

---

# Anthracnose

The term “anthracnose” has been used for two distinct types of disease, one characterized by a typical necrotic spot, a lesion of dead tissue, and the other by some hyperplastic symptom, such as a raised border around a more or less depressed center. The word was coined in France for the latter type, to differentiate a grape disease from a smut of cereals, both of which were called *charbon*. The new word was taken from the Greek *Anthrax* (carbuncle) and *nosos* (disease), and was first used for the grape disease, caused by *Sphaceloma ampelina*, the chief symptom of which was a bird’s-eye spot with a raised border.

A disease of brambles, raspberry and blackberry, was then named anthracnose because it looked like the grape disease. The fungus, however, instead of being correctly placed in the genus *Sphaceloma*, was mistakenly named *Gloeosporium venetum*. The next disease entering the picture was a bean trouble, and, because the fungus was identified as *Gloeosporium* (though later transferred to the genus *Colletotrichum*), this common bean disease with typical necrotic symptoms was also called anthracnose and came to typify diseases so designated.

The term “spot anthracnose” has been given to those diseases similar to the original hyperplastic grape disease. Those with slight hyperplastic symptoms are still commonly called anthracnose, and those with pronounced overgrowth of tissue are commonly called scab. Both types are caused by the genus *Elsinoë*, anamorph state

*Sphaceloma*, and are treated, in this revised text, as a separate group. ▶ **Spot Anthracnose.**

Anthracnose in the modern sense is a disease characterized by distinctive limited lesions on stem, leaf, or fruit, often accompanied by dieback and usually caused by a *Gloeosporium* or a *Colletotrichum*, anamorph fungi producing slime spores oozing out of fruiting bodies (acervuli) in wet, pinkish pustules. These spores (conidia) on germinating form an appressorium (organ of attachment) before entering the host plant. The teleomorph state of the fungus, when known, is *Gnomonia* or *Glomerella* (see [Fig. 1](#)).

---

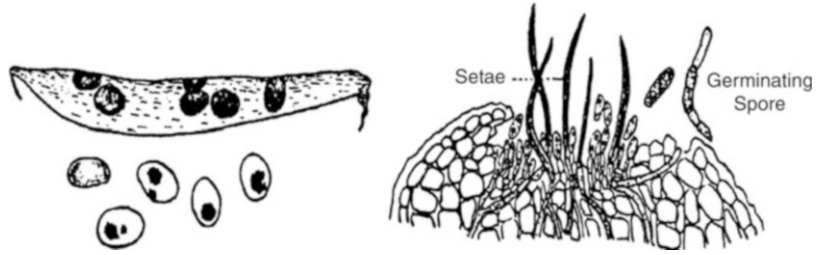
## Apiognomonina

**Apiognomonina errabunda** (Anamorph, *Gloeosporium quercinum*). Oak Anthracnose. See ▶ *Discula umbrinella* and [Fig. 2](#).

**Apiognomonina errabunda** (formerly *Gnomonia quercina*). Oak Anthracnose. The fungus is closely related to *Gnomonia platani*, usually reported as *G. veneta*, but is now considered a separate species. The anthracnose appears as brown areas adjacent to midribs and lateral veins.

**Apiognomonina tiliae** (formerly *Gnomonia tiliae*). Linden Anthracnose, Leaf Spot, Leaf Blotch, Scorch on American and European linden. Small, circular to irregular brown spots with dark margins form blotches along main veins in leaves, leaf stalks, and young twigs, with

**Fig. 1** Bean Anthracnose. Pod and seeds with dark, sunken areas; section through bean seed showing spores formed in an acervulus marked with prominent black setae



**Fig. 2** Oak Anthracnose

rose-colored pustules. In wet seasons, defoliation in early summer may be followed by wilting and death of branches. Cut out and burn such branches.

**Apiognomonina veneta** (formerly *Gnomonia platani*) (*G. veneta*). Sycamore Anthracnose, Twig Blight, general on American and Oriental planes (London plane is rather resistant) and on California and Arizona sycamores. The fungus winters as mycelium in fallen leaves, producing perithecia that discharge ascospores when young foliage is breaking out. Mycelium also winters in twig cankers. Young sycamore leaves turn brown and die, looking as if hit by late frost. Leaves

infected later in the season have irregular brown areas along the veins. Conidia ooze out from acervuli on underside of veins in flesh-colored masses, in rainy weather, and are splashed to other leaves. Twigs and branches have sunken cankers with more acervuli. Native sycamores may be nearly defoliated, with smaller twigs killed. Larger branches die with several successive wet springs. The trees usually put out a second crop of leaves after defoliation, but this is a devitalizing process. Dead twigs and branches give a witches' broom effect to the trees.

