

National Agromet Advisory Service Bulletin

Tuesday 6th January 2015
(For the period 6th to 9th January 2015)



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



Realised Weather on 6th January 2015

Significant weather observations: Dense/very dense fog has been observed at isolated places over Punjab, Haryana & Delhi, Jammu division, West Uttar Pradesh and northwest Rajasthan during morning hours. The visibility of 50 M or less has recorded at: Jammu, Ganganagar, Pantnagar and Bareilly.

Main Weather Observations: Rainfall: (From 0830 hours IST of yesterday to 0830 hours IST of today): Light rain/snow has occurred at isolated places over Jammu & Kashmir. Light rain/thundershowers has occurred at isolated places over Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh and Assam & Meghalaya. Weather remained dry over rest of the country. The rainfall amounts (1 cm or more) recorded at 0830 hours IST of today are: Pasighat and Golaghat each.

Temperature: Minimum temperatures are below normal by 2-6°C at most places over Vidarbha; at many places over Saurashtra & Kutch and Madhya Pradesh; at a few places over East Uttar Pradesh; at isolated places over Himachal Pradesh. They are above normal by 2-5°C at most places over Punjab; at many places over Jammu & Kashmir, Haryana & Delhi, Andhra Pradesh and north Tamilnadu; at a few places over West Uttar Pradesh, West Bengal & Sikkim, Assam & Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Odisha, South Interior Karnataka, Coastal Karnataka, Madhya Maharashtra, Konkan & Goa and West Rajasthan; at isolated places over Uttarakhand, North Interior Karnataka and Kerala and near normal over rest of the country. **The lowest minimum temperature of 4.5°C has been recorded at Churu (Rajasthan) and at Najibabad (Uttar Pradesh)** in plains of the country.

Weather Forecast

Weather Forecast for next 3 days (upto 0830 hours IST of 9th January, 2015).

- Rain/thundershowers would occur at isolated places over Andaman & Nicobar during next 48 hours and at a few places thereafter.
- Rain/thundershowers would occur at isolated places over Arunachal Pradesh, Assam & Meghalaya during next 24 hours and dry weather would prevail thereafter.
- Rain/snow would occur at isolated places over Jammu & Kashmir during next 48 hours and dry weather would prevail thereafter.
- Dry weather would prevail over Kerala during next 24 hours; over Tamil Nadu & Puducherry 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, north Rajasthan, Madhya Pradesh, Bihar and Sub-Himalayan West Bengal & Sikkim during next 3 days.
- Fall in minimum temperatures by 2-3°C over plains of northwest India; by 2-4°C over east India and by 1-2°C over central and west India during next 2-3 days.

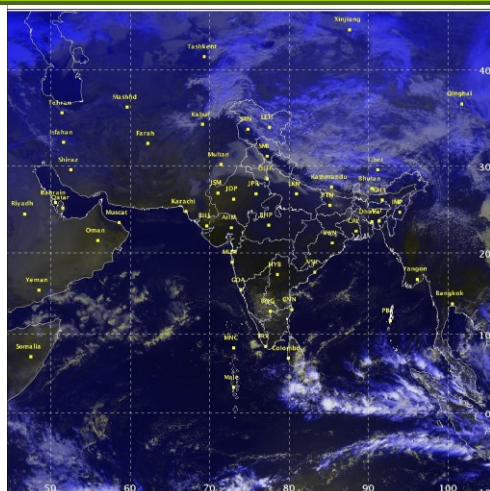
Weather Warning during next 3 days

- **06 January (Day 1):** Dense fog would occur at isolated places over Punjab, Haryana & Chandigarh, North Rajasthan, Madhya Pradesh, Bihar and Sub-Himalayan West Bengal & Sikkim. Cold day conditions would occur at isolated places over Punjab. Cold wave conditions would occur at isolated places over south Madhya Pradesh.
- **07 January (Day 2):** Dense fog would occur at a few places over Punjab, Haryana, Uttar Pradesh, north Rajasthan, Sub-Himalayan West Bengal & Sikkim and Bihar and at isolated places over Madhya Pradesh, Assam & Meghalaya and Nagaland Manipur Mizoram & Tripura. Cold wave conditions would occur at isolated places over south Madhya Pradesh.
- **08 January (Day 3):** Dense fog would occur at a few places over Punjab, Haryana, Uttar Pradesh, north Rajasthan, Sub-Himalayan West Bengal & Sikkim and Bihar at isolated places over Madhya Pradesh, Assam & Meghalaya and Nagaland Manipur Mizoram & Tripura. Cold wave conditions would occur at isolated places over south Madhya Pradesh.

