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ASSOCIATION NEWS
Valann Budischak
Executive Director, D.N.L.A.

Greetings! May this find you healthy, happy, and enjoying a bit of a breather from a rather difficult year. 2007 proved to be a challenge for many green industry business owners and employees. Many businesses were impacted by the slump in the economy and housing market, the challenge of finding good employees, and the drought-like conditions. Good riddance 2007. Bring on 2008!

The DNLA tried something new for 2007. In response to the rapid growth in Sussex County, we decided to take our "show on the road". We held our annual Summer Turf & Nursery Expo in Millsboro at an absolutely gorgeous golf resort & community – Baywood Greens. Baywood is a DNLA member and greeted us with open arms. It was a huge success! More than 175 people took part. Warren Golde and his staff served as tour guides of this extraordinary resort. The plantings can't be beat! Cameron Marcelle and Aaron Jackson of Tunnell Companies gave a talk and tour of their compost operation. University of Delaware Cooperative Extension was there in full force. Gordon Johnson guided attendees through the many construction site and landscape problems that can be encountered. Tracy Wootten, who was instrumental in the planning of the event, teamed up with Gordon for a weed identification challenge. The duo of Bob Mulrooney and Brian Kunkel led a pest and disease walk. Sue Barton served as our moderator, and New Castle County newcomer, Carrie Murphy, lent a hand wherever needed. Jay Windsor, Cooperative Extension retiree and owner of Lakeside Greenhouses, was also there to lend support. It was a great day!

This leads me to my next point. Delaware's green industry is blessed to have so many dedicated professionals in Cooperative Extension. They serve our industry through their active participation in our conferences, their many site visits, short courses, and publications such as Ornamentals Hotline. Tracy Wootten and Susan Barton also serve as advisors on the board of the DNLA. You know, I've barely scratched the surface of the many services the Cooperative Extension folks provide. These individuals log in countless hours on our behalf. Thank you! Thank you!

The Delaware Horticulture Industry Expo and Annual Pesticide Conference are almost upon us. The two-day event will be held on January 16th and 17th at the Modern Maturity Center in Dover. We'll have the opportunity to hear some great speakers. Rick Darke, contextual designer, author and photographer will be on hand to mesmerize us with his discussion and images from his new book, *The Encyclopedia of Grasses for Livable Landscapes*. Bob Lyons will highlight the annuals that "stole the show" in the new UD Botanic Gardens trial gardens. Andrew Bunting of The Scott Arboretum will give us a glimpse of the new cultivars and species of woody plants for the industry. Last but far from least, George Koziarz, ANLA's Certified Business Appraisal Consultant will be on hand to shed some light on "How to Collect and Use Your Numbers in Your Business". This is just a few of the many great speakers we'll hear from. Attendees will also have the opportunity to visit with exhibitors, see what's new, and place orders in a relaxed setting. Sign up now so you don't miss out!

Other news:
September 3rd saw the passing of Joseph Wick, Sr., of Joseph Wick Nurseries. Joe was a founding member of the DNLA. He served as a friend and mentor to all who had the privilege of knowing him. Our deepest sympathies are with the entire Wick family. He will be sorely missed.

On October 24th, eight individuals sat for the Certified Nursery Professional core and/or specialty exams. Congratulations are in order for the following individuals:

New CNP:

Robert Freer
Wilmington State Park
Landscape Specialist

Tom Kucharik
Kucharik Landscape
Turfgrass Management Specialist

Gary Laudeman
Wilmington State Park
Turfgrass Management Specialist

Tom Mellon
Grounds Maintenance
Landscape Specialist

Welcome New Members:

Baker's Power & Turf
Bob Ricker
245 DuPont Highway
Millsboro, DE 19966

Hooked On Plants
Kathy Cherico & Melinda Citro
20144 John J. Williams Highway
Lewes, DE 19958

Jobe's Landscape
Joy Tomer
20934 Robinsville Road
Lewes, DE 19958

Sussex Landscaping
Jim Passwaters
22380 Bunting Road
Georgetown, DE 19947

Inn at Montchanin Village
Joanne Lutz
Rt. 100 & Kirk Road
Montchanin, DE 19710

Fisher & Son Co.
Tom DeFino
110 Summit Drive
Exton, PA 19341

U of D NEWS
Susan Barton, Extension Specialist

The Ornamentals Task Force has put together another great educational program for the Nursery and Landscape Industry in 2008.

But first,
Delaware Cooperative Extension is willing to come to you!
If you have 10 people or more, we will conduct a workshop at your site on insects, diseases, weeds, cultural problems, sustainable landscapes, business skills or any other nursery or landscape industry topic that interests you and your employees. The cost will be $10 per person and scheduling is based on the availability of the instructor with expertise in the topic you choose. Please contact your county extension agent (New Castle – Carrie at 831-2506; Kent – Gordon at 730-4000; Sussex – Tracy at 856-7303) or Sue Barton at 831-2531 to schedule a special workshop.

Turf Workshop[+] *– This one-day program will focus on turfgrass installation, maintenance and management for the home and commercial landscape. It will include pesticide and nutrient management topics. The workshop will be held at the Research and Education Center in Georgetown from 8 AM until 12 PM on March 14.

Soil Series – This series will cover the all-important landscape below the ground—the soil system. Classes will meet on Tuesdays in February at the Kent County Extension Office from 7 to 9 PM. (Cost is $25 or $10 per session)

Session 1: Soil Testing, Analysis, and Recommendations[+] – Gordon Johnson, Extension Ag Agent, Tuesday, 2/5.

In this short course you will learn about soil sampling, available soil tests, how soils are analyzed, reading and understanding soil test results, and developing recommendations based on soil tests. Information will be provided on soil testing for different horticultural uses including landscapes, turf, artificial soils, and container media. Also discussed will be the use of pH and soluble salt meters as troubleshooting tools.

Session 2: Soil Improvement and Soil Management[+] - Gordon Johnson, Extension Ag Agent, Tuesday, 2/12.

This short course will concentrate on how to improve soils as a medium for plant growth. Information will be provided on different soil amendments, their characteristics, and their uses; how to work with and handle soils, and the basics of fertilizer and lime use. Soil health principles and soil and plant root interactions will be discussed.

Session 3: Compost[+] – Dot Abbot, Renewable Resource Agent, Tuesday, 2/26

This short course will concentrate on the value of using natural resource materials collected from the horticulture 'waste' stream and composted to obtain a beneficial soil amendment. Compost characteristics and the process will be discussed, along with potential profitable markets.

Plant Material Uses Series –Plants will be presented in the context of how they are used in the landscape. The goal of this series is to introduce landscapers to a wider plant palette and show them how to use those plants. This series will be offered in New Castle County and the County Extension Office on Wyoming Road from 7-9 PM. (Cost is $35 or $10 for each session)

Session 1: Windbreaks, Screens, Borders and Hedges –Gordon Johnson, Extension Ag

Agent, Thursday, 2/28

This short course will focus on plants for windbreaks, borders, screens, and hedges. Information will be provided on how to design a windbreak, design border plantings, create an effective screen, and create formal and informal hedges. Site challenges and plant selection will be discussed along with problem plants to avoid. The bulk of the session will be devoted to plant species and cultivars to consider, their features, and adaptations.

Session 2: Shade Plantings – Carrie Murphy, Extension Horticulture Agent, Tuesday, 3/6

In this short course we will discuss various degrees of shade, strategies for coping with shade and the plants that grow best in each. Learn how to manage (sometimes challenging) areas of shade by selecting the appropriate plants.

Session 3: Plants in Groups or Masses – Susan Barton, Extension Specialist, Ornamentals, Thursday, 3/13

In this session, learn which plants work best in combination with one another. Learn how groups of perennials, shrubs and trees can be used to perform specific functions in the landscape and enhance landscape aesthetics.

Session 4: Drought Tolerant Plants – Carrie Murphy, Extension Specialist, Ornamentals, Tuesday, 3/18

As we deal with droughts more frequently in Delaware, water conservation has become an integral part of landscape management. In this short course we will discuss how plants respond to drought, how to manage drought conditions, and the importance of selecting low maintenance, drought tolerant plants for the landscape.

Session 5: Problem-Free Plants* –Bob Mulrooney, Extension Pathologist, Tuesday, 4/1

This session will cover a list of deciduous and evergreen trees and shrubs that I have not seen in the diagnostic lab at all or rarely in 33 years of diagnosing plant problems. Expect a rather subjective list but take home some ideas of pest-free or almost pest-free plants for the landscape.

Deciduous Tree Series
This series will focus on one important type of landscape plant—deciduous trees. We will cover culture, insects and diseases in 4 sessions throughout the month of March at the Research and Education Center in Georgetown. Sessions will be conducted from 4 to 6 PM. (Cost is $25 or $10 for each session).

Cultural Concerns[+] - Susan Barton, Extension Specialist, Ornamentals, Tuesday, 3/11

This session will address planting and management issues related to deciduous trees. We will cover plant selection, soil modification, planting technique, pruning, fertilization, mulching and cultural problems associated with trees in the landscape.

Insects* – Brian Kunkel, IPM Specialist, Thursday, 3/27

Participants will learn about insects attacking deciduous trees. Options for controlling borers, scales and defoliating insects will be covered.

Diseases* – Bob Mulrooney, Extension Pathologist, Thursday, 3/20.

Participants will learn about the identification and control of common diseases of leaves, stems and roots that infect our common deciduous trees.

UDBG Events

The University of Delaware Botanic Gardens sponsors events for gardeners and commercial landscapers. The UDBG is a wonderful resource for the nursery and landscape industry. The Spring UDBG plant sale is a great place to buy unusual plants with limited availability in the nursery and landscape trade. The sale benefits student internships as well as growth and development of the UDBG.

Plant Sale Preview Talk – Tuesday, March 18 from 7-9 PM in the Girl Scout Building on the College of Agriculture and Natural Resources campus in Newark. This talk is free and open to the public. It will include a small, select plant silent auction.

Guided Plant Walk – Thursday, March 27 from 4- 5:30 PM departing from Fischer Greenhouse. This plant walk is free with a reservation (302-831-2531). Dr. John Frett will lead this tour of plant sale items so buyers can see plants established in the landscape in larger or mature sizes.

UDBG Plant Sale – Saturday, April 26 from 9:30 AM to 4 PM. The UDBG spring plant sale is held on Ag Day each year. Plants include perennials, tender perennials, shrubs, small flowering trees, evergreens and shade trees. Plant sizes range from quarts to 5 gallons.

Coming in the SUMMER !

Pest Walks* –Join Brian Kunkel and Bob Mulrooney for a pest walk at Goodstay Center in Wilmington on June 17 from 4-5:30. (Cost is $10)

*Pesticide credits will be awarded for attendance at these sessions.
[+]Nutrient management credits will be awarded for attendance at these sessions.

PLANT RESCUE
Dan Riddle, Lodi Farms Ltd.

"I have an unusual question. Do you move trees?" "What is the biggest tree you can move?" "Do you buy trees?" I think most of us have received the call from a prospective customer about a pine tree that needs to be moved because it is planted too close to the house. "I didn't know it was going to grow so fast when I planted it there 10 years ago" is the standard comment.

While most of us consider these calls to be a nuisance, they can also be opportunities for us to educate the customer and become their expert and hero!

Reasons to rescue plants:

- Sentimental value-Many people plant trees to commemorate a birth, marriage or death. When they move, they can't bear to leave the plants behind. If it is a local move this is an option.

- Specimen quality-A customer is adding on to their home, and their Japanese maple or tricolor beech is in the way. The tree is worth far more than the cost to move and is healthy and vigorous. Many times, the tree would be irreplaceable.

- A large quantity of healthy plants-Again, a customer is remodeling a home or landscape and there is a large quantity of healthy vigorous plantings that would be suitable to be used elsewhere on the site, or put into a temporary holding area for later planting. The labor cost will be outweighed by the savings in removal and purchase of new plantings.

- Tax deduction-The customer is adding on to their house, there is no room to plant the tree anywhere else on the property. The tree may

have valued as a tax deduction if a local church or school can provide a home.

Through the years, I have had occasion to rescue plants for all of the reasons stated above. Sometimes it was a one-time move that we subcontracted to a company with a spade truck, but more often it was the beginning of a long prosperous relationship with a customer leading to more work and referrals.

