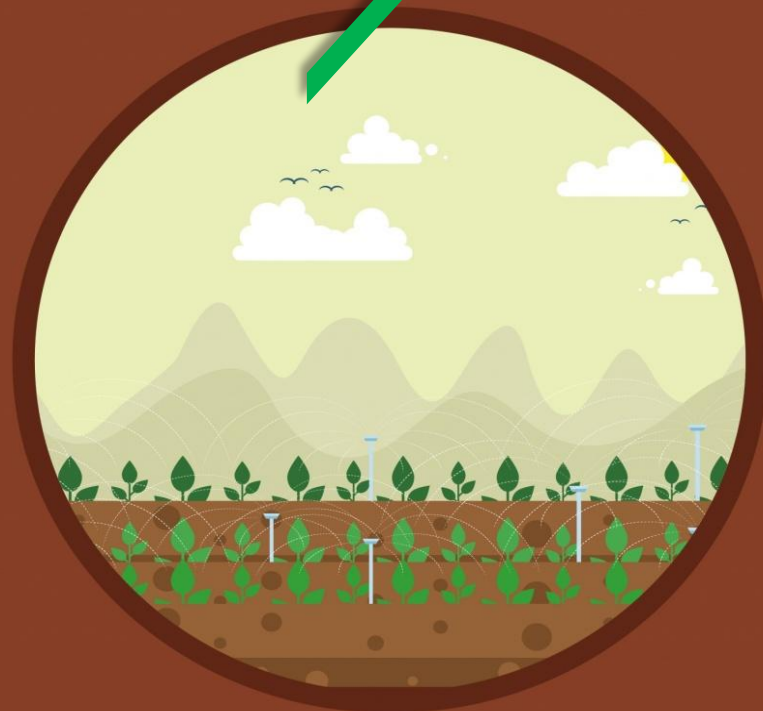




# Stress Management Agro-Advisory for the State of Maharashtra

Jul 03-16, 2026



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# Managing Abiotic and Biotic Stresses in Agriculture Agro-Advisory for the State of Maharashtra (Jul 03-16, 2026)

Advisory No.: NIASM/MH/26-09

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## 1. Weather Forecast (India Meteorological Department, New Delhi)

### 1.1. Rainfall

- Daily rainfall is expected to exceed 40 mm in the Konkan region and western parts of Madhya Maharashtra. The rest of Madhya Maharashtra and Marathwada may receive 5–10 mm/day, while Vidarbha is likely to receive 20–40 mm/day in first week and 10–20 mm/day in second week, remaining 3-10 mm /day above normal in most parts of the state.

### 1.2. Temperature

- The maximum temperature is likely to range between 26–28°C, remaining 2–3°C below normal in most parts of the state.
- The minimum temperature is expected to range between 22–24°C, remaining near normal in most parts of the state.

## 2. Managing Abiotic Stresses

### 2.1. Atmospheric Stresses

#### 2.1.1. Crops

- **Grape:** Due to increased relative humidity the shoot vigor will be more therefore keep removing unwanted extra growth to avoid loss of nutrients and further delay the cane maturity. Remove side shoots below sub-cane and harness the shoot growth at 12-15 leaves by tipping to facilitate fruit bud development.
- **Spraying Operation:** Do not spray in windy conditions and on wet foliage immediately after rains. Use sticker adjuvant along with spray solutions.
- **New Plantations:** In case of newly planted orchards, support the plants by tying them straight using bamboo sticks to avoid damage due to hot sun and heavy winds. To avoid sunburn to saplings, protect them from bright sun with the help of temporary shade.

### 2.2. Water Stresses

#### 2.2.1. Crops

- **Grape:** During fruit bud development and cane maturity stage, provide irrigation water @ 1400-1500 L per ha per mm of evaporation.
- **Orchards:** In case rain exceeds 5 mm on a given day, irrigation water application can be skipped for that day. Prepare the drains to move out excess water from orchards and avoid water logging at root zone.
- **Vegetable crops:** Use of mulching and drip irrigation system for new transplantation in vegetable crops for efficient use of water and to avoid weed growth.
- Light irrigation is to be applied in vegetable crops as and when required.
- **Brinjal:** Use of grafted eggplant seedlings for transplanting. Foliar application of salicylic acid (0.3-0.5g/L) at monthly interval after transplanting will help to overcome the effect of water stress.