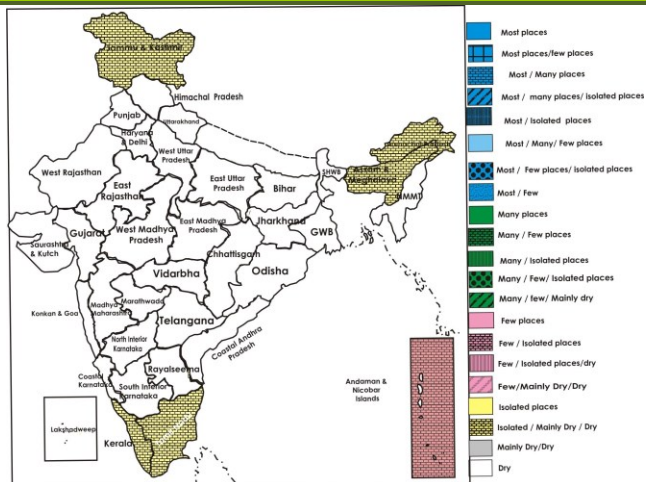
Weather Outlook for subsequent 4 days from 9th to 13th January 2015.

- Rain/thundershowers would occur at isolated places over extreme south peninsular India and Andaman & Nicobar Islands.
- A feeble western disturbance would affect western Himalayan region from 10th onwards.
- Weather would be dry over rest of the country.

Satellite image dated, 06.01.2015, 0600 UTC



Weather Forecast Map (Valid upto 0830 hours of 09th January 2015)



Salient Advisories

- As cold wave conditions would occur at isolated places over **south Madhya Pradesh** during the period, apply light and frequent irrigation in standing crops and arrange smoking around the crop fields during nights to protect the crops from cold/frost injury.
- In view of the prevailing low minimum temperatures and expected dense foggy weather conditions over **Punjab, Haryana & Chandigarh, Uttar Pradesh** and **north Rajasthan**, apply light and frequent irrigation in standing crops and arrange smoking around the crop fields during nights to protect the crops from cold/frost injury.
- In **Madhya Maharashtra**, as minimum temperature prevails around 10°C in Jalgaon and Nasik district and may fall by 1-2°C, protect grapes in North Madhya Maharashtra from cold injury by applying drip irrigation for half an hour during morning 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 the trunk with dried leaves. Make arrangement for artificial wind breaks using gunny bags or any other cloth around orchards. In **Marathwada**, minimum temperature may fall upto 10°C. It may affect fruit growth of banana. Cover new banana bunch with skating bag. Make arrangement for artificial wind breaks around orchards.
- 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.