Key things to keep in mind:

Timing is everything: As most of you know, the best time to move plants is while they are dormant. Try to impress upon the customer the optimum times for the rescue and benefits of planning ahead. If there is enough time, you could even "root prune" the trees a season ahead of the move.

Use your resources: Lean on reference books and respected nurserymen to learn what plants can be moved and the best times to move them. For example, arborvitae and red maple have a shallow fibrous root system; while others such as hickory and most fruit trees have a coarse deep root system and will not move well.

Be innovative: Keep up on the latest tools and treatments available. If the tool to do the job does not exist, make one!

Don't rush! Make sure you allow enough time to call Miss Utility to have the utilities located prior to digging. Also, keep in mind that if this is a sentimental tree, you are dealing with a priceless object. Tie up branches and protect other plants and landscape elements such as walkways and retaining walls.

Last year, Lodi Farms was involved in our most challenging move yet. In addition to a large quantity of ornamental grasses, a weeping Norway spruce and other valuable ornamentals, we were asked to move a specimen multi-stem Japanese maple. The tree was approximately 25 feet tall and 30 feet wide. There was no way to get a spade truck around the tree.

We had to do things a little bit differently than the ordinary transplanting job. First, we identified all the surrounding plants worth saving, tied them up and moved them to a holding area at the edge of the property. The branches of the Japanese maple were tied back as far as practical. Next, we dug a trench six feet around the tree, cutting any roots encountered with pruners and loppers. The soil was removed from the surrounding area and a cutting edge from a plow was used to undercut the 12-foot rootball. The rootball was then wrapped with a layer of burlap and chain link fence secured with ratchet tiedown straps.

A hole was dug to accommodate the new tree with a ramp to carry it into the hole. With the rootball secure, we were ready to move the tree approximately 30 feet to its new home. This was done by lifting the leading edge with a track loader and lifting and pushing from the rear with a bulldozer.

Pre- and post-move treatments with a rooting hormone and water solution in treegators helped to ensure survival of this valuable specimen. Total cost to the customer for moving all of the plants was $1600.00. Estimated value of the tree alone was $10,000.00.

Next time you get one of those "nuisance calls" wanting to move or save a few plants, remember the customer is calling you for a solution. Ask a few questions before you just say no!

Excerpted from The Michigan Landscape, *September 2007.*

DIAGNOSING ABIOTIC CAUSES OF PLANT PROBLEMS

Ron Kujawski, UMass Extension Educator, Landscape and Nursery

Too often, the uninformed landscape owner or amateur gardener assumes every blotch, die-back or wilt on a plant is caused by some disease causing organism, fungi, bacteria or virus. Unfortunately, that assumption is sometimes made by the professional as well. This is not surprising because diagnosing plant problems is not easy. Symptoms caused by living (biotic) and non-living (abiotic) agents of diseases are often similar. For example, frost injury to maple leaves looks very similar to foliar damage caused by pear thrips.

There are, however, some clues that can help the professional identify abiotic diseases. One such clue is the distribution pattern of symptoms over the area. Definite patterns of affected plants, e.g. along roadways or low spots, can indicate climatic, soil or chemical causes.

If the problem is occurring on a number of different plant species, the causal factors are more likely to be environmental, cultural or chemical rather than an infectious disease. Although there are exceptions, biotic agents tend to be specific to a host.

Are all plants in the area affected? Infectious diseases, those caused by biotic agents, progress with time and it is rare that 100% of the host plants would be affected at one time. Likewise, the sudden appearance, e.g. overnight, of symptoms suggests an abiotic cause. If a symptom started at one location on the plant or in the area and then spread slowly in extent and severity, infectious disease is likely.

All of the above steps assume that plant specimens have been examined for evidence of pests or living pathogens and none were found. The regularity of symptom expression and lack of any evidence of living pathogens are the best diagnostic criteria for abiotic diseases.

While the clues are helpful, it is also essential for the diagnostician to develop a case history that includes a record of cultural practices (fertilizer and pesticide applications, etc.), a record of environmental changes (drainage patterns, soil disturbance, etc.), and significant weather data. An attempt should be made to correlate occurrence of symptoms with cultural and environmental factors. This will require the diagnostician to have knowledge of the requirements of the plants involved and information on the growing environment (soil type, pH, drainage, exposure).

Reprinted from GrowLine*, Cornell Cooperative Extension, August 2007. Originally printed in* Hort Notes*, UMass, July 1996*

INVASIVE SPECIES AND SUSTAINABLE LANDSCAPES

John Peter Thompson
The Behnke Nurseries Co.

My involvement with invasive species seems at times to be a single issue, negative presentation full of commands and limitations. The principle challenge with invasive species is their ability to wage a rampant attack, gain competitive advantage and in extreme cases create a "biodesert" or monoculture. The reduction of species diversity within natural areas has become a beacon call to action. The endless calls to ban new plants and exotic species have risen to tidal wave proportions at times, and yet, there always seems to be a missing positive or proactive side to the question at hand.

What are asking gardeners in our disturbed landscapes to do? Go native and forsake a millennium of gardening traditions? Replace exotics with natives within the landscape design paradigms on a one for one species substitution basis? If one of the premises underlying western gardening traditions is the taming of nature, and, if taming nature has come to mean, intentionally or unintentionally, the destruction of nature as we currently understand it, what purpose is served by item substitution that works within the fundaments of traditional landscaping? From generations of gardeners and from agricultural practices comes a desire for order and a sense of the predictable. A meadow looks great from a distance, but close up, most of us do not have the familiarity with the vocabulary of life to deal with the apparent overwhelming diversity of species. In other words, from a distance we reduce the complexities to a more comprehensible whole, but close up we are at a loss to understand the syntax of the landscape in front of our noses.

I am beginning to suspect that in the future landscaping will be required to address the issue of biological species diversity loss. "Biodiversity losses are a clear signal that humanity's life support systems are failing." These quotes from Dr. Tallamy of the University of Delaware became epiphany-moments for me. "We need biodiversity because biodiversity runs the ecosystem on which we depend. The more diverse an ecosystem is, the more services (air, water, food, benign weather systems, carbon dioxide sequestration, garbage recycling etc.) it will provide for us. With ever growing human populations, we need more ecosystem services. But as we kill off our biodiversity, we are getting fewer and fewer services from our ecosystems. We are modifying nearly all of the earth's land for our own purposes. Two million acres, an area the size of Yellowstone National Park, are lost to development each year."

We must find a new philosophy for the landscape of the future which seems to be at odds with our thousand-year tradition on at least one level. To do this, we must start to tear down the fences that delineate the garden from the outside and begin to see our personal spaces as part of a larger whole. Instead of asking what plant has no insect pests, we need to begin asking which species host the most insects, which in turn support our birds and other fauna. This is a difficult proposition. In our suburban landscapes we go to extremes to limit unpredictable biology and to present order. Sometimes we do this for personal health reasons, and sometimes for deeply imbedded fear. We strive to both keep ticks and snakes at a distance, preferably in a museum or other controlled environment.

The idea of going to a local garden center and asking which tree supplies the food requirements of the most caterpillars is, to say the least, not happening on any measurable scale. What is worse for those involved in invasive species issues in horticulture is that

many of the plants that thrive well, and have limited insect predation, tend to be the exotic invasives. A truly sustainable landscape is one that encourages biological diversity within the garden space and within the larger ecosystem. Designing such a garden that fits the expectations of the typical homeowner may be somewhat of a challenge.

While biological diversity hosting and companion species planting is not the only consideration in the design and implementation of a sustainable landscape, it is a major consideration. A sustainable landscape must be greater than the sum of its parts, and consideration must go to resources needed to execute the design and to maintain the plantings, as well as to public health and safety. Invasive plants, those that tend to limit biological diversity, will be deselected under a sustainable decision matrix.

I am not proposing to base a landscape design entirely on its ability to serve as a nexus for biological diversity, but only to suggest that companion and host propensities be given a reasonably large measure of consideration when judging the design. The result will be encouraging the planting of more natives and discouraging the planting of invasive species.

Excerpted from Free State Nursery News, *Summer 2007*.

SIX STEPS TO SERVICE RECOVERY
Nancy Friedman Telephone Doctor

In this day and age, where customer service is on everyone's mind, it's difficult at times when it all hits the fan. What do you do when it's no longer just an irate customer? When it's beyond angry? How do you handle the situation? What can you do to SAVE the account? The relationship? The business?

We have identified 6 Steps of Service Recovery to help you and your company save the account, the relationship and the business. Good luck!

Respond rapidly – This is not the time to put the call/problem on a back burner. The longer you wait to handle the situation the worse it will become. Remember, delay increases anger.

Take ownership – The customer doesn't care if you're new, if you weren't there the day his problem happened, or if you don't know anything about it. They want you to take ownership of the problem or of the situation. It is your responsibility. Don't shift the blame.

Apologize sincerely – That means no "sorry 'bout that" which is a cliché, not an apology. The customer needs to hear the word APOLOGIZE. And they need to hear that you mean it.

Solve the problem – It's that old 80-20 rule; 80% of the time, the problem will be easy to solve. It's the next step that is the real problem.

Manage the feelings – This is the HEART of service recovery – the feelings. They've been hurt; ntentionally, or unintentionally. It doesn't matter. What matters is they feel maligned and we need to spend time on those feelings. We'll probably spend more time on the feelings than we did on the problem. But it's a KEY step in service recovery.

Verify satisfaction – In so many cases, if handled properly, all is well. We hope. Well, how do we know? Simple. We ask! Yes, it's that simple. We ask, "Have I done a good job for you Mr. Smith?" or "Mrs. Jones, has everything been handled to your satisfaction?" We need to let the customer know we value their business. We also may need to do or give something 'extra' if we can, to help the situation along. We need to do something the customer is totally not expecting. Something that will say they're appreciated. Each industry has its own appreciation threshold. It doesn't necessarily need to be expensive. It just needs 'to be.'

Service recovery is special. You see, good customer service is expected. That's nothing new or special. You're supposed to give good customer service. What's the big deal? But when stuff 'hits the fan' and the one customer is beyond IRATE – that's when SERVICE RECOVERY kicks into gear. Good luck!

Reprinted from VNLA Newsletter*, May/June 2007.*

PROBLEMS ASSOCIATED WITH THE PLANTING PROCESS

Robert E. Schutzki
Department of Horticulture, Michigan State University

The planting process involves the pre-planting examination and evaluation of the plant stock type (bare-root, container, balled and burlapped, and mechanical tree spade), the actual physical process of planting, and follow-up maintenance. Problems related to planting can originate within each of these phases of the process.

Consider the idiosyncrasies with each of the previously mentioned stock types; for example the depth of the trunk/root collar on B&B trees, encircling roots in container grown plants, root desiccation on bare-root plants, and glazing in mechanical tree spade plantings. Each one of these factors can contribute to the success or failure of plant establishment. If we add soil or environmental limitations at the planting site into the equation, improper handling and planting technique can contribute significantly to poor establishment and subsequent warranty issues. Symptoms related to poor planting techniques and site limitations are similar to drought and flooding; plants exhibit shoot dieback, reduced leaf size, minimal shoot extension, root injury, and poor root regeneration. Under drought or water deficits, white root tips will be absent and existing roots will be dried and shriveled. Under excessive moisture and poor drainage the root system will also lack white root tips and exhibit signs of anaerobic conditions. The blackened outer surface of the roots will slough off exposing inner grey and water-soaked stains. In addition to the obvious plant symptoms, evidence of twine around the base of the trunk, scars from staking or other signs of mechanical injury may directly relate to handling during the planting process. Problems caused by poor planting technique can be due to: marginal plant stock

quality; poor soil ball or container media moisture prior to planting or during establishment; improper planting depth, either too high or too low; compacted planting sites and poor drainage through the soil profile; improper irrigation scheduling following planting; and improper mulching practice.

Landscape inspections are the key to learning. Each site is a new learning experience, whether the design intent, construction detail, plant use, or examination of plant use, or examination of plant performance. The following text highlights some of the situations encountered involving planting technique and plant establishment while problem solving in the field.

