RUTGERS COOPERATIVE RESEARCH & EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION $1.50 APRIL 6, 2006

INSIDE

Plan Ahead for Better Management of Landscape and Nursery Plants

Gladis Zinati, Ph.D., Specialist in Nursery Management, and Ann B. Gould, Ph.D., Specialist in Plant Pathology

Adapted from an article in the New Jersey Nursery and Landscape Association Newsletter, Vol.4 (2):7.

This year, spring has arrived in New Jersey right on time. Sunnier and warmer temperatures triggered early blooming of many shrubs and trees such as witch hazel, forsythia, maple, magnolia, serviceberry, and willow. Nursery growers and landscape contractors have been very busy since mid-February pruning, potting new plants and setting new landscape contracts. In spite of good rains during October and two major snow storms during the winter season, March was considered the driest in years with a precipitation deficit between 2.4 to 4.5 inches across New Jersey. When it does rain soon it will help with the deficit for the month.

Whether you plan to establish new plants in the field or containers, or manage or execute new commercial, residential, or corporate landscapes, keep in mind to carry out good management practices that will reduce plant stress. Most problems on woody plants are caused by factors other than insect pests and diseases caused by living organisms. These factors include temperature and moisture extremes, compaction resulting in poorly drained soil, nutrient imbalances, unsuitable soil/media pH, air pollution, and inappropriate levels of light. Such environmental conditions predispose ornamental plants to attack by insects and organisms that cause disease. Common symptoms of plant disorders include wilt, marginal leaf scorch, needle burn, foliar chlorosis, root dysfunction, dwarfing, dieback, and death.

The most common and damaging plant stress is drought. Water is essential for movement of substances throughout the plant and serves as a medium for chemical reactions. Unless the roots have a continuous supply of water, plants will eventually wilt and root damage will occur. Prolonged drought results in leaf yellowing, scorch, or drop (abscission), stunted growth, browning of flower buds and poor flowering, decline or dieback, and sometimes plant health. In addition, plants affected by drought are more susceptible to organisms that cause canker diseases.

Management strategies used to minimize environmental stresses may vary with the landscape or production site, soil conditions, climate,

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Diseases of Ornamentals

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

If you haven't already, it's time to start thinking about disease management again…

We had a nice taste of summer last week, and although the wintry weather is back, spring is just around the corner. It's that time to once again consider diseases that affect outdoor ornamental plantings. An abundance of moisture, normal for the spring season, is ideal for the foliar diseases in the landscape. The most common diseases on trees and shrubs affect the foliage as spots, blotches, and blisters. Although unsightly, most foliar diseases do not greatly impact the health of the plant, and chemical inputs are rarely necessary.

Leaf Spots

Leaf spot diseases are caused by many different species of fungi, and most ornamental plants are susceptible to one leaf spot or another. Fungal spores, produced in fruiting structures in leaf litter on the ground, are splashed to developing tissue after budbreak. Typical leaf spotting occurs soon after the infection process begins.

Apple Scab

Scab, caused by the fungus *Venturia inaequalis*, is one of the most common diseases of apple, crabapple, and other rosaceous ornamentals such as cotoneaster, hawthorn, mountain ash, and pyracantha. Symptoms of this disease include olive-colored spots (1/4 inch in diameter) with fuzzy borders on leaves and petals. Corky-looking lesions (hence the name "scab") may appear on twigs and fruit. Severely infected leaves, petals, and fruit may turn brown and drop prematurely.

Like leaf spots, the development of scab occurs in the spring. Spores are forcibly ejected from fruiting bodies in leaves infected the previous year. Newly infected leaves produce more spores that go on to infect fruit and other leaves through the spring period. Cultural disease management strategies, similar to those used for leaf spots; include the use of varieties resistant to scab.

Oak Leaf Blister

Look for symptoms of this disease, little "pockets" on the leaves of susceptible oaks, later this spring. The fungus that causes this disease, *Taphrina deformans*, overwinters in budscales and twigs. Leaves become infected as they develop in spring, and symptoms begin to appear within several weeks. As the blisters age, they become dry, brown leaf spots, and heavily affected trees may defoliate. As with most diseases that development in the spring, oak leaf blister is favored by wet weather. This disease does not seriously harm healthy trees and control with fungicides is not usually recommended.