Detailed Zonewise Agromet Advisories

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



Sorghum



Sugarcane



Chilli



Rice Transplanting

- **Realised Weather:** Weather remained dry over the region. Minimum temperatures are above normal by 2-5°C at many places over Andhra Pradesh and north Tamilnadu; at a few places over South Interior Karnataka, Coastal Karnataka; at isolated places over North Interior Karnataka and Kerala and near normal over rest of the region.
- **Weather Forecast:** Dry weather would prevail over Kerala during next 24 hours; over Tamil Nadu & Puducherry 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:** Nil.
- **Weather Outlook:** Rain/thundershowers would occur at isolated places over extreme south peninsular India. Weather would be dry over rest of the region.
- **Advisories:**
 - **Andhra Pradesh:**
 - In view of prevailing dry weather condition, provide one supplemental irrigation to red gram in order to get higher yields in Anantapuram district in the Scarce Rainfall Zone.
 - Due to prevailing dry weather, moisture stress is noticed in Bengal gram in Kadapa district in the Southern Zone. Spray Potassium Nitrate @ 10 g/litre of water to mitigate the stress.
 - Due to prevailing cloudy weather there is a chance of incidence of pod borer on red gram in North Coastal Zone. Spray Chlorophyriphos @ 2.5 ml or Quinolphos @ 2 ml per litre of water.
 - Tikka leaf spot incidence was noticed in groundnut in few parts of Kurnool district in the Scarce Rainfall Zone, which is likely to spread in the present humid weather and temperature conditions. Spraying of Hexaconazole @ 1ml/litre of water is advised to manage the incidence.
 - **Telangana:**
 - Prevailing low night temperatures may cause cold injury in rice nurseries in the Southern Telangana Zone. To overcome cold injury and for better nursery growth, 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 and apply 2 kg urea for 200 m² nursery area at 10-12 days after sowing.
 - Complete sowing of *rabi* rice and maize in the Northern Telangana Zone.
 - **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.
 - Continue harvesting of chilli and cotton in the North Transition Zone.
 - Continue sowing of pulses like black gram, green gram and also the green manure crop sun hemp to utilize residual soil moisture in rice fields where rice harvesting has been completed in the Southern Dry Zone.
 - Undertake harvesting of short duration varieties of red gram/sunflower and sowing of groundnut in the North East Dry Zone.
 - In the Hill Zone, picking of cotton and sowing of pulses in areas where rice harvesting has been completed.
 - 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. 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* insect in Bengal gram in the North East Transition Zone. Spray insecticides like Profenophos or Chlorpyriphos @ 2 ml/litre or Indoxacarb @ 0.3 ml/litre or Spinosad @ 0.2 ml per litre of water to manage the insects.
 - **Kerala:**
 - Prevailing humid and cloudy conditions are congenial for incidences of bud rot in coconut, leaf spot disease in amaranthus and mosaic disease in bitter gourd and bottle gourd in the Southern Zone. Chisel out completely the affected tissues and paint the wound with Calixin (50g/l) and apply coal tar after one or two days to manage bud rot, spray 8g Baking soda, 32g Turmeric powder in 10 litres of water to manage leaf spot disease and spray Rogor (Dimethoate) 2 ml / litres of water to manage mosaic disease in bitter gourd.
 - **Tamil Nadu:**
 - Undertake sowing of rice fallow pulses under waxy condition in samba rice field under rice fallow condition in the Cauvery Delta Zone.
 - Prevailing low minimum temperature and relative humidity is congenial for flower and fruit drop in chilli in the Western and South Zone Zone. To overcome this, undertake spraying of Naphthalene Acetic Acid 10 ppm (10 mg in 1 litre of water).
 - Brown leaf spot incidence is being noticed in the *samba / thaladi* rice fields. To control this, spray Carbendazim 200 g/acre (or) Mancozeb 400g//acre in 200 litre of water.
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry**
 - Allow cattle, sheep and goats to graze after dew dries off to avoid fluke infection and deworm sheep and goats by using broad spectrum antihelmintics in the Cauvery Delta Zone of Tamil Nadu.

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



Rice transplanting

Mustard

Potato

Cabbage

- **Realised Weather:** Light rain/thundershowers occurred at isolated places over Arunachal Pradesh and Assam & Meghalaya. Weather remained dry over rest of the region. Minimum temperatures are above normal by 2-5°C at a few places over Assam & Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura.
- **Weather Forecast:** Rain/thundershowers would occur at isolated places over Arunachal Pradesh, Assam & Meghalaya during next 24 hours and dry weather would prevail thereafter. Dry weather would prevail over rest parts of the region during the period.
- **Weather Warning:** Dense fog would occur at isolated places over Assam & Meghalaya and Nagaland Manipur Mizoram & Tripura on 7th and 8th January.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Assam & Meghalaya, Arunachal Pradesh:**
 - In Assam, continue sowing and transplanting of *boro* rice.
 - In Arunachal Pradesh apply irrigation to cauliflower, cabbage, broccoli, knolkhol etc.
 - Continue transplanting of *boro* rice of about 45 days old (5- 6 leave stage) seedlings in Hill Zone, Lower Bramhaputra Valley Zone, North Bank Plain Zone and Barak Valley Zone of 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. Apply 1st irrigation in early sown wheat varieties at crown root initiation stage (20-25 days after sowing).
 - In Hill Zone of Assam, undertake picking of matured cotton balls in morning hours.
 - In Meghalaya, continue nursery raising of *boro* rice in low lying areas. Undertake 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 dense 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 aphids / 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 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.
 - **Nagaland, Manipur, Mizoram and Tripura:**
 - In Manipur, apply light irrigation in rapeseed / mustard, pea, lentil, potato.
 - In Mizoram, continue harvesting of rice. 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 @ 1.5g 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 Imidachlopid @ 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, North Bank Plain Zone of Assam.

