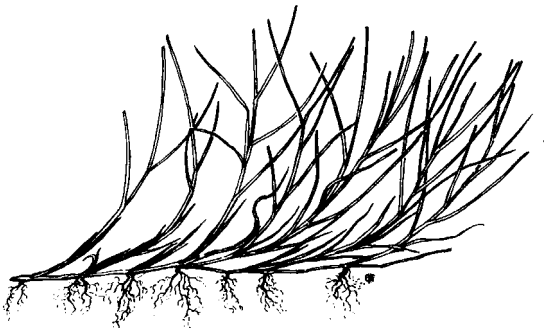
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION $1.50 AUGUST 10, 2000



INSIDE

Diseases of Turfgrass

Bruce B. Clarke, Ph.D., Turfgrass Pathology

Basal Stem Rot Anthracnose

This disease, caused by the fungus *Colletotrichum graminicola*, is apparent on bentgrass, annual bluegrass, fine fescue, perennial ryegrass, and Kentucky bluegrass at this time. The fungus typically attacks turf growing under low soil fertility and/or heat and drought stress. Low cutting height can also enhance symptom development. To identify **anthracnose** in the field, look for small black fruiting bodies with protruding black spines. For best results, increase turf vigor with light applications of nitrogen, maintain adequate irrigation, reduce thatch, and raise the cutting height (when possible). Apply Banner, Bayleton, Chlorostar, Cleary 3336, Compass, Daconil, Eagle, Fungo, Heritage, Manicure, Rubigan, Sentinel, Spectro, or Thalonil on a preventive basis, per manufacturer's recommendations. Once the disease develops, good results have been obtained with a tank mix combination of Bayleton 50DF (1 oz/1000 ft ^{2}) + Daconil Ultrex 82.5WDG (2.8 to 5.5 oz/1000 ft^2) or Cleary 3336 50W (4 to 6 oz) + Daconil Ultrex 82.5 WDG (2.8 to 5.5 oz/1000 ft^2). Avoid the use of ProStar on turf infested with anthracnose since this product has been shown to enhance this disease when conditions are conducive for disease development.

Brown Patch

This disease, caused by the fungus *Rhizoctonia solani*, continues to be reported on tees, greens, and home lawns due to the warm, humid weather. To reduce the incidence and severity of **brown patch**, avoid nitrogen applications during hot weather, irrigate between midnight and 8 a.m. to reduce the period of leaf wetness, and spray turf with Banner, Chipco 26GT, Chlorostar, Cleary 3336, Compass, ConSyst, Curalan, Daconil, Eagle, Fungo, Heritage, Manicure, Pentathlon, Prostar, Sentinel, Spectro, Thalonil, or Touche per manufacturer's recommendations.

Fairy Ring

This problem, caused by a group of fungi known as **basidiomycetes**, is apparent on golf greens and home lawns at this time. Symptoms typically appear as continuous or interrupted rings of dark-green turf. Mushrooms, which are often associated with **fairy rings**, usually develop only in the mid-spring and fall months. Although chemicals have been relatively ineffective against these

SEE TURF DISEASES ON PAGE 2

Turf Diseases from page 1

fungi in the past, Prostar 50W (6 oz/1000 ft^2) and Heritage 50WG (0.4 oz/1000 ft^2) have recently shown promise in university tests. Both materials should be applied in large volumes of water (10 to 50 gal H_20/ 1000 ft^2) or watered in immediately after application (approximately ¼ inch of H_20). Aerification prior to treatment may aid in control. Repeat applications, as needed, every 28 days. Maintain adequate fertility and soil moisture to mask symptom expression.

Pythium Blight

Pythium blight has been quite active on golf and landscape turf during the past few weeks. Since **pythium** thrives in low or poorly drained areas, especially when the night temperatures are above 70^0F, we should see a lot more of this disease as the "hot muggy" weather continues this summer. For best results, improve drainage, water in the morning hours, avoid over fertilization, and apply Aliette, Banol, Heritage, Koban, Prodigy, Quell, Subdue, or Terrazole, according to the manufacturer's recommendations.

Slime Mold

Although not actually a disease, inquiries continue about the appearance of tan to black colored material on turf, flowerbeds, and home gardens. In many cases, this material has been reported to occur virtually overnight on plant stems, grass blades, soil mounds, or other vertical objects. Upon close examination, these mysterious structures have been identified as clumps of the common **slime mold** fungus *Fuligo*. Fuligo is not injurious to plants and will soon disappear on its own. It can be easily dispersed with a rake or steady stream of water, if desired. No fungicides are recommended.

