

بیماری لکه سیاه سیب
Apple Scab

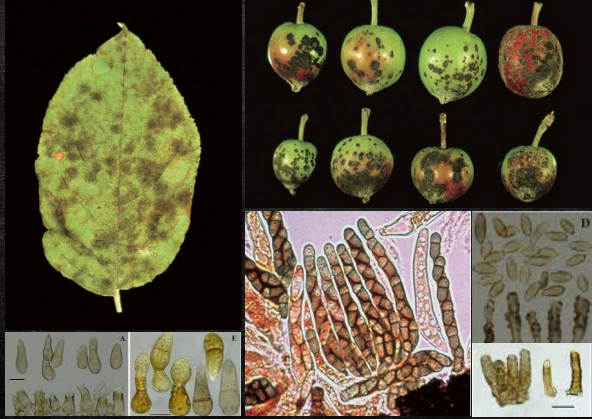


Kingdom: Fungi
Phylum: Ascomycota
Class: Dothideomycetes
Order: Pleosporales
Family: Venturiaceae
Genus: *Venturia*

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Fusicladium pomi

Apple scab exists **worldwide** but is more severe in areas with **cool, moist** springs and **summers**.

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Symptoms caused by *F. pomi*

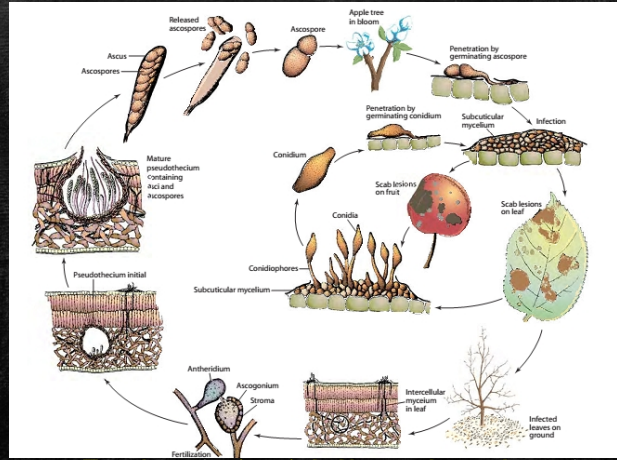
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Symptoms:

At first, **light, olive-colored, irregular** spots appear on the **lower surface** of **sepals** or **young leaves** of the **flower buds**. Later, the lesions appear **metallic black** and may be slightly **raised**. **Lesions on older leaves** generally form on the **upper surface** of the leaves. Lesions may remain **distinct** or they may **coalesce**. **Leaves infected young** remain **small** and **curled** and may later **fall off**. Occasionally, small scab spots are produced on **twigs** and **blossoms**.

Infected **fruit** develop **circular** scab lesions, **velvety** and **olive green** at first but later becoming **darker**, scabby, and sometimes **cracked**. The cuticle of the fruit is **ruptured** at the margin of the lesions. **Fruit infected early** become misshapen and **cracked**, and frequently **drop prematurely**. Fruit infected when approaching **maturity** form only small lesions, which, however, may develop into **dark scab** spots during **storage**.

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The pathogen overwinters in dead leaves on the ground.
For infection to occur, the spores must be continuously wet for 28 hours at 6°C, for 14 hours at 10°C, for 9 hours at 18–24°C, or for 12 hours at 26°C.

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Management:

It appears that **all** apple cultivars are **susceptible**, several apple **varieties resistant** to scab are available, but many **popular** ones are **moderately** to **highly** susceptible.

Some of antagonist fungi **decrease** ascospore production when applied to scab-infected apple leaves on the orchard floor. So far, **no** effective practical biological control of apple scab has been developed.

Introducing **endochitinase** genes from fungi into apple **increased** the resistance of apple to scab, but it also **reduced** **vigor** of the **plant**.

Treating them with **urea** in the **fall** **reduced** the risk of scab by about 65%.

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Think **more**, **talk** **less**.....

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Management:

Several **fungicides** give excellent control of apple scab. Some of them **protect** a plant from becoming infected, but they cannot **cure** an infection, whereas some can **stop** infections that may have started. In some areas, **new strains** of *Venturia inaequalis* have now appeared that are **resistant** to several of the **systemic fungicides**.

