

# Fungal Disease Problems in Mustard Crop and Their Management

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## ABSTRACT

The mustard crop is grown in tropical and subtropical as well as temperate zone. Mustard crops play an essential role in agricultural economy of India. The mustard may be caused many foliage diseases viz, leaf blight, white rust, and downy mildew and powdery mildew diseases that severe economic losses. It is managed by the sustainable practices which are cultural, mechanically, eco-friendly practices, and plant protection. The sustainable agriculture very crucial enhances the productivity and production of crops.

## INTRODUCTION

Mustard, (*Brassica* spp.) are herbaceous annual plants. It is belonging to family Brassicaceae (Al-Shehbaz, 2011). The mustard crop is grown in tropical and subtropical as well as temperate zone. Mustard crops play an essential role in agricultural economy of India. In a rotation with other crops, mustard may be planted as a cover among various diseases infecting mustard crop.

### 1. Leaf Spot / Blight

**Causal organism-** The disease caused mainly two species of *Alternaria* i.e. *Alternaria brassicae* and *Alternaria brassicicola*.

#### Symptoms:

The first symptoms appear on leaves, stem and silique with concentric ring such as black spot during severe outbreak, turn black in color and may also rot. Such pods contain shriveled, undersized seeds.

## Management

- Seed treatment with Iprodione 2g/kg of seed before sowing.
- Spraying of 0.25% Dithane M-45 or Blitox 50 at 10 to 15 days interval.
- Growing of resistant variety- In some variety resistant to *Alternaria* blight like RW-351, Pusa Kranti and Seeta.
- Cultural practices – Summer ploughing in month of May to June, field sanitation, timely sowing, and crop rotation.



### 1. White rust of crucifer-

**Causal organism-** *Albugo candida*

#### Symptoms

Initially symptoms appear on all areal part of plant is affected. The affected plant shows two type of infection local and systemic. Local symptom appears white- creamy rust like pustules on leaf and stem and systemic infection through the young stem and inflorescence. The floral part becomes swelling due to hypertrophy and hyperplasia. Both stages of the disease- local and systemic or floral infection can cause yield losses from 23 to 54.5%.



## Management

- Spraying of @ 0.2 % Mancozeb at initially appearing of symptom.
- Collection of affected plants from the field.
- Crop rotation- follow 2-3 year with non cruciferous crop to reduce the primary inoculum.
- Grow resistant variety like- Kranti, TM 20, RN 510, MDYR 2029.
- Early sowing (1<sup>st</sup> week of October).

### 2. Downey mildew of Mustard

**Causal Organism-** *Perenospora parasitica*

#### Symptom

The first symptom appears on the underside of leaves, uneven, grayish-white necrotic spots. Later, given the right circumstances, fungal growth that is brownish-white may also be visible on the spots. The infection of the inflorescence, which causes enlargement of the inflorescence peduncle and the development of stage head configuration, is the most obvious and prominent symptoms and affected plant inflorescence do not produce seed.

## Management

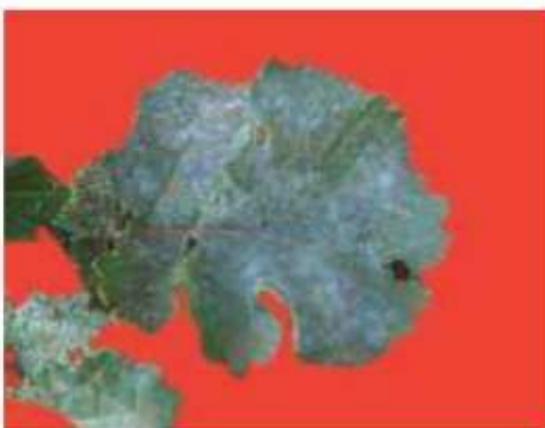
- Seed treatment with Captan @2g/Kg of seed before the sowing.
- Spraying of fungicide Mancozeb (0.2%) 2-3 times at 15 day interval.

- Clean and healthy seeds should be sown.
- Crop rotation has been observed to be good result for plant health.
- Grow resistant variety like- CSR-43, Chamba1, 2, Candle, Metapolka and Domo etc.



### Powdery mildew

Causal organism- *Erysiphe cruciferum*



### Symptom

The first symptom appears on the upper surface in the oldest leaves as small (4-5 cm diameter), scattered, white almost circular spot and become powdery mass and cover the whole infected plant. This disease is most commonly observed on the upper sides of the leaves. Infected buds may fail to open. Powdery mildew of mustard affects not only foliage but also developing green siliquae as well as grown plant.

### Management

- Spraying of fungicide like Carbendazim @0.1% or Karathane / Hexaconazole @ 0.15% at the 10-15 days interval.
- Application of Milstop fungicide for most effective against disease.
- Application of biofungicide like *Ampelomyces quisqualis* with mineral oil at the time of late evening or early morning.
- Grow resistant variety like Laxmi, PPC-2, PCR-7 and HC-1 etc.
- Removal of affected plant part and clean up fallen plant debris on the ground.
- Application of the spore suspension of *Streptomyces rochei* for reduction of disease intensity (Sharma and Gupta, 1978).

### CONCLUSION

We have seen that the mustard crop grown in winter season and managed many foliages diseases above. Used of conservation and Identification of natural enemies and environment friendly diseases management practices which involve minimum use of harmful synthetic chemicals is the core of integrated pest management., sustainable agriculture which is environment and public health. It is managed by the sustainable practices which is cultural, mechanically, eco-friendly practices, and plant protection.

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