Plant/Soil/Water Interrelationships

Landscape plants are impacted by soil moisture, either too much or too little, more than any other soil related concerns. A basic understanding of soils and water movement aids in accessing conditions and determining reasonable solutions to problems. Developing a working knowledge of soils requires a review of soil physical, chemical and biological properties. In the case of planting sites, we focus on the physical properties of texture and structure. Soil texture refers to the percentage of sand, silt, and clay within the soils. These soil particles provide the basic foundation of the soil and have a major influence on the soil's characteristics, potential uses, and response to disturbance. Soil structure is the physical property describing the clumping or aggregation of the soil particles. Soil texture is usually unchangeable, however; structure is more easily manipulated and modified through cultural practice. We make attempts at improving structure when we till the soil or amend planting backfill. Soil porosity refers to the pore space between soil particles and is a function of soil texture and structure. Porosity will contribute to aeration, drainage, bulk density, and water holding capacity of the soil.

Ultimately, in reviewing these properties we are interested in soil, plant, and water relationships.

Water will move from a coarse textured soil to a fine textured soil, but it will not move from a fine textured soil into a coarse textured soil until it is saturated. Also, the break and discontinuity between soil types can influence the pattern of movement. When examining the movement of water in a planting hole we are not only interested in the downward flow, but also in the lateral movement. Lateral movement of water involves capillary flow through soil pores. Lateral movement of soil water with regards to planting refers to the movement across the outside edge of the planting hole (undisturbed soil) and the backfill, and the movement between the plant soil ball/root mass and the backfill. During establishment, a plant relies on internal ball or container media moisture to sustain growth and development until which time it has regenerated roots, penetrated the backfill, and drawn upon backfill moisture. If the soil ball/container media is too dry, the plant may not have the necessary resources to regenerate roots. If the soil ball/media mass is too wet, lack of aeration minimizes root development and leads to plant decline. In examining soil conditions at planting sites, we try to access soil texture, structure and the movement of water down through the profile and laterally across the plant soil ball/container media, backfill, and outside edge of the hole.

Over the years, we have encountered many problem situations related to the flow of soil water through the soil profile and the lateral movement between the root ball/mass and the backfill. One memorable situation was a Black Hills spruce screen on a corporate site. Several of the trees had already died and others were exhibiting varying degrees of needle browning. The landscape was well constructed and both

the turf and the landscape beds were irrigated. At first glance, observations hinted at excessive soil moisture. Whenever we suspect soil problems, it is always a good idea to start with the non-disturbed soil outside or beyond the planting hole. In most situations this will provide a first-hand look at the existing soil conditions. You can identify the soil type, depth of topsoil (if any), determine compaction and lastly, get an idea of current soil moisture. We pulled a soil core from about an 8-10" depth. It was a heavy, compacted soil with adequate, but not excessive moisture. The next soil core was taken from the planting backfill. The probe extracted a rich amended soil with adequate moisture. Deeper examination of the backfill profile did not show anything to the contrary. The last core was taken from the tree's soil ball. We scraped away the mulch and planting soil from the top of the soil ball and proceeded to extract a core. It did not go as expected; the soil ball was dry and could not be penetrated with the soil probe. As it turned out, the overhead irrigation water was being shed to the outside of the soil ball by the dense crown of the spruce. Water was not falling directly on top of the ball and percolating into the soil. Although the planting backfill and undisturbed site soil held adequate moisture it was not being moved into the ball, nor had there been enough time for roots to penetrate the backfill and draw upon its moisture. We suspected a water problem but it wasn't until we examined the soil that we were able to determine the true nature of the problem.

A similar situation was observed at a different corporate site where Autumn Blaze maples were exhibiting early signs of fall color in July. Premature fall color is a sign of stress. Excessive or inadequate soil ball moisture can cause this symptom in newly planted trees. Examination of the soils within the soil ball, backfill, and surrounding soil revealed differences in moisture levels. The soil within the ball was dry whereas the backfill and undisturbed site solids were moist. Although alleviating the soil ball moisture stress did not change the appearance of the current season's leaves; the stress will not be carried into the next season.

Excessive water due to poor soil drainage exhibits the same symptoms. We witnessed this on several occasions; the first situation was at a large commercial site with pines randomly planted around the perimeter of the property. The trees were on a slight slope and surrounded by non-irrigated turf. As with the other sites, trees showed signs of water stress. Soil cores taken from the outside of the planting hole identified heavy clay soils. The soil cores taken from the backfill were saturated. Water was dripping from the soil probe. Drainage through the planting hole was poor, water was building up in the hole, and the trees were sitting in a bowl. Soil cores from the soil ball were also saturated. Supplemental water supplied by the contractor accumulated in the bottom of the hole, had risen into the ball through capillary action, and was damaging the root system. On this site, the absence of an irrigation system suggested that lack of water could be contributing to the plant stress, when in fact, lack of drainage contributed to a build-up of supplemental water in the planting hole.

Poor soil drainage caused problems with several European beech at another corporate site. The drainage problem was evident by the staining on the sidewalk, puddling within adjacent landscape beds, decline of the perennials within the beds, and the presence of water in the vertical wells installed at several of the beech trees. One beech was already dead and a few more were declining due to the standing water within the tree planting pits. Surface and subsurface drainage needed to be addressed to alleviate the problem. Fortunately, the contractor had the foresight to install vertical wells at each of the tree planting sites. Water

level data from the wells provided evidence that tree decline was not due to contactor error and minimized liability for replacements. When poor soil drainage is suspected and has not been addressed in the construction specifications, it is prudent to install a vertical well at the planting site and monitor water levels during the warranty period. A vertical well is basically a three or four-inch perforated plastic drain tile positioned vertically in the planting hole. The top can be capped and covered at the surface with mulch. Weekly measurements will document water levels within the planting hole and provide evidence of poor soil drainage that may impact plant establishment and subsequent health. Poor soil drainage can also impact ground cover establishment in landscape bed areas. Perennial ground covers can suffer from excessive moisture at the soil surface and in the mulch layer. Plants will typically yellow and not show much evidence of expected shoot extension.

Soil water movement is also a concern for trees planted by mechanical tree-spades. Glazing on both the sides of the hole and the edge of the plug can restrict the lateral movement of soil water. Spaded plants rely on plug moisture for quite some time. It is necessary to focus watering on the plug to ensure plant performance and quality during the establishment period. When extracting cores to determine soil moisture from a spaded tree it is also important to examine the interface between the edge of the plug and the outside wall of the hole. Gaps between the two soils cause discontinuity and could lead to future problems. In addition, variation in moisture patterns across the width of the plug may also require a different approach in directing supplemental irrigation. We witnessed an example of the discontinuity issue in spaded trees on a blue spruce screen. The condition of the trees range from having sporadic dead branches to being totally dead. The impacted trees were randomly scattered in the border with no apparent pattern to the problem. There was evidence of transplant shock and planting stress on most of the trees.

Due to the fact that these trees were planted with a tree spade, we examined the root/soil plug and the surrounding soils to access soil moisture. We found that the sandy soils in the tree plug were dry and the surrounding clay soils were moist. This problem was due to inadequate maintenance in addressing the water requirements during the initial stages of establishment. Our inspection was one point in time; however, given the conditions of the trees and our fluctuating seasonal precipitation, it was relatively easy to relate the conditions back to inadequate moisture over the course of the growing season. The drought conditions experienced by the trees contributed to branch decline, the presence of Cytospora on selected trees, and in some cases death. Supplemental watering by the property owner needed to be directed to the plug area.

Planting Depth

The depth of the planting hole relates back to the soil ball or container size level of the root system, and soil conditions. Typical recommendations call for the depth to coincide with the level of the root system. In heavier soils, it is suggested that plants be elevated to alleviate any problems with poor soil drainage. In B&B trees, it is important to examine the top of the soil ball to determine the true level of the root system. The visible swell of the trunk flair/root collar will give an indication whether soil has built up around the trunk during production. It is easy to pull away the soil from the trunk and locate the uppermost roots of the plant. Locating the true level of the root system establishes planting depth. Improper planting depth leads to a deterioration of plant quality and is the cause of many replacements. The

false top found in B&B trees is not found on container plants; however, we do find problems associated with planting too high on container shrubs and herbaceous perennials. It is important to "plant the plant in soil", meaning that soil needs to be added to the sides of the elevated root mass. Too often we find container plants with the top of the root mass "planted" in mulch. Mulch settles leaving the root masses exposed. The drying of the upper portion of the root masses contributes to plant decline and causes an unsightly appearance in the planting beds. If soil conditions warrant planting high, cover the root mass with soil and taper it to meet the existing grade.

Girdling Roots

Girdling roots have been a long recognized abiotic problem in both production and landscape systems. Encircling roots due to production methods, poor soil conditions, excessive mulch, and narrow planting sites have contributed in one form or another to the problem. A distinction is sometimes made between two forms of girdling roots, the first is what has traditionally been referred to as girdling roots; the second is known as stem girdling roots. Girdling roots refers to the condition when roots encircle upon themselves. Stem girdling roots are roots that encircle the tree stem above the trunk/root collar. Both of these conditions impact the structural stability and anchoring of the plant, restrict the root system's ability to adequately mine the soils, and in the case of stem girdling roots, compresses the conductive tissue in the trunk restricting translocation and eventually leading to trunk decay. Each situation causes a slow but progressive decline in plant performance. Treatment for girdling and stem girdling roots requires the selective removal of root sections. The extent of the removal varies with the condition and the length of time that the plant has been in place. Root removal may span several seasons to minimize stress to the plant. Elimination or reduction of this problem can be gained through proper planting procedure and long-term mulching practice. Upon planting, encircling roots should be cut or removed to ensure proper egress of new and existing roots into the surrounding soils. Excessive mulch layers around the base of plants cause new roots to work their way upwards to capitalize on optimal aeration, moisture, and nutrient levels. Roots remain in the mulch layers and encircle as continued mulching maintains the preferred environment. Mulch layers should be removed periodically and problem roots cut and redirected.

Mulch Practice

The benefits of mulch are well documented and support its widespread use. Mulch conserves soil moisture, reduces soil erosion, minimizes weed growth, moderates soil temperatures, and contributes to soil fertility following decomposition. However, abiotic disorders can surface from its improper use or overuse. Excessive mulch and improper application lead to crown decay and plant decline. Problems associated with improper mulching practices include excessive moisture build-up on trunk collars and trunk decay, negative impacts on rooting depth, promotion of girdling roots, and initiating nitrogen deficiencies in the case of ground covers and annuals plantings.

One of the best strategies for dealing with problems related to the planting process is to be proactive. Routine planning and management can aid in either eliminating or minimizing their occurrence and impact on plants.

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TEN TREE MYTHS
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Much of what we hear about tree care is actually incorrect, based on myths and misconceptions. Here is what the International Society of Arboriculture considers the top 10 myths of tree care.

MYTH #1: When a tree is planted, it should be securely staked to ensure the development of a stable root system and a strong trunk. Although it is sometimes necessary to stake trees to keep them upright and allow establishment, there are some adverse effects of staking. Compared to staked trees, unstaked trees tend to develop a more extensive root system and better trunk taper. Allowing a small amount of movement can help root and trunk development. Of course, the worst effect of staking is the possibility of trunk damage from the staking wires or ties. Staking materials usually should be removed after one year to avoid girdling the tree.

MYTH #2: Newly planted trees should have their trunks wrapped with tree wrap to prevent sunscald and insect entry. Studies using most common tree wraps have shown that they do not prevent extreme fluctuations in temperature on the bark. In some cases, the temperature extremes are worse. Also, tree wraps have proven quite ineffective in preventing insect entry. In fact, some insects like to burrow under tree wrap.

MYTH #3: Trees should be pruned back heavily when they are planted to compensate for the loss of roots. Tree establishment is best on unpruned trees. Although pruning the top can reduce the amount of water that evaporates from the leaves, the tree needs a full crown to produce the much-needed food and the plant hormones that induce root growth. The tree will develop a stronger, more extensive root system if it has a fuller crown. Limit pruning at the time of planting to structural training and the removal of damaged branches.

MYTH #4: When removing a branch from a tree, the final cut should be flush with the stem to optimize healing. First of all, trees don't "heal" in the sense that wounds on people heal. Our bodies regenerate tissues in much the same form of the tissues that were removed.

