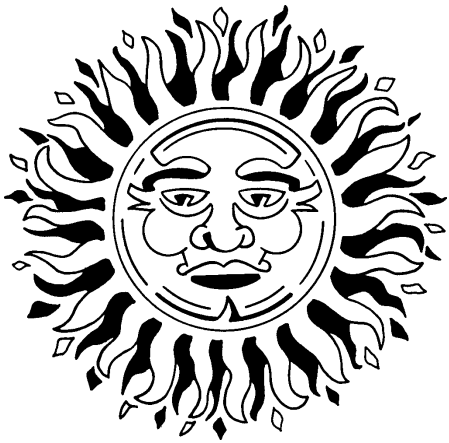


# PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION \$1.50

JULY 29, 1999



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## Plant Diagnostic Laboratory Highlights

*Richard Buckley, Laboratory Coordinator*

### Turfgrass

One superintendent called it “the third wave”, Al Roker says we are going into our fourth heat wave of the season, but from my point of view it has just been one huge tsunami! Throughout the region heat and humidity, as well as consistent dry weather continue to plague turf managers. With only two days left in July, submissions to the Plant Diagnostic Laboratory exceeded our all time monthly records. During August, 1996 there were 271 samples sent to the laboratory, last year during July we saw 243, yesterday we went over 300 and expect (from phone calls) another 30-40 by tomorrow. Samples of turfgrass, mostly from golf courses, dominate. If you are looking at a troubled turf area, you are not alone. The laboratory has received samples from almost all counties in New Jersey and from several surrounding states. It seems that mandatory water restrictions are right around the corner, so things can only get worse!

**Anthracnose** appears to be the most frequent submission. It is not surprising that this disease is so common. Heat stress is known as a predisposing condition for the disease. *Colletotrichum graminicola*, the fungus that causes **anthracnose**, does particularly well on senescent *Poa annua*. If you are having **anthracnose** problems, look for underlying stress factors. **Pythium blight** continues to be a problem in unprotected turf areas. After the July 4<sup>th</sup> fiasco, most superintendents got with the program on susceptible greens. Since then samples with *Pythium* problems have been primarily from irrigated roughs and surrounding areas that get little or no fungicide treatments. **Brown patch** is quite common at this time. Most of the samples with **brown patch** have been coming from residential landscape turf. Finally, the laboratory is seeing the normal influx of **summer patch** samples. Kentucky bluegrass lawns appear to be the hardest hit, but some samples have been from golf greens.

**Gray leaf spot update!** Not a positive diagnosis from any golf course or residential lawn to date, however, we did see the disease on the Rutgers turf farm. Symptoms appeared suddenly in a new perennial ryegrass turf. The plants were seeded 8-10 weeks ago, and overlap some irrigated research plots. This turf was not inoculated for trial, but is down wind from heavily inoculated research plots. The mature, inoculated turf has **no disease** at this point. With the amount of fungus spread over the grass at the research farm one would think that every-

SEE LAB ON PAGE 4

# Drought Stress in Ornamental Trees and Shrubs

Ann B. Gould, Ph.D., Plant Pathology

Recent hot, dry weather has been troublesome for many ornamental plantings throughout the state. All trees and shrubs can be affected by these adverse environmental conditions, especially plants situated in sites not suited for good growth or those recently transplanted. Native plants in a given area are adapted to variations in water supply and show symptoms of drought stress only under unusually dry conditions. Planted trees and shrubs, however, can be more susceptible to water deficit.

Trees affected by drought stress lose foliage, grow slowly, and become more susceptible to attack by insects and diseases and to injury by severe winter weather. This is especially true of younger trees. Severe drought may kill trees. It can take 5 to 10 years for a mature tree to recover from the effects of a severe drought.

## Causes of Drought Stress

Water deficit is a normal phenomenon that occurs in plants during the daytime when loss of water from the leaves exceeds water uptake in the roots. This deficit is made up at night and during periods of rain or dew formation. Under dry soil conditions, however, roots fail to extract as much water as has been lost, and physiological stress develops. Under severe drought stress, tissues lose turgor (water pressure), degenerate, and die.

Water deficit may also occur in dormant plants (especially evergreens) during warm weather in winter or early spring when water evaporates from leaves and stems while the soil is cold or frozen. Roots extract insufficient water from cold soil and none from frozen soil. This is called winter desiccation. Drought stress also predisposes plants to sun scald, frost cracks, winter burn, and dieback.