### 2.2.2. Livestock

- Mixed silage of sugarcane tops up to 50% level may be prepared with jowar or maize fodder in case excess green fodder is available. The silage thus prepared may be useful for feeding livestock during the upcoming summer/ scarcity period.
- Store feed and fodder in dry, well-ventilated areas to prevent mould growth and spoilage.

### 2.2.3. Fisheries

- Construction of new ponds, strengthening of embankments, and maintenance of side slopes may be completed during this period. The pond should have an optimum depth of 1.5–2.0 m with a water-holding depth of about 1.2 m throughout the year.
- Apply cow dung @ 0.75–1.0 t/ha after lime application, preferably in the corners of the pond.
- Cow dung, urea, and single super phosphate (SSP) should be applied only after the pond is filled with water.
- Measure the turbidity of pond water using a Secchi disc and maintain water transparency between 30–45 cm.
- Apply powdered lime at the pond bottom @ 120–130 kg/ha. Water should be filled into the pond after 10 days of lime application.
- Use an aerator during rainfall to maintain adequate dissolved oxygen (DO) levels and stabilize the water quality.
- It is recommended to maintain sufficient freeboard in the pond to accommodate excess rainwater during the pre-monsoon period.
- Proper maintenance and strengthening of pond dykes are recommended in low-lying areas where a large volume of runoff from adjoining catchment areas may enter the pond.
- To prevent erosion of pond dykes due to heavy rainfall, grow grasses and other vegetation on the slopes as well as the top crest of the dykes to reduce soil erosion and excess turbidity.
- Regularly monitor important water quality parameters such as dissolved oxygen (6.0–7.0 ppm), pH (7.0–8.5), ammonia ( $\leq 0.05$  ppm), nitrate (50–150 ppm), nitrite ( $\leq 0.1$  ppm), carbon dioxide (CO<sub>2</sub>) (<10 ppm), and hydrogen sulfide (H<sub>2</sub>S) (<0.002 ppm) in the fish pond.
- To prevent fungal, bacterial, and parasitic diseases, fish farmers are advised to apply potassium permanganate @ 1–2 kg/acre or agricultural limestone @ 50–75 kg/acre. Application of salt @ 100 kg/acre may also help protect fish against disease outbreaks, especially during winter.
- The growth of fish should be monitored regularly for proper stock management and early detection of diseases.
- Unutilized feed in the feeding trays should be checked and removed regularly to prevent deterioration of water quality and ammonia toxicity.

### 2.3. Soil Stresses

- **Sweet Orange:** If not applied earlier, for Ambia bahar crop, muriate of potash 180 g/tree should be applied uniformly around the grown up tree. The applied fertilizer should be thoroughly mixed in the soil.
- **Grape:** Potassium application is required from cane maturity stage onwards. If not applied earlier, total about 64 kg/ha of Sulphate of potash (water-soluble grade) should be applied in 5-6 split doses.
- **All orchards:** Avoid use of heavy machinery movement on wet soil near the plants to avoid soil compaction and suffocation of roots. In case of monsoon rains, remove mulch

cover on the bund/ basins and allow the rain water to seep into the soil. This will leach the accumulated salts in the root zone. The mulch so removed can be mixed with the soil to improve the soil porosity.