Trees compartmentalize wounds, generating wound wood over the wounded area. Flush cutting removes the branch collar, creating a larger wound than if the branch were removed outside the collar. Also, it is likely that some of the parent branch tissue will be removed. The spread of decay inside the tree is greater with flush cuts.

MYTH #5: Pruning wounds greater than three inches in diameter should be painted with a wound dressing. Research has shown that the common wound dressings do not inhibit decay, do not prevent insect entry and do not bring about faster would closure. In fact, many of the commonly used dressings slow wound closure.

MYTH #6: Certain fast-growing, weak-wooded trees such as silver maple and Siberian elm should be "topped" to make them less hazardous in the landscape. While topping these trees may reduce the potential hazard at first, they will likely be more dangerous in the future. Topping stimulates growth of twigs below the cuts. Growth of many vigorous shoots leads to branches with weak attachments. Also decay spreads inside the stubs and branches that were topped. Within 2-5 years after topping, the tree will have regained its height, but will be more hazardous than before the topping. Besides, topping makes trees ugly. Alternatives include

thinning, cabling, or removal and replacement with a more suitable species.

MYTH #7: If certain species of trees are pruned early in the spring, they will "bleed," stressing the tree and causing health problems. True, some trees such as maples and birches will "bleed" or lose sap from pruning cuts made early in the spring. This bleeding does not hurt the tree, and the loss of sap is inconsequential. With a few exceptions, most routine running can be done any time of year. The worst time is just as the tree has leafed out in the spring. The best time is when the tree is dormant. To maximize flowering for the following year, prune just after bloom this year.

MYTH #8: The root system of a tree is a mirror image of the top. Many people envision a large, branching taproot growing deep into the soil. Actually, taproots are very uncommon in mature trees. If taproots do develop, they usually will be forced into horizontal growth when they encounter hard subsoils beneath the surface. The entire root systems of most trees can be found within the top three feet of soil. The spread of the root system however, can be very extensive, often extending 2-3 times the spread of the crown.

MYTH #9: Trees require "deep root fertilization" to reach their root system. In most U.S. soils, the vast majority of a tree's fibrous, absorbing roots are in the top eight inches of soil. Roots grow where conditions are best for root growth, where water and oxygen are available. When we place fertilizer 12- 18" deep in the soil, we are putting it too deep.

MYTH #10: When a tree has lost a significant portion of its root system such as in construction damage, the crown should be cut back to compensate for root loss. While this is a common recommendation, research has not supported it. Following root loss, unpruned trees seem to respond better than pruned trees. Obviously, any removal of branches will reduce the capacity of the tree to produce food in the leaves. Although the tree will probably lose some branches as a result of the root damage (if the tree survives the trauma), it is best to let the tree decide which ones. Thus, pruning should be limited to hazard reduction at first. Later, after the tree has responded to the damage, further pruning would be in order.

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RELATIONSHIP BETWEEN PLANT STRESS AND ARTHROPOD PEST SUSCEPTIBILITY IN URBAN LANDSCAPES

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Plant "stress" is a condition that refers to factors including moisture and temperature imbalances, soil compaction, reduced sunlight, air pollution, and/or mechanical disturbance that compromise the ability of a particular plant or plant grouping to survive in an urban or ornamental environment. Trees and shrubs located in urban landscapes are subject to a wide range of "stress" factors, such as those mentioned above, which may increase their susceptibility to opportunistic arthropod (insect and mite) pests.

In general, this involves trees and shrubs planted in residential and commercial landscapes. It may also include plant material located along streets, walkways, and in shopping center or "strip mall" parking lots that are typically surrounded by asphalt and/or concrete.

Trees and shrubs growing along streets and walkways are particularly subject to pollutants from automobile exhaust and dust. This not only increases plant "stress", but may also reduce the abundance of natural enemies since dust is known to be detrimental to parasitoids and predators. In the absence of natural enemies, plants may experience higher populations of insect and mite pests, thus necessitating the need for insecticide or miticide applications. In additions plants growing near streets or walkways are highly susceptible to disturbances associated with construction including walkway replacement and repair or installation of new piping systems. These kinds of disturbances generally result in severe root injury, which compromises the ability of trees and shrubs to defend themselves, thus increasing susceptibility to insect pests. What this means is that plants will allocate available resources for survival instead of producing defensive compounds or secondary metabolites, which are responsible for protecting plants against attack from insect and mite herbivores.

Another factor that typically leads to increased plant "stress" is the amount of hardscape such as parking lots and/or buildings that surrounds trees and shrubs. This creates micro-habitats ("islands") that are stressful to plants due to the increase in heat absorption, light reflection, and/or decrease in available moisture. These types of environments, however, may be conducive for insect and/or mite pest development, but not for natural enemies. Additionally, trees and shrubs located in these micro-habitats may be more difficult for natural enemies to find. As a result, insect and mite pests escape regulation from natural enemies, leading to potentially higher populations that can cause plant damage.

Trees and shrubs growing in residential and commercial landscapes are exposed to "stress" factors including mechanical injury and improper cultural practices. Mechanical injury may occur when lawn mowers or weed-whackers are used to either mow or "trim" turfgrass growing near the base (crown) of trees and shrubs. Lawn mowers or weed-whackers may inadvertently remove bark (cambium) tissue and girdle plants. This creates undue "stress" on trees and shrubs and increases susceptibility to wood-boring insects (both beetles and caterpillars). The implementation of proper cultural practices can reduce the susceptibility of trees and shrubs to wood-boring insects, particularly beetles. However, improper irrigation, fertility, mulching, and pruning may "stress" trees and shrubs, thus altering the plant-pest balance in favor of pests.

Over or underwatering plants in urban landscapes may create a series of physiological

changes that result in plant "stress", resulting in increased susceptibility to insect attack. Plants stressed due to overwatering tend to allocate resources toward growth with fewer resources allocated for defense, which makes it easier for wood-boring insects to attack plants. Underwatering may also contribute to plant "stress" because trees and shrubs are unable to take up enough moisture to maintain normal metabolic functions. Wood-boring beetles and other insects tend to take advantage of this situation. For example, research has demonstrated that trees experiencing moisture "stress" are unable to produce oleoresins, which normally act to repel wood-boring beetles. Pine trees tend to be more susceptible to pine bark beetles during periods of drought. The duration of moisture "stress" may impact insect ad mite populations both positively and negatively. For example, while short-term moisture "stress" may stimulate development of the twospotted spider mite (*Tetranychus urticae*), long-term moisture "stress" may limit twospotted spider mite population growth due to a decrease in plant quality and quantity.

The use of rapid-release nitrogen-based fertilizers that are applied to turfgrass may increase the susceptibility of trees or shrubs to phloem-feeding insects such as aphids, leafhoppers, scales, and vascular-feeding spider mites such as the twospotted spider mite (*T. urticae*). Overfertilization tends to increase insect and mite pest populations because plants, in general, allocate more energy into growth instead of the production of defensive compounds. This results in an increase in reproduction and decrease in development time (egg to adult) of insect and mite pest populations. The concentration of chemical defenses necessary for resisting insect and mite pests decreases in rapidly growing trees and shrubs. For example, birch (*Betula resinifera*) and quaking aspen (*Populus tremuloides*) are more susceptible to leaf-feeding insects when fertilized. In addition, this often leads to the production of soft, succulent growth that contains higher quantities of amino acids, which are essential for insect and mite herbivores, and a thinner leaf cuticle that is easier for aphids, spider mites, and leafhoppers to penetrate with their piercing-sucking mouthparts.

Proper mulching can reduce plant stress by decreasing weed competition, retaining soil moisture for extended periods of time, and preventing damage to the base of trees and shrubs from lawn mowers and weed-whackers. However, too much mulch or mulch that covers the plant crown can inhibit oxygen uptake and suffocate plants. Again, this increases susceptibility to wood-boring insects.

Two types of improper pruning may result in insect problems; poor practices and improper timing. Example of poor pruning practices include leaving "stubs", topping trees, or cutting too far back on the branch collar. These pruning practices make it difficult for plants to properly heal themselves, which then increases susceptibility to wood-boring beetles. Improper timing involves:

1) pruning trees or shrubs when insects, especially egg-laying females, are most active;
2) pruning when trees or shrubs are most likely to emit volatile chemicals that attract insects; and
3) pruning practices that stimulate succulent growth, which may be attractive to insects including aphids and planthoppers.

The implementation of proper cultural practices such as irrigation, fertility, mulching, and pruning will have a significant influence in decreasing plant stress and susceptibility to insect and mite pests. Understanding how cultural practices are correlated with plant responses such as defense will lead to proper implementation of cultural practices in the urban

landscape, which will result in fewer insect and mite pest problems in the long-term.

Below are two excellent references that contain information associated with the impact of cultural practices and other "stress" factors on plant health:

**Cultural Practice Problems of Trees and Shrubs in the Landscape and Nursery.* 2002
Authors: R. D. Childs, D. C. Swanson, and R. F. Kujawski. University of Massachusetts, French Hall, Amherst, MA 01003. (413)545-0895

**Abiotic Disorders of Landscape Plants: A Diagnostic Guide.* 2003.
Authors: L. R. Costello, E. J. Perry, N. P Matheny, J. M. Henry, and P. M. Geisel. University of California, Agriculture and Natural Resources, Publication 3420 (510) 642-2431 or 1-800-994-8849.

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AD HOC WHITEFLY TASK FORCE
Billy Newton, USDA

Whiteflies have been detected in some rooted cuttings shipments, and hot dry conditions have promoted a greater than normal buildup of whiteflies on field crops in parts of the southeastern United States in 2007.

The Ad Hoc Whitefly Task Force, made up of state and federal regulators, representatives of the ornamentals, cotton and vegetable industries, and leading scientists, has been working together to develop effective whitefly management programs since 2005. The success of this effort has serious economic implications for U.S. agriculture, and depends in part on <u>you</u> – the ornamentals grower.

A good whitefly management program must have two goals. First, of course, is to help growers produce a high quality, salable crop for the final consumer. Second, but of equal importance, is preserving the chemical tools that agriculture uses to manage whiteflies. If we do not maintain the viability of effective chemical tools, it will be difficult for many growers to produce a salable crop. Consequently, the wise use of chemicals, through a scientifically based IPM program, is essential in this 21st Century. Europe has seen, and is suffering from, the results of overspraying. Insecticide misuse in the United States may result in silverleaf whitefly populations that cannot be controlled. It is important to remember that the Q-biotype whitefly is already resistant to a number of products commonly used. Chemical over-spray could easily lead to B-biotype resistance.

The Task Force asks you to collaborate with us in this effort. It's not just about the challenges posted by the Q-biotype. It's about avoiding resistance development in <u>any</u> whitefly population.

What should commercial growers be doing?

1. Scout – essential. Inspect your crops at least weekly. Don't let the whiteflies get ahead of you, or your treatment options will be more limited.

2. Exclude or isolate. If at all possible, try to exclude whiteflies from your growing facility with screening material, and if possible, isolate the facility so that workers have to enter through an anteroom.

3. Practice good sanitation – essential. Keep weeds down, maintain good growing practices.

4. Inspect incoming shipments, and isolate if necessary. All of the major propagators are cooperating in this program, so you should not be receiving undue numbers of whiteflies. Because zero-tolerance is NOT the goal for anyone, you may see a whitefly or two when your shipments arrive. That's normal, and means that your propagator (or rooting station) is probably following good management practices. However, if you see many whiteflies on incoming shipments, keep those shipments separate from your other crops until they have been treated. And contact your propagator or rooting station – inform them about the situation. Ask whether they are biotyping their whiteflies, if they are monitoring resistance levels in their whitefly populations, and if they are following the Task Force's recommended Management Program.

5. Watch your neighbors' fields. If you're near cotton or vegetable fields, you may see whiteflies migrate to your greenhouse at the end of their season, and you'll have to deal with it. If you know when those seasons are, you'll be better prepared.

6. Study and implement the "Management Program for Whiteflies on Propagated Ornamentals" recommended by the Task Force. It's available at http://www.mrec.ifas.ufl.edu/LSO/bemisia/bemisia.htm. This program is based on the best scientific data developed to date by the Whitefly Task Force scientists. Do not rely on just one or two effective products, but instead integrate products with different modes of action to decrease the potential for developing resistance.

