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NOTES FROM THE PRESIDENT

Naomi McCafferty
President, D.A.N.

Are you ready for 1998? Here it comes, ready or not! I hope everyone had a nice holiday season with time to rest and rejuvenate. There are a lot of exciting events to look forward to this year as the D.A.N. celebrates its twenty-fifth year. We are finalizing plans for our first golf tournament, which will coincide with the summer expo, so please mark your calendars for August 20th. Don't pack only your notebook for this year's expo, pack your golf bag too!

Despite the longevity of D.A.N., this year is a transition year. Not only am I taking over the Presidency from Craig Rice, but we're also changing our executive director. Marianne McGloin has moved on and is being replaced by Val Budischak. Val comes to us from Black & Decker where she was a regional sales manager. She is leaving the corporate jets behind and hopes to have more time to stop and smell the roses, and maybe remulch them too. I hope everyone will take the time to get to know her.

I'd also like to mention our new Vice-President, Al Sonchen, a familiar face to many. Al has brought a renewed enthusiasm to the D.A.N. You'll soon hear his ideas for increasing membership, public awareness of our profession, and a desire to make D.A.N. fun.

I would like to thank the Association for sending me to the Management Clinic in Louisville, KY, this February. I look forward to relating my experiences there and would be happy to answer questions about the Clinic on an individual basis. I strongly suggest everyone interested in improving his or her business attend an ANLA Management Clinic. They are held at the beginning of February every year in Louisville, KY. I was happy to see other

D.A.N. members present; Susan Barton, Peg Castorani, Rusty Swift, Chris Valenti and Carl Frampton. We all learned a lot and had a great time. Hope you can join us next year!

The new D.A.N. address is:

Delaware Association of Nurserymen
P.O. Box 897
Hockessin, DE 19707

888-448-1203
610-274-2166

Quote for the Quarter

Nothing endures but change.

Heraclitus

D.A.N. Swap Shop

Ruppert Landscape Co. is having a greenhouse sale. They have

1 - Gutter-connected greenhouse (96' x 144')
4 - Quonset-style hoop houses (96' x 30')
4 - Sundair heaters with fuel tanks
Shade cloths
Electric pumps
Pressure tanks
Over 25,000 pots, market packs and trays
and much more

For more information, call Shannon Berkheimer at Ruppert Landscape Co., Inc. (301)924-7862.

Congratulations CNPs

Emerson Loller
University of Delaware, Grounds
Turfgrass Specialist
Landscape Specialist

Bob Mazzetti
Delaware River Bridge Authority
Turfgrass Specialist

Bill Ditlow
Delaware River Bridge Authority
Turfgrass Specialist
Landscape Specialist

Elmer “Skip” Bowman
Delaware River Bridge Authority
Turfgrass Specialist
Landscape Specialist

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

Greetings to everyone! Allow me to introduce myself--my name is Val Budischak and as you can see from the heading, I'm the new Executive Director of DAN. For the past 14 years I've held various roles with Black & Decker. And as many of us make New Year's resolutions, for once I stuck with mine. It was time for a change. Alas, here I am. I realize I've got some large shoes to fill in replacing Marianne. But I've been on board now for several weeks and I'm enjoying every minute of it. I look forward to meeting and working with all the DAN members.

1998 is already proving to be an exciting year for DAN. First and foremost, it's our 25th Anniversary! The DHIE was a huge success in January and plans are already underway for 1999. If you have any speaker suggestions (either names or topics) please contact me.

The Certified Nursery Professional exam took place on March 10th, at the Department of Agriculture, Dover, DE. Congratulations to Emerson Loller from the University of Delaware who is now a CNP. Congratulations to Bob Mazzetti, Bill Ditlow and Elmer “Skip” Bowman of the Delaware River Bridge Authority for passing their specialty exams. The next exam date is October 20th. Manuals have just been updated and are available for sale.

The Summer Expo will be held on August 20th. It will also coincide with our inaugural golf tournament. Good information; good food; good fun! Please plan on attending. More details will soon follow.