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



Sugarcane



Wheat



Onion



Rice

- **Realised Weather:** Light rain/thundershowers occurred at isolated places over Sub-Himalayan West Bengal & Sikkim. Weather remained dry over rest of the region. Minimum temperatures are above normal by 2-5°C at a few places over West Bengal & Sikkim, Odisha and near normal over rest of the region.
- **Weather Forecast:** Rain/thundershowers would occur at isolated places over Andaman & Nicobar during next 48 hours and at a few places thereafter. Dry weather would prevail over rest parts of the region during the period. Fog would occur at a few places over Bihar and Sub-Himalayan West Bengal & Sikkim during next 3 days. Fall in minimum temperatures by 2-4°C over east India during next 2-3 days.
- **Weather Warning:** Dense fog would occur at a few places over Sub-Himalayan West Bengal & Sikkim and Bihar on 7th and 8th January and at isolated places on 6th January.
- **Weather Outlook:** Rain/thundershowers would occur at isolated places over Andaman & Nicobar Islands. Weather would be dry over rest of the region.
- **Advisories:**
 - **West Bengal:**
 - In New Alluvial Zone, to protect the rice seedlings from cold, cover the nursery bed with polythene or keep stagnant water in the nursery bed especially during the night-time. Keep 2 to 3 cm stagnant water. Continue land preparation for sowing of sunflower.
 - In Laterite and Red Soil Zone, continue transplanting of *boro* rice.
 - 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. Undertake main field preparation for transplanting of *boro* rice.
 - 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 New Alluvial Zone and Coastal Saline Zone, due to dense fog during morning hours, there is chance of late blight attack in potato. Spray Metalaxyl+Mancozeb or Thimoxyl+Mancozeb@2.5g/litre of water as preventive measure. There is also chance of blast and brown spot diseases in *boro* rice due to low temperature. Spray Tricyclazole@0.5g/litre of water. Spray Mancozeb @4g/litre of water against powdery mildew in mustard and cucurbits.
 - In Laterite and Red Soil Zone, Old Alluvial Zone and Terai Zone, due to low temperature and foggy weather, there is chance of attack of late blight in potato. To prevent attack spray Mancozeb (2 gm /litre of water) and Blitox (4 gm/litre of water) or Carbaryl 0.2 % (Sevin) 50 ml @1000 litre of water or Dimethomorph + Mancozeb @2g/litre of water or Cymoxanil(8%) + Mancozeb (64%) @ 2.5 gm /litre of water.
 - In Old Alluvial Zone, due to foggy condition aphid attack may be seen in mustard. Apply Imidacloprid @ 3 ml. /15 litre of water.
 - In New Alluvial Zone, due to prevailing weather condition, there is chance of attack of white streak disease in pea, lentil and Bengal gram. Apply Sulphex or Dinocap 2.5 gm per litre of water to control.

▪ **Andaman and Nicobar:**

- In North and Middle Andaman, continue nursery raising of vegetable crops.
- In North and Middle Andaman, in the prevailing weather, severe incidence of defoliating pests and borer pests are observed in pulse and fruit crops. Spray Malathion @ 2 ml/litre water.

