Mitigation strategies for horticultural crops

Mango

 To prevent losses due to flower and fruit drop, the mango orchards should be sprayed with 1.0 % (10 g L⁻¹ of water) Potassium nitrate.

Banana

- To avoid losses due to physical injuries and subsequent infection, orchards should be sprayed with fungicide.
- In case of Yellowing of leaves due to water stagnation, drain out the stagnated water and spray 1 % potassium nitrate along with good surfactant.

Pomegranate

 Damaged leaves, branches, fruits should be collected and destroyed and spraying of fungicide like Bordeaux mixture (1.0 %) should be carried out immediately.

Guava

• The damaged and fallen fruits should be collected and destroyed promptly. Spraying of copper fungicides should be done to prevent the disease infection.

Grapes

 In cases where flowers of grape vines have been extensively damaged and little crop is anticipated, growers may consider knocking the remaining shoots off to allow secondary buds to burst.

Sapota

 White latex oozes out from the damaged fruits which attract development of rot fungus causing complete spoilage of fruits. To prevent this, spray the orchards with copper fungicide.

Citrus

- If injuries are big on stems and branches apply Bordeaux paste on the injuries.
- Foliar application of gibberellic acid (GA) @ 1 gram and urea 1 kg per 100 litre of water may be given at earliest in the month of March.

Brinjal

• Pruning of uppermost damaged parts helps in maintaining sufficient number of effective branches, flowers, and fruits.

Onion

 Injury to leaf, neck and bulb tissues due to hail damage, reduces the functional leaf area. Drenching with humic acid (2 ml L-¹ of water) along with KNO₃ sprays is effective in recovery.



Onion crop at 2 days after hail with broken leaf bulbs (L) and recovered onion crop at 30 days after hail with foliar application of humic acid + KNO₃ (R)

Technical Folder No. 42

Prepared by:

Sunil Potekar and RN Singh

ICAR-NIASM, Baramati 413 115, Maharashtra Tel: 02112-254057, FAX: 02112-254056 Website: http://www.niam.res.in

Hailstorms: Damage and Mitigation Strategies for Horticultural Crops





हर कदम, हर डगर किसानों का हमसफर भारतीय कृषि अनुसंधान परिषद

Agriesearch with a Buman touch



ICAR-National Institute of Abiotic Stress Management

Introduction

Hail is a solid, frozen form of precipitation that causes extensive damage to properties and growing crops. Its usually form over a relatively small area and pass over within a very short period of time, however, it causes great damage to standing crops even when occurred for a very short duration.

Hail frequency in India

The frequency of hailstorms is small in winter, but increases generally from February onwards and peaks in the months of March and April, as the season advances to summer. With respect to the diurnal frequency, it has been observed that in conformity with the other regions of the world, peak number of hailstorms events happened to occur in late afternoon and early evening hours.

Nature of Damage

The damages accrued with hails are determined by its characteristics that include the size and number of hailstones that fall per unit area and the strength of winds during hail fall.

Primary injuries

Heavy defoliation, shredding of leaf blades, breaking of branches and tender stems, lodging of plants, peeling of bark, stem lesions, cracking of fruits, heavy fruit drop etc.

Secondary injuries

Dieback or wilting of damaged plant parts, stagnated growth, staining, bruises, discolouration of damaged leaves and fruits, rotting of damaged fruits, tender stems and branches due to fungal and bacterial infections.





Damage to Grapes and Papaya crops due to hailstorm

Preventive measures

- It is always advisable to have shelter belts and wind breaks around orchard to avoid heavy damage to the main crop. This will give additional advantage of reducing water requirements and also lower the heat stress.
- In areas with higher probability of hailstorm occurrence, shade nets can be a good option especially for high value fruit crops.
- Nylon nets used for protection against bird damage can also protect the fruit crops from hail.



Nylon nets used for protection against hail

Coping strategies

- Remove all the broken branches, twigs and fallen fruits in orchard crops to reduce the spread of diseases and pests during their decay.
- Carry out thinning of hail damaged fruits which will improve yield and quality of remaining fruits.
- Pruning may be done as per necessity to retrain young trees and optimize new growth.
- Bud breaking chemicals and growth regulators may be applied to induce the vegetative growth in orchard crops along with fertilizers.
- Proper drainage facilities should be provided to avoid water logging and secondary infection of diseases.
- Contingency crops like green gram and black gram may be taken to take the advantage of soil moisture and to recover a part of losses.
- Bulb crops like onion and garlic which are near maturity may be harvested to avoid rotting.
- Large wounds on trunks and branches should be covered with a water-based paint to avoid desiccation and disease infection.