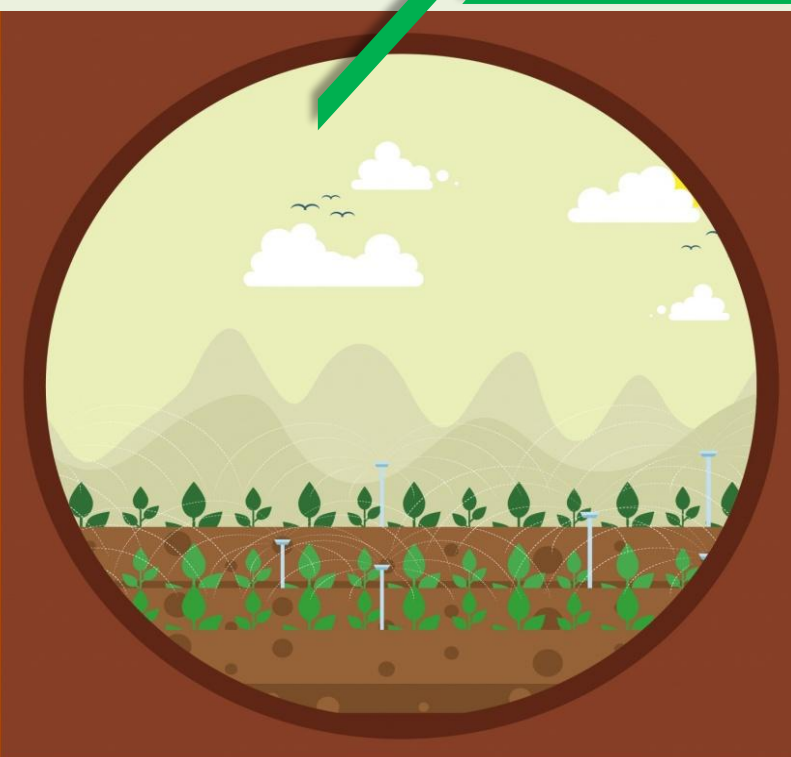


Stress Management Agro-Advisory for the State of Maharashtra

June 20-July 03, 2025



Compiled & Edited by :

RN Singh, Scientist (Agricultural Meteorology)

Advisory Committee:

KK Pal, NP Kurade, S Kochewad, V Salunkhe, Neeraj Kumar, Rajkumar, Aliza Pradhan, PS Khapte, Vijay Kakade, Pravin Taware & Sunil Potekar

Technical Support :

Pravin More, Tech. Officer (Computer)

**ICAR-National Institute of Abiotic Stress Management
Baramati, Pune, Maharashtra**

Managing Abiotic and Biotic Stresses in Agriculture

Agro-Advisory for the State of Maharashtra

(June 20-July 03, 2025)

Advisory No.: NIASM/MH/25-11

Date: June 20, 2025

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

1.1. Rainfall

- During 19–26 June, rainfall is expected to be in the range between 10–20 mm/day across most parts of the state, except in the Konkan region, where it may exceed 40 mm/day, remaining above normal in most areas. In the following week, rainfall is likely to decrease to 5–10 mm/day in most parts, while in the Konkan region it may range between 20–40 mm/day, remaining below normal across much of the state.

1.2. Temperature

- The maximum temperature is expected to be in the range between 26-30°C, remaining 1-3°C below normal in most parts of the state.
- The minimum temperature is expected to be in the range between 22-26°C, remaining 1-2°C below 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.
- **Spraying Operation:** Do not spray in windy conditions and on wet foliage immediately after rains. Use sticker adjuvant along with spray solutions.

2.1.2. Livestock

- Avoid overcrowding of animals in livestock shed
- To protect the animals from hailstorms, the animals should not be left tied up or restrained outside during a storm.
- Repair the roofs of shed and ensure that animal sheds are leak-proof and well-ventilated.
- Establish proper drainage systems to prevent waterlogging and moisture buildup.
- Control of ecto-parasites and endo-parasites should be carried out
- The floor of the animal shed should be kept clean and dry
- Maintain the surrounding of animal shed clean and hygienic and remove the unwanted vegetation nearby the sheds.

2.2. Water Stresses

2.2.1. Crops

- **All orchards:** In case rain exceeds 5 mm on a given day, application of irrigation water may be skipped for that day. Arrange for proper drainage 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

- Silage can be prepared if excess green fodder is available for future use during scarcity periods.
- 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 sufficient dry fodder to meet the needs during the rainy season, as green fodder has high moisture content during this time.
- 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

1. 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 height to maintain water throughout the year at maximum possible capacity
2. Apply cow dung @ 0.75-1.0 ton/ha after application of lime at the corner of the pond
3. Measure turbidity of the pond water with the Secchi disc for maintenance of pond water transparency (30-45 cm)
4. Application of powdered lime at pond bottom @ 120-130 kg/ha and after 10 days of lime application water may be filled in the fish pond
5. Monitor the 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), CO₂ (less than 10 ppm), and H₂S (0.002 ppm) in fish pond carefully.

