وزارة التعليم العالي والبحث العلمي

جامعة الانبار / كلية الزراعة

قسم وقاية النبات

(امراض خضر - Vegetable diseases)

المرحلة الرابعة Fourth stage

قسم وقاية النبات Plant Protection Dept.

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Seed rot, damping-off, root rot, and soft rot

The disease affects seeds, seedlings, and roots of all plants. In all cases, however, the greatest damage is done to the seed and seedling roots during germination either before or after emergence. Losses vary considerably with soil moisture, temperature, and other factors..

The Pathogen: *Pythium* spp.

Several species of *Pythium* cause pre- and postemergence damping-off. Certain other Oomycetes and fungi, however, such as *Phytophthora*, *Rhizoctonia*, and *Fusarium*, often cause symptoms quite similar to thos

described earlier. Several more fungi, and even some bacteria, when carried in or on the seed, also caus damping-off and kill seedlings.

Pythium produces a white, rapidly growing mycelium. The mycelium gives rise to sporangia, which germinate directly by producing one to several germ tubes or by producing a short hypha at the end of which forms a balloon-like secondary sporangium called a vesicle.

Phytophthora Root and Stem Rots

Most species of ***Phytophthora*** cause root and lower stem rots on numerous species of plants . The losses caused by such root and stem rots are great, especially on trees and shrubs.

The best known species is ***Phytophthora infestans***, the cause of late blight of potatoes and tomatoes, but several other species also cause extremely destructive diseases on their hosts

Phytophthora root and stem rots cause damage to their hosts in nearly every part of the world where the soil becomes too wet for the good growth of susceptible plants and the temperature remains fairly low, i.e., between 15 and 23°C. Annual plants and young seedlings of trees may be killed by the disease within a few days, weeks, or months. In some cases the oomycete also attacks and causes partial or complete rot of the fruit, as e.g., in pepper, cucurbits tomato and citrus, Symptoms caused by fungi on plants. Fungi cause local or general symptoms on their hosts and such symptoms may occur separately or concurrently or may follow one another. In general, fungi cause local or general necrosis of plant tissues, and they often cause reduced growth (stunting) of plant organs or entire plants. A few fungi cause excessive growth of infected plants or plant parts.

LATE BLIGHT OF POTATOES

The late blight disease of potatoes is the most devastating disease of potatoes in the world**.** Late blight may kill the foliage and stems of potato and tomato plants at any time during the growing season. It also attacks potato tubers and tomato fruits in the field, which rot either in the field or while in storage. Late blight may cause total destruction of all plants in a field within a week or two when weather is cool and wet.

The Pathogen: *Phytophthora Infestans*

The mycelium produces branched sporangiophores that produce lemon-shaped sporangia at their tips. Sporangia germinate almost entirely by releasing three to eight zoospores at temperatures up to 12 or 15°C,

whereas above 15°C sporangia may germinate directly by producing a germ tube.

Downy Mildews

Downy mildews are primarily foliage blights. They attack and spread rapidly in young, tender green leaf, twig, and fruit tissues

DOWNY MILDEW OF GRAPE

Downy mildew of grape occurs in most parts of the world where grapes are grown. Downy mildew affects the leaves, fruit, and shoots of grapevines. It causes losses through killing of leaf tissues.

Symptoms. At first, small, pale yellow, irregular spots appear on the upper surface of the leaves, and a white downy growth of the sporangiophores of the oomycete appears on the underside of the spots .

The Pathogen*: Plasmopara viticola*.

The mycelium diameter varies from 1 to 60 micrometers because the hyphae take the shape of the intercellular spaces of the infected tissues.

Some of the most common or most serious downy mildew oomycetes and the diseases they cause are listed below.

-Bremia lactucae, causing downy mildew of lettuce

-Hyaloperonospora parasitica, causing downy mildew of crucifers

-Peronospora, causing downy mildew of **(*P. antirrhini*),** of onion (***P. destructor*),** of spinach **(*P. effusa*),** of soybeans **(*P. manchurica***) , mildew (blue mold) of tobacco **(*P. tabacina***) and of alfalfa and clover (***P. trifoliorum*)**

-Peronosclerospora, causing downy mildew of sorghum and corn **(*P. sorghi*)**, of corn (***P. maydis and P. philippinensis***), and of corn and sugarcane ***(P. sacchari)***

-Plasmopara, causing downy mildew of grape (***P. viticola***) and of sunflower **(*P. halstedii*)**

Pseudoperonospora, causing downy mildew of cucurbits **(*P. cubensis*)**

Sclerophthora, causing downy mildew of cereals (corn, rice, sorghum, wheat) and grasses (***S. macrospora***) .

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