

## Downy mildew diseases

Differential characteristics:

1. The symptoms of disease appear as yellow spots on the upper surface of the leaf, turn to brown or dark gray when the infection develops. While on the lower surface of the leaf downy growth white or gray: it is the sporangiophores and the sporangia which invade the tissue of the plant and come out from the stomata.
2. In the case of strong infection the spots expand to include most parts of the leaf and may appear on other parts of the plant like stems, flowers and fruits.
3. The fungi causing **downy mildew diseases** are obligate parasites, they cannot live without parasitism, for this we cannot culture them on artificial nutrient media, and it is specific in its pathogenesis so the parasitism is limited to a specific host or related hosts.
4. The fungus causing **downy mildew diseases** are endoparasites because the hyphae grow inside the host tissue intercellularly.
5. Sexual reproduction by Oospores. Asexual reproduction by spread of sporangia through the air.

### Prevention of these diseases:

1. Collect infected crop residues like dry leaves and burn them to eliminate the Oospores that repeat the life cycle.
2. Suitable aeration of the soil because high humidity helps to infection.
3. Spraying fungicides before the infection.
4. These fungi are sensitive to copper ions.

### Classification status of downy mildew fungi

Kingdom : Straminipila	Phylum: Oomycota	Class: Oomycetes
Order: Peronosporales	Family: Peronosporaceae	

### Downy mildew diseases

Depending on the way of sporangiophore branch we can distinguish between genera which belong to the family peronosporaceae :

1. **Genus: *Plasmopara viticola* :**

causing **Downy mildew diseases** in grapes sporangiophore relatively narrow show up from it many branches are at standing angles with the original axis of holder , sporangiophore endings containing round projections and each branch carry over one sporangium .



Shape of sporangiophore and sporangia under microscope



Symptoms on the lower surface of the leaf

2. **Genus: *Peronospora destructor* :**

causing **Downy mildew diseases** in onions, sporangiophore double branched and curved, hook shaped carry over one sporangium .



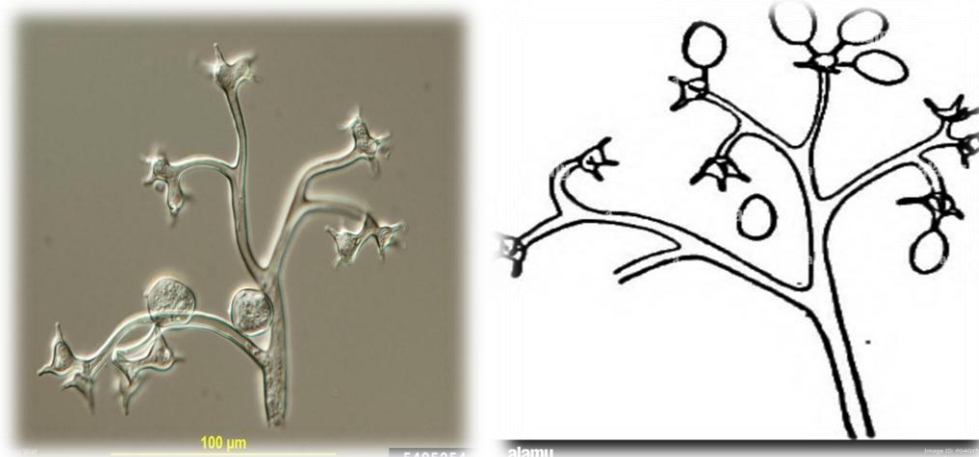
Shape of sporangiophore and sporangia under microscope



Symptoms on onion leaf

3. **Genus: *Bremia lactucae* :**

causing **Downy mildew diseases** in lettuce, sporangiophore double branched and its endings containing compos like disc carrying four Sterigmata which carrying sporangia.



Shape of sporangiophore and sporangia under microscope



Symptoms on the lower surface of the leaf



Symptoms on the uper surface of the leaf