @ 2 ml./ litres of water and for early blight, apply Mancozeb @ 2.5g per litre of water.

▪ **Andaman and Nicobar:**

- As rain/thundershowers would occur at many places in Andaman and Nicobar islands during the period, postpone irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops.
- In North and Middle Andaman, undertake transplanting of vegetables.

▪ **Odisha:**

- As cold wave conditions would occur at isolated places over Odisha on 13th and 14th January, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold injury.
- In Western Undulating Zone, continue land preparation and sowing of green gram, black gram and sunflower in residual moisture immediately after harvesting of rice.
- In East and South Eastern Coastal Plain Zone, continue nursery sowing of rice and *rabi* pulses. Continue transplanting of onion.
- In East and South Eastern Coastal Plain Zone of Odisha, continue sowing of sunflower and groundnut.
- In North Eastern Coastal Plain Zone of Odisha, complete sowing of rapeseed and mustard.
- In Western Undulating Zone of Odisha, present weather is congenial for occurrence of *Alternaria* blight in mustard at vegetative stage. For controlling the disease, spray Indofil M 45@3g/lit of water.
- In Mid Central Table Land Zone of Odisha, cloudy weather during the past week is favourable for incidence of powdery mildew disease in black gram. To control it, spray Sulfex@5g / litre of water.
- In East and South Eastern Coastal Plain Zone of Odisha, cloudy weather may favour infestation of aphids in potato and pulses. Spray 400 ml Dimethoate or 50 ml Imidachloprid in 200 litres of water per acre.
- Due to cloudy weather and moderate temperature, thrips and aphids infestation has been found in groundnut in East and South Eastern Coastal Plain Zone of Odisha. Spray Dimethoate @400 ml or Imidachloprid @50 ml in 200 litre water per acre.
- In North Eastern Coastal Plain Zone of Odisha, cloudy and humid weather during the week coupled with rain is favourable for attack of leaf webber in mustard and rapeseed. Spray Traizophos@ 2ml/ litre of water to control.
- In Mid Central Table Land Zone of Odisha, cloudy weather is favourable for powdery mildew disease in black gram. To control it, spray Sulfex@5g / litre of water.

▪ **Bihar:**

- In South Bihar Alluvial Zone, as dry weather is prevailing, apply irrigation in timely sown wheat crop is at tillering stage and late sown wheat crop is atCRI stage. Continue harvesting of matured sugarcane.
- In North West Alluvial Plain Zone of Bihar, continue transplanting of *rabi* onion.
- In North West Alluvial Plain Zone of Bihar, low temperature and foggy weather is favourable for the attack of blight in potato and lentil crops; spray Indofil M-45, for better result mix sticker 1ml/liter of water. Due to foggy weather there is a chance of white rust in mustard/rapeseed, spray Chlorothalonil 75 WP @ 1 g/ litre of water.

▪ **Jharkhand:**

- In Western Plateau Zone, continue intercultural operations in pulses and oilseeds to conserve soil moisture and control weeds. As dry weather is prevailing continue harvesting of matured toria. For cultivation of early summer vegetables, sow the seeds of cucurbitaceous vegetables in polythene filled with soil and FYM and keep it at warmer place.
- In South Eastern Plateau Zone of Jharkhand, apply irrigation in wheat, arhar, mustard, field pea and potato. Continue nursery sowing of summer rice. Select medium duration improved rice varieties like MTU 1010, IR 36, 64 and Naveen.
- In Central & North Eastern Plateau Zone of Jharkhand, continue land preparation for sowing of vegetables like long gourd, round gourd, bitter gourd, sponge gourd, cucumber, water melon and musk melon. Continue nursery sowing of summer rice. Undertake transplanting of onion.
- In Jharkhand, low temperature and foggy weather is favourable for the attack of early and late blight disease in early planted potato crop; spray Krilaksil or Ridomil MZ @ 1.5 g per litre of water to control the disease.
- In Central & North Eastern Plateau Zone and Western Plateau Zone of Jharkhand, cool and dry weather is favourable for incidence of powdery mildew disease in pea. To control it, spray Kairathen @ 1 ml or sulfex @ 3 ml per litre of water.
- In South Eastern Plateau Zone of Jharkhand, cool and humid weather in the morning and later on clear sunny weather is favourable for the attack of aphids in mustard/toria, spray Thiamehoxam 25 % WG @ 3-4 g or Rogar (Dimethoate) @ 2ml or Monochrotophos @1 ml per litre of water.
- Suitable varieties are given in Annexure I.