7. If you have control problems: contact your propagator, your local extension agent or university expert. Follow our "Whitefly Management Program", and get your whiteflies biotyped. The biotyping process is fast, and information will be kept absolutely confidential. Knowing which biotype you are dealing with will help you choose the most effective control products. (The Management Plan provides a list of addresses to which samples may be sent for biotyping.)

In the United States, the potentially impacted industries, federal and state governments, and scientists have cooperated in the aggressive, cooperative whitefly management effort to help growers produce a salable crop and minimize the likelihood of developing resistant whiteflies. You are an essential part of that effort.

REMEMBER: Q-BIOTYPE WHITEFLIES ARE A DOCUMENTED THREAT, BUT THERE IS ALSO EVIDENCE THAT B-BIOTYPE ARE DEVELOPING RESISTANCE AS WELL. Only by working cooperatively, wisely and together can agriculture solve this problem.

PLEASE DON'T BE PART OF THE PROBLEM:
BE PART OF THE SOLUTION!

Reprinted from VNLA Newsletter, *September/October 2007.*

GENERATION GAP(S) IN THE WORKPLACE

We tend to think "diversity" is an issue of race or sex. But, of course, to be truly diverse means much more than that. We could add the handicapped, religious and political groups, veterans, the aged, and many more.

These groups are, more or less, the protected classes or target groups that we intend to include in our workforce; But the most prevalent of all diverse groups is usually already in our workforce and is also the most openly intolerant of each other – the "generation gap."

This is not the conventional generation gap of "the old versus the young" or the "over 40" protected class identified by the Equal Employment Opportunity Commission (EEOC). No, this is about the multiple levels of generations that exist in most workplaces, and each of these generations has gaps between themselves and the other generations.

Although we can preach to these generational groups about tolerance, the real goal should be to first identify the characteristics of each group and then show them how to bridge those gaps.

Recently, the Mayo Clinic produced an updated analysis and narrowed in on a few new titles for these generational groups.

The Generations in Today's Workplace

1. Traditionalists – born 1900 to 1945. Often referred to as the World War II generation, traditionalists have worked longer than any of the other generations. They have experienced two world wars; and the Great Depression taught them how to live within limited means.

Traditionalists are loyal, hardworking, financially conservative, and are faithful to the institutions to which they belong. Many are approaching retirement or are already retired, and they may be working at part-time jobs or for themselves.

2. Baby Boomers – born 1946 to 1964. When baby boomers entered the workforce, they wanted to change the status quo. They were actually the people who created the new world of rights and opportunities that we now have and take for granted. They had an almost boundless optimism that led them to fight for the changes that they felt were needed. But because of their large numbers, they faced severe competition from each other for jobs. Baby boomers can be credited with inventing the 60-hour work week. They felt that hard work and loyalty to their employer was the best way to get ahead. They identify themselves with their jobs.

They believe that "you are what you do" and that you are most clearly identified by your achievements. As a group, baby boomers are politically savvy when it comes to navigating their way around the minefields of the workplace.

3. Generation Xers – born 1965 to 1980. Generation Xers, having ushered in the area of video games and personal computers as children, are technologically savvy. As the primary group of computer whizzes in the market, they became the prime targets for the headhunters of the growing recruiting industry. Lured away from their jobs as their competitive knowledge expanded, they became the first workforce to find job-hopping to be a career advance.

Disillusionment with the skyrocketing divorce rates of their parents, seeing parents laid-off after years of service and the distrust of political institutions instilled a sense of skepticism and distrust of institutions of all kinds. They see no

problem with changing jobs as their loyalties are to the technology and their careers.

In contrast to the baby boomers' work ethic, Generation Xers do not believe that work is the most important part of their lives. They are resourceful and hardworking, but at 5 o'clock most have other interests to pursue.

4. Millennials – born 1981 to 1999. Many in this generational group are still in school, but the oldest of them are recent college graduates and are already entering the workforce. This wireless generation has had access to cell phones, pagers, and personal computers for all of their lives. Millennial are eager to learn, and they enjoy questioning everything. They are confident and have high self-esteem.

Having functioned in groups in school, organized sports, and extra curricular activities from a very young age, they are collaborators and favor teamwork. They reject the notion of having to stay within the boundaries of their job description. Expect them to have their eyes open for opportunities and to keep their career options open.

However, as opposed to Generation Xers, who often change jobs but stay in their careers, millennials are also more likely to make entire career changes or to simultaneously build double careers.

Cuspers

Cuspers are those who are wedged in between two generations. Even though we have given specified dates for each generational group, those dates are not carved in stone. You might actually identify with elements in two different groups if you were born near the beginning or end of one of them. If so, consider yourself a "cusper," one who is on the cusp between one generation and the next.

The folks at the Mayo Clinic have identified three such groups in today's workforce.

1. Cusper A - Traditionalist/Baby Boomer

Born around 1940 to 1945, members of this cusper group value the strong work ethics of the traditionalists. However, some are also eager to change the status quo, a definite baby-boomer trait. They are also achievement oriented.

2. Cusper B - Baby Boomer/Generation Xer

Born between 1960 and 1965, these cuspers witnessed the success of their older baby boomer coworkers, but they, too, were affected by the job-hopping trends and conditions faced by the Generation Xers. Not as high tech, they were not exposed to computers until after high school.

3. Cusper C - Generation Xer/Millennial

Born from 1975 to 1980, these cuspers are not yet well known. But, so far it is clear that they possess an interesting mix of Generation Xer skepticism and millennial optimism, and they are quite comfortable with technology. They are good team players, and they have a strong entrepreneurial streak.

Cuspers can be valuable resources in any workplace because they can be a bridge that understands and respects two separate groups. They have so far proven to be good mediators, translators, and mentors.

Being aware of the differences between these groups is to your advantage, and managing those differences can be even more so. Recognize that each group has strengths and weaknesses. Manage and direct each group and each individual according to their strengths and you will get the best from each.

Workplace Strategies for Groups Working Together

Of the four generation groups, baby boomers and Generation Xers make up the majority of the U.S. workforce, and these groups have the highest potential for misunderstanding. So let's focus on their interactions.

1. Generation Xers working with Baby Boomers

- Show respect. Acknowledge that you have less experience than the baby boomer and that you can always learn something new.
- Choose face-to-face conversation. Most baby-boomers find e-mail and voice mail too impersonal.
- Give them your full attention. Although multitasking while your colleague is talking to your may seem efficient, this apparent put-down may have you at odds with the baby boomer.
- Play the game. As a Generation Xer, workplace politics may turn you off, but they are a fact of life. Baby boomers are diplomatic and are adept at getting things done by navigating politically charged environments. Let them use their strengths to get things done.
- Learn the corporate history. Realize that much may have transpired at this company long before you came on board. Those things may still be affecting everyone and everything going on today. You do not have to buy into all of that, but you should know what you are dealing with. Find out what has been right, what's gone wrong, and the lessons learned over the years. Few things rankle a baby boomer more than a new employee breezing in and making changes with no thought of what's gone on before.

2. Baby Boomers working with Generation Xers

- Get to the point. Avoid corporate jargon, buzzwords, and clichés. State your points concisely.
- Use e-mail. Use technology in your correspondence with Generation Xers. Save meetings for issues that require face-to-face communication.
- Give them space. Do not micromanage Generation Xers; they crave autonomy. Give them direction and allow them to figure out the best way to get results.
- Get over the notion about dues paying. As a baby boomer, you may have worked 60 hours per week to get-ahead. Maybe you started at ground level and worked your way up. But don't think that younger generations ought to follow in all your footsteps. Generation Xers value a little more balance in the work-life plan, but they still get ahead. Get over it.
- Lighten up. Remind yourself that it is okay for work to be fun. Generation Xers already think you are too intense and set in your ways.

Anyone Working with Traditionalists

- Honor the chain of command. Traditionalists have respect for authority, and they expect it in return.
- Offer them job security. Traditionalists value the legacy they have built with the company.
- Value their experience. Use them as a resource to learn what has and has not gone right with the company. Respect their insights gained from years of experience.
- Appreciate their dedication. Unlike the other groups, traditionalists are the group most likely to have stayed with one company for most of their careers.

4. Anyone Working with Millennial

- Challenge them. Millennials want to work on things that really matter. Reward their accomplishments with more responsibility.
- Ask their opinion. Millennials love to collaborate and be team players. They do not respond as well to dictatorial, chain-of-command management styles.
- Find them a mentor. Millenials have great respect for traditionalists. Establish mentor-mentee relationships between these groups. Both will benefit.
- Provide timely feedback. Millennials are used to getting feedback instantly, like at the touch of a button. They work best with frequent, honest, and direct feedback.

If you are lucky enough to have more than one generation in your workplace, you have the makings for excellent teambuilding and an efficient, creative, and productive workforce.

*(For more information about working with different management styles see the Personnel Notebook "**People Dynamics**" on PLANET'S HR University site), hotline: (703)897-8511, e-mail: hrahl@consulthra.com*

Reprinted from VNLA Newsletter, *September/October 2007.*

SELLING LANDSCAPE GARDENING

Larry Newlin, Imperial Nurseries, Territory Manager

If you are reading any of the garden center magazines, you are probably getting a drift of the discussions centered around whether or not Baby Boomers and their Gen X counterparts have stopped gardening. The oldest Boomers turn 61 this year while the youngest are in their mid-forties. The thirty-something to early forty-age crowd seem to be a lot less interested in getting their hands dirty than their parents were (hopefully still are). Research and focus groups are suggesting to trend trackers like Kip Creel of Standpoint in Atlanta, that homeowners are time-starved and are a lot more interested in having someone plant for them than doing it themselves. There is even a suggestion that we shelve the phrase, "gardening", and talk more about outdoor living and accessorizing garden rooms. Gen X women talk a lot about form and function, according to Creel, because they have become informed inspired by their HGTV programs ad lifestyle magazines. Robert Hendrickson of the Garden Center Group is leading the backlash about this talk of placing gardening on the backburner. He reminds retailers that it is plants that got us here and warns to be wary of abandoning our main product line for outdoor kitchen departments.

I like the phrase, "landscape gardening", not because it sounds less like work than "gardening" – it probably doesn't. Rather, it suggests that there is a movement that has evolved over time and has really taken off in the last fifteen years blending the feminine interest in flowers and texture with the masculine propensity to accentuate shape and neatly defined lines. While there are still plenty of suburban homes with little green blobs planted around the foundation, increasingly, Southern landscapes are mixing trees and shrubs with perennials, grasses, vines, tropicals, and

annuals. As arboreta, nurseries, plant explorers, and propagators introduce new plant material to the consuming public, retailers can become confused about what to offer and how to merchandise new plants. It would be best if we began to embrace landscape gardening as a gardening movement and market, sell, and merchandise our plants, especially our new plants, in that context.

There are five ladies who have helped to shape the landscape gardening movement over the past century or so. There are also plenty of men to recognize including the godfathers of the "New American Garden", James van Sweden and Wolfgang Oehme, and great plantsmen such as J.C. Raulston, Michael Dirr, Tony Avent, Dan Hinkley, Don Shadow, and Marc Cathey, to name a few. But, it is the ladies who first embraced the term, landscape gardening, and who have shaped the garden ethic of the vast majority of our customers, namely women (though probably without them ever having heard of any of these gardening greats). The five ladies that I have in mind are Gertrude Jekyll who helped to popularize cottage gardens in Britain and in the U.S.; Marian Coffin, who helped design gardens at Winterthur and Mount Cuba for the duPonts; Beatrix Farrand, who traveled widely in Europe and studied under Professor Sargent at the Arnold Arboretum in gaining her insight into the Arts and Craft garden; Ellen Biddle Shipman, who had a very sophisticated eye for blending formal and natural elements in her designs; and Lynden Miller, a contemporary designer in New York City who has one of the sharpest eyes for plant combinations in America. After returning from an England garden tour, I would add the late Rosemary Verey, Penelope Hobhouse, and Australian turned par-Brit, Marylyn Abbott.

Gertrude Jekyll came under the influence of the Arts and Crafts movement which championed fine craftsmanship, authenticity, simplicity, and the use of natural materials in both home and garden and reacted to the ostentation and excess of the Victorian period. She came to know everything possible about the plants she used in her designs and blended them in amazing ways to exploit their flower, foliage, texture, and form. Trained as an artist, she employed the term, "landscape gardening" to describe her art form.

