



# Hort Notes<sup>®</sup>

An educational newsletter with research-based information for businesses and individuals involved in selling, planning, designing, servicing, and enjoying landscapes and gardens.

## The 4 P's of Plant Survival

*H. Dennis Ryan, Ed.D., Dept. of Natural Resources Conservation, University of Massachusetts Amherst*

The tree and shrub planting season is now getting underway and, if we want our new plants to survive, then we need to ensure that we are doing the job correctly. Based on more than forty years of planting observations, I believe that there are four reasons why plantings with the best intentions fail. It is what I call the 4 P's:

- Poor Design
- Poor Nursery Stock
- Poor Planting Practices
- Poor Maintenance Practices

**Poor Design** is where many of our problems begin. If the designer does not take into consideration the biological needs of the plant and the space requirements, then the design will be a failure and the plants will die. We continue to see streetscape designs that put large growing trees in 4X4 foot pits; 64 cubic feet of soil is not sufficient to support a Red Oak. Because a particular plant looks good on the paper design sheet does not mean that it will do well on a particular site. The designer needs to take into consideration the soil conditions (pH and drainage), the exposure (full sun, part shade, shade) and the growing space required by the mature plant.

When choosing a designer, be sure the person has an understanding of the horticultural needs of the plant and how these match to the environmental characteristics of the planting site. Many landscape architects have no training in plant care; be sure you only work with designers that have a strong background in plant biology.

**Poor Nursery Stock** continues to be a growing problem for arborists and landscapers. We would recommend that you only work with and buy your planting stock from

well-known local nurseries. Develop a good working relationship with the local nursery; they need to know what quality you expect when you order. If you cannot get high quality stock, then take your business to another.

One problem with landscape plants is the root system. All plants should have 10 to 12 inches of roots for each inch of caliper. For example, a two-inch caliper maple needs to have a rootball that is two feet in diameter. Less than this and, in most cases, the plant will have problems. Detailed specifications for rootball diameter for nursery grown trees and shrubs can be found in the *American Standard for Nursery Stock, ANSI Z60.1*, published by American Association of Nurserymen, 1250 I Street, N.W., Suite 500, Washington, DC 20005.

The biggest problem continues to be container stock. There are two issues with the containers: artificial soils and root girdling. In most cases, the containerized plants are grown in an artificial soil mix that is approximately 50% organic matter, 50% mineral, and supported with a fertilizer program. When the plants are moved to the planting site, there is a need to wash off all of the artificial soil and plant the roots in the native soil. If planted with the container medium still in place around the roots, the plants in many cases will have both nutrient and water relations problems.

Another issue is the development of girdling roots - a result of being grown in a container. I can honestly say that I have never looked at a containerized plant that did not have some roots circling in the container. Plants will in many cases live many years before showing girdling problems as a result of these poor root systems, but eventually there will be problems.