As you complete landscape jobs this spring and summer, remember the DAN Landscape Awards. You can only win if you enter!

U of D NEWS
Susan Barton
Extension Specialist

Ornamental Short Courses have been going well this spring. We have had to cancel a few classes due to low registration, but others have been fully registered. Our spring offering will wrap up with the first of three pest walks scheduled for 1998. This first pest walk will be held at the UDBG on June 2.

A second session of short courses will begin in August. We will start with a pest walk at Delaware State University, in Dover on August 6 from 9-12. Herbaceous Plant ID will be taught at the UDBG by Jay Windsor on August 11, 18 and 25 from 2-4 PM. If you want to learn about new annuals and perennials, don't miss this one. Jay will use plants in the herbaceous garden, specimens from his greenhouse and slides to illustrate some of the many to species and cultivars available to the trade.

On August 19, from 10 AM to 2 PM, we will be offering for the first time--Basic Landscape Management for Spanish-speaking Personnel. The course, taught by Raul Cabrera and Pedro Perdomo from Rutgers Cooperative Extension, will cover basic planting techniques, as well as landscape and turf maintenance. The entire course will be conducted in Spanish. This is a great opportunity to offer quality training to your personnel!

We had to cancel the Irrigation short course in March, due to low enrollment, but we promised the three people who registered another chance at this course in August. Gordon will lead this hands-on irrigation workshop on August. We will announce the date in the new flyer.

Bob Mulrooney will lead a course in Disease Identification and Control on September 3, 8 and 10. The course will be conducted in the

Fischer Greenhouse Classroom from 6 to 8 PM.

A final pest walk will be held at Winterthur from 9 AM to 12 PM on September 15. Bob, Dewey and Sue will lead the group and discuss insect, disease and cultural problems we find in the landscape.

During October, we will hold an Insect and Weed Short Course at the Research and Education Center in Georgetown. Jay Windsor and Derby Walker will cover the major insects and weeds that plague woody ornamental plants. This class will be offered on October 6 and 8 from 3 - 5 PM.

John Frett, fresh from his sabbatical will cover Shrubs for the Landscape during three sessions on October 7, 14 and 21 from 5-7 PM. The course will begin in the Fischer Greenhouse and proceed out into the UDBG grounds for plant identification.

Flyers for the late summer and fall short courses will reach you in June. Be sure to register early and ensure your place in these exciting short courses.

Delaware and Pennsylvania will be sponsoring another garden center bus tour on June 30. We plan to visit four garden centers in central Pennsylvania. The tour will include Stauffers of Kissel Hill, Country Market Nursery, Ashcombe's and Snavely's Garden Corner. We plan to depart from Newark at about 6:30 AM and return by 8:00 or 8:30 PM. You'll see four fascinating garden centers in one day. By touring in late June we hope to catch the centers while they are still stocked for spring rather than seeing the mid-August down-time. This should be a great (and relatively inexpensive) trip. I encourage all you garden center operators to get out and learn from others in the industry.

SELECTING QUALITY TREES

Susan Barton

Extension Specialist

The following article is a summary of a talk presented by Bill Graham from the Morris Arboretum as part of a tree stewardship workshop conducted by the Delaware Center for Horticulture and Delaware Cooperative Extension in 1997.

A successful landscape planting begins with high quality plants. But sometimes it is difficult to tell which plants will survive and which will cause future problems in the landscape. Bill Graham suggests starting with the American Standards for Nursery Stock published by the American Nursery and Landscape Association. A revised edition was published in 1996. The standards include minimum ball and container sizes for plants sold in the trade as well as many other specifications. To order a copy, write to the ANLA, 1250 I Street, N.W., Suite 500, Washington, DC 20005.

Before purchasing or accepting shipment of any plant, inspect the root, trunk and crown.