• **Animal Husbandry**

- To protect from cold, dairy animal should be covered with gunny sack/ sheet in the evening in Central & North Eastern Plateau Zone of Jharkhand and also provide calcium and jaggery in the feed. To prevent from Swine fever disease in pigs, farmers are advised to vaccinate against swine fever.
- In North West Alluvial Plain Zone of Bihar, low temperature condition may adversely affect the milk production

of milch animals. Farmers are advised to give protein enriched diet to the animals. Do not keep the animal in the open during night hours.

CENTRAL INDIA [M.P., CHHATTISGARH]



Sugarcane

Wheat

Mustard

Onion

- **Realised Weather:** Dense/very dense fog has been observed at isolated places over Madhya Pradesh. Cold day conditions are prevailing at isolated places over north Madhya Pradesh. Weather remained dry over the region. Minimum temperatures are below normal by 2-4°C at most places over East Madhya Pradesh; at many places over West Madhya Pradesh and Chhattisgarh.
- **Weather Forecast:** Dry weather would prevail over the region during the period. Minimum temperatures would rise by 2-4°C over central India adjoining to northwest India during next 2-3 days.
- **Weather Warning:** Cold wave conditions would occur at isolated places over south Madhya Pradesh and Chhattisgarh on 13th and 14th January
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - As cold wave conditions would occur at isolated places over south Madhya Pradesh and Chhattisgarh on 13th and 14th January, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold injury.
 - **Madhya Pradesh:**
 - Continue transplanting of medium and late sown cauliflower, cabbage, carrot, radish and onion in main fields in Kymore Plateau and Satpura Hill Zone.
 - Continue transplanting of onion, tomato, brinjal, chilli, cabbage and cauliflower in Malwa Plateau Zone.
 - As dry weather is prevailing, apply irrigation in wheat at tillering stage and light irrigation in vegetables in Jhabua Hill Zone.
 - Due to partly cloudy and foggy weather, there are chances of attack of sucking pest in vegetables in Satpura Plateau Zone and Jhabua Hill Zone, spray Imidachloprid @0.5ml per litre of water and for control of shoot & fruit borer, spray Trizophos @ 800 ml per hectare.
 - Due to cloudy weather, there are chances of attack of caterpillars in gram in Madhya Pradesh. Spray Quinalphos @ 25 EC per 500-600 litres of water.
 - Due to foggy weather, there are chances of leaf curl disease in brinjal, chilli and papaya in Bundelkhand Zone, spray Methyl dematon 25 E.C. @ 2.0 ml per litre of water.
 - **Chhattisgarh:**
 - As dry weather would prevail, undertake digging of matured potato and apply irrigation in wheat at tillering stage in Bastar Plateau Zone.
 - Due to cloudy weather, there are chances of incidence of aphids in mustard and radish in North Hill Zone and Plain Zone of Chhattisgarh, for control, apply Carbaryl @ 2 kg/ha.
 - Due to cloudy weather, there are chances of infestation of pod borer in pigeon pea in North Hill Zone of Chhattisgarh, spray Polytrin C @ 1litre/ha or Endoxacarb @ 300 ml/ha.
 - **Animal Husbandry**
 - As cold wave conditions would occur at isolated places over south Madhya Pradesh and Chhattisgarh, protect animals from cold. Increase light duration in poultry farms.

