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Important Disease and Insect Pest of Ber and their Management

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INTRODUCTION

Ber (*Zizyphus mauritiana* Lamk) is one of the important fruit crops of arid and semi arid zones of the world. it is also known as ber, desert apple or Indian plum. It belongs to family Rhamnaceae. It is a tropical/ subtropical fruit native to the northern hemisphere. The genus Ziziphus has 135 to 170 species, of which 17 are native of India.

In India though it is a minor fruit but recently the ber become an important cash crop in some areas and its acreage and production are increased. Due to rapid spread of commercial cultivation, the crop is also affected by different biotic and abiotic factors including pathogens causing many serious diseases.

It is a fast-growing tree with a medium life span that can quickly reach up to 10-40 ft (3 to 12 m) tall. Z. mauritiana is a medium sized tree that grows vigorously and has a rapidly developing taproot, a necessary adaptation to drought conditions. Ber fruit is generally eaten fresh and is a rich source of ascorbic acid, essential minerals and carbohydrates.

Statistical Data of Area, Production and Productivity in India

Year	Area	Production	Productivity
	(Ha)	(MT)	MT/Ha
2017-18	50	513	10.32
2018-19	52	639	10.90
			NHB (nhb.gov.in)

1.Powdery mildew of ber

Causal organism: *Oidium erysiphoides* **Symptoms:**

- Appearance of white powdery substance on leaves, flowers and fruits.
- Affected fruits turn brown, dry and fall down from the leaves.

Management :

Cultural control:

- Spraying at full bloom needs to be avoided.
- Alkathene bands should be cleaned at regular interval.
- Resistant varieties: Safeda selected, glory, Dhaka 1 and Dhaka - 2



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Chemical control:

- Spraying of carbendazim 50% WP @ 10 g diluted in 10 L water per tree.
- Spray 0.2% sulfex or karathane.

2. Sooty mould or Black leaf spot

Causal organism: *Capnodium spp*. Symptoms:

- Appearance of black spots on the under surface of leaves during September-November.
- Turning of the upper surface of leave to yellow.
- Falling of affected leaves.

Management:

Cultural control:Pruning of affected branches and their prompt destruction prevents the spread of the disease

Chemical control: Spray Dithane Z-78 0.2%

3. Cladosporium Fruit rot

Causal organism: *Cladosporium spp*. **Symptoms:**

- The disease appears near the time of fruit ripening. Injured Fruits become infected.
- The symptoms of the disease start from the tip of the fruit Forming light brown to dark brown spots.

Later, a greenish fungal growth is also seen on these spots.

Management:

Cultural control:

- Using disease-free transplants is the most Effective method for controlling.
- Use of drip irrigation, limits the dispersal of the pathogen.
- Plants are also more sensitive to infection under high fertility conditions.
- Reduced nitrogen rates or the use of nitrate rather than ammonium nitrogen sources may also reduce.

4. Black Leaf spot:

Causal organism: Cercospora spp

Symptoms:

- The disease is characterized by sooty tuft-like circular to irregular black spots on the underside of the leaves.
- Later, it covers the entire lower surface giving a sooty appearance.
- The leaves show yellowish and brownish discoloration on the upper surface and drop prematurely.

Management:

Cultural control:

Avoid planting in low-lying areas and flooding.

Do not delay irrigation until the crop exhibits moisture stress Symptoms.

Chemical control:

The disease can be controlled effectively by spraying Mancozeb 0.25 per cent.

5. Die back:

Causal organism: Phytophthora spp

Symptoms:

The pathogen causing dieback, tip dieback, graft union blight, twig blight, seedling. The disease is most conspicuous in October-November.

Favourable conditions:

High humidity and moist conditions favours the development of disease. The disease is most common in October-November.

Management:

Cultural control:

- Scion wood selected for propagation should be free from infection.
- Prevent introduction of disease in newly planted orchards.

Mechanical control:

- Any infected portion be pruned immediately, followed by pasting with cow dung at the cut ends.
- Pruning should be done in such a way that some healthy portion is also removed, to ensure complete eradication of pathogen (below the infection site).



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Insect pest of Ber:

1. Fruit borer of ber

Symptoms:

- Larva feeds internally and damages the pulp around the seed.
- At initial stages of fruit development, the full grown larvae found to feed on soft immature seed.
- Holes appears on the fruit.

Management:

Cultural control:

•Removal of wild ber trees around the ber orchard. Rack the soil under the tree or near the trees to destroy the maggots and

Pupae present in the soil.

•Collection and proper destruction of infested fallen fruits. Harvest of fruits at immediate after maturity (green stage).

2. Fruit fly of ber

Symptoms:

- Infestation starts with the onset of fruit setting.
- The excreta of the larva accumulate in the galleries, which may sometimes result in rotting of the fruit.
- Infested fruits become deformed and their growth becomes checked.
- > A large number of such fruits drop off.

Management:

Natural enemies of fruit fly:

Parasitoids:Fopiusarisanus,Diachasmimorpha kraussi

Mechanical control:

- Male annihilation technique: Set up fly trap using methyl eugenol. Prepare methyl eugenol 1 ml/L of water + 1 ml of malathion solution.
- Take 10 ml of this mixture per trap and keep them at 25 different places in one ha between 6 and 8 AM.
- Collect and destroy the adult flies.

3. Bark eating caterpillar

Symptoms:

- The caterpillars feed on the bark of the tree during night.
- They bore inside the trunk or main stems and eat through the bark in to the wood.
- The affected portion is covered with large silken webs.

Management:

Cultural control:

- Remove frassy galleries and paint the bark.
- Application of the solution, made up by mixing 1 lit of kerosene and 100 g soap in 9 lit of water to the holes effectively controls the bark eating caterpillar.

4. Grey hairy caterpillar

Symptoms:

- Caterpillars feed on the young leaves and fruits.
- The older caterpillars spread in all directions and devour leaves and fruits and sometimes even tender shoots.
- They start eating new foliage as it grows after pruning and this is continued by overlapping generations.

Management :

Cultural management: Irrigate once to avoid prolonged mid- season drought to prevent preharvest infestation.

Mechanical control:

Dig the pit of 1 inch depth between the orchids & dust to kill.

Natural enemies of grey hairy caterpillars:

Predators: Chrysoperla Spp., Coccinellids Spp