On white oaks anthracnose appears as brown areas adjacent to midribs and lateral veins.

**Control** Although raking up and burning all fallen leaves has been stressed for years, the overwintering of the fungus on twigs makes this measure rather ineffective. The spray schedule has called for three applications of bordeaux mixture; a dormant spray, one when the buds swell, and another 7 days later. Trees should be fertilized to stimulate vigorous growth.

## Colletotrichum

### Deuteromycetes, Coleomycetes

Spores are formed in acervuli, erumpent, cushionlike masses of hyphae bearing conidiophores and one-celled, hyaline, oblong to fusoid conidia. Acervuli have stiff marginal bristles (setae), which are sometimes hard to see. Conidia (slime-spores), held together by a gelatinous coating, appear pinkish in mass. They are not wind-borne but can be disseminated by wind-splashed rain. On landing on a suitable host, the conidium sends out a short germ tube, which,

on contact with the epidermis, enlarges at the tip into a brown thick-walled appressorium. From this, a peglike infection hypha penetrates the cuticle.

**Colletotrichum acutatum** Anthracnose on almond, strawberry and black gum.

**Colletotrichum antirrhini** (▶ *Glomerella cingulata*) Snapdragon Anthracnose, on snapdragon, chiefly in greenhouses, sometimes outdoors in late summer.

**Colletotrichum atramentarium** (or *C. coccodes*). Potato Anthracnose, Black Dot Disease on potato stems and stolons following wilt and other stem diseases, occasionally on tomato, eggplant, and pepper; general distribution but minor importance. Starting below the soil surface, brown dead areas extend up and down the stem. The partial girdling causes vines to lose their fresh color and lower leaves to fall. Infection may extend to stolons and roots. The black dots embedded in epidermal cells, inside hollow stems and on tubers, are sclerotia to carry the fungus over winter and to produce conidia the following spring.

The fungus is a wound parasite ordinarily not serious enough to call for control measures other than cleaning up old refuse and using healthy seed potatoes.

**Colletotrichum bletiae** (▶ *Glomerella cingulata*) and other species. Orchid Anthracnose, Leaf Spot on orchids coming in from the tropics.

**Colletotrichum capsici** Ripe Fruit Rot of pepper.

**Colletotrichum coccodes** Anthracnose on soybean.

**Colletotrichum dematium** (formerly *Colletotrichum omnivorum*). Anthracnose on aspidistra and hosta. Large, whitish spots with brown margins are formed on leaves and stalks. Remove and burn infected plant parts.

**Colletotrichum dematium** Anthracnose on spinach.

**Colletotrichum dematium** f. sp. **spinaciae** Spinach Anthracnose. Known on spinach since 1880 but unimportant in most years. Leaves have few to many circular spots, water-soaked, turning gray or brown, with setae prominent in spore pustules. The fungus is seed-borne.

**Colletotrichum dematium** f. sp. **truncata** Anthracnose on tomato. Found in Georgia on *Dolichos*.

**Colletotrichum erumpens** (▶ *Glomerella cingulata*). Rhubarb Anthracnose, Stalk Rot.

**Colletotrichum fragariae** (▶ *Glomerella cingulata*). Strawberry Anthracnose found in Florida and Louisiana.

**Colletotrichum fuscum** Foxglove Anthracnose small spots to 1/8 inch, circular to angular, brown to purple brown, on leaves; sunken, fusiform lesions on petioles and veins; minute black acervuli, with bristles, in center of spots. Seedlings damp-off, older plants are killed or stunted in warm moist weather. Use clean seed or treat with hot water (131 °F for 15 min).

**Colletotrichum gloeosporioides** (▶ *Glomerella cingulata*). Lime Anthracnose, Withertip, only on lime in southern Florida.

**Colletotrichum graminicola** (formerly *Colletotrichum sublineola*). Anthracnose on wild rice (*Zizania*).

**Colletotrichum graminicola** Cereal Anthracnose widely distributed on barley, oats, rye, wheat, sorghum, wild rice (*Zizamia*) and also on cultivated lawn grasses, causing a root decay and stem rot. Leaf spots are small, circular to elliptical, reddish purple, enlarging and fading with age; centers have black acervuli. The fungus winters on seed and plant refuse in or on soil. Improved soil fertility reduces damage from this disease. This pathogen also causes fruit anthracnose of tomato.

