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Southern Plant Diagnostic Network
Issue 3-March 15, 2021

Arkansas Plant Health Clinic Newsletter

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Spruce

Timing is critical for control of Rhizosphaera Needle Cast caused by *Rhizosphaera kalkhoffii*. This is the most common problem of species of spruce in the landscape. The disease usually starts at the bottom (inside, near the trunk) of the tree and progresses outward and upward. The needles will take on a brown or purplish color and then fall to the ground. The first visible signs of infection occur one year after infection in the late fall or spring. Last year's needles turn yellow, then purplish brown and fall from the tree, while the new needles remain green. These new green needles become infected the spring they emerge and fall to the ground the following season. Small black fruiting bodies (pycnidia) of the fungus may be observed with a hand lens. They appear on the needles in linear rows. Watch your trees for new growth, (candles), emerging at the tips of branches. Protective sprays applied when new needles are half-emerged from the candles provide satisfactory control. Products containing chlorothalonil such as Bravo or Daconil, and manganese/zinc such as Cleary's Protect T/O are labeled for control of Rhizosphaera Needle Cast. Follow label directions for rate and frequency of application. Blue spruces grow best in fertile, well-drained, moist soil. They dislike compacted soils. When stressed by drought or poor soil, they are prone to Needle Cast.

Spruce Rhizosphaera Needle Cast-*Rhizosphaera kalkhoffii*

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

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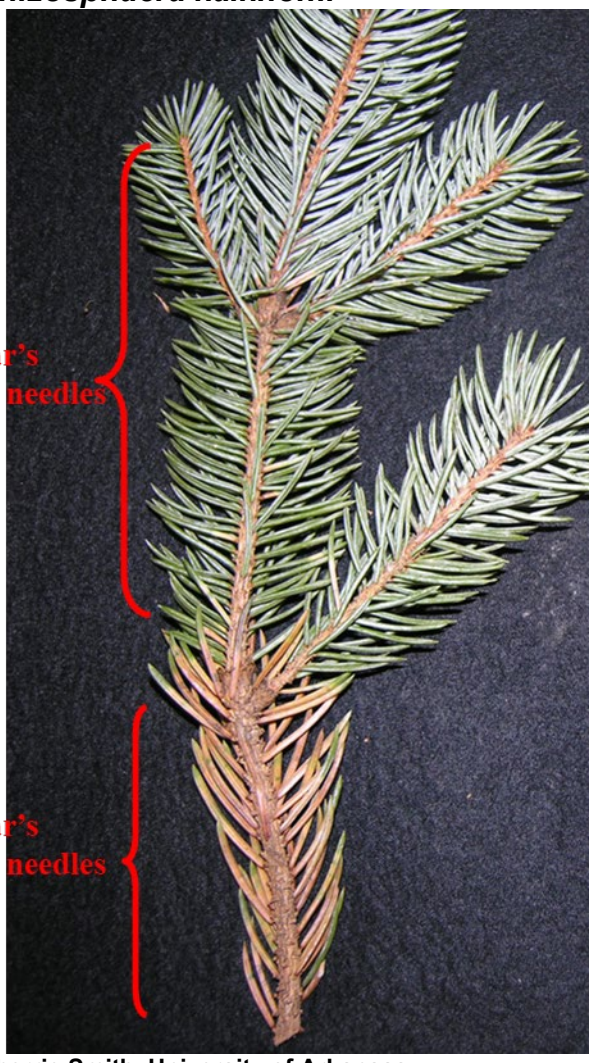

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Spruce Rhizosphaera Needle Cast-*Rhizosphaera kalkhoffii*

Photo by USDA Forest Service, North Central Research Station Archive, Bugwood.org