Yellow Tuft

This disease, caused by the fungus, *Sclerophthora macrospora*, is present on greens and irrigated landscape turf at this time. **Yellow tuft** (=Downy Mildew) occurs on almost all cool-season turfgrasses; however, it is usually only a serious problem on turf maintained at a low cutting height. Poorly drained or heavily irrigated sites are often associated with disease development. Infected turf appears stunted, off color (yellow to light green), and may exhibit slightly broadened leaf blades and dense clusters of shoots. Patches range in size from ¼ to 1 inch in diameter for bentgrass and red fescue turfs, and ½ to 3 inches for bluegrass and perennial ryegrass areas. Tufts are easily removed from the soil due to the absence of adventitious roots. To control, improve drainage, avoid overwatering, mow only when the grass is dry, apply iron sulfate to mask symptom expression, and spray turf with Aliette, Prodigy, or Subdue on a preventive basis (next spring) at 21 day intervals from late March to early June. ❑

Black Spot of Rose

Ann B. Gould, Ph.D., Plant Pathology and Clare S. Liptak, Senior Program Coordinator, RCE Resource Center

This growing season appears to be very conducive to the development of **black spot**, one of the most important diseases of roses worldwide. Although this disease was discussed in an earlier issue of this newsletter, it's become such a problem this year that we've decided to present the disease in greater detail.

Black spot, caused by the fungus *Marssonina rosae* (*Diplocarpon rosae*), is most troublesome on roses grown outdoors. The disease was first reported in Sweden in 1815 and by 1844 had spread through much of Europe. The disease was identified in the northeastern United States in 1830 and has since been found throughout the world wherever susceptible roses are grown.

Symptoms

Black spot gets its name from descriptive, black spots (1/10th to 1/2 of an inch) that appear on canes and on the upper and lower surfaces of leaves. On leaves, the spots have feathery edges, are accompanied by yellow "halos" of leaf tissue, and contain small blisters. When moistened with water, these blisters are visible with a magnifying glass. Petioles and fruit may also be affected; infected flower petals exhibit small red dots surrounded by distorted tissue. On first-year canes, irregular, raised, red-purple blotches appear, which become blackened and blistered with time.

Infected leaves turn yellow and drop from affected plants. Without leaves, the plant cannot produce sufficient starches and sugars needed for normal growth and for survival the following winter. This common fungal disease weakens and disfigures susceptible roses; affected plants produce fewer, poor quality blooms and are more susceptible to winter injury.

Disease Development

In the spring, spores of *M. rosae* are carried from lesions on previously infected tissue (canes or fallen leaves) by rain water or overhead irrigation. These spores infect the upper or lower surfaces of new leaves that are 1 to 2 weeks old. High humidity, plant surfaces that stay wet for at least 7 continuous hours, and temperatures between 68 and 76°F (20 and 24°C) favor disease development. Three to sixteen days following infection, spots descriptive of the disease begin to appear on the upper leaf surface. Within 14 to 16 days of infection, spores produced in these spots spread the disease to newly expanding leaves and canes. Black spots may also form on the lower leaf surface about a month following infection. If weather conditions are favorable, the disease cycle repeats itself throughout the growing season.

See Black Spot on page 3

BLACK SPOT FROM PAGE 2

Disease Management

To manage black spot, as well as any plant disease, use cultural practices that help reduce inoculum or impact of environmental conditions conducive to disease development. In general, keep the foliage dry, reduce humidity, practice sanitation, and select varieties wisely to reduce the incidence and severity of disease.

Since *M. rosae* overwinters on diseased canes and leaves, reduce initial inoculum by raking old leaves and pruning diseased and damaged canes in early spring. After pruning, spray with an appropriate fungicide (see below).

Proper plant spacing, watering, and pruning practices impact disease development by reducing leaf wetness and humidity. So that the foliage stays dry, use soaker hoses or drip irrigation rather than overhead sprinklers to water plants. In addition, plant roses in a location that receives morning sun. Morning sun dries dew on the foliage and is less stressful for plants than the hot afternoon sun. Plant floribundas, hybrid teas, and grandifloras 2 to 3 feet apart, and plant climbers and most shrub roses 4 to 8 feet apart. Interplant resistant varieties with susceptible ones to slow disease development. The removal of crossing canes increases air movement in the plant; make the final cuts above an outward-facing bud, so that no additional crossing canes develop.

