



Stress Management Agro-Advisory for the State of Maharashtra

November 10-23, 2023



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Managing Abiotic and Biotic Stresses in Agriculture

Agro-Advisory for the State of Maharashtra

(November 10-23, 2023)

ICAR-National Institute of Abiotic Stress Management
Baramati, Pune, Maharashtra 413115

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

1.1. Rainfall

- The forecast indicates that most parts of the state should not expect any rainfall over the next two weeks

1.2. Temperature

- The maximum temperature may vary between 26-30 °C remaining up to 1-2°C below normal in most parts of the state.
- The minimum temperature may vary between 16-20°C remaining up to 1-2°C above normal in first week, and near normal in the second week for most parts of the state.

2. Managing Abiotic Stresses

2.1. Atmospheric Stresses

2.1.1. Crops

- **Grape:** In case of protracted delay in forward pruning, use higher concentrations of hydrogen cyanamide @ 2.0 - 2.5 % to enhance bud sprouting even in low temperature.

2.1.2. Livestock

- The floor of the animal shed should be kept dry and clean to avoid udder related diseases in animals.

2.2. Water Stresses

2.2.1. Crops

- **Grape:** Irrigation water requirement after forward pruning i.e. during shoot growth stage is about 20,000-25,000 L/ha/day. In case, growth of shoot is more than the desired, reduce the irrigation to half the quantity or withhold for a day or two.
- **Vegetables:** Light irrigation is to be given through drip irrigation while ensuring mulching to reduce direct evaporation of soil moisture and management of weeds/pests/diseases.
- Sowing of wheat, chickpea, and pre-seasonal sugarcane must be done by 1st fortnight of November.
- Farmers should ensure providing irrigation in *adsali* sugarcane crop.

2.2.2. Livestock

- Provide clean and potable drinking water to animals round the clock.

- Provide mineral mixture @ 30-40 g/day/cattle for improving milk production and reproductive efficiency.

2.2.3. Fisheries

- Avoid application of organic manures such as cow dung, poultry droppings, pig dung, etc. in the pond, during this month.
- Cover the pond by net to protect against predatory birds.
- Feed may be provided to fingerlings @ 4-5 % of the body weight thrice a day (morning, noon and evening) for better growth of fingerlings fish.
- For maintenance of growth of fingerlings, ensure 30-35% proteins in the fish feed
- The growth of the fingerlings may be checked regularly for better maintenance of fish stock and protection from diseases
- Suspend manuring and feeding till back to normal, if the water of the pond turns coloured
- Lime at 50-100 kg/acre and potassium permanganate @ 2-3 kg/acre may be applied to avoid the algal bloom in pond during the winter.
- To minimize the incidence of fungal, bacterial and parasitic diseases, apply potassium permanganate @ 2.5-5.0 kg/ha or limestone @ 125-200 kg/ha and salt @ 250 kg/ ha
- Monitor and maintain the water quality parameters viz. dissolved oxygen (6.0-7.5 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. For this aerate the ponds either by adding fresh water or by using aerators to maintain oxygen level in fish pond.

• 2.3. Soil Stresses

- Utilize existing soil moisture for sowing of *rabi* crops
- Apply well-decomposed FYM or compost to the soil before preparatory tillage.
- Increase crop diversification by growing legumes such as chickpea, rajma and cowpea to reduce doses of nitrogen in subsequent crops and also for improving soil health.

3. Managing Biotic Stresses

3.1. Crops

- **Grape:** During early shoot growth at 3-leaf and 5-leaf stage, sprays for control of downy mildew are mandatory. The sprays of Dimethomorph @ 1g/L + Mancozeb 75WP @ 2g/L (tank- mix) or Iprovalicarb + Propineb @ 2.25 g/L are recommended.
- **Guava:** Use pheromone trap bottles containing 100ml solution of 0.1% Methyl eugenol and 0.1 Malathion for integrated management of fruit fly pest. Tie the trap bottles at 1.5 to 2 meter height in orchard @ 8 Nos/ ha.
- **Maize:** Set up pheromone traps @ 20 traps/ha for mass trapping of fall armyworm. Spray the crop with Azadirachtin at weekly interval @ 3 ml/L of water.
- **All vegetable crops:**
 - It is necessary to follow integrated pest and diseases management practices such as use of disease-free seedlings from certified nurseries, field sanitation, sticky traps for sucking pests, pheromone traps and light traps for the lepidopteran pest.

- Use of environmentally safer pesticides like Spinosad (for Lepidopteran) in brinjal and chilli, Spinetoram in chilli (for thrips, fruit borer), and Azadirachtin 1% @ 1 ml/L to manage sucking pests.
- The maize crop (to be planted 3 weeks in advance) will protect the crop from viral diseases by restricting the movement of insect vectors.

3.2. Livestock

- There is very high risk of Peste des Petits Ruminants (PPR) in Ahmadnagar, Jalgaon, Nashik and Pune districts.
- Vaccination for FMD and PPR (animals above 3 month of age) may be done in consultation with the local veterinarians and as advised by the state animal husbandry authorities.
- There is very high risk of Haemorrhagic septicaemia (HS) in Dhule 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 very high risk of sheep and goat pox in Ahmadnagar and Nandurbar districts. Vaccination may be done in consultation with the local veterinarians.
- There is very high risk of Theileriosis in Akola district. Care needs to be taken to close all cracks and crevices by roughcasting and smoothing of the outer and inner surfaces of cattle sheds for the eradication of the ecto-parasites from the farm.
- There is very high risk of Black Quarter (BQ) 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.
- Monitor animals for any sickness particularly related to digestive, dermal or respiratory problems and treat them by consulting a veterinarian.
- For treatment of ecto-parasitic infestation, dipping (if not done during last three months) need to be carried out with Ectomin/Butox, post-shearing on sunny days. Anti-parasitic drugs should be used under guidance of a veterinarian.
- Spot the sick animals and isolate them in a separate shed for treatment.

4. Other advisories

4.1. Crops

- **Grape:** Shoot thinning should be carried out immediately after bunch primordia become visible, to retain 10-12 bearing shoots per square meter area.
- **Dragon fruit:** Pruning shall be conducted after harvesting of fruits followed by preventive spray of Copper oxychloride @ 2.5 g/L or Bordeaux mixture @ 1%.

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