Fast forward to the Twentieth Century and you find adherents to Gertrude Jekyll's style and principles of composition. Marion Coffin was a protégé of Henry Francis DuPont and from her extensive travels in Europe designed gardens at his famed Winterthur blending formal gardens with a naturalistic English country style.

Beatrix Farrand met Ms. Jekyll on her travels to England. She also traveled throughout Europe with her aunt, Edith Wharton, author of *Italian Villas and Gardens*. She employed Arts and Crafts design principles in her signature landscape design – Dumbarton Oaks in Washington, D.C. where formal elements around the mansion gave way to planterly gardens and greater use of natural stone on the outskirts of the garden. She referred to herself as a landscape gardener and drafted a detailed manual for the groundskeepers to maintain Dumbarton in perfect shape taking into account the particular requirements of each plant. She traveled easily in the circles of the rich and famous and was commissioned to execute hundreds of designs for friends and acquaintances and purchased Ms. Jekyll's designs to preserve them at the University of California for all to enjoy and learn from.

Ellen Biddle Shipman, who is best known in NC for her design of the Italian garden at Duke Gardens, designed a beautiful garden at Longue Vue in New Orleans for the Stern family. She assisted Ms. Stern in decorating each of the rooms of her stately mansion and talked her into

reorienting her entrance to take full advantage of the Spanish courtyard she had designed.

Lynden Miller studied art in Europe and became interested in gardens not only as a subject for her landscape paintings but also from the inspiration provided by visiting the great gardens of Europe. She designed the Conservatory Garden at Central Park in New York City and raised $1.5 million to ensure that the gardens are well-maintained. Her eye for combining color and texture in utilizing flowering shrubs and perennials in the mixed border at the Conservatory Garden and at the Ladies' border at the New York Botanical Garden offers some of the most inspirational plantings in America. In the summer she may be found in the gardens wearing both pearls and a scabbard for her pruning shears.

So, what does this thumbnail sketch of great landscape gardeners tell us about how to "sell" landscape gardening?

First, it isn't coincidental that these great designers are/were ladies. That doesn't mean male designers cannot produce creative and horticulturally brilliant designs, but it is worth noting that the majority of the customers walking in your garden center are ladies who are looking for inspiration and creative ideas to pursue their garden visions. Consider offering plant combinations through your merchandising, handouts, and container gardens, and if you are not utilizing merchandisers/designers who, if not female themselves, are in touch with the latest "in" colors and styles and know their plants and plant attributes well, you are missing the boat.

Second, it also isn't coincidental that most of these designers had training and experience as artists before they turned to gardening. How is the inside of your store merchandised? Monochromatic color schemes, pleasing color combinations, cutting edge containers, and even a few botanical or Impressionist prints "speak" to sophisticated women consumers who are stepping into your store with the hope of being inspired and assisted in making their purchasing decisions.

Third, it also isn't coincidental that these designers were well-traveled and were inspired and informed by the great gardens that they visited. Doesn't your favorite deli draw on this romantic feeling of faraway places by placing pictures or photos of the Old Country throughout their dining room? How can you merchandise your store and outside sales area to give a flavor of Italy, France, Holland, or England or Japan or China to your customers?

Fourth, most of these "landscape gardeners" were influenced by the Arts and Crafts Movement. Aren't our customers coming to us to escape from virtual reality in order to get their hands dirty and engage in an activity that is real and authentic? The native plant movement and the comeback of old-timey plants like hydrangea, iris, peony, and lilac speak to this interest in authenticity and memories of simpler times.

Fifth, outdoor rooms are nothing new. Most of these designers were as talented in designing the inside of their patrons' homes as they were their gardens. Whoever is doing you're merchandising needs to keep up with interior tastes and trends by attending appropriate shows, reading lifestyle magazines, and touring decorator homes. Garden rooms in England vary tremendously from room to room reflecting the depth and breathe of the gardener's experience and interests. Moreover, the eclectic gardener may change tastes in color or style from year to year or from one stage of life to another, and compartmentalizing their gardening enables them to remain dynamic in their creative

pursuits.

Sixth, if the term, "Landscape gardening" doesn't grab you to use in your marketing and merchandising, consider similar phrases – "dynamic gardening", "gardening for all seasons", "planterly landscaping", "gardenesque landscaping", "the New American Garden". Gardening is therapeutic but above all is creative. We need to promote the "vision thing" more and downplay "garden solutions" which sounds like we are helping solve problems rather than turning dreams into gardens.

Seventh, the great designers mentioned above are/were great collaborators with their patrons. We need to train our salespeople to be consultative, to listen to the needs and visions of their customers, and to offer a limited number of possibilities for their customers to consider as opposed to an encyclopedic list of every plant or plant combination. Whenever possible in selling a plant or group of plants or plant-related produce, if your staff can refer to personal experiences and especially their own success with the product, then it will help build confidence in the customer to follow your staff member's recommendation.

Eighth, these ladies were passionate about plants and very inquisitive about new plants being discovered in Asia or brought forward by the great botanical gardens of their day. If you are befuddled by the avalanche of new plant offerings, do not despair. Select the ones that you have confidence in promoting and include them in your marketing message and group them together in prominent places using grower point-of-purchase signage or under a sign that says, "Look what's new for 2007". The plant center at RHS Wisley was packed the first Saturday in July – does the fact that they carry every plant in Wisley's Disney World of gardening have anything to do with this ability to attract and inspire serious gardeners?

Finally, I would suggest that you give serious consideration to having your salespeople, especially your salespeople trained in horticulture and/or are experienced gardeners, wear a nametag that identifies themselves as "landscape gardener". Customers are coming to independents for quality, selection and valuable advice and responsive customer service. "Head Buyer" or "Department Manager" is less impressive to most of the women shopping with you than whether or not your staff member is passionate about what they are selling and experienced, knowledgeable, and creative.

These are challenging times to be an independent retailer, but for independents selling plants, it is an especially exciting time. It is best to put into context what we are doing. We are helping to promote a movement called "landscape gardening". It didn't begin yesterday, isn't a passing fad, and continues to grow and improve to this day. It is fed by new plants, new design ideas, and new planting techniques. Get excited about being part of this movement if you are not already and sell it to your customers – they kinda sorta know about it already, and they are ready to be inspired and informed to plant dreamy gardens in their own backyards.

Happy (landscape) gardening!

Reprinted from VNLA Newsletter, *July/August 2007.*

Research Briefs

Propagation:

Improving germination of *Phlox pilosa*. *Phlox pilosa* is a desirable perennial for residential and commercial landscaping, habitat restoration, and highway beautification. But germination of *P. pilosa* seeds is erratic and poor seedling emergence has been reported in its natural habitat. Inconsistent germination has long discouraged growers from starting plants from seed. The greatest improvements in germination and uniformity were obtained by the addition of 10 mg/L gibberellic acid (GA_3). Since surface sterilization decreased incidence of seedborne fungi but did not influence germination, it is likely that seedborne fungi are not the cause of poor germination. Light is necessary for germination at 20 C, but different combinations of light and temperature might produce different results. (A.M. Madeiras, T.H. Boyle and W.R. Autio.

Excerpted from HortScience *42(5):1263-1267, August 2007*.

Ethephon application improves perennial stock plant management. The objective of this study was to determine whether ethephon application can improve stock plant management in perennials, specifically to maintain vegetative growth and improve cutting quality and yield. Ethephon has potential for this purpose in Coreopsis and Veronica cut not Dianthus. An ethephon application of 600 mg/L biweekly was adequate to significantly increase the number of primary shoots and vegetative cuttings as well as decrease the plant height, shoot length, and the number of reproductive buds and reproductive cuttings of *Coreopsis* 'Moonbeam." Weekly applications of 400 mg/L had the same results for *Veronica* 'Sunny Border Blue;' however, rates greater than 600 mg/L weekly were phytotoxic to Veronica foliage. (J.E. Glady, N.S. Lang and E.S. Runkle)

Excerpted from HortScience *42(7):1616-1621, December 2007*.

Decreasing production time for lanceleaf coreopsis and little bluestem. Several practices in the production of containerized lanceleaf coreopsis and little bluestem were examined with the purpose of increasing shoot size and thereby reducing production time. The first study established that transplanting older plug cell plants (49 days after sowing) rather than younger ones (35 days after sowing) , and avoiding root ball disturbance (manually teasing roots from the root ball and directing them radially from the plant axis) resulted in the greatest shoot mass by 35 or 107 days after transplanting into one gallon containers. The second study established that using larger plug cells (5.1 vs. 1.4 cubic inches) followed by larger post-transplanting containers (8 vs. 6 inch diameter standard pots) resulted in the greatest shoot mass by 35 or 107 days after transplanting. (J.I. Watkinson and W.G. Pill)

Excerpted from J. Environ. Hort. *25(2):78-83. June 2007*

Seed germination of seabeach amaranth. Sea beach amaranth, once native to dunes from Massachusetts to South Carolina, plays an important role in the initial stages of the development of sand dunes by trapping and binding sand on the beach. Various state and federal agencies are interested in restoring the species to areas where it once grew. In addition, beach restoration and sand renourishment projects have created a demand for seedling transplants of seabeach amaranth that are currently unavailable. To remove seed dormancy from seabeach amaranth, the seeds

must be stratified (moist pre-chilled) for 84-120 days. This study indicated that treatment of seeds for 24 hr with a solution of 1000 ppm K-GA_3 will remove physiological dormancy without the need for lengthy stratification. Treatment with K-GA_3 also eliminates the need for light to maximize germination and may broaden the range of temperatures at which germination occurs. (D.S. Nordenk, F.A. Blazich, S.L. Warren and D.L. Nash)

Excerpted from J. Environ. Hort. *25(2):105-108. June 2007*

Sodium cellulose glycolate (SCG) as a thickening agent can enhance rooting of woody stem cuttings. This study with seven woody taxa indicates that rooting response of stem cuttings can be increased by including SCG in auxin solutions used for a basal quick dip treatment prior to insertion of cuttings in rooting substrate. Larger root systems on newly rooted cuttings may enhance subsequent establishment and growth of plants beyond the propagation phase. On taxa where the SCG treatments are more effective than with auxin alone, use of SCG may also allow lower rates of auxin to be used without a decrease in rooting response. (E.K Blythe and J.L. Sibley)

Excerpted from J. Environ. Hort. *25(3):126-130. September 2007*

Container Production:

Amending pine bark media with industrial mineral aggregate. Industrial minerals have been used as absorbents, agrochemical carriers, and barriers to retain heavy metals. This research looked at the effects of palygorskite (bentonite industrial mineral aggregate) on pine bark media and the resulting impact on water and nutrient efficiency. Substantial nutrient content reduction in effluent and reductions in water application were achieved by amending pine bark with a small particle size (0.25 to 0.85 mm) low volatile material (subjected to further heating, approx. 800 C resulting in a calcined or fixed material) as compared to a sand-amended pine bark-based substrate without sacrificing plant growth. (J.S. Owen, Jr., S.L. Warren, T.E. Bilderback and J. P. Albano)

Excerpted from HortScience *42(5):1287-1294, August 2007*.

Nutrient recovery by aquatic garden plants in a subsurface constructed wetland. Commercial nurseries use large amounts of water and nutrients to produce container-grown plants. The large volume of runoff containing nitrogen (N) and phosphorus (P) that leaves nurseries can contaminate surface and groundwater. Subsurface flow-constructed wetlands have been shown to effectively treat agricultural, industrial and residential wastewater and to be well-suited for growers with limited production space. This research investigated the possibility of using commercially available aquatic garden plants in subsurface-constructed wetlands to remove nutrients in a laboratory scale, gravel-based system. The potential exists for creating a sustainable nursery and greenhouse production system that incorporates a subsurface-constructed wetland planted with marketable horticultural crops that provide remediation and revenue. (R.F. Polomski, D. G. Bielenberg, T. Whitwell, M.D. Taylor, W.C. Bridges and S.J. Klaine)

Excerpted from HortScience *42(7):1674-1680, December 2007*.