**Colletotrichum higginsianum** Turnip Anthracnose, also on rutabaga, mustard greens, radish, and Chinese cabbage in southeastern states. Very small, circular gray spots on leaves, and elongate brown or gray spots on midrib, petiole, and stem, show pink pustules in centers of dead tissue. Heavily infected leaves turn yellow and die; young seeds in diseased pods may be killed. Mustard variety Southern Curled Giant is highly resistant.

**Colletotrichum lagenarium** (see ▶ *Colletotrichum orbiculare*). Melon Anthracnose on muskmelon, watermelon, cucumber, and other cucurbits.

**Colletotrichum liliacearum** (see ▶ *Colletotrichum lilii*). Found on dead stems of

daylilies and many other plants and perhaps weakly parasitic.

**Colletotrichum lilii** (formerly *Colletotrichum liliacearum*). Found on dead stems of daylilies and many other plants and perhaps weakly parasitic.

**Colletotrichum lindemuthianum** (▶ *Glomerella lindemuthianum*). Bean Anthracnose, a major bean disease, sometimes mistakenly called “rust,” generally present in eastern and central states, rare from the Rocky Mountains to the Pacific Coast.

**Colletotrichum malvarum** Hollyhock Anthracnose, Seedling Blight on hollyhock, mallow, and abutilon, particularly destructive to greenhouse seedlings. Black blotches are formed on veins, leaf blades, petioles, and stems. Remove and burn all old plant parts in autumn.

**Colletotrichum omnivorum** (see ▶ *Colletotrichum dematium*). Anthracnose on aspidistra and hosta. Large, whitish spots with brown margins are formed on leaves and stalks. Remove and burn infected plant parts.

**Colletotrichum orbiculare** Anthracnose on watermelon.

**Colletotrichum orbiculare** (formerly *Colletotrichum lagenarium*). Melon Anthracnose on muskmelon, watermelon, cucumber, and other cucurbits. This is our most destructive disease of watermelons, found everywhere that melons are grown and particularly destructive in the South. There are at least three races of the fungus differing in ability to infect different cucurbits. One race is virulent on cucumber, slight on watermelon, moderate on Butternut squash; another is virulent on both watermelon and cucumber; Butternut squash is immune to a third.

Leaf symptoms are small yellow or water-soaked areas, which enlarge and turn black on watermelon, brown on muskmelon and cucumber. The dead tissue shatters; leaves shrivel and die. Elongated, narrow, sunken lesions appear on stems and petioles; vines may die. Young fruit darkens, shrivels and dies if pedicels are infected; older fruit shows circular, black, sunken cankers or depressions, from 1/4 to 2 inches across and 1/3 inch deep on watermelon. In moist weather

the centers of such spots are covered with gelatinous masses of salmon-colored spores. Infected fruit has a bitter taste or the flesh is tough and insipid. Soft rots often follow the anthracnose. Epiphytotics occur only in periods of high rainfall and temperature, near 75 °F.

*Control* Treating seed before planting is essential. Use a three year crop rotation with non-cucurbits; destroy plant refuse. Watermelon varieties Charleston Gray, Congo, Fairfax, and Black Kleckly are resistant but not to all races of the fungus.

**Colletotrichum phomoides** (▶ *Glomerella cingulata*). Tomato Anthracnose, common rot of ripe tomatoes, most frequent in Northeast and North Central districts. Symptoms appear late in the season, causing more loss to canning crops. Small, circular sunken spots, increasing to an inch in diameter, penetrate deeply into the flesh. At first water-soaked, the spots turn dark, with pinkish, cream, or brown spore masses in the depressed centers, often arranged in concentric rings. The disease is worse in warm, moist weather. The fungus winters in tomato refuse, sometimes in cucumber and melon debris.

*Control* Clean up trash and rotting fruit.

**Colletotrichum pisi** (*Glomerella cingulata*). Pea Anthracnose, Leaf and Pod Spot commonly associated with Ascochyta blight and often a secondary parasite.

**Colletotrichum schizanthi** Anthracnose on butterfly-flower. Symptoms are small brown spots on leaves and water-soaked areas on young stems. Cankers on stems and branches of older plants may cause leaves to turn yellow, branches to die back from the tip, and finally death of all parts above the canker.

