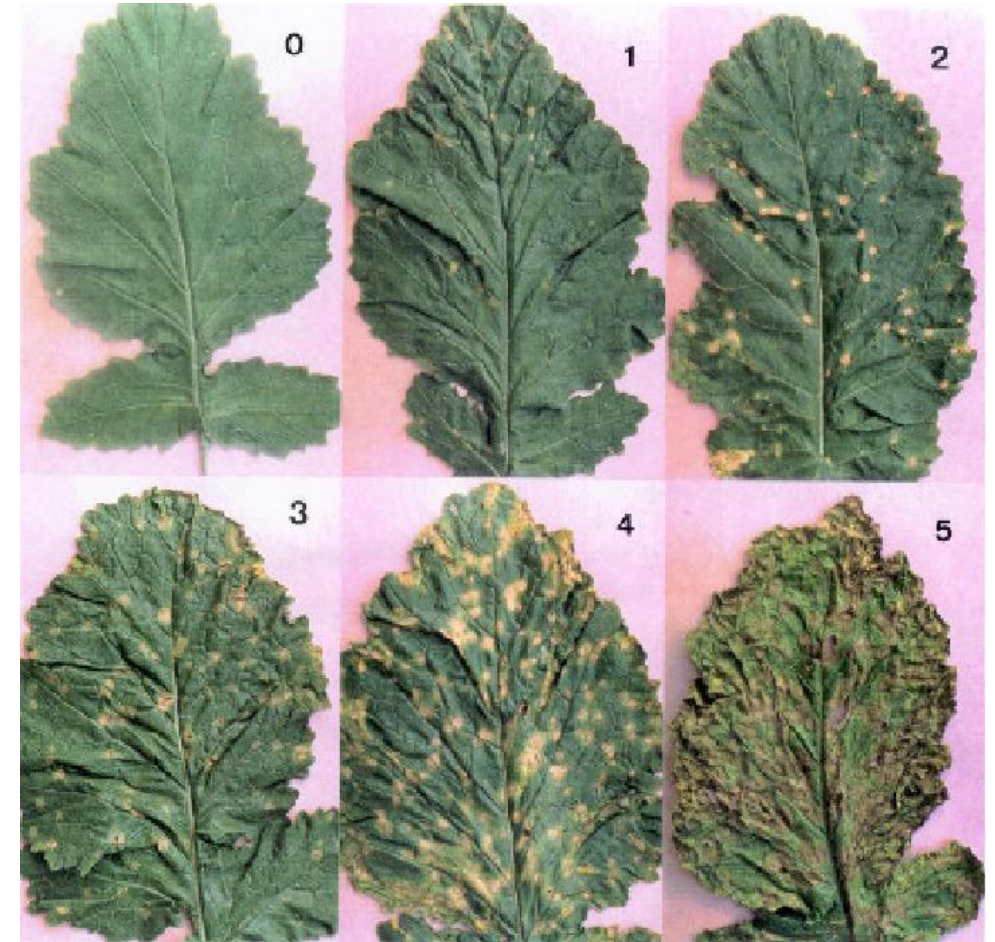


Alternaria blight of Mustard:

C.O.: *Alternaria brassicae*

Symptoms:

- Irregular lesions surrounded by chlorotic haloes are produced on the leaves and petioles.
- The spots get enlarged to cover the entire leaf blade with girdling the petiole to cause blighting of the leaves.
- Entire foliage get blighted.
- Seeds get shriveled and content low oil.
- Grain yield is reduced.



Disease cycle:

- Primary source: Infected leaf debris serves the pathogen to perpetuate.
- Secondary spread: Through wind borne conidia.

Favorable condition:

- ✓ Cool and dry weather.
- ✓ Temperature 10-15⁰ C.
- ✓ R.H.80% & above.

Management:

- Remove the infected plant debris and destroy it .
- Use disease free or treated seed (Mancozeb @2.5g/kg seed).
- Spray with mancozeb (@0.25%) or Iprodione (0.2%) at 10 days interval.

White Rust of Mustard

Obligate parasite causing systemic infection resulting in malformation of the inflorescences.

C.O. : *Albugo crucifearum*

Old name : *Albugo candida*

Class : Oomycetes

Order : *Peronosporales*

Family : *Albuginaceae*



Symptoms:

- Local as well as systemic infections are noticed.
- Disease appear on leaves and characterized by the appearance of white creamy raised pustules on the under surface of leaves.
- Corresponding upper surface become yellow.
- Pustules rupture and released chalky dust of spores (sporangia).
- Systemic infection causes hypertrophy and hyperplasia on inflorescences and pods.
- Affected flowers show malformation.