Plants vary in ability to tolerate

moisture stress. Stress tolerant trees and shrubs include ash (green and white), birch (gray), chaste tree, common witchhazel, crabapple, ginkgo, golden raintree, hackberry, holly, ironwood, red maple, mimosa, oak, and shadblow serviceberry. Stress tolerant conifers include atlas cedar, concolor fir, Douglas fir, Eastern red cedar, Pfitzer juniper, pine, spruce, and white fir. Seedlings are very susceptible to drought stress because their root systems are shallow and undeveloped. Newly transplanted trees are similarly affected because they have lost many absorbing roots during the transplant process. In some situations, highly porous rooting media present within the root ball dries rapidly, so that water shortage occurs even though surrounding soil may contain sufficient water.

## Symptoms

Plants affected by drought stress cope with drought stress in various ways. Stomates may close to prevent moisture loss from leaves; photosynthesis may slow or cease, resulting in the development of yellow leaf color. Green leaves, stems, roots, and fruit may shrink, and shrunken sapwood may develop radial cracks. Roots in drying soil become less permeable to water, and root tips may be damaged by drying.

Leaves on drought-stressed shade trees and shrubs may droop, wilt, curl, turn yellow, turn brown at the tips and margins, or drop prematurely. Older leaves usually succumb first. The weeping beech in Figure 1 had been planted in a concrete planting box surrounded by pavement. In this case, the plant's root system could not

SEE ORNAMENTAL STRESS ON PAGE 3



Figure 1. Symptoms of drought stress on weeping beech.

## Ornamental Drought Stress Management

- ◆ Control weeds and grasses in and around plants to reduce competition for water during dry periods.
- ◆ If drought persists, irrigate to replace soil moisture in the root zone. This is especially important for young and newly transplanted trees.
- ◆ Remove all dead trees as soon as possible; they may harbor bark beetles.
- ◆ Do not plant shallow-rooted species in areas of low rainfall or on drought-prone sites.
- ◆ To increase moisture retention in dry, sandy, or gravelly soils, add organic matter when planting. Application of mulch (no more than 3 inches) reduces soil moisture loss and soil temperature. Remove weeds from site before planting.
- ◆ To help alleviate winter injury, make sure plants go into the cold winter months with adequate soil moisture.

### ORNAMENTAL STRESS FROM PAGE 2

extract sufficient soil moisture from within the planting box during a period of severe drought. Note the pattern of scorch around the margins of affected leaves. This symptom, typical of shade trees stressed by drought, was aggravated by the artificial planting setting and reflected heat from surrounding concrete.

Severe water deficit in pines causes needles to lose turgor and droop near the needle base. Needles then fade and turn brown or remain green and permanently bent. Symptoms may not appear until a year or more after trees have been stressed by drought. Dead tree tops, shortened needles, and sparse foliage indicate a general decline in vigor that becomes evident in the years following severe drought stress.

### Monitoring for Other Pests

Ornamental plants stressed by drought are more susceptible to injury from pests, diseases, and other adverse environmental conditions. Be on the lookout for problems such as Armillaria root rot, borers on birch, oak, and dogwood, cankers on all trees (especially honey locust, maple, oak, poplar, Prunus species, rhododendron, redbud, spruce, and willow), dogwood anthracnose and dogwood powdery mildew, pine wilt nematode, and Verticillium wilt. Inspect stressed trees of all ages for injury by these invading pests both during and after periods of drought. □

## Diseases of Turfgrass

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

### Gray Leaf Spot

**Gray leaf spot** was identified on perennial ryegrass samples from North Brunswick, NJ on June 22, 1999. This disease devastated perennial ryegrass and tall fescue plantings throughout the Mid-Atlantic States during late summer and early fall months in 1998. Due to similar environmental conditions this year, we may see a resurgence of this disease during the next few weeks. Symptoms start as tiny, brown leaf and stem lesions covering 1 to 2 inch spots. In severe cases, the leaves curl and lesions may extend the entire width of the blade. As the disease progresses, patches coalesce into large (one to two feet) areas of blighted turf. Extensive foliar blighting may occur during warm (75-85°F), wet weather. Newly established seedlings are more susceptible to infection than mature plantings. When conditions are conducive to infection, the causal agent (*Pyricularia grisea*) produces abundant one to two-celled, pear-shaped spores (conidia). For best results, avoid high rates of nitrogen during July and August and extended periods of leaf wetness (i.e. water in the early morning hours). Fungicide studies conducted in New Jersey, Georgia, Maryland, and Kentucky have shown that Heritage (0.2 to 0.4 oz/1000 ft<sup>2</sup>) and Cleary 3336 50W (6 to 8 oz/1000 ft<sup>2</sup>) were most effective when applied on a preventive basis every 14 to 28 days beginning in mid to late-July. Chlorothalonil (e.g., Daconil) and the DMI (sterol-inhibiting) fungicides, such as Banner (propiconazole), have also provided effective control when disease pressure was moderate.

