



# Stress Management Agro-Advisory for the State of Maharashtra

April 10-23, 2026



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# Managing Abiotic and Biotic Stresses in Agriculture

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

#### 1.1. Rainfall

- No rainfall is expected across the state during the next two weeks.

#### 1.2. Temperature

- The maximum temperature is likely to range between 39 - 43°C; it will remain near normal in the first week and may rise up to 3°C above normal in the second week in most parts of the state.
- The minimum temperature is expected to range between 22 - 26°C; it will remain near normal in the first week and may be up to 2°C above normal in the second week in most parts of the state

### 2. Managing Abiotic Stresses

#### 2.1. Atmospheric Stresses

##### 2.1.1. Crops

- **Grape:** Complete foundation pruning during this period, cover the cordons of the pruned vines with a shade net, for uniform sprouting by reducing the high-temperature impact on the buds.
- **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.

##### 2.1.2. Livestock

- The animals should be kept under shed during hot hours.
- The sheds should be covered with thatch material to protect the animals from heat stress.
- The roof should be painted with white paint.
- Grazing of animals should be done during 6-10 am and in evening from 5-6 pm so that direct exposure to sunlight may be avoided in peak hours.
- Proper ventilation in animal shed
- Animals should be fed in cool hours
- Animals should be fed with good quality green fodder
- Wet gunny bags should be tied in the animal shed to protect from hot winds
- Avoid overcrowding in animal shed.
- Control of external endoparasites should be carried out.
- Install fan/foggers, wherever possible to reduce the heat stress.
- Provide natural/artificial shade to animals.

## 2.2. Water Stresses

### 2.2.1. Crops

- **Orchards:** Irrigation should preferably be done in the evening to reduce evaporation losses. Use plastic or biomass mulch for conserving soil moisture. Sub-surface irrigation technique will also help in minimizing moisture loss due to evaporation.
- **Grape:** After foundation pruning, during the shoot growth stage, apply 30,000 – 37,500 L per ha per day of irrigation water. If the vigour is more than desired, then reduce irrigation water application by 50% or stop irrigation till such time growth is controlled.
- **Sweet orange:** Provide regular irrigation @90-100 L per day per plant for ongoing *hasta bahar*.
- **Mango:** Maintain good soil moisture status through drip irrigation by providing 25-30 L water per day per plant to avoid early fruit drop as well as better fruit growth in case of High Density Plantation.
- **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

#### Preparation of the pond for stocking of the fish

- Construction of new pond, strengthening of embankment and side slopes may be completed during this period with optimum depth of 2.0-3.0 m with 1.5 m water holding capacity throughout the year.
- Apply cow dung @ 0.75-1.0 ton/ha after lime application in corner of the pond
- cow dung, urea and SSP application applied only after pond filled with water
- Measure turbidity of the pond water with the Secchi disc for maintenance of pond water transparency (30-45 cm)
- Apply powdered lime in pond bottom @ 120-130 kg/ha and after 10 days of lime application water may be filled in the fish pond
- Monitor water quality parameters viz. dissolved oxygen (6.0-7.0 ppm), pH (7.0-8.5), ammonia (0.05 ppm), nitrate (50-150 ppm), nitrite (0.1 ppm), CO<sub>2</sub> (less than 10 ppm), and H<sub>2</sub>S (0.002 ppm) in fish pond carefully.

#### Recommendation for stocked fish

- Fish farmers are advised to use high protein diets (30-35 %) during this month.
- Fish farmers must use farm made pellet feeds to reduce feed wastage and achieve better feed conversion efficiency.

- To avoid the fungal, bacterial and parasitic diseases, fish farmers may advise to use potassium permanganate @ 1-2 kg/acre or limestone @ 50-75 kg/acre. Salt application @ 100 kg/acre also helps in protecting fish against disease outbreak during winters
- Time to time the growth of the fish may be checked for better maintenance of fish stock and diseases protection
- The unutilized feed in the feeding tray may be checked frequently to avoid ammonia toxicity
- Farmers are advised to aerate their ponds either by adding fresh water or by using aerators to maintain oxygen level in fish pond.