In general, roses with yellow and gold flowers are usually more susceptible to black spot than plants with red or pink flowers. Austrian brier roses (*Rosa foetida*), polyanthas, tea roses, and hybrid teas are also susceptible. Often the species roses (the saltspray rose (*R. rugosa*), for example), are more resistant than cultivars bred solely for their appearance. Rose cultivars resistant to black spot may have leaves with a thicker waxy cuticle, which helps to prevent penetration by the fungus. In other resistant cultivars, the lesions caused by the fungus stay small and have fewer harmful effects. Still other cultivars do become infected, but the symptoms and spores that spread the disease develop slowly so that plants do not weaken as quickly.

Keep in mind, however, that many races of *M. rosae* exist, and different races are dominant in different rose growing areas. Because of this, a rose that is resistant in one area may not be resistant in another.

For best results, spray fungicides (be sure to cover all susceptible tissue) in mid-May and repeat at the intervals specified: azoxystrobin (every 7 days unless disease pressure is light); Camelot, captan, Consyst, maneb, triforine, Ziram (every 7 to 10 days); Champ, chlorothalonil, Kocide, lime-sulfur (may also be used as a dormant spray), mancozeb, thiophanate-methyl, trifloxystrobin (every 7 to 14 days); elemental sulfur (every 5 to 6 days); myclobutanil (every 10 to 14 days); neem oil, paraffinic oil, Phyton 27, propiconazole (outdoor use only) (see labels for timing); Spectro (every 7 to 21 days); *or* Zyban (every 7 days).

Note: Zyban has caused some injuries on the varieties Red Empress, Blossom Time, and Golden Showers. *Do not* apply Triact (neem oil) to wilted or stressed plants or to newly transplanted materials prior to root establishment. Avoid application to some rose flowers without prior testing. Check for phytotoxicity before large-scale use of copper fungicides and paraffinic oil. ❑

Plant Diagnostic Laboratory Highlights

Richard Buckley, Plant Diagnostic Laboratory Coordinator

Turfgrass

Summer finally appears in the Plant Diagnostic Laboratory. We are currently experiencing a summer-like sample rush that we suspect will continue through Labor Day. A number of summer diseases are currently active in the mid-Atlantic and northeast region.

The biggest news of the week is the onset of **gray leaf spot**. The first sample of the season was diagnosed on perennial ryegrass from Philadelphia Country Club on August 1. The folks at Philadelphia use a commercial disease prediction service that signaled an infection period on July 28th. The second signal came on the first, which coincided with symptom development on their untreated disease check plots and our subsequent diagnosis. Since that time, we have received reports of **gray leaf spot** activity in several states including Kentucky, Maryland, Illinois, and Pennsylvania. In addition, several samples of perennial ryegrass have been diagnosed this period with **leaf spots** caused by the fungus *Bipolaris sorokiniana*. We have also seen ryegrass recently with **brown blight**, caused by *Drechslera siccans*. The leaf spot symptoms exhibited by these diseases may be mistaken for **gray leaf spot**, so it is especially important to get a proper identification *before* you consider fungicide options.

Bentgrass dead spot was diagnosed again this week. The sample, from a Salem County golf course, was a repeat from last season. Unfortunately the disease has appeared on all 18 greens and is causing significant damage. The current **bentgrass dead spot** mimic is **dollar spot**. Since **dollar spot** is so well known, samples of the disease rarely get to this laboratory. We are currently having an influx of **dollar spot** coming into the lab due to the fear

SEE HIGHLIGHTS ON PAGE 4

HIGHLIGHTS FROM PAGE 3

of **dead spot**. A healthy fear is good, especially where expensive fungicide treatments are concerned. **Dollar spot** was diagnosed on golf turf from Atlantic and Camden County golf courses, from golf courses in New York and Pennsylvania, and from tennis courts in Pennsylvania. We have also seen **cutworm** injury that was being diagnosed in the field as **dead spot**. With **cutworms** there is normally evidence (frass) of their snacking in the spot!

