RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION $1.50 JULY 30, 1998

INSIDE

Monitoring Soluble Salts in Container Production

Raul I. Cabrera, Ph.D., in Nursery Management

With the recent wave of high temperatures it is likely that some container plant growers may be experiencing problems in plants that receive most of their nutrition from controlled-release fertilizers (CRF). Temperature is the main factor affecting the release of nutrients from CRF. Our research at Rutgers University has shown that heavy nutrient release in a large number of CRF (like Osmocote, Scotts and Polyon formulations) occurs once the average daily temperatures reach 80°F, raising the possibilities for salt damage in plants. The lack of rain over the last several weeks adds to this, as irrigation sometimes is not sufficient to leach excess nutrients. Growers who do not monitor soluble salt readings in their pots on a regular basis are the most at risk. They should not be in this situation, as this is a simple and straightforward task. The only things you need are a fairly inexpensive ($50-200) soluble salts or electrical conductivity (EC) meter and some distilled water. Following is an outline of the simple pour-through procedure used to measure the soluble salt levels in your growing media. This will help you assess both the fertility and salinity of your growing media.

Pour Through Procedure

1. Irrigate your plants as normal, avoiding excessive leaching (i.e., runoff), and wait until the pots have completely stopped draining (15 to 30 minutes).

2. Select a representative number of containers, and put plastic saucers or trays beneath them. Raise the pots with suitable objects, so their bottoms are not in contact with the collection tray (this avoids contamination of solution to be collected).

3. Add sufficient distilled water to the surface of the growing media so that about 50 ml (2 fl. oz.) of water are accumulated in the collection vessel. Applying rates of 150 and 350 ml (6 and 12 fl. oz.) of water per 1-gallon and 3-gallon containers, respectively, is normally sufficient.

4. Measure the concentration of soluble salts or EC reading (you can also do pH readings) of the solution collected in the trays or saucers.

While the most desirable soluble salt or EC reading will vary with plant species, growing media and irrigation management, an EC reading around 0.6-2 mmhos/cm (same units as mS/cm or dS/m) is considered adequate for most woody ornamentals. In some plants like

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Dying Maples in the Landscape

Adapted from Kentucky Pest News, July 6, 1998, by John Hartman, University of Kentucky Extension Plant Pathologist

The decline and death of mature maples in New Jersey landscapes is common this year. There does not seem to be a single cause for this phenomenon; some factors that trigger the decline of maples include:

Verticillium wilt: This disease often develops on one side of the tree first. During the growing season, affected branches progressively wilt and die throughout the tree. Where infections occurred late in the previous season, trees may even fail to leaf out in the spring, or if they did, they immediately died. The mild temperatures of last winter may have allowed this soil-borne fungus to be more active than usual.

Girdling roots: Offending roots may not be visible above ground, but if the tree trunk does not have the normal buttress root flare at the base, and instead, goes straight into the ground like a telephone pole, self-girdling roots should be suspected. Trees with girdling roots may decline over a period of years, but then may collapse suddenly.

Restricted rooting space: Maples planted as street trees or in planting islands in parking lots sometimes lack space for their roots to exploit. Such trees with inadequate root systems are especially vulnerable to drought and temporary flooding stresses.

Soil compaction: Compaction from foot traffic, construction, or other activities crushes small roots and makes soil impervious to invasion by new roots. Affected maples may decline.

De-icing salts: Maples are fairly sensitive to excess salt. Although sidewalk and road salt were not used much this past winter, where they were used and where treated snow was piled over the root system, trees may have been injured. (Note: other trees sensitive to de-icing salts include beech, flowering

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Plant Diagnostic Lab Highlights

Richard Buckley, Coordinator, Plant Diagnostic Laboratory

Turfgrass

Anthracnose is the disease of the week in golf turf as an easy July for the turf manager comes to a close. **Anthracnose** is caused by the fungus *Colletotrichum graminicola*, and is normally found on turf that has been stressed in some manner. The demands of golfers cause much of the stress needed for **anthracnose**; as cutting heights decrease the impact of the disease increases. Other factors that predispose turfgrass to **anthracnose** infection include temperature and moisture stress, traffic and compaction, poor drainage, and infection by other diseases. Several samples diagnosed with **anthracnose** this season also had problems with **nematodes**, **root-infecting pythium**, or patch diseases like **take-all** and **summer patch**. Samples diagnosed with the disease have been submitted to the laboratory from Virginia, Delaware, Pennsylvania, New York, and Middlesex, Somerset, Passaic, and Bergen Counties in New Jersey.