For an **effective** apple scab control program, apple trees **must** be **sprayed** or **dusted** diligently **before**, **during**, or **immediately after** a rain from the **time** of budbreak until all the **ascospores** are **discharged** from the **pseudothecia**. **If these primary infections from ascospores are prevented**, there will be **less** need to **spray** for scab **during** the remainder of the season. **If primary infections do develop**, spraying will have to be **continued** throughout the season.

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بیماری پوسیدگی قهوه‌ای Brown Rot of Stone fruit

Kingdom: Fungi
Phylum: Ascomycota
Class: Leotiomycetes
Order: Helotiales
Family: Sclerotiniaceae
Genus: *Monilinia*



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Monilinia fructicola, *M. laxa*, and *M. fructigena*

Brown rot occurs **wherever** stone fruits are grown.

<http://www.apsnet.org/edcenter/intropp/lessons/fungi/ascomycetes/Pages/BrownRotStoneFruits.aspx>

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Symptoms:

The **first** symptoms of the disease appear on the **blossoms** and may involve the **entire flower** and **its stem**. In **humid weather** the infected organs are **covered** with the grayish-brown conidia, and later **shrivel** and **dry up**, with the **rotting mass clinging** to the twigs. **At the base of infected flowers**, **small, sunken cankers** develop on twigs around the flower stem, and cause twig blight. In humid weather, **gum** and also **gray tufts of conidia** appear on the **bark surface**.

Fruit symptoms appear when the **fruit approaches maturity** as **small, circular, brown spots** that spread rapidly in all directions. **Ash-colored tufts of conidia** appear on the fruit surface. **One large or several small rotten areas** may be present on the fruit, which finally dries up into a **mummy** or remains **hanging** from the tree. Sometimes **small cankers** also develop on **twigs or branches** bearing infected fruit.

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Development of Disease:

Sufficient **rainfall** during the **blossoming** and fruit **ripening** periods are very **serious**. **Peaches, cherries, plums, apricots, and almonds** with **about equal severity**.

Losses from brown rot result **primarily from fruit rotting** in the orchard, but **serious losses** may also appear during **transit** and **marketing** of the fruit. **In severe infections, 50 to 75% of the fruit may rot in the orchard, and the remainder may become infected before it reaches the market.**

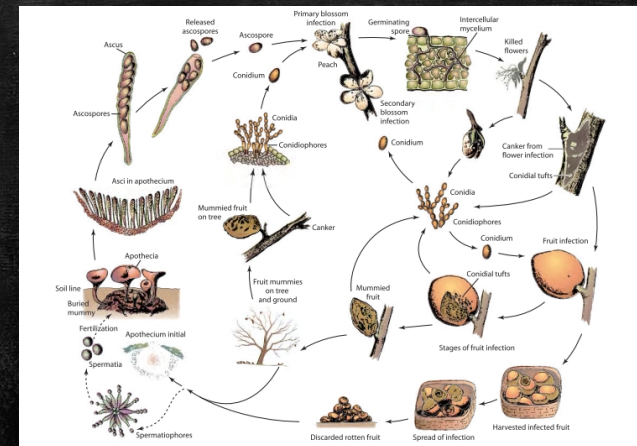
The pathogen **overwinters** as **mycelium** in **mummified fruit on the tree** and in **cankers of affected twigs** or as **pseudosclerotia** in **mummies in the ground**. In the **spring** the **mycelium** in mummified fruit on the tree and in twig cankers **produces new conidia**, whereas the **pseudosclerotia** in mummified fruit buried in the ground **produce apothecia**, which form asci and ascospores.

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Symptoms caused by *Monilia spp.*

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Disease cycle of brown rot of stone fruits caused by *M. fructicola*

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Management:

Brown rot can be controlled best by **completely controlling** the **blossom blight phase** of the disease. This can be done by **spraying two to four times** with an effective **fungicide** from the **time the blossom buds show pink until the petals fall**.

Resistant strains of the brown rot fungus have developed to **systemic fungicides**; therefore, these chemicals are generally used in **combination** with one of the broad-spectrum fungicides, such as **captan** or **sulfur**.

Twigs bearing infected blossoms or cankers should be **removed** as **early** as possible to **reduce** the **inoculum** available for fruit infections later in the season, and for **overwintering**.

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بیماری پوسیدگی تلخ سیب Bitter rot of apple

Kingdom: Fungi
Phylum: Ascomycota
Class: Sordariomycetes
Order: Phyllachorales
Family: Glomerellaceae
Genus: *Glomerella*



عامل بیماری

Colletotrichum gloeosporioides and by *C. acutatum*

Bitter rot occurs worldwide!!!!