Roots: Common root defects include kinked or circling roots that will often result in trunk girdling as the tree develops if the circling pattern isn't broken. J-roots are also a problem with field-grown nursery stock. J-roots develop when seedlings are planted using a transplanting machine. If the planter holds onto the seedling a few second too long, the root mass is pulled away from the stem to create a plant that represents the letter J. If the root mass continues to grow on one side of the tree, less than half the root mass will be harvested when the tree is dug. How can you tell if these problems occur? Always take container plants out of the container and inspect the root systems. Balled and burlapped plants are trickier. Look for a sturdy ball, and reject any

plants with trunks that wobble significantly. When planting, you can inspect tree roots as you peel back the burlap. That may be too late for rejected a nursery shipment, but you can save yourself replanting by selecting a new plant if a ball is in bad shape at planting. Look for torn root ends and dry, lifeless roots that may have dried out due to poor handling.

Another nursery problem occurs when nurseries cultivate tree rows and throw soil back around the base of the trunk. The soil line is raised and roots grow up into the new soil. The tree may end up with a two-tiered root system. When those trees are planted, it is best to remove any loose soil from the top of the ball and plant the tree so the top of the original ball is about 1 inch above the surrounding soil line.

Before planting, inspect root balls for the following”

1. proper ball size - use American Standard for Nursery Stock.
2. plastic or treated burlap - be sure to remove.
3. plastic or treated twine - also remove.
4. firmness of root ball - reject wobbly balls.
5. condition of burlap and twine - rotted burlap or twine may not support the ball during the planting procedure.

Trunk: Look for a proper stem taper. The trunk should be wider at the base, where it enters the soil, and taper evenly to the tree crown. Also look for a straight trunk. Some species have crooked trunks, but that can be a sign of improper production and the tree may be difficult to incorporate into a landscape. Finally, check the stem for defects. Front end loaders are often used for transporting trees but trunks are easily damaged by the top of the

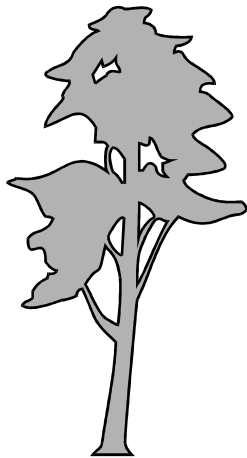
bucket. Look also for frost cracks and cankers that may cause problems in the future.

Crown: Inspect the crown for proper pruning. Don't accept trees with large branch stubs or with elliptical-shaped wound-wood. When a wound heals unevenly, it indicates a pruning cut that damaged trunk wood. That provides an entry for disease organisms which may be at work inside the tree trunk.

Look for properly spaced tree limbs, that are distributed around the trunk in a circle. When all the limbs come from one point (as is common with Bradford Pear), the tree will be weak and may split at that point in the future. Avoid codominant stems, that tend to split as the tree ages. Select trees with strong leaders.

If the tree will be used as a street tree, consider the crown to clear stem ratio. Never accept a tree that is pruned up to more than 1/3 of its height. While the tree is young, keep the lower branches to provide photosynthetic tissue for strong growth. Consider those lower branches temporary and prune them as the tree ages.

Follow these guidelines to ensure that the trees you plant have a healthy start and eliminate many future problems.



FEATURED PLANTS Susan Barton Extension Specialist

Many state nursery associations, trade associations and plant societies have programs in which they select featured plants for the year. The plants are selected based on a variety of criteria, usually including excellent ornamental attributes, ease of growth, underuse in the landscape and pest resistance. These selected plants are promoted to gardeners through a variety of media. Garden centers can take advantage of that name recognition and feature these plants throughout the season. Here are some selected plants for 1998.

D.A.N. Plants of the Year

Amsonia montana (Dwarf Blue Star) - This native perennial's unique qualities of rapid spring emergence, blue flowers, compact vertical form and fall color make it a multi-season dazzler. Once *Amsonia* breaks dormancy, it shoots energetically upward forming a strong upright clump one to two feet tall. In late spring, sparkling sky-blue star-shaped flowers float atop the leaves. It makes a fabulous cut flower. In the fall, the foliage is a glowing golden yellow. Plant in moist soils and partial shade to full sun. *Amsonia* has no serious pests. It is a lovely bridging plant between spring and summer, with a grand fall finale.