Other summer disease problems were in full swing on most turf areas throughout the state. Outbreaks of **brown patch** and **pythium blight** were common. **Pythium blight** was identified on samples from Virginia and New York, as well as on golf turf from Passaic and Gloucester Counties. **Brown patch** was diagnosed on samples from Atlantic County, New York, Virginia, and Pennsylvania. **Summer patch** was confirmed in samples from golf courses in Middlesex, Gloucester, Burlington, and Warren Counties.

There has been some concern recently about **gray leaf spot**. In 1995 this disease was rampant in ryegrass fairways and caused quite a bit of damage. This week several samples of ryegrass were submitted to the laboratory with a **leaf spot** disease caused by the fungus *Bipolaris sorokiniana*. The symptoms of both diseases are similar, therefore, the superintendents were being cautious before starting a **gray leaf spot** control program. **Gray leaf spot** has not been common in this area since the fall of 1995. Last year we had only one confirmed case. Furthermore, the infection period for **gray leaf spot** generally does not occur until late-August. Last year's samples were sent to the laboratory the third week of September. Be sure to get a proper diagnosis before starting a fungicide program.

Landscape and Nursery

The **white pine weevil** is having a good year. Samples of several different conifers came to the lab with weevil injury this week. White pine was submitted from Middlesex County, Japanese black pine with beetle injury from Bergen County, and Norway spruce from Somerset County. Root and crown rots are beginning to cause problems in nurseries and urban landscapes at this time. **Phytophthora root and crown rot** was diagnosed on spruce and Douglas fir samples from the same landscape in Union County. **Fusarium seedling blight** caused problems in a pine seedling nursery in Ocean County. **Rhizoctonia root and crown rot** was a problem for gardeners in Monmouth and Burlington Counties. Coral bell and Sedum were the hosts of the *Rhizoctonia*. **Pythium root rot** caused problems for a poinsettia grower in Gloucester County. Other diseases and insects of note include a **Dutch elm disease** sample from Salem County; **euonymus scale** from Monmouth County; **white oak borer** from Atlantic County; **botryosphaeria and cytospora cankers** on cherry and dogwood also from Atlantic County; and **black turpentine beetle** and **maskell scale** in pines from Ocean County. ❑

Diseases of Turfgrass

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

General

Basal stem rot anthracnose, brown patch, **pythium blight,** and **yellow ring** continue to be reported. **Summer patch** is prevalent on annual bluegrass, Kentucky bluegrass and fine fescue species. **Dollar spot,** and **copper spot** are also apparent on golf and landscape turf at this time. Since the latter two diseases are stimulated by environmental and cultural stress, maintain optimum turf vigor to reduce disease incidence. For best results, irrigate between midnight and 9 a.m.. Refer to recent issues of this newsletter for additional disease control information.

Basal Stem Rot Anthracnose

This disease, caused by the fungus *Colletotrichum graminicola*, has been quite prevalent on annual bluegrass, fine fescue, perennial ryegrass, and Kentucky bluegrass recently. 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 **basal stem rot anthracnose** in the field, look for small black fruiting bodies with protruding black spines on discolored stems or leaf sheaths. Affected plants are easily pulled apart due to the extensive crown rot associated with this disease. For best results, increase turf vigor with light applications of nitrogen, maintain adequate irrigation, reduce thatch, and raise the cutting height (whenever possible). On a preventive basis, Banner, Bayleton, Cleary 3336, Daconil, Heritage, Manicure, Rubigan, Sentinel, or Thalonil work well when used according to the manufacturer's recommendations. Once the disease develops, however, apply a tank mix of Bayleton 25DF (2 oz/1000 ft^2) + Daconil 2787 4F (10 to 12 fl oz/1000 ft^2) or a tank mix of Cleary 3336 50W (4 to 6 oz/1000 $ft^{2)}$ + Daconil 2787 4F (10 to 12 fl oz/1000 ft^2) for best results.