**Colletotrichum sublineola** (see ▶ *Colletotrichum graminicola*). Anthracnose on wild rice (*Zizania*).

**Colletotrichum trichellum** Fruit Anthracnose of tomato and Hedera.

**Colletotrichum truncatum** Stem Anthracnose prevalent in the South on bean, lima bean, and soybean, also on clovers and on lentil in ND. Brick-red spots appear on veins on underside of leaves and on pods. Plants are chlorotic, stunted, may die prematurely; blossoms or pods may drop.

Use healthy seed grown in arid states; clean up plant refuse; rotate with non-legumes.

**Colletotrichum violae-tricoloris** (▶*Glomerella cingulata*). Anthracnose of violet, pansy.

*Colletotrichum* sp. Azalea Anthracnose. New disease serious on Indian and Kurume azaleas in Louisiana since 1954. Very small rusty brown spots appear on both surfaces of young leaves, followed by defoliation. Spores appear on fallen leaves, which serve as source of inoculum for the next season. Copper and organic fungicides are effective in control.

---

## Discula

▶ **Blights.**

**Discula campestris** Anthracnose on maple.

**Discula destructive** Anthracnose on dogwood.

**Discula fraxinea** (Teleomorph, **Gnomoniella fraxini**). Anthracnose on ash.

---

## Gloeosporium

### Deuteromycetes, Coleomycetes

Genus characters are about the same as for *Colletotrichum* except that there are no setae around the acervuli. Conidia are hyaline, one-celled, appearing in masses or pustules on leaves or fruit. Leaf spots are usually light brown, with foliage appearing scorched.

**Gloeosporium allantosporum** (▶*Phlyctema vagabunda*). Anthracnose, Dieback on raspberry in Oregon, Washington.

**Gloeosporium apocryptum** (▶*Glomerella cingulata*). Maple Anthracnose, Leaf Blight, an important leaf disease of silver maple, common also on other maples and boxelder, appearing from late May to August.

**Gloeosporium aridum** (**Discula fraxinea**) Anthracnose on ash.

**Gloeosporium limetticum** (▶*Glomerella cingulata*). Lime Anthracnose, Withertip, only on lime in southern Florida.

**Gloeosporium melongenae** (▶*Glomerella cingulata*). (possibly identical with *G. piperatum*). Eggplant Anthracnose, Ripe Rot, an occasional trouble.

**Gloeosporium piperatum** (▶*Glomerella cingulata*). Pepper Anthracnose, Fruit Spot, sometimes a leaf and stem spot but more often a disease of green or ripe fruit.

**Gloeosporium quercinum** (Teleomorph, ▶*Apiognomonium errabunda*). Oak Anthracnose. See ▶*Discula umbrinella* and Fig. 2.

**Gloeosporium thuenenii** f. sp. **tulipi** Tulip Anthracnose found in California in 1939. Lesions on peduncles and leaf blades of Darwin tulips are small to large, elliptical, first water-soaked then dry with black margins and numerous black acervuli in center of spots.

**Gloeosporium** sp Peony Anthracnose on stems, leaves, flowers, petals of peony. Stem lesions are sunken, with pink spore pustules, and may completely girdle the stalks, causing death of plants. Also a destructive anthracnose on strawberry.

## Glomerella

Ascomycetes, Phyllachorales

Perithecia are dark, hard, carbonaceous, usually beaked, immersed in substratum so only the neck protudes. Ascospores are hyaline, one-celled; asci are thickened at tips, inoperculate but spores sometimes discharged with force; paraphyses present.

**Glomerella cingulata** (formerly *Colletotrichum violae-tricoloris*). Anthracnose of violet, pansy. Circular dead spots with black margins, sometimes zonate, appear on leaves; flowers have petals spotted or not fully developed and producing no seed; entire plants are sometimes killed. Remove and burn infected plants or parts; clean up old leaves in fall. Copper sprays may be injurious.

**Glomerella cingulata** (formerly *Colletotrichum gloeosporioides*). Anthracnose, Canker, Dieback, Withertip, Fruit Rot of a great many plants, generally distributed except on the Pacific Coast, more common in the South.

Infection is often secondary, in tissues weakened from other causes. See also under ► [Cankers and Diebacks](#) and under ► [Rots](#).