▪ **Odisha:**

- 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, complete nursery sowing of rice, sowing of wheat and *rabi* pulses. Continue transplanting of onion.
- In North Eastern Plateau Zone, continue sowing of wheat, groundnut, gram, peas and onion. Continue transplanting of chilli.
- In North Eastern Coastal Plain Zone of Odisha, continue 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.

▪ **Bihar:**

- In North East Alluvial Zone of Bihar, continue nursery sowing of *boro* rice. As low temperature is prevailing, apply light irrigation at evening time in tomato, chilli and other vegetable crops.
- 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 at CRI stage. Undertake harvesting of matured sugarcane.
- In North West Alluvial Plain Zone of Bihar, apply light irrigation in wheat crop at (CRI) stage and maize. Undertake transplanting of *rabi* onion.
- In North West Alluvial Plain Zone of Bihar, low temperature and foggy weather is favourable for the attack of early and late blight in potato crops; spray Indofil M-45, for better result mix sticker 1ml/liter of water.

▪ **Jharkhand:**

- In Western Plateau Zone, undertake intercultural operations in pulses and oilseeds to conserve soil moisture and control weeds.
- In South Eastern Plateau Zone of Jharkhand, apply irrigation in wheat at CRI stage and potato.
- In Central & North Eastern Plateau Zone of Jharkhand. Prepare nursery bed for onion and land preparation for sowing of vegetables like long gourd, round gourd, bitter gourd, sponge gourd, cucumber, water melon and musk melon. Undertake nursery sowing of summer rice.
- 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 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 liter of water.
- Suitable varieties are given in Annexure I.

• **Animal Husbandry**

- In Hill Zone and Terai Zone of West Bengal, provide artificial heating through lighting of electric bulb to protect poultry birds (upto 25 days old) from low temperature. Cover poultry house with gunny bags/ polythene sheets to protect them from cold.
- 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.

CENTRAL INDIA [M.P., CHHATTISGARH]



Sugarcane



Wheat



Mustard



Onion

- **Realised Weather:** Weather remained dry over the region. Minimum temperatures are below normal by 2-6°C at many places over Madhya Pradesh and near normal over rest of the region.
- **Weather Forecast:** Dry weather would prevail over the region during the period. Fog would occur at a few places over Madhya Pradesh during next 3 days.

Fall in minimum temperatures by 1-2°C over central India during next 2-3 days.

- **Weather Warning:** Dense fog would occur at isolated places over Madhya Pradesh during the period. Cold wave conditions would occur at isolated places over south Madhya Pradesh during the period.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Madhya Pradesh:**
 - As cold wave conditions would occur at isolated places over south Madhya Pradesh during the period, apply light and frequent irrigation in standing crops and arrange smoking around the crop fields during nights to protect the crops from cold/frost injury.
 - 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.
 - 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 foggy and partly cloudy sky, potato crop may be affected by early blight in Bundelkhand Zone, spray Mancozeb @ 2.5 ml per litre of water.
 - Due to cloudy weather, there are chances of attack of caterpillars in gram in Madhya Pradesh. Spray Quinalphos @ 25 EC per 500-600 litre of water.
 - **Chhattisgarh:**
 - Apply irrigation to wheat (at CRI stage) and vegetables in Chhattisgarh Plain Zone and North Hill Zone of Chhattisgarh.
 - As dry weather is prevailing, apply irrigation in wheat (after 20-25 days of sowing), gram and potato.
 - Due to cloudy weather, there are chances of incidence of aphids in mustard, radish and beans in North Hill Zone and Plain Zone of Chhattisgarh, for control, apply Carbaryl @ 2 kg/ha.
 - Suitable varieties are given in Annexure I.
- **Animal Husbandry**
 - As cold wave conditions would occur at isolated places over south Madhya Pradesh during the period, 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

