

## Lecture 10 - Diseases of Bhendi

### Bhendi

**Cercospora Leaf Spots:** *Cercospora malayensis*,

*C. abelmoschi*

#### Symptoms



In India, two species of *Cercospora* produce leaf spots in bhendi. *C. Malayensis* causes brown, irregular spots and *C. abelmoschi* causes sooty black, angular spots. Both the leaf spots cause severe defoliation and are common during humid seasons.

#### Pathogen

Conidiophores are pale to medium olivaceous brown, multiseptate, some times branched, geniculate and irregular. Conidia are obclavate to cylindric, olivaceous brown and straight to curved.

#### Mode of spread and survival

The fungus survives in the diseased crop material.

#### Management

Spraying Mancozeb 0.25 % control the disease.

**Fusarium wilt:** *Fusarium oxysporum f.sp. vasinfectum*

#### Symptoms

The conspicuous symptom is a typical wilt, beginning with a yellowing and stunting of the plant, followed by wilting and rolling of the leaves as if the roots were unable to supply sufficient water. Finally, the plant dies. If a diseased stem is split lengthwise, the vascular bundles appear as dark streaks. When severely infected, nearly the whole stem is blackend.

#### Pathogen

Macroconidia are 3- 5 septate formed on sporodochia and pionnotes. In mass conidia appear buff or salmon orange in color. Macroconidia are fusiform and curved inward at both ends. The base is pedicellate. Microconidia are septate. Terminal and intercalary chlamydospores are broadly ovate.

### **Mode of spread and survival**

The fungus is soil borne.

### **Management**

Treat the seeds with Mancozeb @ 3g/kg seed. Drench the field with Copper oxy chloride @ 0.25%.

**Powdery mildew:** *Erysiphe cichoracearum*

### **Symptoms**



Powdery mildew is very severe on bhendi. Greyish powdery growth occurs on the under as well as on the upper surface of the leaf causing severe reduction in fruit yield.

### **Pathogen**

Conidia are single celled, hyaline, barrel shaped and in long chains. Cleistothecia are globose and dark brown myceloid appendages. The asci are pedicellate, ovate or ellipsoid. The number of ascospores is usually 2 rarely 3 per ascus. The ascospores are single celled, hyaline and oval to sub cylindrical

### **Management**

Spray inorganic sulphur 0.25% or Dinocap 0.1% 3 or 4 times at 15 days interval.

**Vein-Clearing/Yellow Vein Mosaic :** *Bhendi yellow vein mosaic virus*

## Symptoms



Yellowing of the entire network of veins in the leaf blade is the characteristic symptom. In severe infections the younger leaves turn yellow, become reduced in size and the plant is highly stunted. The veins of the leaves will be cleared by the virus and interveinal area becomes completely yellow or white. In a field, most of the plants may be diseased and the infection may start at any stage of plant growth. Infection restricts flowering and fruits, if formed, may be smaller and harder. The affected plants produce fruits with yellow or white colour and they are not fit for marketing.

## Pathogen

The virus particles are 16 – 18nm in diameter.

## Mode of spread

The virus is spread by whitefly.

## Management

By selecting varieties resistant to yellow vein mosaic like Parbhani Kranti, Arka Abhay, Arka Anamika, and Varsha Uphar, the incidence of the disease can be minimised. The virus is transmitted by the whitefly (*Bemisia tabaci*). Parbhani Kranti, Janardhan, Haritha, Arka Anamika and Arka Abhay can tolerate yellow vein mosaic. For sowing during the summer season, when the whitefly activity is high, the susceptible varieties should be avoided. Spraying monocrotophos 1.5 ml/litre of water can restrict the disease spread. Synthetic pyrethroids should not be used because it will aggravate the situation. It can be controlled by application of Chlorpyrifos 2.5 ml + neem oil 2 ml lit of water.

**Phoma canker (*Phoma exigua*)**

Water soaked lesion appear on fruits. Black spots with irregular margin Black area - pycnidial formation. 80-90% fruit loss post harvest rot of okra pods *rhizoctonia solani* in brazil. Completely rotted, the pod's typical greenish color turning brown and the infected tissues fully covered with mycelia. Internally, immature seeds and placenta infected. Diseased tissues were light brown to black. Externally, mycelia tend to be fluffy and lighter in color, forming a large number of dark sclerotia on the fruit surface.



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