On citrus, orange, lemon, grapefruit there is a dying back or withertip of twigs. Leaf spots are light green turning brown, with pinkish spore pustules prominent in wet weather. Decayed spots are produced on ripening fruits in storage. Similar withertip symptoms may also appear on avocado, aucuba, cherimoya, fig, loquat, roselle, rosemallow, royal palm, dieffenbachia, rubber-plant, strawberry and other ornamentals and fruits. The disease has also been reported on European white birch in Virginia. Lack of water and nutrient deficiency predispose plants to infection by this weak parasite. The fungus attacks blue lupine and statice or sea-lavender; peach anthracnose became important in Georgia when lupine was used as a ground cover in orchards. Sweet pea anthracnose is often more severe near apple orchards where the fungus winters on cankered apple limbs and in bitter rot mummies. Whitish lesions disfigure sweet pea leaves, shoots, and flower stalks. Leaves wither and fall; stalks dry up before blossoming; seed pods shrivel. There may be general wilting and shoot dieback.

Anthracnose and twig blight are widespread on privet. Leaves dry and cling to the stem; cankers at the base of stems are dotted with pink pustules. Bark turns brown and splits; death follows complete girdling of stems. European privet is highly susceptible; California, Amur, Ibota, and Regal privets are fairly resistant. Also found on black locust in GA and SC and pecan in GA. *Control* Remove infected twigs and branches from trees and shrubs, taking care to make smooth cuts at base of limbs and painting surfaces with a wound dressing. Plant sweet peas, from healthy pods, at a distance from apple and privet, in clean soil; rake up and burn plant refuse at the end of the season.

**Glomerella cingulata** (formerly *Gloeosporium melongenae*). (possibly identical with *G. piperatum*). Eggplant Anthracnose Ripe Rot, an occasional trouble. Yellow to brown spots on leaves and small to medium depressed spots on fruit show pink spore masses following rain or heavy dew. Spores are splashed by rain and

spread by tools, insects, and workmen. Rotation of crops and sanitary measures may be sufficient control.

**Glomerella cingulata** (formerly *Gloeosporium limeticolum*). Lime Anthracnose Withertip, only on lime in southern Florida. Shoots, leaves, and fruits are infected when young; mature tissues are immune. Twigs wither and shrivel from one inch to several inches back from the tip; young leaves have dead areas or are distorted; buds fail to open and may drop; fruits drop, or are misshapen, or have shallow spots or depressed cankers.

*Control* Spray with bordeaux-oil emulsion as fruit is setting, with two or three applications of 1 to 40 lime sulfur at 7–14 day intervals.

**Glomerella cingulata** (formerly *Gloeosporium apocryptum*). Maple Anthracnose Leaf Blight, an important leaf disease of silver maple, common also on other maples and boxelder, appearing from late May to August. The leaf spots are light brown, often merging with the leaves, appearing scorched. The effect may be confused with the physiological scorch caused by hot weather. On Norway maples the leaf lesions are confined to purple to brown lines along the veins. In rainy seasons there may be severe defoliation.

*Control* If trees have been affected more than a year or so, feed to stimulate vigorous growth. Spray with a copper fungicide two or three times at 14-day intervals, starting when buds break open.

**Glomerella cingulata** (formerly *Colletotrichum bletiae*) and other species. Orchid Anthracnose Leaf Spot on orchids coming in from the tropics. Lemon-colored acervuli are formed in soft, blackish spots in ragged leaves. Burn diseased plants or parts. Spray with a copper fungicide.

**Glomerella cingulata** (formerly *Colletotrichum pisi*). Pea Anthracnose Leaf and Pod Spot commonly associated with *Ascochyta* blight and often a secondary parasite. Spots on pods, stems, and leaves are sunken, gray, circular, with dark borders. Crop rotation is the best control.

**Glomerella cingulata** (formerly *Gloeosporium piperatum*). Pepper Anthracnose, Fruit Spot, sometimes a leaf and stem spot but more often a disease of green or ripe fruit. Spots are dark, sunken, with concentric rings of acervuli and pink masses of spores, which are washed to

other fruit. Seed is infected internally and contaminated externally. Harvest seed only from healthy fruit.

**Glomerella cingulata** (formerly *Colletotrichum erumpens*). Rhubarb Anthracnose, Stalk Rot. Oval, soft watery spots on petioles increase until whole stalks are included; leaves wilt and die. Small dark fruiting bodies with setae survive winter in stems, produce conidia in spring. Clean up all rhubarb remains in fall.