Horsechestnut Leaf Blotch

Lesions of this fungal disease, caused by *Guignardia aesculi*, first appear on horsechestnut and buckeye in the spring as watery blotches that turn brown within a few days and are bordered by a yellow band. The blotches coalesce, causing leaflets to distort and curl, and fall prematurely. The disease also affects petioles and fruit. From a distance, severely affected trees appear scorched, so get close and look at the leaves before making a diagnosis.

Foliar Disease Management

The development of these and many other foliar diseases is favored by abundant moisture and cooler temperatures. These conditions in the spring months can vary significantly, which is why we see more disease in some years than in others. Management of springtime foliar diseases benefits from a few basic strategies: reduce leaf wetness and humidity in plantings (e.g., improve air-flow through proper spacing and weed management, irrigate during early morning hours, and avoid overhead watering); remove leaf litter to reduce fungal inoculum; and improve plant vigor to help reduce disease severity. Remember, however, that the environment drives the foliar disease process, so expect to see more of these following wet springs. ❑

MANAGEMENT FROM PAGE 1

plant type, and maintenance. Many of these problems can be avoided by selecting native plants or plants that match the site conditions, proper pruning of shrubs and trees, and testing the soil for selecting proper fertilization. Keep in mind that new plantings require more water than established ones. Adopting proper watering and mulching of plants reduces plant exposure to drought and heat stress. Cyclic irrigation combined the use of rain sensors can conserve water and reduce potential leaching of nutrients from the field or container root zone. The use of indicator plants (such as doublefile viburnum, azalea, dogwood, hydrangea, and Japanese maple) can be helpful in determining the need for supplemental watering.

For more information on this topic check out our newest bulletin entitled "Landscape and Ornamental Plant Stress: Factors, Symptoms, Diagnosis, and Management" RCR&E Bulletin E-309 available through your RCR& E county office or website:

http://www.rcre.rutgers.edu/pubs. ❑

Diseases of Turfgrass

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

Leaf Spot and Melting-Out

Drechslera poae (=*Helminthosporium vagans*), the causal agent of Leaf Spot and Melting-Out, is once again attacking susceptible Kentucky bluegrass varieties throughout the State. To prevent severe damage from the melting-out phase of this disease, avoid heavy applications of nitrogen in the early spring (especially quick-release formulations such as urea or ammonium nitrate), maintain the cutting height at or above 2 to 2-1/2 inches, remove excess thatch, and apply Chipco 26GT, chlorothalonil, Compass, Curalan, Heritage, Insignia, mancozeb, Medallion, or Touche now per manufacturer's recommendations. Avoid the use of acropetal penetrant fungicides (e.g., the benzimidazole or sterol-inhibiting chemistries) this spring in areas with a history of leaf spot and melting-out, since they may intensify symptom expression.

Necrotic Ring Spot

This disease, caused by the fungus *Ophiosphaerella korrea* (formerly *Leptosphaeria korrea*), may soon appear on landscape turf. *Ophiosphaerella* attacks the roots and crowns of turf during cool, wet weather in the spring and fall. Grass growing under stress (i.e., low mowing height, pH extremes, or moisture extremes) is most susceptible to infection. Although most cool-season grasses are susceptible to necrotic ring spot, annual bluegrass, Kentucky bluegrass, and fine fescues are most frequently affected. Symptoms typically appear as circular to irregular patches of dead turf (3″ to 12″ in diameter) with green tufts of resistant grass or weeds in the center. To control, reduce plant stress, avoid soil pH extremes (i.e., keep soil pH between 6.0 - 6.5, if possible), and treat affected turf now with Banner, Chipco 26GT, Eagle, Heritage, Rubigan or thiophanate-methyl. Repeat 14-28 days later for best results.

Take-All Patch

This disease, caused by the root and crown infecting fungus *Gaeumannomyces graminis* var. *avenae*, is likely to develop soon on bentgrass fairways. Although infection takes place during cool, wet weather in the fall, winter, and spring, symptoms are most striking after periods of stress. Infected grass first appears bronzed to reddish-brown in color and then fades to a dull brown. Patches are usually circular or ring-shaped and range in size from several inches to two feet or more in diameter. The centers of patches on affected greens, tees, or fairways are frequently colonized by bluegrass (*Poa* spp.), fescues (*Festuca* spp.), or weeds. Upon close examination, decaying roots and leaf sheaths appear black and dark strands of mycelium often develop parallel to the root axes. The disease is enhanced by poorly drained, light textured soils, and high pH.