### 3. Managing Biotic Stresses

#### 3.1. Crops

- **Grape:** Spray Bordeaux mixture 1% or copper oxy chloride @ 2.5 g/L for controlling downy mildew and anthracnose infection. Spray Buprofezin 25 SC @ 1.25 ml/L to manage mealybugs. Remove loose bark from stem and cordons and give preventive wash on stem and cordons with Metarhizium @ 3-5 ml/L to control stem borer incidence.
- **Guava:** For flea beetle management after pruning, spray Imidacloprid 17.8 SL @ 0.4 ml/L or Lambda-cyhalothrin 4.9 CS @ 0.5 ml/L during early morning hours.
- **Sweet orange:** Prune all canker affected branches and leaves in acid lime and dispose by burning them. Spray Kasugamycin 3% SL @ 2 ml + COC 50WP @ 3g/ L water to check citrus canker in acid lime. Repeat the spray after 30 days interval. For control of Citrus psylla and Leaf miner pests spray Imidacloprid 17.8 SL @ 0.5 ml/L.
- **Brinjal:** To manage fruit and shoot borer, use water trap/Leuci lure pheromone traps @ 12/ ha to monitor, attract and kill male moths and change the vial once in three weeks. Also spray Chlorantraniliprole 18.5 SC @ 0.3 ml/L once in 15 days depending upon the population of the pest.
- **Solanaceous and Cucurbitaceous vegetables:** Fluctuation in daily mean temperature may increase the infestation of mites and to manage them, spray Spiromesifen 22.9 SC @ 0.5 ml/L or Abamectin @ 0.5 ml/L.
- **Apple Ber:** Spray Deltamethrin 2.8 EC @ 0.5 ml/L to manage fruit fly infestation at early stage.
- **Biological Control Measures:** Use biological control agents like *Trichoderma viridae/harzianum*, *Pseudomonas fluorescense*, *Beauveria bassiana* and *Metarhizium anisopliae* through soil drenching and foliar spray, for integrated management of pests and diseases in orchards.
- **All vegetable crops:**
  - To avoid incidence of disease and pest in solanaceous vegetable crops, maintain optimum /recommended plant spacing.
  - Procure healthy and disease-free seedlings from certified nursery only.
  - Spray liquid formulation of *Trichoderma* sp. @ 5ml/litre as a preventive measure for effective management of diseases
  - To manage soil-borne pathogens, apply *Trichoderma* sp. + *Pseudomonas* sp. @ 1litre/acre through drip irrigation system.
  - Follow integrated pest and diseases management practices such as disease-free seedlings from certified nursery, drenching with copper oxychloride @ 2.5 g/L of water to avoid post-transplanting damping-off in addition to use of systemic insecticides like Imidacloprid @ 0.5 ml/L to manage sucking pests.

#### 3.2. Livestock

- There is a very high risk (VHR) of Haemorrhagic Septicaemia (HS) in the Kolhapur district and VHR of Black quarter (BQ) in Latur district. There is a very high risk (VHR) of Enterotoxaemia in Sangli district.

- Affected animals may be isolated and treated with suitable antibiotics and vaccination is to be done in consultation with the local veterinarians.
- There is a very high risk of Peste des Petits Ruminants (PPR) in Ahmadnagar, and Mumbai districts. There is a VHR of Foot and Mouth Disease (FMD) in Ahmadnagar, Pune, Sangli, Satara and Sindhudurg districts. There is a VHR of Lumpy Skin Disease (LSD) in Ahmadnagar, Akola, Bid, Buldhana, Dhule, Hingoli, Jalgaon, Kolhapur, Latur, Nagpur, Nanded, Nandurbar, Nashik, Osmanabad, Palghar, Pune, Sangli, Satara, Sindhudurg, Solapur, Wardha, and Washim districts. There is a very high risk (VHR) of Sheep & Goat pox in Ahmadnagar district.
- Vaccination for FMD, PPR, LSD, ASF CSF and Sheep and Goat Pox in the concerned districts may be done in consultation with the local veterinarians.
- There is a very high risk of Babesiosis in Mumbai and Mumbai Suburban districts
- Ensure 100% vaccination with timely boosters for PPR, HS and S & G pox alongside routine testing in VHR districts to enable early disease detection.
- Enforce strict biosecurity protocols, including controlled farm access, equipment disinfection, and quarantine for newly introduced animals.
- Control vector populations through integrated management practices, including tick control, fly-proof shelters, and molluscicide use in snail-infested areas.
- Monitor animals for any sickness particularly related to digestive, dermal, or respiratory problems, and treat them by consulting a veterinarian.
- Regular deworming should be carried out by consulting local Veterinarians.
- For treatment of ectoparasitic infestation, dipping (if not done during the last three months) needs to be carried out with Ectomin/Butox, post-shearing on sunny days.
- Anti-parasitic drugs should be used under the guidance of a veterinarian.
- Spot the sick animals and isolate them in a separate shed for treatment.

#### 4. General

- **Sweet orange:** Remove water shoots from the plant and all shoots below the bud union of the graft joint.
- **Dragon fruit:** Manual pollination is highly recommended to improve fruit set, quality and size when flowering coincides with drizzling overnight rains.
- **Date palm:** Cover the fruit bunches with cloth bag to protect from insect and bird damage.
- **Grape:** Carry out frequent de-suckering in grafted vines to avoid nutrient losses.
- **Foliar spraying:** Use good quality water for spraying of agrochemicals preferably neutral or slightly acidic. If water is alkaline (pH~8), use Citric acid @ 0.5 g/L, to increase spray efficacy.

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