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



Wheat



Sugarcane



Mustard



Cabbage

- **Realised Weather:** Dense/very dense fog has been observed at many places over Punjab, Haryana & Delhi, West Uttar Pradesh; at isolated places over north Rajasthan. Cold day conditions are prevailing at isolated places over Himachal Pradesh, West Uttar Pradesh. Weather remained dry over the region. Minimum temperatures are below normal by 5-7°C at isolated places over West Uttar Pradesh; by 2-4°C at most places over East Uttar Pradesh, rest West Uttar Pradesh; at isolated places over Punjab. They are above normal by 2-5°C at many places over Jammu & Kashmir, Himachal Pradesh and West Rajasthan; at a few places over East Rajasthan; at isolated places over Uttarakhand. **The lowest minimum temperature of 1.8°C** has been recorded at **Najibabad (Uttar Pradesh)** in plains of the country.
- **Weather Forecast:** Rain/snow would occur at many places over Jammu & Kashmir during next 24 hours; at most places on 14th and at a few places thereafter. Rain/snow would occur at isolated places over Himachal Pradesh during next 24 hours; at many places on 14th and at a few places thereafter. Rain/thundershowers would occur at isolated places over Punjab, Haryana & Delhi during next 24 hours; at a few places on 14th and at isolated places thereafter. Rain/snow would occur at many places over Uttarakhand during next 24 hours and at a few places thereafter. Rain/thundershowers would occur at isolated places over Rajasthan during the period. Dry weather would prevail over West Uttar Pradesh during next 24 hours and rain/thundershowers would occur at isolated places thereafter.
Fog would occur at a few places over Punjab, Haryana & Delhi, Uttar Pradesh and north Rajasthan. Minimum temperatures would rise by 2-4°C over northwest India during next 2-3 days.
- **Weather Warning:** Dense fog would occur at isolated over Punjab, Haryana & Delhi, north Rajasthan, Uttar Pradesh on 13th January and at isolated places over East Uttar Pradesh on 14th January. Cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh during the period. Heavy rainfall/snowfall would occur at isolated places over Jammu & Kashmir and Himachal Pradesh on 13th and 14th January.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - As cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh during the period, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold/frost injury.
 - **Jammu & Kashmir:**
 - As rain/snow would occur at many/most places over Jammu & Kashmir on 13th & 14th January, along with heavy rainfall/snowfall at isolated places, postpone irrigation, inter-cultural operation and application of plant protection measures and fertilizers to the standing crops. Provide adequate drainage in standing crops to remove excess water.
 - Undertake second hoeing and weeding followed by irrigation in 40 days old pulses like chick pea and lentil in Sub-Tropical and Intermediate Zone of Jammu & Kashmir.
 - In Intermediate Zone and Sub-tropical Zone of Jammu & Kashmir, due to cold and humid weather, there are chances of aphid attack in cole crops viz. cabbage and cauliflower. To control spray Rogor (Dimethoate) @ 1 ml/litre of water after current spells of rain and repeat at fifteen days interval.
 - **Himachal Pradesh:**
 - As rain/snow would occur at many/most places over Himachal Pradesh on 14th January along with heavy rainfall/snowfall at isolated places, postpone irrigation, inter-cultural operation and application of plant protection measures and fertilizers to the standing crops. Provide adequate drainage in standing crops to remove excess water.
 - In low and mid-hill areas, undertake planting of onion at a spacing of 15-20 x 5-7 cm apart utilizing realized rainfall.
 - 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 utilizing realized rainfall.