Summer patch might be the most common disease diagnosed in the laboratory this week. If your golf greens are on a **summer patch** prevention program, a Mid-August fungicide treatment may be prudent. We have seen the disease on courses where the July treatment is nearing the end of the recommended spray interval. Extra soil moisture and temperature-stress are predisposing factors, which could increase the disease incidence as we move through the month. **Summer patch** was diagnosed on turf samples from Camden, Cape May, Monmouth, Somerset, and Middlesex Counties. Watch for **summer patch** in Kentucky bluegrass lawns. Because we rarely recommend the fungicide program on landscape turf, the disease is more common on lawns than golf courses. **Summer patch** control in landscape turf is best served by renovating with a non-host like tall fescue or perennial ryegrass.

Other diseases of interest this month include: **anthracnose** (never goes away!); **root-infecting pythium** on new sand greens in Cape May County; and **brown patch** on everything. **Chinch bugs** were active in Zoysia from Cumberland County. There has also been a lot of interest in **nematodes** on golf turf. Some samples have populations of **lance**, **stunt**, **ring**, and **root-knot** nematodes that are above reported threshold levels.

Landscape

Anthracnose diseases are also quite common in landscape plants at this time. Several closely related fungi cause diseases that are commonly known as **anthracnose**. Most of these diseases cause leaf spots and blight green stems. **Anthracnose** has been diagnosed on euonymus, privit, and zebragrass. Another **anthracnose**, known as **didymosporina (Marssonina) leaf spot**, is quite common at this time. Maple samples are coming into the lab with this leaf spot from Morris and Warren Counties. Unlike a typical **shade tree anthracnose**, which is active in the spring, **didymosporina leaf spot** is active later in the season. We have also seen samples of **dogwood anthracnose** from a Middlesex County landscape. Insect problems have been common this week. **Juniper scale** was found on juniper samples from Essex County. **White pine weevils** and **bark beetle** were diagnosed as problems for a tree line of very stressed white pine. **Oystershell scale** and **lecanium scale** was identified on a maple from Monmouth County.

Greenhouse

Poinsettia scab, caused by the fungus *Sphaceloma poinsettiae*, was diagnosed on poinsettia samples from a Morris County greenhouse. The disease causes scabby, angular leaf spots with yellow halos. It also has a gibberellin-like effect on heavily infected plants that causes abnormal elongation of the shoots. It seems that this disease may be cutting related, so careful inspection of your stock is essential. ❑

Pest Notes

Deborah Smith-Fiola, Ocean County Agricultural Agent, and Steven Rettke, Program Associate in IPM

✔ **FALL WEBWORM (1266-1795 GDD – 2nd generation):** A late season pest of mostly visual concern. This caterpillar feeds within silken webs encircling branches, twigs, and leaves. They only feed inside the web, which they enlarge as they grow. Larvae may feed for a few weeks before webs become apparent. The webs become most obvious near the end of larvae feeding periods. The second generation is out now. The first generation in June is usually small, while the second generation may sometimes have outbreak populations. More than 100 species of trees may be attacked, including mulberry, ash, elm, linden, sweetgum, willow, walnut, hickory, oak, apple, and other fruit trees. Prune out nests (pole pruners can be useful). The early stages (instars) are vulnerable to sprays of *Bacillus thuringiensis*, horticultural oils and insecticidal soaps. These control materials will also have limited impacts upon the many effective egg and larvae parasitoids and predators.

✔ **HAIRY CHINCH BUGS (1903-2160 GDD — 2ND generation):** Fifty percent of the 2nd instar nymphs are active during the above growing degree-days. Above average rainfall this summer promotes the natural fungus *Beauveria,* which can wipe out chinch bug populations. Do not apply a calendar treatment unless monitoring confirms a large, damaging population. Conversely, hot and droughty summers normally increase chinch bug numbers. The worst damage typically develops from the second generation, which occurs during mid-August and into September. The insects are found near the soil surface, at the transition zone between green and brown grasses. They suck sap from the crown and stems of grass, causing yellowish spots to appear on leaves. They prefer turf

SEE PEST NOTES ON PAGE 5

PEST NOTES FROM PAGE 4

with high thatch and can consume entire lawns. The use of endophyte enhanced cultivars have proven to be effective toward managing this pest (none available for Kentucky Bluegrass). If sampling methods demonstrate numbers greater than 15 to 20 individuals per square foot, then treatment thresholds may be present. First generations can be controlled with Dursban WP, Mavrik, or Diazinon. If grubs are present during the second generation, then Turcam or Dycarb applications will control both.