Although take-all is difficult to control, good results can be achieved through the use of acidifying fertilizers (e.g., ammonium sulfate applied during cool weather to avoid foliar toxicity), aerification, and preventive applications of Banner, Bayleton, Heritage, Insignia or Rubigan in October and November. If symptoms appear in the spring, fungicides should be reapplied in April and then again in May. If fungicides are applied in less than 4 gal of water/1000 sq ft., chemicals should be lightly irrigated into the root zone (up to 1/8″of water) for maximum effectiveness. Wherever practical, overseed affected areas with less susceptible grasses (i.e., fine fescue, Kentucky bluegrass, or perennial ryegrass) to mask symptom expression. Maintain soil pH at approximately 6.0 and aerify (when symptoms are not present) to suppress disease development. In manganese deficient soils, the application of manganese (2 lb actual manganese per acre applied, for example, as manganese sulfate) in April can reduce the incidence and severity of this disease.

Turf Field Day

Mark your calendars now for this year's Rutgers Turfgrass Research Field Days which will be held on August 2, 2006 (Landscape Turf Research Field Day at Adelphia, NJ) and August 3, 2006 (Golf Turf Research Field Day at Hort Farm II, Ryders Lane, New Brunswick, NJ). Additional information and directions to each location will appear in future issues of this newsletter. ❑

Plant Diagnostic Laboratory Highlights

Richard J. Buckley, Laboratory Coordinator

Turf

There is not much happening on the golf turf front quite yet, although several samples of turf from golf greens in New Jersey and New York were submitted with thinning and yellowing/browning grass. In each case, once the samples got into the laboratory, the grass really started to grow. It is hard to be patient on a 70°F afternoon, but grass in some locations just might not have enough heat to break dormancy and grow just yet. In fact, it is snowing (Wed.) here on campus today, so hang in there.

Ornamentals

Boxwood was the most frequent submission from the landscape this period. Two fungi, *Volutella* and *Macrophoma* are commonly found on diseased boxwood and were identified on all of the samples we received. Each of these fungi is a weak pathogen that attacks plant material that has been stressed in some manner. In boxwood, winter desiccation is often the underlying stress. Nutritional imbalances, particularly with micronutrients, can also be an issue. *Volutella* attacks green stems and causes twig blight. *Macrophoma* causes simple leaf blight. Sound horticultural practice, which includes good sanitation, proper fertilization, and irrigation to avoid drought and winter injury, is the best way to prevent these problems. **Anthracnose**, caused by *Colletotrichum*, was found on ivy plants from a Middlesex County landscape. The same plants also had a little **Phyllosticta leaf spot**.

Greenhouse and nursery

A nice sample of Viburnum from Monmouth County grower was diagnosed with **Botryosphaeria canker**. Presumably the fungus was attacking drought, heat stressed, or winter injured branches. Last, but definitely not least, was the submission of two samples – hyacinth and Easter lily – from a Sussex County grower that were diagnosed with **bacterial soft rot** of the bulbs. The grower was concerned that the plants were growing slowly. We took one look (smell) at the bulb and instantly knew why! ❑

Star-of-Bethlehem Control

Patrick McCullough, Program Associate in Weed Science and Steve Hart, Ph.D., Specialist in Weed Science

Star-of-Bethlehem is a major problematic perennial weed in turfgrass and landscapes. Star-of-Bethlehem is a bulbous perennial weed found throughout northern United States, the Piedmont region of southern states, and Canada. Star-of-Bethlehem has fleshy grass-like leaves that grow up to a foot long with a whitish grooved midrib. The most indicative characteristic associated with Star-of-Bethlehem is seen from April to June when the plant produces bright white flowers with 6 oblong petals that have a distinctive green stripe underneath.

Star-of-Bethlehem generally dies back to underground bulbs during summer months following seed dispersal. Ovate bulbs of Star-of-Bethlehem grow in clumps in the soil which regenerate root and shoot tissue in subsequent growing seasons. Reproduction by seed is minimal but plants may germinate from dormant seed during spring months. Controlling Star-of-Bethlehem has traditionally been difficult from the capacity of the plant to regenerate shoot tissue from vegetative structures following herbicide injury.