Primary source:

- ✓ The oogonia and antheridia are formed from the mycelium and oospore developed on fertilization of anthredium with oogonium.
- ✓ Oospore germinates and forms zoospore.

Secondary spread:

Sporangia produce biflagellate zoospore.

Favourable conditions:

- ✓ Oospore survives under dry storage for 20 years.
- ✓ Rain coupled with relatively low humidity.

Management:

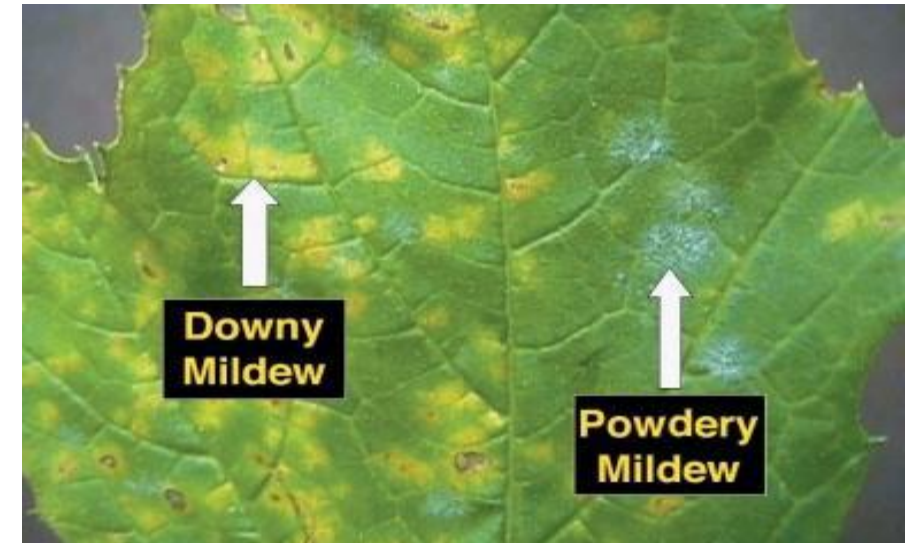
- Spray metalaxyl (ridomil MZ-72) or mancozeb @ 0.25 % or chlorothalonil (kavach) 0.2 %

Downy mildew of Mustard :

C.O. : *Peronospora brassicae*

Symptoms:

- It is common among young plants, but also appears on mature plants.
- The disease is characterized by the appearance of purple to brown spots on the underside of the leaves.
- The spots may remain small or become enlarged.
- The upper surface of the leaf on the lesion is yellow.
- Sometimes white rust is also found side by side on the same leaf and the symptoms of the two look very much similar from a distance.
- The stem also get infected and swell up with malformed siliques.



Disease cycle:

- Primary source: The pathogen survives in the form of oospores in the soil. Contaminated Seeds also act as source of inoculum. The co-lateral hosts plays important role in perpetuation of pathogen.
- Secondary spread: Through sporangia containing zoospores.

Host: Turnip, radish, cabbage, cauliflower and *Brassica* spp.

Management:

- The weed hosts of the pathogen should be eradicated.
- Crop sanitation- removing and burning the diseased leaves/ shoots etc.
- Deep ploughing in summer.
- Spray 0.8 to 1.0% B.M. or ridomil M-Z 0.2% after initiation of the disease.

Sclerotinia Rot of Mustard: *Sclerotinia sclerotiorm*

Symptom

- The stems develop water-soaked spots which later may be covered with a cottony white growth.
- As the disease progresses, affected portions of the stem develop a bleached appearance, and eventually the tissues shred.
- Girdling of the stem results in premature ripening and in lodging of plants.
- Hard black bodies, the sclerotia, are formed inside the stem and occasionally on the stem surface. Basal stalk infections rarely occur.

Management

- Use crop rotation; do not plant highly susceptible crops more than once in four years, including dry edible beans, sunflowers, mustard and canola. Use at least a five year rotation for severely infested fields.
- Avoid planting next to a field that had severe *Sclerotinia* in the past four or five years. Control broad-leaved weeds.
- Plant thoroughly cleaned seed. Avoid dense stands of canola