- Under prevailing low temperature and cloudy weather condition, there are chances of occurrence of yellow rust in wheat in Sub-Montane and Low Hills Sub-Humid Tropical Zone. For control, spray Tebuconazole 25 EC or Bayletan 25 WP @ 30ml or 30 g per 30 litres of water per kanal and repeat the spray after current spells of rain and repeat at 15 days interval. Downy mildew is also expected in cruciferous vegetables. For control, spray Redomil M-Z @ 25 g per litres of water after current spells of rain and repeat at 15 days interval.
- Under prevailing low temperature and cloudy weather condition, there are chances of attack of aphids in sarson, gobhi-sarson and cole crops viz. cabbage and cauliflower in Sub-Montane and Low Hills Sub-Humid Tropical Zone. Spray Malathion 50 EC @ 1 ml per litre of water after current spells of rain and repeat at 15 days.
- Under low temperature condition, there are chances of incidence of collar rot in apple in Mild Hills Sub Humid Zone. For control, spray Ridomil @ 75g per 20 litres of water after current spells of rain.
- **Uttarakhand:**
- As dry weather condition is prevailing, undertake harvesting of ratoon sugarcane, matured potato and pea in Bhabar and Tarai Zone of Uttarakhand.
- Foggy weather is conducive for incidence of blight disease in potato in Hill Zone of Uttarakhand. For control, spray Diethane M-45/Radomil @ 20-25 g per 10 litre of water.
- **Punjab, Haryana and Delhi:**
- In Eastern Zone of Haryana and Western Zone of Punjab, provide polythene sheet/Sarkanda/Kahi/ rice straw to protect the plants from cold/ frost injury. Dwarf vegetable varieties can be protected from frost injury by covering with 100 gauge thick white plastic bags of 35 x 25 cm size.
- In Undulating Plain Zone of Punjab, apply light irrigation and cover the newly planted plants with thatches for protection from cold and apply light irrigation in mustard in the evening to protect from cold/frost injury. Complete sowing of late sown wheat.
- In Western Semi-arid Zone of Delhi, continue sowing of late varieties of wheat with seed rate of 125 kg seed /ha. 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. Undertake transplanting of onion, mature seedlings of tomato, cauliflower and cabbage.
- In Western Zone of Haryana, apply light and frequent irrigation to vegetables and young fruit plants to protect from cold and cover the young fruit plants with Bhusa /thatch to protect from cold weather.
- Due to foggy weather, there is chance of incidence of late blight disease on potato and tomato in Western Zone of Punjab. To control spray Indofil-M-45/Kavach/Antracol @500-700g/acre or Blitox@750-1000g/acre using 250-350L of water/acre at weekly interval.
- Incidence of pink stem borer is observed in wheat in South-Western region of Punjab, if the attack reached above ETL then spray Quinalphos 25EC 800ml/acre.
- In Punjab, due to foggy weather, there is chance of incidence of yellow rust in wheat in the form of yellow powder/stripes on the leaves. The susceptible varieties are PBW-343, PBW-502, PBW-550, HPW-184, HPW-42, HS-240, HS-295, HS-420, UP-2328 and WL-711. Farmers are advised to monitor the crop and spray the fungicides Tilt (Propiconazole) 25 EC/folicure (Tebuconazole) 25 EC/Bayletan 25 WP @ 0.1% i.e. 30ml or 30 g per 30 litres of water per kanal with the appearance of the symptoms and repeat the spray after 15 days interval.
- Present weather is favourable for attack of top borer in sugarcane in Eastern Zone of Haryana, apply Carbofuran 3G @13 kg or Phorate 10G @ 8 kg in furrows.
- Due to foggy weather, there is chance of aphids in mustard/rapeseed in Western plain Zone of Punjab, spray 40 g Actara 25 WG or 400 ml of Metasystox 25 EC or Rogor 30 EC or Ekalux 25 EC/Malathion 50 EC or 600 ml Dursban/Coroban 20 EC in 80-125 litres of water/acre.
- **Uttar Pradesh:**
- Continue nursery sowing of tomato and chilli in Central plain Zone.
- Undertake application of Nitrogen @ 40 kg /ha as top dressing in wheat after light irrigation in Central Plain Zone. Also apply irrigation in sugarcane. Undertake top dressing of urea @ 74 kg/ha after irrigation at 15 days interval in garlic. Undertake harvesting of barseem.
- Apply second irrigation in wheat in North Eastern Plain Zone.
- Undertake top dressing of remaining half dose of nitrogen and urea in wheat in Bundelkhand Zone. For control of weeds in wheat, apply Sulphuron Methyl 5% WG @ 40 g in 800 litres of water per hectare. Also undertake intercultural operations like weeding and hoeing in gram, pea, rajma, masoor crops. Undertake harvesting of cauliflower, cabbage, tomato, carrot, chilli and brinjal.
- Continue nursery sowing of tomato and chilli in Central Plain Zone. Undertake harvesting of matured toria in Central Plain Zone. For control of weeds in linseed, spray Sulfofuran 75WG @ 33g dissolved in 500-600 litres water, 20-25 days after sowing.
- Continue sowing of sunflower in Western Plain Zone utilizing the realized rainfall.
- Under prevailing dry weather condition, undertake top dressing of urea in wheat after application light irrigation in wheat in Eastern Plain Zone. Also undertake irrigation in sugarcane, gram, pea, mustard, linseed lentil and rajma. Undertake planting of onion (Pusa red) at a distance of 15x10 cm.
- Foggy weather is conducive for the incidence of blight disease in potato in Central Plain Zone and Eastern Plain Zone. For control, spray Diethane M-45 @ 2.5 g or Macozeb or Blitox 2.2 % @ 2 g per litre of water.