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Management:

In **ripening fruit**, **fungicides** are applied to the trees **a few weeks before** harvest, and applications **continue weekly** or **biweekly** until **just before harvest**. Because most infections of immature and mature fruit **originate** in **wounds** made by **insect**, the **control of insects** will also good.

To **prevent infections** at **harvest** and during **storage** and **transit**, fruit should be **picked** and **handled** with the **greatest care** to avoid **punctures** and skin abrasions on the fruit. All fruit with brown rot spots should be **discarded**. **Postharvest brown rot** can be **reduced** by **dipping** fruit in an appropriate fungicidal solution before storing.

Biological control of **postharvest brown rot** has been obtained with several fungi, but it still needs additional work and is **not yet used commercially**.

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Symptoms:

Bitter rot symptoms usually appear when the **fruit** approaches its **full size**. The rot starts as **small, dark** areas that enlarge rapidly and become **circular** and **sunken** in the center. **The surface** of the spots is **smooth** and **dark brown** at first. When the spots are 1 to 2 centimeters in **diameter**, numerous **acervuli-forming** cushions appear concentrically near the **center** and fewer toward the **edge** of the spots.

In **humid weather**, the **acervuli** produce **creamy** masses of pink-colored spores, the rotted area expands rapidly, and **more rings** of spore masses appear. In **older rotted** areas the pink masses **disappear** and the tissue becomes **dark brown** to **black, wrinkled**, and **sunken**. The **rot** also spreads inward toward the apple **core**, and the **rotted tissue** may be **bitter**.

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Symptoms:

Several spots on a fruit usually **enlarge**, **fuse**, and rot the **entire** fruit, which may **mummify** and **drop** or **cling** to the twig. **Bitter rot infections fail to develop appreciably during cold storage.**

When, however, the fruit is marketed and kept at **room temperature**, bitter rot may develop very **rapidly**. Occasionally, bitter rot **cankers** may develop on the **limbs**.

Overwintering:

The fungus **overseasons** in diseased **stems**, **leaves**, and **fruit** as **mycelium** or **spores**, in the **seed** of most affected annual hosts, and in **cankers** of **perennial hosts**.

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Development of Disease:

Ascospores or **conidia** produced by the **surviving mycelium** in the spring cause **primary** infections.

Conidia cause all **secondary** infections during the **entire** season as long as **temperature** and **humidity** are favorable. Germ tubes penetrate **uninjured tissue directly**. The mycelium grows **intercellularly** and may remain **latent** for some time before the cells begin to **rot**.

The mycelium then produces acervuli and conidia **just below** the **cuticle**, which rupture the cuticle and **release** conidia that cause **more infections**. **Infections of young fruit** generally remain **latent** until the fruit is **past a certain stage of development and maturity**, at which point the infections develop fully.

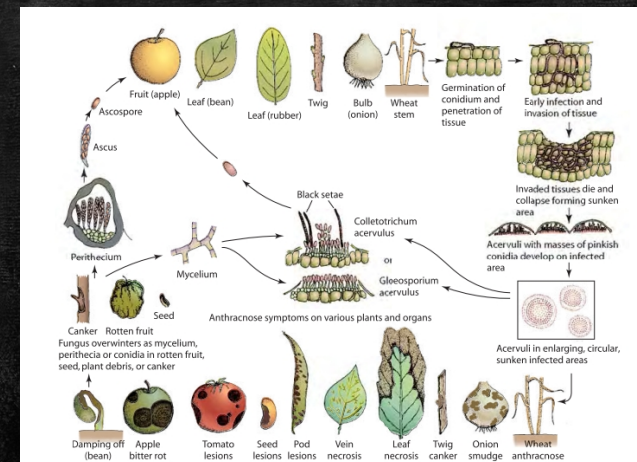
The fungus is favored by **high temperatures** and **humid** or **moist weather**.

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Symptoms caused by *Colletotrichum* spp.

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Disease cycle of anthracnose diseases

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Manegement:

The control of *Glomerella/Colletotrichum* diseases depends on the use of disease-free seed grown in arid areas or use of treated seed; crop rotation of hosts; use of resistant varieties when available; removal and burning of dead twigs, branches, and fruit infected with the fungus in woody plants; and, finally, spraying with appropriate fungicides.

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