Onion

- **Realised Weather:** Dense/very dense fog has been observed at isolated places over Punjab, Haryana & Delhi, Jammu division, West Uttar Pradesh and northwest Rajasthan during morning hours. Light rain/snow has occurred at isolated places over Jammu & Kashmir. Weather remained dry over rest of the region. Minimum temperatures are below normal by 2-6°C at a few places over East Uttar Pradesh; at isolated places over Himachal Pradesh. They are above normal by 2-5°C at most places over Punjab; at many places over Jammu & Kashmir, Haryana & Delhi; at a few places over West Uttar Pradesh and West Rajasthan; at isolated places over Uttarakhand. **The lowest minimum temperature of 4.5°C has been recorded at Churu (Rajasthan) and at Najibabad (Uttar Pradesh)** in plains of the country.
- **Weather Forecast:** Rain/snow would occur at isolated places over Jammu & Kashmir during next 48 hours and dry weather would prevail thereafter. Dry weather would prevail over rest parts of the region during the period. Fog would occur at a few places over Punjab, Haryana & Delhi, Uttar Pradesh, north Rajasthan during next 3 days. Fall in minimum temperatures by 2-3°C over plains of northwest India during next 2-3 days.
- **Weather Warning:** Dense fog would occur at isolated places over Punjab, Haryana and north Rajasthan during the period; over Uttar Pradesh on 7th and 8th January and over Chandigarh on 6th January. Cold day conditions would occur at isolated places over Punjab on 6th January.
- **Weather Outlook:** A feeble western disturbance would affect western Himalayan region from 10th onwards. Weather would be dry over rest of the region.

• **Advisories:**

- In view of the prevailing low minimum temperatures and expected dense foggy weather conditions over Punjab, Haryana & Chandigarh, Uttar Pradesh and north Rajasthan, apply light and frequent irrigation in standing crops and arrange smoking around the crop fields during nights to protect the crops from cold/frost injury.
- **Jammu & Kashmir:**
- In Intermediate Zone and Sub-tropical Zone of Jammu & Kashmir, apply irrigation in *rabi* pulses (gram, lentil & field pea) at branching to flowering stage. Undertake land preparation and sowing of leafy vegetables in poly house.
- Continue transplanting of onion in Valley Temperate Zone of Jammu & Kashmir. Continue hand weeding /hoeing in saffron to reduce infestation by weeds. Open drainage channels to avoid water stagnation in saffron fields. In view of the frost conditions, mulching may be done in seed crops viz. Knol Khol, cabbage and root crops to protect the crops.
- In Sub-tropical Zone of Jammu & Kashmir, under low temperature and foggy weather conditions there are chance of attack of *alternaria* blight in mustard crops. Apply Mancozeb @ 2.5 g/litre of water. Control aphids population by installing yellow sticky trap @ 1/kanal.
- **Himachal Pradesh:**
- In Sub-Montane and Low Hills Sub-Humid Tropical Zone, continue intercultural operation in already sown wheat. Also undertake earthing up and top dressing of nitrogen @ 40-50 kg Urea per hectare in vegetables like cauliflower, cabbage, broccoli, knol-khol, palak, methi, peas and garlic. In low and mid-hill areas, undertake planting of onion at a spacing of 15-20 x 5-7 cm apart.
- 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 with available soil moisture.
- 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 15 days interval. 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. Downy mildew is also expected in cruciferous vegetables. For control, spray Redomil M-Z @ 25 g per litres of water 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 at 15 days interval.
- 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.
- Under prevailing low temperature condition, there are chances of attack of woolly apple aphid in apple orchards in Mid Hills Sub-Humid Zone. To control, apply Thiamethoxam (Ektara) 100 g or Carbosulfan (Marshal) 100 ml or Chlorpyrifos (Durmet) @ 200 ml in 100 litres of water.
- **Uttarakhand:**
- In Hill Zone and Sub Humid Sub Tropical Zone of Uttarakhand, apply irrigation in wheat at crown root initiation stage and then apply first dose of Urea equivalent to 30 kg Nitrogen/ha.
- Due to foggy weather conditions, there is chance of incidence of late blight disease on mustard crop in Hill zone of Uttarakhand. To control apply Malathiaon or Metasystox @ 2ml per litre of water, repeat after 12 – 15 days.
- **Punjab, Haryana and Delhi:**
- In Western Zone and Central Plain 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. Apply irrigation in already sown wheat at CRI stage. Undertake transplanting of onion, mature seedlings of tomato, cauliflower and cabbage. Due to foggy weather, white rust may be noticed in mustard.
- Due to foggy weather conditions, there is chance of incidence of late blight disease on potato in Western Zone of Punjab. To control, spray Indofil-M-45/Kavach/Antracol @ 500-700g/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:**

