



وزارة التعليم العالي والبحث العلمي

جامعة الانبار / كلية الزراعة

قسم وقاية النبات

(امراض خضر - Vegetable diseases)



Fourth stage

المرحلة الرابعة

Plant Protection Dept.

قسم وقاية النبات

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Diseases of the alily family

1- Downy Mildew of onion

This disease spreads in most parts of the world that grow onions. It was recorded for the first time in England in 1841 AD, then in the United States of America in 1884 AD. It spreads in Iraq. It leads to poor onion qualities, especially if the infection occurs early in the season, and if the flowering fungus is infected, the seeds do not form

Favorable conditions

The best conditions for the emergence of the disease are very humid night with a tendency to cold with a warm day full of clouds, high air humidity 90 - 100%, temperature range 4 - 28 degrees Celsius, optimum temperature 10 - 18 degrees Celsius. Most infections occur when the leaves are 15 cm or more long, lowlands are poorly drained.

Symptoms

1- The disease appears during the months of March and April in the form of yellow spots on the leaves and forms a fluffy purple growth on it and appears on it in the wet weather a white fluffy growth that turns to a grayish color that tends to purple and then yellows or fades and becomes white.

2- The infestation is not limited to the leaves only, but also includes the carriers of the inflorescences if the appropriate conditions for infection persist in Iraq.

3- Symptoms also appear on plants of different ages. The infection begins on seedlings in the nursery and continues after transplanting during the growing season. With the intensification of the disease, the leaves wither and die, and the maturity of the bulbs is delayed.

4- The fungus may attack the inflorescence, so the infection appears on one side of it in the form of round or oval spots that lead to its weakness and the bending of the sunflower towards the site of the injury, which may lead to its breakage

5- As a result, seeds are not formed or atrophic seeds are formed in small quantities. It was found that seeds from infected plants do not cause disease transmission if they are used as seeds

6- Bulbs resulting from infested plants are smaller than usual and spongy in texture. Their preservation strength is poor, and they are easily infected during storage with onion mold

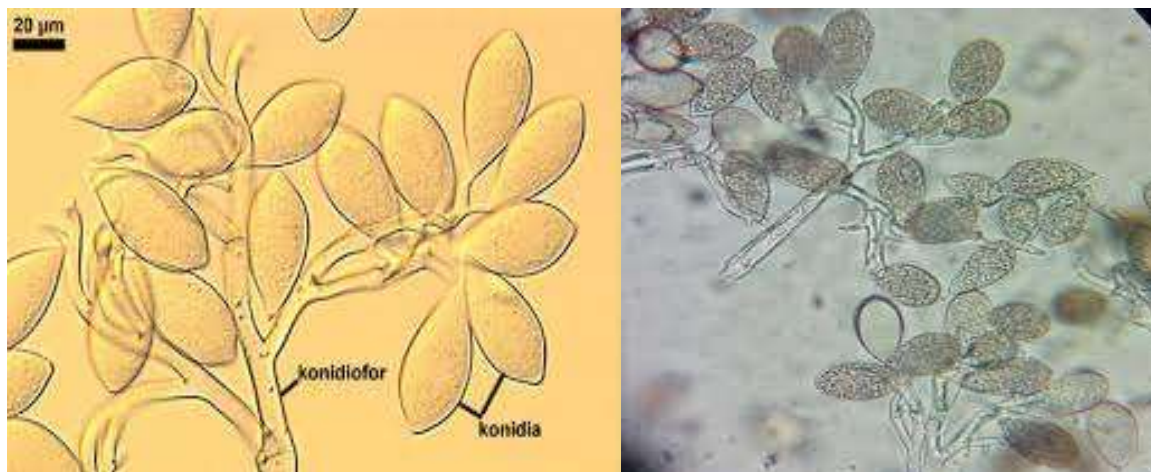


Symptoms downy mildew on onion

Pathogen:

Pernospora destructor

- 1- An obligate and endoparasitic oocyte fungus that lives within the tissues of the host.
- 2- From these hyphae, thick shoots emerge to the surface of the host through the stomata.
- 3- The germinal spurs are dichotomous, and the tips of the branches are tapered and paired, pointed and drooping.
- 4- And at the ends of it bears the sacs of lemon-shaped, thin-walled and somewhat transparent.



Pernospora destructor

Cycle life

- 1- The causative agent spends the winter in the form of mycelium in the bulbs and in the form of oval spores in the old and infected leaves.
- 2- If the infected bulbs are planted, the mycelium grows with the vegetative growth and in the right conditions the leaves are infected and out of the stomata a villous growth is formed. It is the

dichotomous conidia that bears on its pointed edges, which resemble the bird's beak, in large numbers purple lemon-shaped conidia.

