

Class -3<sup>rd</sup> year

Semester- Second semester

Course Title- Diseases of Field and Horticultural crops & their Management

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Topic - Diseases of Chilli

## Diseases of Chilli

### 1. Anthracnose

C.O. - *Colletotrichum capsici*

**Anthracnose** is an economically important disease of **chilli** affecting both fruit and seed quality.

The disease is more severe in all southern states.

#### Symptom:

- Ripe fruits turning red are affected
- Small, black, circular spot appears on the fruit skin
- Badly diseased fruits turn straw colour or pale white colour, lose their pungency
- Diseased cut open fruits - lower surface of the skin is covered with minute, elevated sclerotia
- Advanced stage - seeds covered by a mat of fungal hyphae, turn rusty in colour



#### Favourable conditions

- Temp - 28°C, RH - 95%
- High humid conditions when rain occurs after the fruits have started to ripe

#### Mode of spread

- Seed borne
- Secondary spread is by air borne conidia & rain
- Flies and other insects – responsible for dissemination of the spores from one fruit to another

#### Management:

- Use disease free seeds
- seed treatment - thiram 2 kg/ha or zineb 2.5 kg/ha
- Three sprayings with captan 0.2 %- 1st spraying - just before flowering, 2nd at the time of fruit formation and 3rd - fortnight interval after second spraying

#### Biocontrol

- *P. fluorescens*, *Bacillus subtilis* -effective (Rajavel, 2000)
- *P. fluorescens* and *T. viride* (Muthuraj, 1998)
- *Saccharomyces cerevisiae* & *P. fluorescens* (Jayalakshmi et al., 1998)
- Essential oil - *Nigella sativa* - antimicrobial activity

### 2. Fruit Rot/Die-back of Chilli

Causal organism: *Colletotrichum capsici*.

#### Symptoms

The disease occur in two forms Dieback and Ripe fruit rot.

#### Dieback



1. The disease causes necrosis of tender twigs from the tip to backward. The entire branch or the entire top of the plant may wither away.
2. Numerous black dots (acervuli of fungus) are found scattered all over the necrotic surface of the affected twigs.
3. Only the top or few side branches may be killed or in severe attacks the entire plant is withered. Partially affected plants bear fruit which are few and low quality.

#### **Ripe fruit rot**

1. Although red ripe fruits are frequently affected, anthracnose symptoms appear even on well developed green fruits.
2. Small black circular spots are appeared on the skin of the fruit and spread along the long axis of the fruit and thus becoming more or less elliptical.
3. The spots are usually sunken with black margin. Badly diseased fruit turn straw colour from normal color. Sunken spots are covered with pinkish mass of fungal spores.
4. The fruits with many spots drop off prematurely, resulting heavy loss in yield. Seeds are also infected by this fungus.

#### **Favourable condition**

- High temperature (28 C).
- High relative humidity (92% or above).
- Heavy and prolong dew deposition after rainy season.

#### **Control Measure**

##### **A. Cultural control**

Seeds should be collected from spotless fruits.

Disease crop debris should be collected and burnt.

##### **B. Chemical control**

Seed treatment with Vitavax200, Brassical @ 2g/ kg of seed.

Spraying with DithaneM 45 or Bavistin @ 0.2% solution, 34 times after 15 days interval when fruit begin to ripe.

### **3. Fusarium wilt :**

*C.O. Fusarium oxysporum f.sp.capsici*

#### **Symptoms**

1. On the young seedlings initially, water soaked areas developed at the collar region and a brown sunken lesion which soon appeared as girdled resulting in seedling collapse.
2. On adult plant initially, slight drooping of leaves which led to drying of leaves starting from lower ones extended from root to stem region and plants exhibited wilting symptom.



#### **Pathogen**

Mycelium is grayish white. Microconidia are formed singly, hyaline and cylindrical.

Macro conidia are cylindrical to falcate. Chlamydo spores are globose to oval and rough walled.

#### Disease cycle:

- Primary source of inoculum:- Chlamydo spores, Soil, Seed.
- Secondary source of inoculum:- Micro conidia, Macro conidia, water

#### Management

- Use of wilt resistant varieties.
- Drenching with 1% Bordeaux mixture or Blue copper or Fytolan 0.25% may give protection.
- Seed treatment with 4g Trichoderma viride formulation or 2g Carbendazim per kg seed is effective.
- Mix 2kg T.viride formulation mixed with 50kg FYM, sprinkle water and cover with a thin polythene sheet.
- When mycelia growth is visible on the heap after 15 days, apply the mixture in rows of chilli in an area of one acre.

## 4. Leaf Curl disease of Chilli

**Causal organism:** Leaf curl virus.

**Vector:** White fly (Bemisia tabaci).

#### Symptoms

1. The leaf curl is characterized by severe stunting of the plants with downward rolling and wrinkling of leaves.
2. Leaves become small in size; internodes are shortened, giving the plant as witches broom appearance.
3. Leaves are pale yellow coloured.
4. Fruiting is stopped or fruits that formed are small and deformed. Alternate Hosts Tobacco, Tomato, Papaya etc.



#### Transmission

The virus is not sap transmissible or not seed borne. It is transmitted by white fly.

#### Control Measure

Field sanitation.

Roughing and cultural practices.

Use of optimum doses of nitrogenous fertilizer in the field.

Destruction of lateral alternate host.

Apply Carbofuran 3G @ 4-5 Kg/acre in the mainfield to control sucking complex and insect vectors selectively.

If it is not possible spray the crop with systemic insecticides. Dimethoate 2 ml or Acephate 1g per litre of water.

Collect and destroy infected virus plants as soon as they are noticed.