- Under prevailing dry weather condition, undertake top dressing of urea after application of first irrigation in *rabi* maize and second irrigation in wheat in North Eastern Plain Zone.
- Undertake intercultural operations like weeding and hoeing in gram, pea, rajma, masoor crops in Bundelkhand Zone. Undertake harvesting of matured leafy vegetables, cauliflower, cabbage, tomato, carrot, chilli, brinjal.
- Undertake nursery sowing of tomato and chilli in Central Plain Zone with available moisture. Undertake harvesting of matured toria in Central Plain Zone. For control of weeds in linseed, spray Sulfufuran 75WG @ 33g dissolved in 500-600 litre water 20-25 days after sowing.
- Under prevailing foggy weather condition, apply light and frequent irrigation in barley, mustard, pea, chickpea, lentil, linseed in Central Plain Zone.
- Continue sowing of sunflower in Western Plain Zone. Apply irrigation to early sown wheat after 21 days after sowing and in sugarcane at 20 days interval. Apply nitrogen @ 30 kg per hectare and a mixture of 0.5% Zinc Sulphate and 2% urea in wheat.
- Complete sowing of wheat and short duration varieties of linseed as early as possible in Eastern Plain Zone. 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 incidence of *Alternaria* blight in mustard in Northeastern Plain Zone. Spray Blitox @ 2.5 kg per hectare. For control of late blight in potato, spray Metatoxyl @ 2 kg per hectare.
- Under foggy weather condition, there are chances of occurrence of damping off disease in onion in Central Plain Zone of Uttar Pradesh. For control, spray Thiram @ 2.5 g or Carbendazim @ 1 g or Mencozeb @ 2.5 g per per litre per hectare.
- Under cold weather condition, there are chances of attack of saw fly in mustard in Eastern Plain Zone. For control. Spray Quinolphos 1.55 @ 20-25 kg per ha.

▪ **Rajasthan:**

- In Semi Arid Eastern Plain Zone of Rajasthan, to protect the standing crops from frost attack, apply dilute Sulphuric acid @ 0.1% (1 litre H₂SO₄ in 1000 litre water or 500 gm Thiourea in 1000 litre water) or light irrigation.
- Due to low temperatures, there are chances of aphid infestation in mustard crop. To control spray Malathion 50 EC @ 1200 ml/ha or Dimithoate 30 EC @1200 ml/ha along with water in Arid Western Plain Zone of Rajasthan.
- Due to low temperature, there are chances of aphid attack in mustard, barley, cauliflower and radish in Semi Arid Eastern Plain Zone of Rajasthan. To control spray of insecticide Dimethoate 30 EC or Methyl Demeton 25 EC @ 1.0 ml per litre water.
- Due to low temperature, there is a possibility of pod borer infestation in gram. To control, spray Monocrotophos 36 SL @1 litre per hectare diluted with water, in Sub Humid Southern Plain and Aravali Hill Zone of Rajasthan.
- Due to clear sky after fog, there are chances of white rust.in mustard in Flood Prone Eastern Plain Zone of Rajasthan. To control, spray Mancozeb or Ridomil MZ 72 WP @ 2.0 Kg in 800 litres water/ha.
- In Arid Western plain zone of Rajasthan, due to cold wave condition, there are chances of leaf blight in wheat crops. To control spray Mancozeb @ 2 g 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.
- Complete transplanting of winter season annuals in Valley Temperate Zone of Jammu & Kashmir.