- Under foggy weather condition, there are chances of blight in gram in Central Plain Zone. Spray Zinc Manganese Carbamate @ 2kg per 800 litres of water per hectare. For control of attack of Sap Sucker or Mahu insect in mustard, spray Phosphomidon @ 250 ml in 800 litres of water. Also for control of stem borer in sugarcane, spray Furadon 30kg/ha. To control blight and mahu in potato, tomato and chilli, spray 0.2% Mancozeb.
- Under low temperature condition, there are chances of occurrence of stem rot and leaf blight in tomato in North Eastern Plain Zone. Undertake drenching of Carbendazim 50 WP @ 1 kg per hectare.
- Under foggy weather condition, there are chances of incidence of *Alternaria* blight in mustard in North Eastern Plain Zone. Spray Blitox @ 2.5 kg per hectare. For control of late blight in potato, spray Metoxyyl @ 2 kg per hectare.
- **Rajasthan:**
 - Undertake weeding and hoeing, irrigation in wheat, barley, mustard and vegetables in Sub Humid Southern Plain and Aravali Hill Zone of Rajasthan.
 - Undertake transplanting of rabi onion in the main field in Semi Arid Eastern Plain Zone of Rajasthan.
 - Due to continuous cool and humid weather, *Alternaria* blight (black spot) disease may attack mustard crop in some pockets of Flood Prone Eastern Plain Zone of Rajasthan. Destroy the infested plants. Spray Iprodione or Mancozeb @ 2kg/acre in 800 litres of water.
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry:**
 - As cold day conditions would occur at isolated places over Punjab, Haryana, Chandigarh & Delhi and Uttar Pradesh during the period, keep cattle in cowsheds to protect them from cold. Also give 40-50g mineral mixture with the daily feed. Also make arrangements in poultry houses for protection of birds from cold.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]