### 2.3. Soil Stresses

- **Grape:** During rest period of 15 to 20 days after harvesting to back pruning, 10% dose of recommended fertilizers i.e. 26 Kg N, 18 Kg P<sub>2</sub>O<sub>5</sub> and 26 Kg K<sub>2</sub>O per acre to be applied through fertigation. If soils are calcareous, mix the Sulphur 125 kg/ha in the soil in between the vines during the rest period before foundation pruning.
- **Sweet Orange:** Apply 3.5 Kg N, 5.0 Kg P<sub>2</sub>O<sub>5</sub> and 5.0 Kg K<sub>2</sub>O i.e. Urea 7.5 Kg, Phosphoric acid 6 Kg and MOP 8.30 Kg per hectare at weekly interval through fertigation.
- **All orchards:** Pulverize the soil in tree basins to break compaction of top soil to improve soil aeration and weed management.

## 3. Managing Biotic Stresses

### 3.1. Crops

- **Mango:** To manage fruit fly infestation, prior to harvest (30-40 days) collect and dispose of infested and fallen fruits to prevent further, multiplication and carryover of population. Three weeks before harvesting, spray Deltamethrin 2.8 EC @ 0.5 ml/L + Azadirachtin (3000 ppm) @ 2 ml/L. To manage various pests, follow IPM practices like waxy polythene band on tree trunk at 30 cm height to manage mealy bug infestation in future and pheromone traps for fruit fly and light traps for fruit borer.
- **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:** To control the incidence of bark-eating caterpillars, remove the wooden frass (larval excrement) and then inject 5-10 ml of the formulation prepared by mixing 3-4 ml of Dichlorvos 76 EC in one-liter water with the help of a disposable syringe and cover the larval tunnel with cotton wool. To combat the incidence of mites, spray Dicofol 1.8 EC @ 2 ml/L.
- **Acid lime:** If citrus trees are showing oozing symptoms of gum then scrap the area with a sharp knife and apply Mefenoxam MZ-68 or Fosetyl Al paste on it. Apply Bordeaux paste on the tree trunk up to height of 60 cm by paint brush.
- **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.

- **Dragon fruit:** Pruning of diseased cladodes followed by fungicide spray Mancozeb + Carbendazim @2.5g/L or Bordeaux mixture @10g/L after harvesting fruits.
- **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 Ahmadnagar, Dhule, Hingoli, Nashik, Pune and Solapur districts and VHR of Anthrax in Pune and Yavatmal districts. VHR of Black quarter (BQ) in Ahmadnagar, Bid and Latur districts and Enterotoxaemia in Kolhapur, Latur, Mumbai, Mumbai Suburban and Satara districts.
- 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, Akola, Amravati, Bid, Buldana, Dhule, Jalgaon, Jalna, Kolhapur, Mumbai Suburban, Nanded, Nandurbar, Nashik, Osmanabad, Pune and Satara districts, and Sheep and Goat pox in Ahmadnagar, Buldana, Dhule, Jalgaon, Latur, Mumbai Suburban, Nashik, Palghar, Pune, Ratnagiri, Sangli, Satara and Thane districts.
- There is a very high risk of Foot and Mouth Disease (FMD) in Ahmadnagar, Kolhapur, Nashik, Pune, Solapur and Wardha districts.
- There is a very high risk of Lumpy Skin Disease (LSD) in Bid, Buldana, Hingoli, Kolhapur, Latur, Nanded, Nandurbar, Osmanabad, Parbhani, Sangli, Satara, Solapur and Washim.
- There is a very high risk of Classical Swine Fever (CSF) in Ahmadnagar, Jalgaon, Nagpur, Nashik and Pune districts and African Swine Fever (ASF) in Ahmadnagar, Amravati, Nashik, and Sangli districts
- 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.
- VHR of Fascioliasis in Latur, Mumbai, Mumbai Suburban and Satara districts.
- There is a very high risk of Theileriosis in Ahmadnagar, Amravati, Bid, Nashik, Sangli and Solapur districts. and Trypanosomiasis in Ahmadnagar, Amravati, Nashik, and Sangli 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

- **Grape:** Complete foundation pruning after desired rest period. Remove and destroy all the pruned biomass to reduce disease and pest load.
- **Sweet orange:** The dead wood on the trees should be pruned about 2cm below the dead portion followed by spraying with Carbendazim @ 1.0 g/L.

#### Disclaimer

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