Most pre- and postemergence herbicides, including some non-selective materials, do not effectively control Star-of-Bethlehem. Glyphosate containing products (such as Roundup®) often provide inconsistent and erratic levels of Star-of-Bethlehem control and are not recommended. Multiple applications of Diquat (Reward®) at 3 week intervals may effectively control Star-of-Bethlehem but may severely injure surrounding grasses and plants. Recently, research conducted at Virginia Tech University demonstrated that carfentrazone (Quicksilver T&O®) has substantial herbicidal activity on Star-of-Bethlehem and is safe on all cool-season turfgrasses. Applying Quicksilver T&O at 4 oz/acre once or 2 oz/acre twice at 3 week intervals gave 88 to 95% Star-of-Bethlehem control in Tall fescue. Unfortunately, single applications of Quicksilver T&O® can not currently exceed 2.1 oz/A. In addition, Quicksilver T&O® is not systemic and Star-of-Bethlehem may continue to be problematic in successive growing seasons. ❑

Turf Management Questions

James Murphy, Ph.D., Specialist in Turf Management

Q: *Have you any information or thoughts on the new fall fescue with rhizomes in it?*

A: First, it should be made clear that the rhizome activity in tall fescue is not equivalent to that in Kentucky bluegrass, yet there is a spreading characteristic present in tall fescue that breeders are working to enhance.

I know of two varieties that are being aggressively marketed as having rhizomes: Labrynth and Grande II. Of these two, Grande II has the best turf quality - I would recommend this one. Labrynth isn't attractive (very coarse textured, poor density, and yellow-green color). And accordingly Labrynth is being sold in blends or mixes with better looking varieties to mask this appearance while Labrynth provides the sod knitting ability. These blends and mixtures with Labrynth would be the only way I would recommend using Labrynth, but realize that the turf quality of Labrynth will not be totally masked and could be a negative to many property owners.

Some anecdotal evidence suggest that the variety Titan Ltd. has good spreading and sod knitting ability, presumably by rhizomes.

The breeding program at Rutgers is working diligently on improving this trait in tall fescue. So it is fair to say that you will be hearing more on this issue in the coming years. And I am optimistic that this characteristic will be prevalent in more varieties in the near future.

Cold weather (winter) performance is another trait that is being worked on. This improvement would a great boost to the sports turf industry, since winter is a period of downtime for fields. Current varieties are too slow growing during the mild weather of winter; improvement of winter vigor could enable turf managers to achieve some degree of recovery during winter and early spring that is currently not possible.

Q: *Last year was a banner year for sod webworm (SWW) in Passaic County. Rutgers Cooperative Research & Extension Factsheet FS1007 (An Integrated Approach to Insect Management in Turfgrass: Sod Webworms) is great because it describes the damage, the insect and control measures. However, the weather did not cooperate (drought for 7 weeks followed by 14 inches of rain). What is a homeowner to do with large areas of dead turf due to SWW? Seeding and fertilizing are best done in August/September but can/should anything be done NOW to have the lawn more lush and green?*

A: Unfortunately, Passaic County isn't the only location in New Jersey with severely damaged turf areas. Last summer was a very difficult year; the dry August and September did not allow turf to recover from devastation in June and July. The fact sheets referenced below should be of some value to stakeholders with questions about rejuvenating lawns. Or if starting over completely, you may want to refer to Fact Sheet 584.

FS108 – Renovation of turf FS584 Seeding Turf

Rutgers Cooperative Research & Extension fact sheets are available through County Extension offices or on the web at: http://www.rcre.rutgers.edu/pubs. ❑

Solu-Cal as an Alternative for Soil Amendment

Mary C. Provance-Bowley, Research Assistant and Joseph Heckman, Ph.D., Specialist in Soil Fertility

Turf managers not only need to be able to diagnose problems as they arise, but to decide on what products and practices to use in correcting these problems. The maintenance of a desired soil pH level is a crucial part of the establishment and maintenance of a healthy stand of turf and varies with the type of turf being maintained. In the Northeast, managers must frequently monitor and adjust pH levels in acidic soils. Agricultural limestone has long been the standard used for this purpose, but frequently we are presented with alternative or new products and are not sure what benefit they will provide or if they will work in solving the problem at hand. One such product, Solu-Cal, has been suggested as an alternative to limestone. We conducted a study at Rutgers University to compare the effects of Solu-Cal on the chemistry of an infertile sandy loam soil, with an initial pH of 4.9, to that of common liming agents. According to the product label, Solu-Cal is derived from calcium carbonate and calcium oxide with no calcium carbonate equivalent (CCE) listed on the label. The product appears as gray pellets with a 1-4mm size range.