**Glomerella cingulata** (formerly *Colletotrichum antirrhini*). Snapdragon Anthracnose on snapdragon, chiefly in greenhouses, sometimes outdoors in late summer. Stems have oval, sunken spots, grayish white with narrow brown or reddish borders, fruiting bodies showing as minute black dots in center. Spots on leaves are circular, yellow green turning dirty white, with narrow brown borders. Stem cankers may coalesce to girdle plant at base, causing collapse of upper portions, with leaves hanging limp along the stem.

*Control* Take cuttings from healthy plants; provide air circulation; keep foliage dry; destroy infected outdoor plants in autumn. Spray, every 7 to 10 days.

**Glomerella cingulata** (formerly *Colletotrichum phomoides*). Tomato Anthracnose, common rot of ripe tomatoes, most frequent in Northeast and North Central districts. Symptoms appear late in the season, causing more loss to canning crops. Small, circular sunken spots, increasing to an inch in diameter, penetrate deeply into the flesh. At first water-soaked, the spots turn dark, with pinkish, cream, or brown spore masses in the depressed centers, often arranged in concentric rings. The disease is worse in warm, moist weather. The fungus winters in tomato refuse, sometimes in cucumber and melon debris.

*Control* Clean up trash and rotting fruit.

**Glomerella glycines** Fruit Anthracnose of tomato. Also, anthracnose on soybean.

**Glomerella gossypii** Fruit Anthracnose of tomato. Also, anthracnose on cotton.

**Glomerella lindemuthianum** (formerly *Colletotrichum lindemuthianum*). Bean Anthracnose, a major bean disease, sometimes mistakenly called "rust," generally present in eastern and central states, rare from the Rocky Mountains to the

Pacific Coast. It may also affect lima bean, Scarlet runner, tepary, mung, kudzu, and broad beans, and cowpea. It is worldwide in distribution, known in the United States since 1880. There are at least 34 strains of the fungus, in three different groups, but the disease has decreased in importance with the use of western-grown, anthracnose-free seed.

The most conspicuous symptoms are on the pods, small, brown specks enlarging to black, circular, sunken spots, in moist weather showing the typical pinkish ooze of the slime-spores. Older spots often have narrow reddish borders. After the spores are washed away, the acervuli look like dark pimples. If pods are infected when young, the disease extends through to the seed, which turns yellow, then rusty brown or black under the pod lesion. The infection may extend deep enough to reach the cotyledons. Leaf lesions are dark areas along veins on underside of the blade and on petioles. Seedlings may show stem spotting below diseased cotyledons. The fungus is spread by splashing rain, tools, and gardeners working with beans when they are wet. Optimum temperature is between 63° and 75 °F, with maximum around 85 °F.

*Control* Use western-grown seed. Saving home-grown seed is dangerous unless you can be sure of selecting from healthy plants and pods. Clean up, or spade under, old bean tops; rotate crops. Never pick or cultivate beans when vines are wet. There are some resistant varieties, but more reliance should be placed on obtaining seed grown where the disease is not present.

**Glomerella nephrolepidis** Fern Anthracnose, Tip Blight of Boston and sword ferns. The soft growing tips of fronds turn brown and dry. Keep foliage dry; remove and burn diseased leaves.

---

## Gnomonia

### Ascomycetes, Diaporthales

Perithecia innate, beaked, separate; paraphyses absent; ascospores two-celled, hyaline; anamorph state *Gloeosporium* or *Marssonina*. Diseases caused by *Gnomonia* are classified as anthracnose, scorch, or leaf spot.

**Gnomonia caryae** Hickory Anthracnose, Leaf Spot, widespread. The disease is common in eastern states, causing defoliation in wet seasons. Large, roundish spots are reddish brown on upper leaf surface, dull brown underneath. The fruiting bodies are minute brown specks, and the fungus winters in dead leaves on the ground.

**Gnomonia leptostyla** (*Marssonina juglandis*). Walnut Anthracnose, Leaf Spot, general on butternut, hickory, and walnut. Spring infection comes from ascospores shot from dead leaves on the ground, secondary infection from conidia. Irregular dark brown spots appear on leaflets in early summer; if these are numerous, there is defoliation. An unthrifty condition of black walnuts and butternuts is often due to anthracnose.