Compost impacts water use and growth in simulated landscapes. *Pentas lanceolata* were grown in compost-amended, mined field clay-amended and unamended sand soils in Florida. They were evaluated for growth, quality and irrigation requirements. Total irrigation

volumes applied were similar among treatments but compost-amended soils yielded larger canopies, improved quality and tended towards less cumulative irrigation. Clay amendment was not beneficial. (S.M. Scheiber, R.C Beeson, Jr. and S. Vyapari)

Excerpted from HortScience *42(7):1744-1747, December 2007*.

Fertilizer application strategies for container grown rhododendron cultivars. Fertilizer application strategies for transplanted liners of *Rhododendron* 'Roseum Elegans', *R.* 'P.J. Mezitt Compact', and *R.* 'Gibraltar' should include low N availability after transplanting followed by high N availability in mid to late summer. This type of strategy will not only improve N uptake efficiency from fertilizer, but also will minimize N loss from the containers. N uptake in the autumn may play an important role in supplementing plant N reserves required for growth during the next season as well as for balancing N losses incited by leaf abscission, root turnover, and maintenance functions that occur over winter. (C.F. Scagel, G.Bi, L.H. Fuchigami and R.P. Regan)

Excerpted from HortScience *42(6):1440-1449, October 2007*.

Increasing shelf life of vegetative annuals. 21 cultivars of vegetative annuals were studied. Each species in the study has one or two postharvest decline symptoms common to all cultivars of that species. However, cultivars within species also varied in the postharvest decline symptoms and longevity. To maintain quality, the postharvest environment should be equipped with low light, shaded with 50% to 60% shade material and have good air circulation. Cool temperatures are the most important post harvest factor with seed-propagated bedding plants. Avoid exposure to ethylene and irrigate at the onset of water stress. (T.W. Starman, S.E. Beach and K L. Eixmann)

Excerpted from HortTechnology *17(4):544-551, October-December 2007.*

Landscape:

Improving transplant success of *Kalmia latifolia*. Mt. laurel frequently does not survive transplanting, even in areas where it is indigenous. This research looked at root-zone temperature (RZT) as a factor affecting transplant survival and compared mt. laurel to Japanese holly (and easily transplanted species). When grown at RZTs of 61, 75 or 90 F for 12 weeks, root growth of Mt. laurel decreased with increasing RZT while root growth of Japanese holly was unaffected by RZT. In areas with high soil temperatures, cultural practices to reduce soil temperature, such as mulching or planting in shade or on northern/eastern exposures to accelerate root growth and maintain higher root to top ratios. (A.N. Wright, S.L. Warren and F.A. Blazich)

Excerpted from J. Environ. Hort. *25(2):73-77. June 2007*

Improving transplant success of *Kalmia latifolia* with pine bark amended backfill. Results suggest that amending soil backfill with pine bark can increase post-transplant root growth of container-grown mountain laurel. When pine bark was layered on top of soil, roots grew into the pine bark, but did not grow into the soil. (A.N. Wright, R.D Wright, B.E. Jackson and J.F. Browder)

Excerpted from J. Environ. Hort. *25(3):145-149. September 2007*

Weed control during plug establishment of a wildflower meadow. In establishing a wildflower meadow from plugs, tillage of glyphosate-killed turf is unnecessary since

tilling twice 7 days apart to 3 inches in depth filed to increase wildflower shoot growth above non-tilled plots. Weed fabric compared to no cover failed to affect wildflower growth during either growing season. Weed fabric under mulch compared to mulch alone generally failed to affect wildflower growth and had no effect on weed growth during either growing season. Thus, the most efficacious and cost effective method of site propagation for establishing a wildflower meadow from plugs was to place 3 inches of woodchip mulch directly over untilled glyphosate-killed turf. (J.I. Watkinson and W.G. Pill)

Excerpted from J. Environ. Hort. *25(2):83-88. June 2007.*

Sedum plug survival on green roofs. Of the sedum species tested, most survived in greater numbers when established in spring relative to autumn. If autumn establishment of these species is required in climates similar to Michigan, then ample quantities of *S. floriferum* and *S. sexangulare* should be included in the species mix due to their superior overwintering success. *Sedum cauticola* 'Lidkense' should be avoided in this climate due to its limited survival in either spring or autumn plantings. All species may have survived in greater numbers on a roof over a heated building. (K.L. Getter and D. B. Rowe)

Excerpted from J. Environ. Hort. *25(2):95-99. June 2007*

Turf:

Economic value of sod production in US. The U.S. sod production industry represents a vital sector within the turfgrass industry and is growing in importance in many states, particularly southern states where sod is more easily grown. In Florida, sod realized $307 million in farm cash receipts making it a top ten agricultural commodity for the state. New residential construction in the United States grew from 1.57 million units in 2000 to 1.93 million in 2005, representing a 22.7% increase. As urban populations continue to grow, the demand for landscape materials and sod will also grow. As it does, the supply of sod will increase in economic importance relative to many other agricultural commodities. (J. J. Haydu, A.W. Hodges, C.R. Hall, J.L. Cisar)

Excerpted from J. Environ. Hort. *25(2):55-60. June 2007.*

Pests:

Evaluation of propargyl bromide as a soil fumigant. With the phase out of methyl bromide, it is important to develop alternatives for treatment to control soil-borne pests. The physical properties of propargyl bromide—ready movement though soil, short soil degradation time, strong biocidal properties and no ozone depleting characteristics. When compared with the soil fumigants methyl bromide, iodo-methane, and metam sodium, propargyl bromide provided comparable control of all soil-borne pests, but at much lower rates. Although higher rates of propargyl bromide (more than 112 kg/ha) were needed to control weeds, these rates were still almost half that required of the other standard fumigants. Cheeseweed and field bindweed were never consistently controlled with propargyl bromide. The handling characteristics of propargyl bromide continue to be a challenge for its commercialization. (I. A. Zasada, C.L. Elmore, L.E. Yakabe and J.D. MacDonald)

Excerpted from HortScience *42(5):1212-1216, August 2007.*

Fungus gnat response to light. Light along with the use of pheromone traps may be a feasible management strategy for controlling

fungus gnats in greenhouses. This study provides a starting point for evaluating the response of fungus gnat adults to varying light intensities. Further studies are needed to determine whether the onset of fungus gnat adult activity is influenced by different wavelengths, various light intensities, and different light sources. (R.A. Cloyd, A. Dickinson, R.A. Larson and K. A. Marley)

Excerpted from HortScience *42(5):1217-1220, August 2007*.

***Metarhizium anisopliae* as a control for black vine weevil in container-grown nursery crops**. *Metarhizium anisopliae* is an insect killing fungus that has recently been registered for black vine weevil (BVW) control. In the field, drench applications of *M. anisopliae* were very effective at eliminating BVW in container-grown nursery plants when media temperatures were adequate (59 F). Temperature dependent limitations are similar to entomopathogenic nematodes for BVW control. Applications should occur as early in fall as possible once egg laying has ended or in late spring just prior to pupation when media temperatures would be most conducive to fungal infection. (D.J. Bruck)

Excerpted from J. Environ. Hort. *25(3):150-156. September 2007*

New Introductions:

'Asian Moon' *Buddleja*. To address issues of invasiveness with some *Buddleja* species, a triploid *Buddleja* was released. Butterfly bush (*Buddleja* sp.) is a recent addition to invasive plant lists in the United States but has been on invasive lists in other countries for a longer period of time. *Buddleja davidii*, the most commonly used species in landscape plantings, is single out on these lists because of its ability to grown in moist environments, outcompete native plants, and to produce hundreds to thousands, and even millions, of seeds per year. The seeds that dehisce from capsules are small, lightweight, and typically winged, allowing them to disseminate freely. Reducing invasive potential of *Buddleja* will enable its continued use in the managed landscape. The hybrid 'Asian Moon' should be evaluated in areas where invasiveness of *Buddleja davidii* is a concern. 'Asian Moon' has a symmetrical, round, shrub-like growth habit and is hardy from Zone 6b to 8. It grows best in full sun and moist, well-drained soil, but tolerated dry sites. Flowers are light purple. 'Asian Moon' is being distributed to nurseries. A list of commercial sources or rooted stem cuttings can be obtained by contacting Dr. Jon Lindstrom, Department of Horticulture, University of Arkansas, Fayetteville. (S.E. Renfro, B.M Burkett, B.L. Dunn)

Excerpted from HortScience *42(6):1486-1487. October 2007*.

Pesticides/IPM

FenStop – A New Weapon for the Green Industry. OHP, Inc. recently has announced a new oomyceticide called FenStop, which should be a good new weapon for the green industry in the never-ending battle against Phytophthora and Pythium diseases as well as downy mildew. Right now this product is labeled for use in greenhouses only and a supplementary label for outdoor use is pending.

FenStop should not be tank mixed or used in rotation with any of strobilurin fungicides in disease management programs.

FenStop should be used before disease occurs. Use of FenStop in a preventive manner is key to maximizing disease control efficacy. This product may be used once every 28 days at rates of 7 to 14 fluid ounce per 100 gallons of water. It also carries a 12-hour REI. As always, growers should read the instruction on the label before using this product and follow it strictly.

Provided by Dr. Chuan Hong HRAREC; chhong2@vt.edu

Monthly Pesticide Applicator Testing to Start in January.

Delaware Department of Agriculture will start monthly pesticide applicator testing in January -- the 4th Wednesday of the month at DDA.

On February 27, testing is from 1:00-4:00 pm

January 23, March 26, and April 23, testing is from 8:00 am - 12:00 noon

The UD Pesticide Info web site http://ag.udel.edu/extension/pesticide/index.php gives the schedule through April & has links to On-Line training

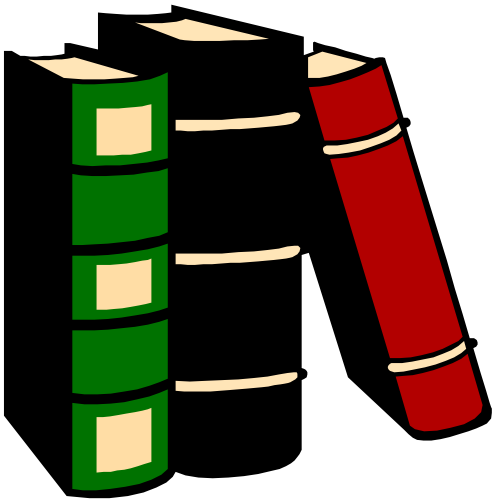
Publications

A Practical Guide to Handling & Growing Bareroot Trees
Introduced by Ferrite Nursery Co., OR, this 12-page publication describes the best practices for receiving, storing, growing and pruning bare-root trees. Designed as a resource for experienced growers and those new to the industry-as well as their employees-the publication contains a number of drawings and photographs illustrating recommended procedures. A Spanish version of the guide may be published in the future. Call (800)547-2161 or (503)678-1261; www.femrite.com

The Hobbyist's Guide to Pond Plants and **The Hobbyist's Guide to Pond Fish.**
This is the first in a series of books for water gardeners introduced by Aquascape Lifestyles Books, a division of Aquascape Inc., St. Charles, IL. Aquatic plant photos accompany informative descriptions on plants and how to care for them. Also includes diagrams illustrating plant locations in ponds of varying sizes. Input from well-known plant pioneer Steve Stroupe, as well as other knowledgeable writers. *The Hobbyist's Guide to Pond Fish* is the second book released in the series. Koi and pond fish veterinarian Dr. Erik Johnson and other contributing writers teach water gardeners about the different types of pond fish. Numerous photos are also included. Caring for fish and basic diseases are covered so pond owners will feel equipped to provide a health home for their pond fish. Call (866)877-6637; www.aquascapeinc.com

Handbook of Poisonous and Injurious Plants. 2nd edition
By Lewis S. Nelson, Richard D. Shih, and Michael J. Balick. Co-published by Springer and The New York Botanical Garden. Softcover,

340 pages, 430 color photographs. Cost $39.95. It is a rigorous, scientific treatise that will appeal to anybody who deals with poisoned patients or is interested in plants that can cause death or injury to humans and their animals. The book provides a wealth of information on hundreds of plants as well as descriptions of the symptoms often experienced by those who have been exposed to phytotoxins. Also described are the mechanisms of action of many of these substances and the management guidelines for treating affected individuals. A glossary of terms commonly used by botanists assists the reader in identifying poisonous plants. The book is divided into five sections. Section 1-covers botanical nomenclature, section 2-the toxic mechanisms of poisonous plants, section 3-plant-induced dermatitis, section 4-reviews gastrointestinal decontamination, section 5- is a comprehensive compendium of poisonous and injurious plants.