Marasmius

There have been numerous reports recently about the appearance of small mushrooms protruding from brown leaf blades. These structures, belonging to the fungus *Marasmius*, are approximately 1/2 to 3/4 inch in length and consist of a dark brown stem and a small tan to orange colored cap. It often appears in areas previously thinned by brown patch. Although this fungus may appear pathogenic, it is actually invading dead and dying tissue and thus is not a threat to the surrounding turf.

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 use against this disease. Due to phytotoxicity, this fungicide should not be used on cool-season grasses during hot weather.

Turf Field Day

The date for this year's **"Golf and Fine" Turf Research Field Day** has been set for August 6, 1998 at Hort Farm II, Ryders Lane, in North Brunswick, NJ. Registration will begin at 12:30 p.m., "rain or shine". Guided field tours will commence at 1:15 p.m. The day will conclude with a barbecue dinner at 5 p.m. The **"Lawn and Landscape" Turf Research Field Day** will be held on August 5, 1998 at Hort Farm II, Ryders Lane, North Brunswick, NJ. Registration will commence at 8:00 a.m. (rain or shine). Research tours will start at 9:00 a.m., and will conclude at 3:30 p.m. The cost of registration each day is $20.00 without a meal and $30.00 with a meal. Recertification credits will be awarded for both days, so mark your calendars now for these worthwhile events. Call Marlene at (732) 932-9400 for further information or directions. ❑

Landscape IPM Brochures

The Rutgers Cooperative Extension Landscape IPM Program has produced two new brochures entitled "Integrated Pest Management" and "Natural Pest Control".

For copies of the free brochures, contact Deborah Smith-Fiola, Agricultural Agent, Rutgers Cooperative Extension of Ocean County, Extension Center, 1623 Whitesville Road, Toms River, NJ 08755-1199, (732) 349-1246. ❑

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azaleas, however, you may have to pay more attention to EC readings in the upper range, as these plants are considered to be fairly salt-sensitive. For additional information on the use and management of CRF fertilizers, and how to monitor soluble salts, consult the Rutgers Cooperative Extension Factsheets FS847 and FS848. You can obtain these, free of charge, from your local County Agricultural Agent or Office. ❑

Manganese Management

Joseph Heckman, Ph.D., Soil Fertility

Manganese (Mn) is a micronutrient that is often deficient in many coarse-textured soils of South Jersey but is seldom found deficient in fine-textured soils of North Jersey. Sandy soils typically have a low Mn content and are very susceptible to Mn deficiency if too much limestone is applied. As soil pH increases, plant availability of soil Mn decreases. Liming practice is therefore an important part of Mn management.

The objective of the liming program, to be consistent with the objective of maintaining soil Mn availability, is to raise the soil pH to the preferred pH level of the crop to be grown but no higher. Because sandy soils require less lime to change soil pH than soils higher in clay content, it is important to carefully apply only the amount of lime that is needed.

In recent years, increasing amounts of limed-sludge (biosolids) products are being marketed. Heavy applications of limed-sludge have in some instances resulted in excessive soil pH elevation and Mn deficient crops. Beneficial use of limed-sludge products requires the same attention to application rate as other traditional liming materials. The application rate of any liming material should be based on the calcium carbonate equivalent as listed on the product label and the soil test recommendation. Refer to Rutgers Cooperative Extension Fact sheets 635, 767, 902, 903, 904, and 905 for further information about liming and soil pH management.

Another aspect of Mn management is an awareness that different crops vary in sensitivity to Mn deficiency. Bentgrass grown on golf course fairways is also more susceptible to take-all disease when Mn availability is low. Manganese deficiencies are occasionally observed on some ornamentals.