Banana

Sugarcane

Sorghum

Mango

- **Realised Weather:** Cold day conditions are prevailing at many places over Vidarbha. Weather remained dry over the region. Minimum temperatures are below normal by 5-7°C at many places over Vidarbha; at isolated places over Madhya Maharashtra; by 2-4°C at most places over rest Vidarbha, Marathwada, rest Madhya Maharashtra and Konkan & Goa; at isolated places over Gujarat region. They are above normal by 2-5°C at a few places over Saurashtra & Kutch.
- **Weather Forecast:** Dry weather would prevail over the region during the period.
- **Weather Warning:** Cold wave conditions would occur at isolated places over Vidarbha and Madhya Maharashtra on 13th and 14th January.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Maharashtra:**
 - As cold wave conditions would occur at isolated places over Madhya Maharashtra and Vidarbha on 13th and 14th January, apply light and frequent irrigation in standing crops and arrange for smoking around the crop fields during night hours to protect the crops from cold injury.
 - In Konkan, as dry weather is likely to prevail, apply irrigation, fertilizers and undertake intercultural operations in vegetable crops and mango and cashew orchards. Also apply irrigation to groundnut at 10-12 days interval. Complete transplanting of seedlings of *rabi* rice and finger millet. Maintain water level upto 5 cm in already transplanted rice and finger millet fields.
 - Prevailing cold wave conditions in North Madhya Maharashtra may cause fruit cracking especially in black grapes. Protect grapes from cold injury by applying drip irrigation for half an hour during morning hours. Arrange for smoke around the orchards during night hours. Apply mulch with crop residue. For protection of banana, apply mulch of organic material at base of trunk, apply light and frequent irrigation during evening and cover fruit bunch with 2 to 6 % porous plastic bag. Use gunny bags or any other cloth around orchards to protect them from cold winds. Undertake field preparation for planting of *suru* sugarcane. Continue intercultural operations like weeding and apply fertilizers in sugarcane, vegetables and late sown wheat. Complete harvesting already matured red gram.
 - In Marathwada, as dry weather prevailed and is likely to continue during next 5 days, apply light irrigation in

gram (pod development stage), wheat (tillering stage), jowar and vegetables. Apply irrigation to sugarcane by drip irrigation or by alternate furrow method due to water stress condition. Undertake intercultural operations in late sown wheat, vegetables and sugarcane. Prevailing low temperature (below 10°C) in some parts may affect fruit growth of banana, orange, grapes and sweet lime. Cover new banana bunch with skating bag. Complete preparatory tillage and field may be kept ready for planting of *suru* sugarcane. Continue harvesting of already matured red gram.

- In Vidarbha, as cold wave conditions would occur during next 48 hours, apply light and frequent irrigation to orange and sweet lime, apply mulch with crop residue to protect the plants from cold. Arrange for smoke around the orchards during night hours. Undertake transplanting of 30 -35 days old rice seedlings. Maintain 2-3 cm water level in transplanted rice field. Continue harvesting of already matured red gram.
- Cloudy weather prevailed during last week in Marathwada is favourable for attack of aphids in *rabi* jowar; spray Dimethoate 30 % @ 10 ml per 10 litres water.
- Prevailing cold and high humidity during morning hours in Pune region is congenial for infestation of powdery mildew in pea; spray Sulphur WS @ 25 g per 10 litres water.
- **Gujarat:**
 - Procure good quality seeds of sesame, groundnut and green gram for *summer* sowing in North Saurashtra Zone. Apply irrigation in wheat (booting stage/flowering). Complete picking of cotton in South Saurashtra Zone.
 - As mainly dry weather prevailed, apply irrigation in wheat at flowering stage in South Gujarat Zone and at milking stage in Middle Gujarat zone.
 - In North Gujarat Zone, continue picking of matured bolls of cotton and harvesting of matured spikes of castor.
 - Carry out gap filling and weeding operations in germinated sugarcane crop in South Gujarat Heavy Rainfall Zone. Carry out weeding and intercultural operations in castor, jowar and mulching in jowar with available organic residues. Apply irrigation in wheat at booting stage and in banana at an interval of 10-12 days.
 - Due to humid weather in North Saurashtra Zone infestation of *alternaria* blight and purple blotch in garlic and onion observed which is likely to increase; increase periods between irrigations, spray 27 gm Mencozeb / 10 litres of water at 10 days interval for control.
 - Due to cold and humid weather condition there are chances of outbreak of blight disease in potato, cumin and fennel in North Gujarat Zone and in tomato and cumin in North West Zone; spray Mancozeb 0.2% @ 30 gram plus 20 ml of concentrated desi soap solution in 10 litres of water for control.
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry**
 - In Gujarat, provide ad lib warm water to lactating animals. Keep young calves indoors during night time to avoid cold stress. Provide balanced diet to the animals and also keep animal sheds clean to prevent the diseases.
- **Poultry**
 - As cold wave conditions would prevail over Madhya Maharashtra and Vidarbha, protect poultry birds from cold winds by hanging 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

Assam

Boro rice: Mahsuri, IR-50, Dinanath, Bishnuprasad, Jyotiprasad, Kanaklata and Dinanath, Boro-1, -2, -3, Kalinga-3, Joymati, Dinanath, Swarnav.