# Monitoring Checklist for early-May

V21.#5 May 10, 2010

## PLANT PHENOLOGY for early-May: BETWEEN 150 - 199 GROWING DEGREE DAYS

BEGIN BLOOM	FULL BLOOM	END BLOOM
<i>Aesculus hippocastanum</i> (Horsechestnut) <i>Crataegus</i> sp. (Hawthorn) <i>Spiraea x vanhouttei</i> (Van Houtte Spirea) <i>Syringa vulgaris</i> (Common Lilac)	<i>Cornus florida</i> (Flowering Dogwood) <i>Cytissus scoparius</i> (Scotch Broom) <i>Prunus x cistena</i> (Purpleleaf Sand Cherry) <i>Prunus maritima</i> (Beach Plum) <i>Spiraea prunifolia</i> (Bridalwreath Spirea)	<i>Forsythia</i> sp. (Golden Bells) <i>Prunus subhirtella</i> (Higan Cherry) <i>Rhododendron carolinianum</i> (Carolina Rhododendron) <i>Rhododendron 'PJM'</i> (Peter Mezitt Rhododendron)
PLANT	PEST OR PROBLEM	GDD OR ENVIRONMENTAL CONDITIONS
Various pines, especially mugo	<b>European Pine Sawfly</b> <b>Caterpillar</b> <i>Neodiprion sertifer</i> p. 16	<b>GDD:</b> 90 - 420
Euonymus	<b>Euonymus Caterpillar</b> <i>Xponomeuta cagnagella</i> p. 174	<b>GDD:</b> 95 - 600 (larvae)
Susceptible pines include: Austrian, Scotch, and mugo, along with red and ponderosa on poor sites	<b>Diplodia blight</b> <i>Diplodia pinea</i> (fungus) pp. 130-131	Common symptoms include scattered dead shoot tips with brown, stunted needles and resin-soaked bark. The fungus causes more extensive branch dieback in trees weakened by poor growing conditions. By late summer or the following spring, small black fruiting structures may be visible on blighted needles and on outside scales of second-year cones.
		During wet periods spring to fall, fungus disperses spores from black fruiting structures growing within infected needles, branches, and cones. Spores colonize immature needles and green shoots during wet springs, and infecting moist wounds on branches and 2-year-old cones anytime during the growing season.
		The adult female sawfly (wasp) lays eggs within the needles, which appear as blocky yellow patches along the needle length. Larvae hatch and congregate on the needle tips and feed downward towards the fascicle. Small larvae may only be able to consume about half of a needle length but, as they become larger, they consume all of the needles. Buds are not damaged but plants are left with large areas of stems with no foliage. Pines are slow to replace lost needles and affected plants may lose their aesthetic appeal for many years.
		A pale yellow lepidopteran caterpillar with black spots; feeds throughout host plant. Produces copious amounts of silk, often covering the entire plant. The caterpillar uses this silk as a highway to travel throughout the plant. Often, many caterpillars at a time can be seen moving upward and downward on silken strands. When ready to pupate, they will cluster together in mats of this silk and form small white cocoons that look like fuzzy grains of rice. Complete defoliation results when population numbers are high.
		Common symptoms include scattered dead shoot tips with brown, stunted needles and resin-soaked bark. The fungus causes more extensive branch dieback in trees weakened by poor growing conditions. By late summer or the following spring, small black fruiting structures may be visible on blighted needles and on outside scales of second-year cones.
		Remove infected shoots. Prune and shear only when conditions are dry. If practical, cone removal further reduces inoculum. Grow pines well adapted to environmental conditions in the planting site. Provide weekly soaking irrigation during dry periods, properly mulch root zone, and fertilize, as needed. During wet springs, consider fungicide protection of new growth on high value trees beginning as the buds swell.
		Inspect for eggs within needles and remove and destroy affected needles prior to egg hatch. Inspect for the small dark larvae clustered on needle tips. When small, larvae are easily managed with insecticidal soap spray. As the larvae become larger, which they do rather quickly, treat them with a product that contains Spinosad.
		Monitor for the caterpillars and their silk. Treat with a product that contains Spinosad. <i>Bacillus thuringiensis</i> (Kurstaki) can be applied for the younger larvae. Be sure to penetrate silk webbing with whatever is sprayed but especially with B.t. given that it must cover the leaf surface for ingestion by the caterpillars.
		Remove infected shoots. Prune and shear only when conditions are dry. If practical, cone removal further reduces inoculum. Grow pines well adapted to environmental conditions in the planting site. Provide weekly soaking irrigation during dry periods, properly mulch root zone, and fertilize, as needed. During wet springs, consider fungicide protection of new growth on high value trees beginning as the buds swell.
PLANT	WHAT TO LOOK FOR	WHAT TO DO

The page numbers in the second column, after the pest, refer to the texts *Insects That Feed on Trees and Shrubs*, 2nd ed., Johnson and Lyon, and *Diseases of Trees and Shrubs*, Sinclair, Lyon and Johnson, Cornell University Press. These references provide color photos and more detailed information on the specific problems.

Bob Childs, Extension Entomologist  
Dan Gillman, Extension Plant Pathologist

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When choosing a nursery, make sure they have an understanding of the type and quality of plants you will buy. When possible, go to the nursery and pick out the plants yourself and inspect them before you buy them.

**Poor Planting Practices** by inexperienced, poorly trained or rushed crews continue to be a major problem in the Green Industry. There are two major issues: removal of the wire cage/burlap and proper planting depth of the plant.

Removal of the wire cage and the burlap is essential to good plant growth. Take care to set the plant into the planting hole at the proper depth, back fill enough to stabilize the plant, and then remove all of the wire cage and the burlap from the rootball. If the plant has been handled properly, there is no biological reason to leave these materials on the plant or in the hole. Most municipal and state contracts require this removal and a failure to remove them can and should result in the contractor returning to correct the error.

The second issue is proper planting depth - a problem for many years in the Green Industry which seems to have grown with the use of hydraulic digging spades in the nursery. It is imperative that plants, especially trees, be plant-ed with the root flair visible and not even a little too deep.

**Poor Maintenance Practices** will in many cases lead to dead plants. We can do everything right – have good design, buy good nursery stock, and make sure that proper planting practices were followed – but if we do not have the proper follow-up maintenance, the planting will often fail.