Manganese deficiency symptoms often appear in random patterns across fields (symptoms may range from mild to severe). In most crops the diagnostic symptoms of Mn deficiency are exhibited as interveinal chlorosis: the area between the veins of the leaves turn yellow while veins remain green. The oat plant is an exception – gray oval-shaped specks appear on the edges of leaves.

Cultural practices to protect against Mn deficiency

Avoid excessive application of lime.

Maintain an optimum pH for the crop.

Ammonium sulfate is a fertilizer that causes soils to become acid. If soil pH is too high and Nitrogen fertilizer is needed, consider using ammonium sulfate fertilizer.

Use an acid forming starter fertilizer containing ammonium sulfate or monoammonium phosphate.

Soil test to identify fields low in Mn availability.

Grow crops that are less susceptible to Mn deficiency in fields with a history of Mn deficiency.

Treatment of Manganese Deficiency

Manganese sulfate is an excellent fertilizer source for correction of Mn deficiency.

Begin foliar treatment of Mn deficient crops as soon as symptoms appear. Plants deficient in Mn will noticeably green up within a few days after treatment.

For foliar treatment, apply 0.5 to 2.0 lbs. of elemental Mn per acre at each spraying.

Foliar Mn application on soybean may be applied as a tank mix with postemergence herbicides (Blazer, Classic, Pursuit or Basagran).

Applications of Mn to soil are generally less effective than foliar treatment. When broadcasting Mn, apply 15 to 20 lbs. Mn per acre. When banding Mn at planting, apply 6 lbs. Mn per acre with the starter fertilizer.

Soil Testing for Manganese

The Mehlich-3 soil test along with a soil pH measurement provides an index of soil Mn availability. Manganese availability index is calculated as follows:

Mehlich-3 Mn Availability Index = 101.7 – 15.2 (soil pH) + (Mehlich-3 Mn in ppm)

Interpretation of index values:

Below 25: Mn deficient soil

Above 25: Mn adequate

Refer to Rutgers Cooperative Extension Fact Sheets: FS568 and 632 for further information on Mn. ❑

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dogwood, shagbark hickory, ironwood, American linden, little-leaf linden, sycamore, and black walnut. Refer to Rutgers Cooperative Extension Fact Sheet FS663 for more information.)

Mechanical injury: Construction severs roots and triggers decline. Wounds to the trunk or large branches can also have a negative affect on maple tree health.

Opportunistic fungi: Root, butt, and trunk rotters such as *Ganoderma* can be found on declining trees. In addition, canker and canker-rot fungi such as *Nectria* and *Botryosphaeria* are capable of invading weakened plants and causing branch dieback.

Although some infectious diseases are involved in maple decline and death, much of the problem often lies with urban stresses. In addition, recent dry, hot weather, wet spring conditions, and any number of weather extremes from several years ago could be involved. In almost all cases, there is no reversing the decline. For those with still healthy maples, continue to provide good growing conditions and be observant for the first indications of maple distress such as premature fall color, branch tip dieback, and girdling roots.

Submitted by Ann B. Gould, Ph.D., Ornamentals Plant Pathology ❑

Physical Fitness of Landscape Soils

James D. Willmott, Camden County Agricultural Agent

Thousands of years of harsh environmental extremes have weathered underlying bedrock into life giving soils. Understanding their qualities, especially physical attributes, is necessary for maximizing plant health and relative pest tolerance.

Soils have varying textures which are classified by the size of their mineral particles: sand, silt and/or clay. Sand particles are largest, followed by silts and clays. Each is progressively smaller. If greatly enlarged, sand particles would be about the size of softballs, silts would be equal to baseballs and clays like golf balls. Most soils contain all three textures. These are called loams. If any one textural class predominates, it is named either a sandy, silty or clay loam. In New Jersey, soils are highly variable with sand, silt and clay loams. "Heavier" clay and silt loams are predominant in the north and western parts of south Jersey within the inner coastal plain. These tend to be fertile and retain moisture for relatively longer periods of time than courser textured soils which are common on the outer coastal plain of south Jersey. Let's consider a few points for soil management.