✔ **EASTERN SPRUCE GALL ADELGID:** This imported adelgid causes green, circular pineapple-shaped galls at the base of new growth. Galls are ¾ to 1 inch long. The preferred host is the Norway spruce, but white, red, and blue spruce can be infested by this pest. The immature females overwinter on twigs at base of buds. Only one generation occurs each year. If galls are numerous, eventual twig death can occur. With continued infestations, this insect can be a serious pest over time.

Once green galls form in spring, control sprays are useless. They turn brown and open by late August to release mature adelgids. If green galls have not been pruned out by now, focus on upcoming adult control or pruning next spring. Sticky traps detect flying adults in early fall. Horticultural soaps or oils, when applied at the proper time, offer excellent suppression against adults. Overwintering nymphs on terminals can also be controlled with dormant oils. Note: Some Norway spruces have a genetic immunity to gall formation from this adelgid. Hence, it is possible to have two trees side by side with only one being affected with galls.

✔ **EUONYMUS SCALE (1150-1388 GDD – 2ND generation crawlers):** Check plants now using a hand lens to see the tiny yellow/orange crawlers. Some of the early hatching crawlers have already settled and inserted their mouthparts, although the cool weather may have delayed egg hatch this year. Later hatching crawlers may not be active until later in the month. Monitor before treating with double-sided tape or sticky traps. Horticultural oils and insecticidal soaps are very effective against crawlers and recently settled nymphs. The nymphs typically do not produce their waxy cover that is thick enough to repel insecticides until approximately 2 weeks after hatch. Continue monitoring and treat once at peak crawler emergence. Prune out branches that are heavily infested.

✔ **(BLACK) LOCUST LEAFMINER:** The casual observation of black locust trees along the edges of our roads has indicated relatively heavy feeding this summer by the locust leafminer in many areas of the state. The earlier leaf mining by the larvae (June) followed by the skeletonizing from the yellow and black adult beetles (July) has resulted in severe browning and an unthrifty appearance of the foliage. The damage is considered to be mostly cosmetic because it occurs fairly late in the season. Black locust trees usually have limited ornamental value and hence, spray recommendations are not common. They are useful as trees that can grow in poor and marginal site locations.

✔ **BEECH SCALE (2513 GDD = crawlers):** The tiny 1/32 of an inch, yellow nymphs are hatching now and will continue hatching into September. Once settled into a bark crevice, it covers itself in a woolly, white waxy material. They can be found clustered around cracks and wounds on the lower branches and on the north side of beech trees. With heavy infestations, beech scale may result in an unattractive discoloration and "pox marked" appearance of the bark. They also create wounds that allow canker fungi to enter and attack (e.g., Nectria canker). Copious amounts of honeydew and the resulting black sooty mold may be objectionable. Don't treat if populations are low to moderate, since ladybird beetles and other predators can often suppress beech scale populations. If predators are overwhelmed, wait until peak emergence to apply pesticides during late August and September. Horticultural oil, acephate (Orthene), or insecticidal soap have proven to provide effective suppression.

✔ **COOLEY SPRUCE GALL ADELGID:** Most of the "pineapple" galls on spruce branch tips have already opened-up, and the winged adults have emerged. Except to improve the aesthetic appearance of the trees, there is nothing to be gained by picking off the galls now. When high populations require suppression, treatments can be applied later this month when GDD accumulations reach between 1850 and 1950. Treatments include horticultural oil, carbaryl (Sevin), chlorpyrifos (Dursban), insecticidal soap, or imidacloprid (Merit). Future control windows will open during the fall or early spring months, against overwintering females located at the bases of terminal buds.

✔ **OAK SPIDER MITES:** The infestation and damage levels by most of our "warm season" spider mites do not appear to be as severe as they have been in recent years. The rainy and cooler temperatures being experienced this season have reduced the populations of such mites as the oak spider mite. When monitoring, look for the characteristic bronze discoloration on the upper leaf surfaces of mostly red oak group species (can also occasionally be found feeding on birch, chestnut, beech, elm and hickory). Eggs are generally deposited on upper leaf surfaces, along the midvein. Multiple generations occur with peak populations in mid to late summer. After egg hatch in the late spring, controls should be applied before large populations build up by midsummer. Overwintering eggs can be controlled with dormant horticultural oil. With very heavy infestations, overwintering egg masses may be protected by elongated silk webbing (areas of the trunk and branches can have the appearance of rusty fiberglass). This silk webbing may be difficult to penetrate with horticultural oils. ❑

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