3- Conidia are formed during the night and ripen in the early morning and then spread by winds carrying moisture over long distances and after they fall on the appropriate families, they germinate and another generation of conidia is formed within two weeks, and thus the infection is repeated during the season.

4- Control:

- ❖ Breeding and growing resistant varieties.
- ❖ Collecting and burning the residues of the previous infected crop.
- ❖ Follow all that will reduce humidity and triple onion cycle .
- ❖ Good and balanced fertilization of nitrogen, phosphorous and potassium
- ❖ When the plants are 15 - 12 cm tall, a preventive spray is sprayed, and the spraying is repeated every one to two weeks.

2- Purple blotch of onion

Favorable conditions

1-The disease spreads in all areas of onion and garlic cultivation and is associated with downy mildew disease and this disease appears in late February and early March.

2-Where the infection with downy mildew appears in cold, humid weather, while the purple sting appears when the temperature is high

3-It affects the vegetative system (leafs and flower spikes) and leads to its drying out in severe cases, which leads to a

decrease in the yield of bulbs and seeds, both quantitatively and qualitatively.

Symptoms:

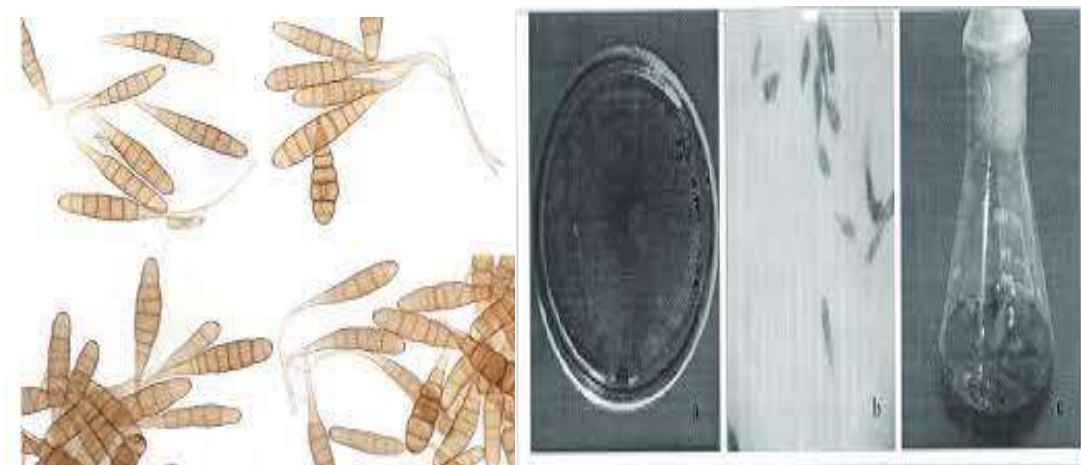
- 1- Symptoms first appear on the leaves in the form of small sunken spots of white color on the outside and purple in the middle.
- 2- The spots widen and a yellow halo appears around them, extending above and below the spot. In the humid weather, the surface of the spots is covered by a dark brown growth that tends to black. Similar spots may form on the holder of the inflorescence and on the flower parts.
- 3- It may lead to the formation of seeds or the formation of atrophic seeds, and rotting of the necks of the bulbs may occur if wounds or scratches occur during the extraction process, and the mold appears in a black color during storage.



Symptoms Purple blotch of onion

Pathogen:

The disease is caused by the fungus *Alternaria porii*, which belongs to the imperfect fungi. The fungi are single conidia carriers or in groups bearing conidia. These conidia are long and have a long beak and have transverse septa much more than the longitudinal ones.



Alternaria porii

Cycle life:

- 1- The fungus spends the winter period in the form of mycelium latent in the remains of onion plants, where it can re-infestation from one season to another.
- 2- And when the right conditions are available, conidia germinate and enter the germination tubes from the stomata of the host or directly penetrate the epidermal cells.
- 3- The occurrence of the infection requires the presence of rain or dew on the surface of the plants with a temperature of 25 ° C.

Control:

- 1- Dispose of the remnants of the previous crop by burning to get rid of the sources of infection.
- 2- Cultivation of infestation-free seeds (seeds or bulbs) taken from healthy fields where the disease has not appeared.
- 3- Storing the crop after collection in refrigerated stores, with a temperature of about 2°C and a relative humidity of about 60%.
- 4- Avoid overgrowing onion plants, as this helps reduce humidity

References

1. Agriose, G. 2004. Plant Pathology. Fifth Edition .Academic Press.
- 2.<https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/fusarium>
- 3.<https://www.britannica.com/science/plant-disease>
- 4.<https://extension.umaine.edu/ipm/plant-disease/>
- 5.<https://bsppjournals.onlinelibrary.wiley.com/journal/13653059>