First, soils must have good structure. In urban/suburban settings, they are often disturbed during site construction or subsequent human activity. Good structure offers optimal pore space or water and air which is necessary for root growth. Tillage or cultivation can improve soil structure. Wait for heavy soils, like clay loams, to dry out before tilling. (Tilling wet clay soils may do more harm than good.) The addition of organic matter like peat moss or compost is an excellent way to improve soil structure. Never add sand to improve structure unless recommended by a qualified soil physical laboratory. For lawn areas and trees, a great tillage practice is core aeration which remediates surface compaction resulting from heavy lawn mowers or foot traffic.

Finally, all exposed soils should be mulched or covered with a material to protect it from pounding rains which result in surface compaction and possibly erosion. Natural bark mulches are ideal and will greatly help plant growth. Be careful not to overdo it! Two or three inches is plenty. Drainage is often a landscape problem. There are two options: either choose plants that tolerate wet conditions or correct drainage by grading or installation of subsurface drain pipes.

The greatest number of landscape plant failures are due to poor soil structure or drainage. Many are quick to jump to other conclusions - especially unfavorable soil chemistry including pH and nutrient content. While these are important, pH modification or fertilization will do nothing if soil structure is poor. ❑

Calendar of Events

August 4, 1998 - Deer Fencing Installation Seminar, Rutgers Snyder Research Farm, Pittstown, NJ. Call Snyder Farm at (908) 730-9419, ext. 11 to register.

August 5, 1998 - Deer Fencing Installation Seminar, Rutgers Agricultural Research & Development Center, Bridge-ton, NJ. To register, call Rutgers Snyder Research Farm at (908) 730-9419, ext. 11.

August 5, 1998 - Landscape Turf Research Field Day, Rutgers Turf Research Farm (Ryders Lane), North Brunswick. 8:30 - 3:30. Rain or shine. $20 w/o lunch, $30 w/lunch. Call 732-932-9400.

August 6, 1998 - Golf Turf Research Field Day, Rutgers Turf Research Farm (Ryders Lane), North Brunswick, 1:00 - 5:00 p.m. Rain or shine. $20 w/o supper, $30 w/ supper. Call 732-932-9400.

August 12-13, 1998 Penn State Turfgrass Field Days, Jos. Valentine Turfgrass Research Center and Landscape Mgmnt. Research Center, University Park, PA, $20. Call 814-863-3475.

August 17, 1998 - IPM Pest Clinic (Turfgrass); Adelphia Research Farm, $5, 9:30-11:30, Contact RCE of Ocean County at 732-349-1246.

August 19, 1998, 5:00-7:00 p.m. - Weed Control/Production Management Nursery Twilight Meeting, Centerton Nursery then Hopewell Nursery, Bridgeton, NJ, Contact RCE of Gloucester County at 609-863-0110.

August 25, 1998 - IPM Pest Clinic (Ornamentals), Georgian Court College, Lakewood, $5, 9:30-11:30. Contact RCE of Ocean County at 732-349-1246.

November 12, 1998 - 1998 Philadelphia Regional Greenhouse Conference and Poinsetta Varieties Trial, Warrington Motor Lodge, Warrington, PA and Delaware Valley College, Doylestown, PA. Co-sponsored by Penn State Cooperative Extension and Delaware Valley College. Contact Thomas Contrisciano 610-378-1327.

Pesticide Certification Exams: Bergen County (July 28, Aug 25, Sep 22); Burlington County (Aug 4, Sep 1); Cumberland County (Aug 6, Sep 3); Mercer County (Aug 7, Sep 4); Middlesex County (July 16, Aug 13, Sep 17); Morris County (July 22, Aug 20, Sep 23); Union County (July 14, Aug 11, Sep 15). To register call NJDEP Pesticide Control at 609-984- 6614.

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The user is reponsible for the proper use of pesticides, residues on crops, storage and disposal, as well as damages caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact Rutgers Cooperative Extension in your County.

Use of Trade Names: Trade names are used in this publication with the understanding that no discrimination is intended and no endorsement is implied. In some instances a compound may be sold under different trade names, which may vary as to label clearances.