---

## Microdochium

### Deuteromycetes, Coelomycetes

Hyaline, two-celled spores are formed in acervuli without setae. Spores are rounded at ends and are formed in pale to black masses on leaves.

**Microdochium panattonianum** (formerly *Marssonina panattoniana*). Lettuce Anthracnose. Small, dead, brown spots appear on blades and petioles, centers often falling out leaving black margined shot holes. Spots progress from older to young inner leaves; outer leaves are broken off and blown around by wind. The disease is important only during prolonged periods of wet weather, when it may cause heavy losses. Sanitary measures and treating seed before planting suffice for control.

---

## Monographella

### Ascomycetes, Dothideales

Perithecia immersed in substratum, not beaked, not setose, paraphyses lacking; spores hyaline, two-celled. The genus contains more than 1,000 species, many destructive to plants, with conidial stages in many genera.

**Monographella opuntiae** (formerly *Mycosphaerella opuntiae*). Cactus Anthracnose on *Cereus*, *Echinocactus*, *Mammillaria*, and *Opuntia*. The curved spores of the anamorph state (*Microdochium lunatum*) form light pink pustules on the surface of moist, light brown rotten areas. Cut out and destroy diseased segments.

---

## Pezicula

### Ascomycetes, Helotiales

This is one of the discomycetes, cup fungi. The apothecia, formed on living plants, are fleshy, bright-colored with a peridium of dark cells forming a pseudoparenchyma. Spores are hyaline, fusoid.

**Pezicula malicorticis** (formerly *Neofabraea malicorticis*). Northwestern Apple Anthracnose on apple, crabapple, pear, quince, chiefly in the Pacific Northwest, where it is a native disease, serious in regions with heavy rainfall. Cankers are formed on younger branches – elliptical, dark, sunken, up to 3 or 4 inches wide and 10 to 12 inches long, delimited when mature by a crack in the bark. Conidia of the anamorph state (*Gloeosporium malicorticis*) are formed in cream-colored cushions, which turn black with age, in slits in the bark. Young cankers, reddish brown, circular spots appear on the bark in late fall. Fruit is infected, usually through lenticels from either ascospores or conidia in pustules on bark, but the disease may not show up until the apples are in storage.

**Control** Cut out diseased limbs or excise cankers, burning all prunings and dead bark. Spray with bordeaux mixture before fruit is picked and fall rains start; repeat after harvest, and again about 2 weeks later.

---

## Phlyctema

### Deuteromycetes, Coleomycetes

Pycnidia dark, separate or sometimes confluent, developing in or under the epidermis or bark. Conidiophores simple or forked; conidia hyaline,



one-celled, cylindrical or log, spindle-shaped, mostly bent.

**Phlyctema vagabunda** (formerly *Gloeosporium allantosporum*). Anthracnose, Dieback on raspberry in Oregon, Washington. See ► *Elsinoë veneta* under Spot Anthracnose for the common raspberry disease called anthracnose.

---

## Pseudopeziza

### Ascomycetes, Helotiales

Apothecia brown, cup-shaped, arising from leaves on short stalks, not setose, paraphyses present; spores one-celled, hyaline, ovoid.

**Drepanopeziza ribis** (formerly *Pseudopeziza ribis*). Current Anthracnose, Leaf, Stem and Fruit Spot generally distributed on currant, flowering currant, and gooseberry, first reported on black currants in Connecticut in 1873. Very small, brown, circular spots appear first on lower, older leaves, which turn yellow if spots are numerous. Hyaline,

crescent-shaped conidia are formed in moist, flesh-colored masses in center of spots. In severe infections there is progressive defoliation from below upward.

Other occasional symptoms are black, sunken spots on leaf stalks, light brown to pale yellow lesions on canes, and black flyspeck spots on green berries, with considerable reduction in yield. Apothecia are formed on fallen leaves; ascospores are forcibly discharged in spring and carried by wind to young leaves.

*Control* Clean up and burn old leaves under the bushes. Spray with bordeaux mixture (preferred to the newer organics) shortly after leaves appear (about 3 weeks after blossoming) and immediately after picking. Include a good spreader and cover both leaf surfaces thoroughly.

**Pseudopeziza ribis** (see ► *Drepanopeziza ribis*). Current Anthracnose, Leaf, Stem and Fruit Spot generally distributed on currant, flowering currant, and gooseberry, first reported on black currants in Connecticut in 1873.