DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System
Sherrie Smith

SPDN
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Arkansas Plant Health Clinic Newsletter

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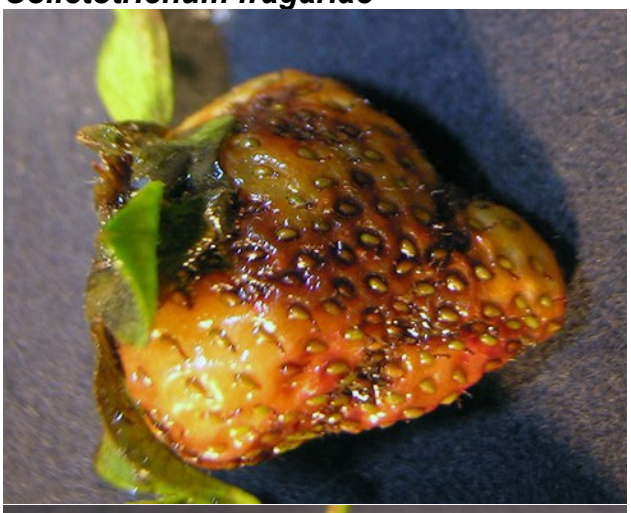
Strawberry

There are three species of *Colletotrichum* which cause disease on strawberries: *Colletotrichum fragariae*, *C. acutatum*, and *C. gloeosporioides*. Anthracnose Fruit Rot, or Black Spot, is a serious and economically important disease of strawberry fruit. Symptoms begin as light-brown, water-soaked spots on ripening fruit. Lesions rapidly become firm and round and turn dark brown to black in color. Occasionally, lesions remain tan. Pink, salmon, or orange-colored conidia cover the centers of the lesions during periods of high humidity. The entire fruit becomes infected, dries up, and mummifies. When green fruit is infected, lesions may be restricted to a single achene, which turns black. As the fruit ripens, the lesion enlarges into a typical Anthracnose lesion. Control is difficult once the disease is established in a field. Diseased fruit should be removed as soon as it is noticed. Homeowners should avoid overhead irrigation. Commercial growers may use Abound, or Cabrio, or CaptEvate, or Flint, or Inspire Super, or Pristine, or Quadris Top, or Rovral, or Switch, or Tilt. Homeowners may use Captan.

Strawberry Anthracnose- *Colletotrichum fragariae*



Photos by Sherrie Smith, University of Arkansas Cooperative Extension

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Cucurbits

Most seasons, Cucurbit Angular Leaf Spot, caused by *Pseudomonas syringae* pv. *lachrymans*, is not a serious problem. However, during seasons with prolonged wet conditions, crop losses can be substantial. All cucurbits are susceptible including cantaloupes, cucumbers, gourds, and watermelons. This is a seed-borne pathogen that infests seed beneath the seed coat, resulting in infection of the cotyledons upon germination. On the leaves, Angular Leaf Spot first appears as small, water-soaked lesions. The lesions expand, usually along a vein. During periods of high humidity, a clear to milky bacterial exudate appears on the surface of the lesions. Lesions later turn tan to brown, dry up, and sometimes fall out, giving a tattered appearance to the leaves. Petioles, stems, and fruit may also become infected. Infection of watermelon fruit causes large, water-soaked brown areas on the fruit. Infected fruit may become deformed or completely rotted. The bacterium is carried from leaf to leaf and plant to plant by rain, irrigation splash, wind, or equipment and field workers. It overwinters on crop debris and can persist for several years on dried leaves and stems. Starting with clean seed and practicing crop rotation away from cucurbits for three years is the best way to minimize Angular Leaf Spot. A 20-minute seed treatment in 50°C (122°F) water containing calcium propionate at 4.4 oz/gal water; or acidic cupric acetate at 6.7 oz/gal water kills much but not all of the bacteria. Repeated applications of a copper fungicide can be helpful to protect young plants. Sprays are generally ineffective once an epidemic is full-blown.

Watermelon Angular Leaf Spot-
Pseudomonas syringae* pv. *lachrymans

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Squash Angular Leaf Spot-
Pseudomonas syringae* pv. *lachrymans

Photo by Richard Klerk, University of Arkansas Cooperative Extension

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Turf

The most serious and common disease of Zoysia turf is Large Patch, caused by *Rhizoctonia solani*. Symptoms begin as water-soaked, black to reddish-brown lesions on stolons and basal leaf sheaths. As tissue is killed by the fungus, irregular circular patches develop that may be several feet or more in diameter. Patches can enlarge to more than 25 feet in diameter. Sometimes a smoke colored or orange halo may be observed early in the morning at the margins of the patch. Affected shoots may be pulled easily from their points of attachment. Roots are discolored but not rotted. In Zoysia, the patches occur a little later in the spring than in bermudagrass. Patches in Zoysia occur two to eight weeks after green up or in the autumn. Sometimes, symptoms slowly disappear during the growing season as surviving tillers start filling in the killed spots. Night irrigation and excessive amounts of nitrogen increase both the severity and incidence of patch diseases. Complete fertilizers with time release nitrogen should be used instead of quick release nitrogen. No more than two pounds of nitrogen per 1000 sq. feet total should be applied per growing season. Good drainage is essential for a healthy lawn. The turf should be de-thatched if thatch accumulates to more than 0.5" thick. De-thatching should be done while grass is actively growing. Fungicides may be applied once in the spring between March 15 and April 15, and again in the fall between September 20 and October 10. Bayleton, Eagle, Heritage, Instrata, and Prostar are labeled for Large Patch. For Large Patch, soil test for pH and nutrients. Avoid night watering. Homeowners may use products labeled for control of Rhizoctonia diseases. Products containing azoxystrobin, or flutolanil, or myclobutanil, or triticonazole, or triadimefon have proven effective when applied per label.

Zoysia Large Patch-*Rhizoctonia solani*

Photo by Michelle Mobley, University of Arkansas Cooperative Extension

Coneflower

Coneflower (Echinacea) is a hardy, reliable perennial that usually gives little trouble. They are relatively drought tolerant once established, thriving in any sunny location. Although a native wildflower, there are many exciting new color varieties in both double and single forms offered through the nursery trade. Occasionally, Coneflowers that are kept in humid, crowded conditions develop Bacterial Blights or Leaf Spots. Both *Xanthomonas* and *Pseudomonas* species of bacteria have been recorded on Echinacea. Angular red lesions or spots develop on the upper surfaces of the

leaves, usually following the veins. Proper cultural practices are required for control of bacterial diseases. Good air circulation and spacing are advisable. Plants should be watered at ground level, and the foliage should be kept dry. If there are just a few spots, the affected leaves should be removed and destroyed. Severely affected plants should be cut back to remove the damaged leaves and stems. Do this only when the foliage is dry to avoid spreading the bacterium further. Copper fungicides are useful for the protection of new growth.

Coneflower Bacterial Spot-

Xanthomonas campestris* pv. *campestris

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

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