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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.

## Spinach

Cladosporium leaf spot of spinach, caused by *Cladosporium variable* can be a serious problem during cool, wet weather. Symptoms are numerous, small, circular, white to yellow spots, first on older leaves and then spreading to younger ones. Spots often coalesce to form large, irregular, blighted areas on afflicted leaves. The center of the lesions produces olive-black spore masses during periods of prolonged leaf wetness. In the case of severe infection, all leaves on the plant may be seriously injured or killed, with older leaves dying first. Infected seed becomes withered. The disease is spread through infested seed, or by splash or windblown spores. *C. variable* overwinters on seed and volunteer spinach plants. A minimum of a two year rotation should be practiced between spinach crops. All volunteer plants should be disked under in the fall or spring before planting. There are cultivars with partial resistance available.

### *Cladosporium variable* conidia- 5-30 x 3-13µm



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### Spinach Cladosporium Leaf Spot-*Cladosporium variable*



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### Spinach Cladosporium Leaf Spot-*Cladosporium variable*



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## Apple

Black Rot, caused by *Botryosphaeria obtusa*, is a common disease of apples and pears. Fruit, leaves, and limbs may all be affected. Symptoms on limbs begin as slightly sunken, reddish-brown areas. The bark eventually becomes cracked, revealing small, black fruiting bodies of the fungus in the cankered areas. Most Black rot cankers remain small, but some enlarge over the course of several years, killing the bark and causing dieback. Limbs injured by low temperatures, insects, or Fire blight are the most susceptible to Black Rot cankers. Fruit is commonly infected early in the season as soon as bud scales begin to open. Minute red flecks develop on the sepals, later becoming purple surrounded by a red ring. The sepals become brown and rotted. This results in a blossom-end rot later in the season. Similarly, infections on young fruit begin as tiny red flecks soon after petal fall. The flecks become purple pimples that remain small until the fruit begins to ripen. At that time they rapidly develop into large lesions that form a series of concentric black and brown rings. Eventually the fruit mummifies and may remain attached to the tree. Leaf lesions begin as small purple flecks that enlarge and become circular tan to brown spots with purple margins. Leaves that are heavily infected become chlorotic and fall from the tree. Trees that lose a majority of their leaves early in the season are unable to produce a good fruit crop, severely reducing yield and quality. The pathogen overwinters on mummified fruit and in limb cankers. Control of Black Rot is a combination of good cultural practices and chemical controls. All mummified fruit, dead wood, and prunings should be removed from the orchard. Orchard sprays should begin as green tip. Sovran 50WG and Pristine are labeled for control of Black Rot in commercial orchards. Homeowners may use a fruit tree spray containing Captan.

### Apple Black Rot-fruit symptoms-*Botryosphaeria obtusa*



Jones, APS Image Library

### Apple Black Rot canker- *Botryosphaeria obtusa*



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## Pachysandra

Pachysandra is an excellent evergreen groundcover for shady to partly shaded areas. The plants form a dense mat 8-10 inches high. It is one of the few groundcovers that thrive beneath pines. Pachysandra grows best in a good, loose, fertile soil with an acidic pH under 6.0. Problems can arise when pachysandra is stressed by transplanting, full sun, shearing, insect damage, or winter injury. The most serious disease of pachysandra is leaf blight and stem canker, caused by *Volutella pachysandricola*. Symptoms on leaves begin as brown or tan blotches with dark margins. The lesions often develop concentric rings of lighter and darker zones as they enlarge. Stem cankers begin as water soaked areas that become brown and shriveled. Leaves above the cankered stems start to yellow. When the stem is completely girdled, the plant wilts and dies. When conditions are warm and humid, pinkish-orange spore masses are produced on the cankered stems and on the underside of leaves. Pachysandra blight can spread rapidly through a planting, causing devastating losses. Providing good growing conditions is the best protection against this disease. Severely diseased plants should be removed from the planting. Thiophanate methyl, chlorothalonil, and mancozeb are effective against *Volutella*. Plants should be sprayed when new foliage emerges in the spring, and repeated following label directions.

### **Pachysandra blight-*Volutella pachysandricola***



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## Zoysia

The most devastating 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. In severe cases entire lawns may be blighted. 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, 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 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 total should be applied per growing season. A soil test is useful to see where fertility levels are. 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. Heritage, Prostar, Eagle, Instrata, and Bayleton are labeled for Large Patch. Spectricide Immunox, Fertilome F-Stop Granules, and Green Light Fung-Away Systemic fungicide are available for homeowners.



**Zoysia Large patch-*Rhizoctonia solani***



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