Recommendation for stocked fish

1. Fish farmers are advised to use high protein diets (30-35 %) during this month.
2. Fish farmers must use farm made pellet feeds to reduce feed wastage and achieve better feed conversion efficiency.
3. To avoid the fungal, bacterial and parasitic diseases, fish farmers may 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
4. Time to time the growth of the fish may be checked for better maintenance of fish stock and diseases protection
5. The unutilized feed in the feeding tray may be checked frequently to avoid ammonia toxicity
6. The 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:** Potassium application is required from cane maturity stage onwards. A total of about 64 kg/ha of Sulphate of potash (water-soluble grade) should be applied in 5-6 split doses.
- **Sweet orange:** 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.
- **All orchards:** Avoid use of heavy machinery movement on wet soil near the plants to avoid soil compaction. In case of monsoon rains, remove mulch cover on the bund/ basins and allow the rainwater 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.
- **Pomegranate:** After harvesting of *Haste bahar* crop, undertake pruning operation to remove the bearing branches, and apply 20 kg FYM along with Neem-cake @ 2 kg per plant.

3. Managing Biotic Stresses

3.1. Crops

- **Grape:** Spray Bordeaux mixture 1% or copper oxychloride @ 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.
- **Sweet orange:** Prune all canker affected branches and leaves in acid lime and dispose by burning them. Spray Copper oxychloride 180 g with Streptocycline 6 g in 60 litre of water to check citrus canker in acid lime. Repeat the spray at 30 days interval. For control of Citrus psylla and Leaf miner, spray Imidacloprid 17.8 SL @ 0.5 ml/L.
- **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.
- **Grape:** If cloudy weather persists, spray Mancozeb 2.5 g/L and wettable Sulphur 2 g/L, to avoid primary infection of fungal diseases. Second spray of copper oxychloride @ 2.5 g/L to be given after 10 days' interval. Spray Thiamethoxam 25 WG @ 0.3 g/L for managing hopper infestation.
- **Citrus:** For management of thrips during active vegetative growth, spray Spinosad 45 SC @ 0.25 ml/L or Spinetoram 11.7 SC @ 0.3 ml/L water when thrips population is 5 per shoot or above. Use yellow and blue sticky traps in orchard @ 20 per ha. If 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.
- **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.
- **Pomegranate:** To manage thrips, install yellow/ blue sticky traps @ 75 per hectare randomly at 15 cm below from the canopy top of the plant. To control fruit borer infestation, remove all the damaged fruits with holes and dispose them by burying in pit and take a spray with any one of the insecticide Cyantraniliprole 10.26% OD @ 0.75 ml/L or Chlorantraniliprole 18.5% SC @ 0.75 ml/L or Flonicamid 50% WG @ 0.75-1.0 ml/L water.
- **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, Akola, Amravati, and Nashik districts. There is a very high risk of Black Quarter (BQ), and of Enterotoxaemia (ET) in Ahmadnagar 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), Classical Swine Fever (CSW) and Sheep and Goat Pox in the Ahmadnagar, and Pune districts.
- There is a very high risk of Foot and Mouth Disease (FMD) in Ahmadnagar, Mumbai, Mumbai suburban and Nandurbar districts.
- There is a very high risk of African Swine Fever in the Amravati, and Nashik districts
- There is a very high risk of Lumpy Skin Disease (LSD) in Amravati, Mumbai, Mumbai suburban and Nandurbar districts.
- Vaccination for FMD, PPR, LSD 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 the Mumbai, Mumbai suburban and Nandurbar districts.
- There is a very high risk of Fasciolosis in the Ahmadnagar district. There is a very high risk of Theileriosis in Amravati, Mumbai, Mumbai suburban Nandurbar and Nashik districts. There is a very high risk of Trypanosomiasis in Amravati, and Nashik 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. Additionally, adopt effective snail control measures, and biosecurity practices.
- 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

- **Dragon fruit:** Manual pollination is highly recommended to improve fruit set, quality and size when flowering coincides with continuous overnight rains.
- **Sweet orange:** Remove water shoots from the plant and all shoots below the bud union of the graft joint.
- **Citrus:** Looking into deficiency symptoms at the time of growth in new flush, spray solution containing Sulphates of Zinc (0.5%), Manganese (0.05%), Iron (0.25%), Magnesium (0.5%), Boron (0.1%) and Molybdenum (0.003%). In addition to that, apply 25 g each of Sulphate of Zinc, Manganese and Iron per tree.
- **Foliar spray solution:** 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. Use sticker and spreader adjuvants during rainy days.

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