Solu-Cal was compared to both Baker's Pulverized Dolomitic Limestone and Pelleted Pro Limestone. The pH was checked after two different time intervals, 71 and 137 days. At the end soil samples were taken and analyzed. The pH, on both dates, showed the greatest increase by Baker's, followed by Pelleted Pro, and lastly by Solu-Cal. The final soil test results at the application rate of 459 lb/1000ft^2(10 tons/A), showed Baker's treated soil had a pH of 7.2, Pelleted Pro 6.3, and Solu-Cal 5.5. Although the Solu-Cal product was less effective at neutralizing acidity, the soil test results showed that the amount of calcium supplied to the soil was comparable to that of the other two liming agents. Solu-Cal did little to increase exchangeable magnesium in the soil, by comparison. The study results indicate that although Solu-Cal proved less effective than traditional liming materials in raising the pH of an acidic soil, it can be useful as a calcium source.

Reference: Provance-Bowley, M.C. and J.R. Heckman. 2006. Evaluation of Solu-Cal as a Soil Amendment for pH Adjustment. Proceedings of the Fifteenth Annual Rutgers Turfgrass Symposium. p. 41. ❑

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 51 degrees north, 52 degrees central and 53 degrees south. Extremes were 78 degrees at Freehold on the 2nd, and 27 degrees at Newton on the 28th. Weekly rainfall averaged 0.03 inches north, 0.08 inches central, and 0.07 inches south. The heaviest 24 hour total reported was 0.22 inches at Hammonton on the 1st to 2nd. Estimated soil moisture, in percent of field capacity, this past week averaged 96 percent north, 93 percent central and 92 percent south. Four inch soil temperatures averaged 47 degrees north, 48 degrees central and 48 degrees south.

The following table contains meteorological information since the start of the growing season March first. The table is updated each Monday and the following is an explanation for each column.

Week=total rainfall for the previous 7 days ending monday morning
Total=total rainfall since March 1st
Dep=departure from normal of rainfall since March 1st. A negative sign indicates below normal and no sign indicates above normal.
Mx=highest temperature for that 7 day period
Mn=lowest temperature for that 7 day period
Avg=average temperature for that 7 day period
Dep=departure from normal of the average temperature for that 7 day period
Total=total number of growing degree units since March 1st
Dep=departure from normal of growing degree units
%fc=percent of field capacity (soil moisture)

Weather Summary for the Week Ending 8 am Monday 4/ 3/ 6

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
CANOE BROOK	.00	.72	-4.19	74	30	52.	7	49	49	91
CHARLOTTEBURG	.00	.78	-3.75	73	28	50.	8	35	35	91
FLEMINGTON	.00	1.00	-3.58	76	28	52.	7	57	57	94
NEWTON	.10	.98	-2.93	72	27	49.	6	36	36	95
FREEHOLD	.04	1.24	-3.57	78	28	53.	6	68	68	89
LONG BRANCH	.10	1.38	-3.63	76	31	50.	4	40	40	87
NEW BRUNSWICK	.16	1.07	-3.40	75	31	53.	6	62	62	93
TOMS RIVER	.12	.65	-4.03	77	29	51.	5	57	57	85
TRENTON	.00	1.32	-3.04	75	33	53.	5	63	63	82
CAPE MAY COURT HOUSE	.07	.78	-3.46	74	33	51.	3	60	60	86
DOWNSTOWN	.03	.79	-3.55	74	31	52.	4	71	71	85
GLASSBORO	.00	.69	-3.85	73	37	54.	6	70	70	80
HAMMONTON	.22	.96	-3.39	75	30	52.	4	74	74	92
POMONA	.06	.43	-3.93	76	30	51.	4	63	63	86
SEABROOK	.03	.38	-3.40	75	36	55.	6	96	96	80
SOUTH HARRISON	.02	.55	-3.42	74	37	55.	NA	87	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW
LAST WEEK 4 (Ending 3/27/06)
THIS WEEK 87 (Ending 4/3/06)

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