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Turf Winter Kill

Many areas of the state have experienced severe winter injury to Bermudagrass, Centipede, St. Augustine, and Zoysiagrass. There are numerous factors involved in winter damage to lawns and golf greens. Early winter damage is associated with turf being subjected to a sudden severe freeze while still succulent and green. In such a scenario, 50% or more stand losses occur between 18 and 23°F. Winter kill can also occur in the spring as grass is greening up, if a severe cold snap occurs. In the early spring sugars and carbohydrates have not been completely converted into more cold-tolerant starches. Freezes are also associated with dry windy conditions that desiccate the crowns, causing them to be more liable to injury. Alternatively, rain accompanying cold fronts causes freezing of the crowns which causes them to be easily crushed by foot traffic. The factors most often associated with extensive winter kill are excessive traffic, standing water, drought, potassium deficiency, excessive thatch, excessive fall nitrogen fertilization, excessive windy conditions, close mowing, shade, pest or pesticide damage, and susceptible turf cultivars. Let us address a few of these factors in more depth. A winterizer type fertilizer is important in the fall. Potassium levels should indicate medium to high levels with leaf tissue analysis indicating at least 1.5% potassium. Excessive thatch levels cause turf to root above the soil in the thatch layer, making the turf more susceptible to winter injury. De-thatch during the growing season if thatch is greater than ½". Avoid excessive fall nitrogen fertilization as this promotes succulent growth that is more easily injured. Close mowing and shade both reduce carbohydrate levels and contribute to winter kill. Disease and insects weaken the grass, making it more susceptible to freeze injury. The multitude of factors that can cause winter injury may mean that one homeowner has a beautiful stand of turf while the neighbor next door has 90% winter kill. Growing cold tolerant cultivars lessens the incidence and severity of winter injury. Vamont, Midiron, TifSport, and Quickstand bermudagrasses are cultivars which have increased cold tolerance. Some of the zoysiagrass cultivars that have been found to have more cold tolerance are Korean Common, Zenith, Meyer, Belair, and El Toro.

Turf Winter Injury-Abiotic

Photo by David Freeze, University of Arkansas Cooperative Extension

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Turf Winter Injury-Abiotic

Photo by Brannon Thiesse, University of Arkansas Cooperative Extension

Onion

Onion crops are in the ground in many parts of the state. Downy Mildew, caused by *Peronospora destructor*, affects all Allium crops: onions, garlic, chives, and shallots. This disease can be very destructive during periods of cool, humid weather. Initial symptoms are elongated, slightly paler patches on the leaves. The patches turn light brown to tan with a grayish-violet fuzzy growth during wet weather. The diseased section of the leaf eventually turns yellow/brown, collapsing and folding over. Seed stem lesions are circular or elongate, often only on one side of the stem. This causes the stem to break over from the weight of the seed head, resulting in the withering of the seeds. Systemically infected plants produce bulbs that are soft and shriveled, with the outer fleshy scale becoming amber colored, wrinkled, and watery. Other infected bulbs remain firm but sprout prematurely. The foliage of such bulbs is an abnormal light green color. Downy Mildew overwinters on volunteer onion plants and persists on stored bulbs and seeds. Spores are blown or splashed up onto new plants in the spring. For infection to occur, relative humidity must be greater than 95%. New spores are produced at night. Typically, the infection cycle is characterized by latent periods of 9-16 days and 1-2 days of sporulation. Foliage in the field may be destroyed during or after 4 infection cycles. Cultural controls are critical in controlling Downy Mildew. All crop debris, volunteer plants, and unhealthy bulbs should be removed and destroyed. A strict crop rotation schedule should be followed with 3-4 years between Allium crops. Good drainage in the field is essential. It is recommended that rows face the same direction as prevailing winds to help avoid prolonged leaf wetness. For the same reason, overhead irrigation must be avoided. Fungicides such as Pristine, or Cabrio, or Revus are available to commercial growers. Fungicide applications must be frequent as new foliage is constantly being produced. Homeowners must depend on practicing good sanitation and crop rotation.

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Onion Downy Mildew-*Peronospora destructor*

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Onion Downy Mildew-*Peronospora destructor*

Photo by Howard F. Schwartz, Colorado State University, Bugwood.org

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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.

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