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.

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

Groundnut: Smruti, TAG-27, TAG – 24 and JL-24

Rainfed Mustard: Parbhathi, Anuradha, TS-29 & M-27.

Onion: Nasik Red, Patna Red, Pune Red, Bellary Red, Pusa Ratnar, Pusa Madhavi, Arka Niketan, Arka Pragati

Sesame: Vinayak, Kanak, Kalika, Prachi, Nirmala, Usha and Uma

Bihar

Boro rice: Gutum, Prabhat, Richaria, Dhanlaxmi, Saroj Rajendra Bhagvati, and R.A.U

Jharkhand:

Summer Rice: IR-36, IR-64, Naveen, lalat, Parijat (80-85 days).

Jammu & Kashmir

Wheat: VL-738 and PBW-175 ,VL-738, VL-804, HS-240, HD-1553, HS-277, HS-240, VL- 616 & SKW-196, VL-829, PBW-175 , VL- 892, VL-738, VL-804, HS-507, VL-829 & VL-892, VL – 907, HS-240 & PBW-154.

Onion: Agrifound Parvati, Pusa red, N-53.

Uttarakhand

Wheat: UP-2572, UP-2584, UP-1109, VL-802, VL-804, VL-738, VL-421, HS-240.VL-616, HS-277, VL-829, VL-738(mandri), HS-277 etc.

Onion: VL-3.

Lentil: T 36, BL 406, Sihore 74-7 and K 75.

Barley: RD 2035, RD 2052, RD 2503, RD 2668,

Himachal Pradesh

Wheat: HPW-155, HPW-89, HPW-147, HPW-236, HPW-211 in low and mid hill and HPW-155, HPW-236, HPW-42 in high hill

Late variety of Cauliflower: broccoli

Cauliflower: Pusa-snowwall

Radish:Japanese white, Chinese pink and mino early white

Turnip: PTWG-1

Carrot: Pusa kesar

Fenugreek: I.C. 74, Kasoori

East Uttar Pradesh

Wheat: Narendra-1012, HD-2824, 2733, HP-1731, UP-2382, PWD-343, CVW-38, DBW-39, UO-2382, HUW-510

Wheat (Late varieties): Malaveey-234, HP-1633, H-1744, Narendra-1014, UP-2425

Onion: Pusa red, Kalynpur red, light red

Lentil: T-8, Pant L-406, 234

West Uttar Pradesh:

Wheat(non-irrigated): K-9644, Maghar(K-8027), Mandakini(K-9351), Indra(K-8962), Gomati(K-9465), HDR-77, HD-2888

Wheat(Irrigated): K-307, DBW-17, PBW-343,502,550, GW-366, K-1006, 607,402, DVW-39

KRL-210, 213, 19, K-8434(Prasad), NW-1067

Lentil: Narendra-1, DPL-62, Pant-5, L-4076, K-75, HUL-57, Shekhar-3,2, IPL-81

Sunflower: No.1, PAC- 302, SH-322

Rajasthan

Mustard: Pusa Jai Kisan (115-120 days), P.R-15 (125-130 days), Pusa bold (130-135 days), R.H. 30 and R.H. 9304 (130-135 day)

Wheat: HI-8381, 8498, 1544 GW-273, Raj-3077, 4037, DL-803-3, GW-322, 190, 366

Linseed: RL-6, RDB-1, RD-31,387, 2552, 2035, 103, BL-2

Gram: BG-256, Phuleji-5, RSG-44, Samrat, Pratap-1, GNG-469,149,663, Kabuli-2

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

Watermelon: Sugar bebi, Ashahi pameto, Madhu, Jyoti, Pusa Bedana (Seedless).