• **Animal Husbandry:**

- Due to low night temperature, keep cattle in cowsheds to protect them from cold in Jammu & Kashmir, Himachal Pradesh and Central Plain Zone of Uttar Pradesh. Also give 40-50g mineral mixture with the daily feed. Also make arrangements in poultry houses for protection of birds from cold in Sub-Montane and Low Hills Sub-Humid Tropical Zone of Himachal Pradesh.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]



Banana

Sugarcane

Sorghum

Mango

- **Realised Weather:** Weather remained dry over the region. Minimum temperatures are below normal by 2-6°C at most places over Vidarbha; at many places over Saurashtra & Kutch. They are above normal by 2-5°C at a few places over Madhya Maharashtra and Konkan & Goa and near normal over rest of the region.
- **Weather Forecast:** Dry weather would prevail over the region during the period. Fall in minimum temperatures by 1-2°C over west India during next 2-3 days.
- **Weather Warning:** Nil.
- **Weather Outlook:** Weather would be dry over the region.
- **Advisories:**
 - **Maharashtra:**
 - 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 in already sown groundnut. Continue transplanting of *rabi* rice and finger millet. Maintain water level 2-3 cm in already transplanted rice and finger millet fields.
 - In Madhya Maharashtra, as minimum temperature prevails around 10°C in Jalgaon and Nasik district and may fall by 1-2°C, protect grapes in North Madhya Maharashtra from cold injury by applying drip irrigation for half an hour during morning 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 the trunk with dried leaves. Make arrangement for artificial wind breaks using gunny bags or any other cloth around orchards. No significant rain occurred and dry weather is likely to prevail. Apply light irrigation to vegetables, sugarcane, safflower, *rabi* jowar, gram and pomegranate orchards. Undertake field preparation for planting of *suru* sugarcane. Continue intercultural operations like weeding and apply fertilizers in sugarcane, vegetables and late sown wheat. Continue harvesting already matured red gram.
 - In Marathwada, as light rain occurred at a few places and dry weather is likely to prevail, apply micro irrigation and fertilizers in sugarcane, gram (pod development stage), wheat (tillering stage), jowar (grain development) and vegetables. Minimum temperature may fall upto 10°C. It may affect fruit growth of banana. Cover new banana bunch with skating bag. Make arrangement for artificial wind breaks around orchards. Undertake field preparation for planting of *suru* sugarcane. Continue harvesting already matured red gram.
 - In Vidarbha, as most of the districts received significant rainfall, Postpone irrigation to wheat, gram, vegetables and orchards. Orange and sweet lime growers are advised to apply mulch to protect the plants from cold. Also clean the orchards to avoid further spread of pest and disease due to untimely rain. Continue harvest already matured red gram.
 - Due to partly cloudy weather conditions in Marathwada during last week, there may be attack of pod borer on gram; spray 20 % Quinalphos @ 20 ml per 10 litres of water.
 - **Gujarat:**
 - As low temperature conditions are likely to prevail in North Gujarat Zone, apply light irrigation during evening hours in wheat, cumin, potato, fennel and fruit crops mango, citrus, pomegranate and sapota to protect the crop from cold injury. Apply irrigation in cotton and carry out weeding in garlic in North Saurashtra Zone.
 - As low temperature conditions are likely to prevail in South Gujarat Heavy Rainfall Zone, apply light irrigation in vegetables during evening hours to minimize adverse effect of cold. Continue sowing of watermelon.
 - Under prevailing dry weather and low temperatures, apply light irrigation in cotton and mustard in North West Zone.
 - Due to partly cloudy weather condition there is a chance of *Heliothis* infestation in gram in South Gujarat Heavy Rainfall Zone; spray Quinalphos 25 EC 20 ml or D.D.V.P 85 EC 5 ml in 10 litre of water for control of *Heliothis*.
 - Due to cold and humid weather condition there are chances of outbreak of blight disease in potato, cumin, tomato and fennel in North Gujarat Zone; spray Mancozeb 0.2% @ 30 gram plus 25 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 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 low temperatures.

Annexure I

List of varieties

Karnataka

Sunflower: Mordern, K.B.S.H-1, 41,42 and 44

Maize: Ganga-11, Deccan -103, N.A.C-6002 & 6004, Nityashree

Groundnut: ICGS-11, K-134, Chintamani-2 (KCH-2)

Ragi: Indaf-5, GPU-26 and 48

Tamil Nadu

Pulses: ADT 3 black gram and ADT 3 green gram

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:

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

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

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