### New Foliar Bentgrass Disease

A new disease, first identified by Dr. Peter Dernoeden last summer in Maryland, was recently observed on sand-based greens at the Rutgers Turf Research Farm in North Brunswick, NJ. The causal agent, a previously unidentified species of *Ophiosphaerella*, induces small reddish-brown spots 0.5 to 1 inch in diameter. Spots usually do not coalesce and only enlarge to 3 inches in diameter. Affected areas eventually fade to a light tan color. Initially, symptoms may be confused with dollar spot, copper spot, black cutworm and golf ball injury. However, upon close inspection, black, flask-shaped fruiting bodies (*pseudothecia*) can be found embedded in necrotic leaf and stem tissue. Mycelium is not apparent in the field.

Although University disease control tests have yet to be performed for this disease, Daconil (chlorothalonil), Chipco 26GT (iprodione), Cleary 3336 (thiophanate-methyl) and Fore (mancozeb) were used successfully by superintendents in the Mid-Atlantic States last year. In most locations, disease suppression only lasted seven to ten days. The disease has been identified on numerous

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bentgrass cultivars and was most serious on high sand content greens and tees. To date, all reports have come from recently established sites (one to four years old). Outbreaks have not been observed on fairways. Environmental conditions that appear to enhance disease development include hot, dry, weather. The disease also appears to be more common in sunny locations than in shaded areas.

### Yellow Ring

This disease, caused by the fungus *Trechispora alnicola*, is evident on Kentucky bluegrass lawns and sod fields at this time. Patches are 1 to 2 feet in diameter. Affected areas consist of green grass surrounded by 2 to 3 inch diameter yellow rings. Upon close inspection of the thatch, a dense mat of white mycelium is often apparent. Infected turf rarely dies and rings do not always reappear the following year. Symptoms are most apparent during cloudy weather between May and October. The fungus is primarily a saprophyte, which colonizes organic matter in the thatch. Since the damage caused by this fungus is purely cosmetic and the turf recovers during cool weather in the fall and spring, control is rarely warranted. In areas where symptom expression cannot be tolerated, turf managers should dethatch affected areas. PCNB has proven effective in university tests but is not currently labeled for the control of this disease. Due to phytotoxicity, this fungicide should not be used on cool-season grasses during hot weather. □

## Golf Turf Research Field Day

August 5, 1999

Turf Research Farm on Ryders Lane  
North Brunswick, NJ

12:30 p.m. – Registration

1:30 to 5:00 p.m. – Field tours

Rain or shine

Cost of registration: \$25.00

Call (732) 932- 9400 Ext. 339 for more information or directions.

LAB FROM PAGE 1

thing would be crushed, but it isn't! So far, so good, but stay alert to the possibility of disease outbreaks until late-September. Just a thought: why make expensive fungicide applications to prevent **gray leaf spot**, when the turf will likely burn up under mandatory water restrictions?

One final turf note: a new disease, **dead spot**, caused by the fungus *Ophioshaerella agrosti*, was diagnosed by the laboratory last week on samples of bentgrass from the Rutgers research plots. This is the first case of the disease discovered in the state. Dr. Peter Dernoeden of the University of Maryland initially reported **dead spot** in the scientific literature in April. He followed with a nice article on the disease in the June issue of *Golf Course Management* magazine. Read Bruce Clarke's report on the disease in this issue for more information, and come to Turf Field Day on August 4<sup>th</sup> to see it for yourself!

### Landscape

The laboratory continues to receive landscape samples. **Heat and drought stress** appears to be the primary problem for shade trees and other woody ornamentals. Oaks and maples are the most common trees submitted. Most samples have an array of minor insect problems, and evidence of environmental stress. Remember that these plants have been suffering for several seasons as temperatures and moisture availability fluctuate to extremes. The recurring stress periods have a long-term impact on your plants that often starts a cascade of events that lead to disease, insect attack, or decline. This month several samples of landscape plants that were transplanted this spring were sent to the laboratory. Wholesale decline of entire landscape plantings was attributed to environmental extremes. Of course, those that were not properly cared for suffered the most damage. We also see the worst problems on poor sites and with improperly selected plant material. All plantings from the last couple of years should be closely monitored and nurtured through the stress periods. □

## Commercial Production of Ornamental Aquatic Plants

August 6, 1999, 1:00 - 4:30

Cumberland County College, Vineland, NJ  
Sandy Hook, NJ (distance education site)

**A**quatic plants are a new and potentially profitable niche crop for New Jersey growers. Interest in backyard ponds and aquatic plants is booming, but consumers are having difficulty finding good quality product. This program is for growers who would like to know more about this new opportunity.

Sponsored by Rutgers Cooperative Extension and Cumberland County College

Seating limited to 28

Cost \$25.00 (\$15.00 for students)

For more information, call Chris Dubois, Atlantic County 609-625-0056

Hurry! Registration deadline: July 30, 1999

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