Calendar

January 3 – Nursery/Landscape Conference, Delaware Valley College. Contact Penn State Cooperative Extension-Bucks County, Neshaminy Manor Center, 1282 Almshouse Rd., Doylestown, PA 18901

January 7-11 – Advanced Landscape Plant IPM PHC Short Course. University of Maryland, Maryland Cooperative Extension. Plant Sciences Building, University of Maryland, College Park. Call (301)405-3913; e-mail conferences@raupplab.umd.edu; www.raupplab.umd.edu/conferences/advlandscape.

January 7-11 – Drawing on the Right Side of the Brain Techniques, Special Programs with Mindy Lighthipe, Mon-Fri-10 a.m.-3:30p.m., Rm. 319. Cost $735 non-members, $705 members (includes a $75 materials fee) #BIL 630. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747.

January 9-11– Mid-Atlantic Nursery Trade Show (MANTS), Baltimore, MD- www.mants.com

January 9 & 10; 16 & 17 – Arborist Short Course, Integrated Management of Woody Ornamentals, Montgomery County Cooperative Extension, 1015 Bridge Rd., Suite H, Collegeville, PA 19426, 9:00am – 5:00 pm. For more information call Julianne Schieffer, (610)489-4315, Fax: 610-489-9277, email jxs51@psu.edu.

January 14 & 15 – Shrub Identification. 9:30am – 3:00pm, Penn State, Berks Campus, Janssen Conference Center, Reading, PA 19610. Cost $70.00 per person. (610)509-2469.

January 15 & 22 – Pruning Workshop for Landscape Professionals "Grow". Meadowood Retirement Community, 3205 Skippack Pike, Worcester, PA. 9:00am – 12:00 noon. For more information call: Mary Concklin (610)489-4315 or mec12@psu.edu, fax #610-489-9277.

January 15 – Mt. Cuba Continuing Education. Enhancing the Garden with Winter Interest, 10:00 a.m. – 1:00 p.m., cost $25.00. Mt. Cuba Center is located just north of Wilmington at 3120 Barley Mill Rd, 4 miles north of Route 141 in Hockessin, DE. Visit: www.mtcubacenter.or or call (302)239-4244 for more information

January 16 & 17 – Delaware Horticulture Industry Expo, Modern Maturity Center, Dover, DE. Contact Valann Budischak (610-274-2166.

January 16-19 – Green & Growin' Show. North Carolina Nursery & Landscape Association Inc. Greensboro Coliseum, Greensboro (trade show); Joseph S. Koury Convention Center, Greensboro (education). Call (919)816-9119 or (919)816-9121; fax (919)816-9118; e-mail cgelvin@ncan.com or rgelvin@ncan.com; www.ncnla.com.

January 17 – Spectacular Tropical Plants for Outdoor Summer Containers, Special Lecture Series, Byron Martin, 10 a.m. –12 p.m. #GAR 801 Section A. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $81 non-members, $73 members.

January 17 – The Magic of Water: Taking Water Gardening One Step Further, Special Lecture Series. Anthony Archer-Wills, 10 a.m. –12 p.m. #GAR 801 Section A. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $81 non-members, $73 members.

January 22 & 23 – Eastern Meadows: Design and Management, Darrel Morrison, FASLA. 9:30 a.m.-5 p.m., Rm. 320, HRT 367. Cost $325 non-member, $295 member. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747.

January 27 – Feb. 1 – Mid-Atlantic Horticulture Short Course, The Founders Inn & Spa Virginia Beach, VA. Contact: 757-523-4734. www.MAHSC.org.

January 29 & 30 – Drainage Design and Construction, Jay Archer. 10 a.m.-3:30 p.m., Rm. 302. Cost $235 non-members, $213 members. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747.

February 5, 12 & 26 – 2008 Ornamentals Short Course Programs. Soil Series: Three sessions will meet at Kent County Extension Office from 7:00pm – 9:00pm. Cost is $25 or $10 per session. Session 1: Soil Testing, 2/5, Session 2: Soil Improvement & Soil Management, 2/12, Session 3: Compost, 2/26. Nutrient management credits will be awarded. Contact Dot Milsom (302)831-2531.

February 6-8 – New England Grows 2008. Boston Convention & Exhibition Center. Call (508) 653-3009; fax (508) 653-4112; e-mail info@negrows.org; www.negrows.org.

February 8-11 – ANLA Management Clinic Galt House in Louisville, KY. Contact: ANLA at www. ManagementClinic.org.

February 2 – Mt. Cuba Continuing Education. Native Plants in Designed Landscapes, 10:00am – 2:00pm, cost $50.00 (lunch included). Mt. Cuba Center is located just north of Wilmington at 3120 Barley Mill Rd, 4 miles north of Route 141 in Hockessin, DE. Visit: www.mtcubacenter.or or call (302)239-4244 for more information.

February 9 – Spectacular Blooming Shrubs for Shade, Gardening: Special Saturday Programs, Lois Sheinfeld, 10 a.m-12 p.m. #GAR 137 Section A. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $31 non-members, $28 members.

February 9 –, Gardening: Special Saturday Programs, The Different Shades of Shade, Michael Ruggiero, 10 a.m.-12 p.m. City Gardens in Shade, Sara Stopek, 12:30 pm-2:30 pm, Deer-Resistant Plants for Shade, Michael Ruggerio, 12:30 p.m.-2:30 p.m., Containers for Shade, Sara Stopek, 2:45 p.m.-4:45 p.m., Herb Gardens Made for Shade, Leda Meredity, 2:45 p.m.-4:45 p.m., #GAR 137. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $31 non-members, $28 members (for each session).

February 14 – Flash and Splash: Colored-Leaved Plants in the Garden, Special Lecture Series, Dan Heims, 10 a.m. –12 p.m. #GAR 801 Section B. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $81 non-members, $73 members.

February 12-14 – Pennsylvania Landscape & Nursery Conference. Pennsylvania Landscape & Nursery Assoc., Penn Stater Conference Center Hotel, State College. Call (800)898-3411 or (717)238-1673; e-mail plna@plna.com; www.plna.com.

February 14 – The Authentic Garden, Claire Sawyers, Special Lecture Series, 10 a.m. –12 p.m. #GAR 801 Section B. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $81 non-members, $73 members.

February 19-22 – Mid-Atlantic Hardscaping Trade-Show

& Seminars, Atlantic City Convention Center, NJ. Contact: 856-845-6200, www.MAHTS.com

February 21 – 8th Land Ethics Symposium: Creative Approaches to Ecological Landscaping, Bowman's Hill Wildflower Preserve. This Symposium focuses on ways to create low-maintenance, economical and ecologically balanced landscapes using native plants and restoration techniques. This event will be held at the Sheraton Bucks County Hotel, Langhorne, Pennsylvania. Continuing education credits are available. Pre-registration required. To request a brochure, or for more information, call the Preserve (215)862-2924, e-mail Hildy Ellis (ellis@bhwp.org) or visit www.bhwp. Org.

February 28, March 3, 6, 13, 18 & April 1 – 2008 Ornamentals Short Course Programs. Plant Material Uses Series. New Castle County Extension Office, Wyoming Road, Newark, DE. 7:00pm – 9:00pm, cost $35 or $10 for each session. Session 1: Windbreaks, Screens, Borders & Hedges 2/28, Session 2: Shade Plantings, 3/6, Session 3: Plants in Groups or Masses, 3/13, Session 4: Drought Tolerant Plants, 3/18, Session 5: Problem-Free Plants, 4/1 (pesticide credits will be awarded for Session 5). Contact Dot Milsom (302-831-2531.

February 28 – Landscaping With Native Plants, Special Program, 10 a.m.-2:30 p.m., Arthur and Janet Ross Lecture Hall at the Garden. Morning featured speakers Dr. David Robertson, Patterns and Processes of Our Regional Landscapes; Mark Gormel, Native Plants in Context. (10 a.m.-12 p.m.) Afternoon speaker and panel Larry Weaner, Creating More Self-Reliant Landscapes. (1 p.m.-2:30 p.m.). #GAR805. Cost $95 non-members, $86 members.

March 3, 20 & 27 – 2008 Ornamentals Short Course Programs. Deciduous Tree Series, 3 Sessions throughout the month of March at the Research & Education Center, Georgetown, DE. 4:00pm – 6:00pm. Cost: $25 or $10 for each session. Session 1: Cultural Concerns (nutrient management credits will be awarded), 3/11, Session 2: Diseases (pesticide credits will be awarded), 3/20, Session 3: Insects (pesticide credits will be awarded), 3/27. Contact Dot Milsom (302)831-2531.

March 7 – Creating Green Roofs Step-by-Step, Green Roof Basics, Sara Murphy, 10 a.m.-12 p.m., Before Getting Started: Ask the Right Questions, Charles Miller, 10 a.m.-12 p.m., The Joy and Challenge of Choosing a System, Sarah Murphy, 1 pm–3 pm., Understanding the Roof Below the Green Roof, Jörg Breuning, 1 p.m.-3 p.m., "Painting" the Roof Green, Jörg Breuning, 3:15 p.m.-5:15 p.m., Integration of Green Roofs with Other Measures, Charles Miller, 3:15 p.m.-5:15 p.m., #HRT 200 Section A. The New York Botanical Garden Special Programs, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. . The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. $48 non-member, $44 members (for each session).

March 13 – Organic is Beautiful, and Safe, Special Lecture Series, Paul Tukey, 10 a.m. –12 p.m. #GAR 802 Section C. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $81 non-members, $73 members.

March 13 – Elegant Silvers: Striking Plants for Every Garden, Special Lecture Series, Karen Bussolini, 10 a.m. –12 p.m. #GAR 802 Section C. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $81 non-members, $73 members.

March 14 – 2008 Ornamentals Short Course Programs-Turf Workshop. Research & Education Center, Georgetown, DE, 8:00am – 12 noon. Pesticide and nutrient management credits will be awarded at this session. Contact Dot Milsom (302)831-2531.

March 18 – UDBG Plant Sale Preview Talk/slide show, Girl Scout Building on the College of Agriculture & Natural Resources campus in Newark, DE. 7:00pm – 9:00pm. This talk is free and open to the public. It will include a small, select plant silent auction.

March 27 – UDBG Guided Plant Walk, departing from Fischer Greenhouse, (in back of Townsend Hall) Newark, Delaware. 4:00pm – 5:30pm. This plant walk is free with a reservation (302)831-2531. Dr. John Frett will lead this tour of plant sale items so buyers can see plants established in the landscape in larger or mature sizes.

March 29 – Gardening: Special Saturday Program, What is a Native Plant?, Jody Payne, 10 a.m.-12 p.m., Invasive Plants, Carol Levine, 10 a.m.-12 p.m. A Native Perennial Garden, Brad Roeller, 12:30 p.m.-2:30 p.m., The Special Virtues of Native Plants, Sara Stopek, 12:30 p.m.-2:30 p.m., Woody Natives for Area Gardens, Brad Roeller, 2:45 p.m.-4:45p.m.., Native Plants for Urban Gardens, Gardening, Sara Stopek, 2:45 p.m.-4:45 p.m., #GAR 202 Section A. The New York Botanical Garden, Continuing Education Program, Bronx, NY 10458-5126. To register, or for more information, call (717)817-8747. Cost $31 non-members, $28 members.

April 17-19 – The Mt. Cuba Center Trillium Symposium. Join the world's leading trillium experts to discover and share unique scientific, conservation, and gardening knowledge about this magnificent woodland treasure. For more information visit www.trilliumsymposium2008.org.

April 26 –Annual UDBG Plant Sale, 9:30am – 4:00pm. The UDBG Spring Plant Sale is held on Ag Day each year. Plants include perennials, tender perennials, shrubs, small flowering trees, evergreens and shade trees. Plant sizes range from quarts to 5 gallons. Call (302)831-2531)

June 17 – Pest Walk with Brian Kunkel & Bob Mulrooney at Goodstay Center in Wilmington, Delaware. 4:00pm – 5:30pm. Cost is $10 (pesticide credits will be awarded).