Proper watering is a key to a successful planting program. There can be too much or too little watering. Just how much often depends on who is going to do the watering and if they know what they are doing. Many years ago I was involved in the moving of three 9-inch DBH American beech trees. Two of the trees were being replanted on private property with a three year Plant Health Care (PHC) plan administered by the company that I worked for. Both of these trees did well and are still doing well after forty years. The third beech was planted on municipal property and the municipality was responsible for the follow-up maintenance. The tree died because of a lack of watering.

PHC is critical to a successful planting. Keep in mind that the larger the plant and the tougher the site, the more important the follow up watering and PHC.

As the “old timers” say “Plant them right, sleep at night.” Have a great planting season.

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## Questions From You

*Roberta Clark, UMass Extension Landscape, Nursery and Urban Forestry Program and Barnstable County Extension*

*Q. Many of my clients are asking about the fuzzy green material that appears to be growing on many tree limbs in our area. They think it is killing their trees. I think it is lichen and need to know if I need to do anything about it.*

A. Many areas in eastern Massachusetts resemble the Olympic Peninsula these days. Due to all the wet weather last year, lichen populations have exploded! Lichens are interesting organisms; they are a symbiotic combination consisting of a fungus and a green or blue-green algae living in a mutually beneficial relationship. The fungus obtains water and minerals from the air. Minerals in the air, such as tiny, dust-like particles of soil, are carried by the wind to the surface of lichens. When it rains, the minerals are dissolved and taken up by the lichen and used for growth. The fungus forms the body of lichen and it shelters and protects the algae. The algal component of lichen is capable of photosynthesis and provides

carbohydrates as “food” for both itself and the fungus. Lichens that grow on trees and shrubs do not harm them. The bark is used as a point of attachment but the vascular tissue is not penetrated and the lichen does not rob the tree or shrub of nutrients; they are not parasitic. There are many different types of lichen. They may be flat, foliose (leafy growth form), or fruticosa (shrubby or hair-like growth form). They range in color from yellowish green to grey, grayish-blue, or even rust colored.

While lichens are often associated with trees in decline, they are not the cause of the decline but take advantage of thinning crowns to grow in more sunlight. It is not necessary to do anything to get rid of lichens as they are causing no harm and are part of the natural environment. In addition, lichens are an indicator of good air quality, as they will not grow in a polluted atmosphere.

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## Upcoming Events

For more details and a registration form, go to [www.UMassGreenInfo.org](http://www.UMassGreenInfo.org) under Conferences and Workshops.

### SCOUTING FOR PESTS AND PROBLEMS OF WOODY ORNAMENTALS WALKABOUTS

#### June 3 - Insects and Cultural Problems

Bridgewater State College, 5 to 7 pm

#### September 30 - Diseases and Weeds, 4 to 6 pm

Holy Cross College, Worcester, MA

Two pesticide contact hours each for categories 29, 36, and Applicator's License; 2 ISA, 2 SAF, 2 CFE, 1/2 MCA, and 1 MCLP and MCH credits available.

### IDENTIFYING FRESHWATER WETLANDS IN THE LANDSCAPE

Location: French Hall, UMass Amherst

This 2-part workshop series will be useful to anyone who needs to be able to identify the presence of freshwater wetlands in the landscape, such as arborists, landscapers, land surveyors, foresters, etc. Presented by Dr. Deborah Picking, University of Massachusetts Department of Plant, Soil, and Insect Sciences. Cost \$100 per session; \$190 if registering for both sessions. Pre-registration required, as space is limited.

*Credits: 5.5 ISA, 1 MCA, 2 MCLP, 1 MCH, 5.5 SAF and 5.5 CFE credits available per session.*

### PART I: Inland Wetland Plant Identification

Thursday, May 27, 2010, 9 am to 3:30 pm

An introduction to inland wetland plant identification with an overview of the major characteristics of woody and non-woody vegetation used for identification in most plant keys, followed by guided exercises in the classroom to practice keying out plants and an afternoon field trip to a local wetland to practice identification skills.

Required text: *Field Guide to Nontidal Wetland Identification*, by Ralph W. Tiner, Jr. additional.

### PART II: Identifying Inland Wetland Soils

Thursday, June 3, 2010, 9 am to 3:30 pm

An introduction to some of the fundamental characteristics of soils used to identify hydric (wetland) soils, with an afternoon field trip to a local wetland will examine plants and soils along a wetland/ nonwetland gradient. Participants should have taken Part I of this series or be able to identify wetland vegetation (by permission of instructor).

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