Fothergilla gardenii (Dwarf Fothergilla) - Fothergilla is an excellent native American deciduous shrub. It grows to a height of 3 to 4 feet and maintains an attractive compact habit. White, fragrant flowers are borne in 1 to 2 inch spikes from April to early May. The textured oval leaves turn brilliant shades of wine, orange and yellow to provide a rich fall display. It may even have multiple colors on one leaf. Fothergilla grows best in part shade, but for an

intense fall display, full sun and moist soils are a necessity. Fothergilla has no serious pests. This small shrub combines well with heather, azaleas, and rhododendrons. Include Fothergilla in your garden for its interesting flowers, good summer foliage and outstanding fall color.

For flyers promoting these two plants call Val Budischak (888-448-1203 or 610-274-2166).

Perennial Plant of the Year (1998)

Echinacea purpurea 'Magnus' - The bloom is described as "huge." Most people attribute the large appearance of the blooms to the tendency of the petals to remain horizontal rather than "droop" as is normal for purple coneflowers.

1998 Gold Medal Award Winners

Aesculus parviflora (Bottlebrush Buckeye) - is a low maintenance shrub with a bold texture. Growing to 12' with a width of 15' in moist soil, Buckeye prefers partial shade and acid soil. Deer resistance and large summer flowers add to its list of delights.

Clethra alnifolia 'Ruby Spice' - tolerates sun or shade when grown in moist soil. A stoloniferous shrub growing to 8' in 10 years, its rich pink flowers delight gardeners each July.

Mahonia bealei - is a striking evergreen shrub, adding a bold textural statement to any garden. Deer resistant, *Mahonia* will grow to 5' in part shade and prefers a moist, well-drained soil. Older plants bloom with chains of yellow flowers followed by blue berries.

Schizophragma hydrangeoides 'Moonlight' - is a soft, silver variegated vine that attaches itself with no mechanical supports. Noninvasive, 'Moonlight' tolerates sun or shade and grows to 40'.

Thuja 'Green Giant' - has a graceful texture and is a vigorous grower in any soil condition. A wonderful habit makes it ideal for use as an evergreen screen or specimen plant. It ultimately reaches a height of 75' with a spread of 12-20'.

Theodore Klein Plant Award (Kentucky Nursery and Landscape Association)

1999 Winners

Aesculus parviflora Bottlebrush Buckeye
Amsonia hubrechtii Arkansas Blue Star
Clethra alnifolia 'Hummingbird'
Summersweet
Dianthus grantianopolitanus 'Bath's Pink'
Hydrangea quercifolia Oakleaf Hydrangea
Ilex opaca 'July Evans' Judy Evans American Holly

Reprinted from *HORTMEMO* 3, University of Kentucky, Cooperative Extension Service, March 31, 1998.

JC Raulston Selections Program - A Continuing Partnership With the Plant Industry Jonathan Nyberg

JC Raulston was very keen on involving the Arboretum more directly with retail customers. He saw that the Arboretum was in a position to act as a link between wholesale growers, retailers and the general public. With the JC Raulston Selections (JCRS) program, his vision has begun to take shape. The Arboretum is reaching directly to the retail customer to allay their fears about buying new plants. The JCRS tag on the plant will have the unwritten messages: this is a good plant, it has been tested at the JC Raulston Arboretum, trust it. If we are successful in getting that message across, more of the plants that JC promoted will be planted in

the landscape. Thus, one of the missions of the Arboretum, to attain a more diverse landscape, will be advanced.

The JCRS is a joint program between the Arboretum and the NC Association of Nurserymen (NCAN). Twelve plants, chosen by committee for their beauty, adaptability, and mass marketability, have been selected for the inaugural release. One or more plants will be released annually. NCAN provided money for a greenhouse at the Arboretum to propagate future releases. They are also funding a part-time propagator.

Color display boards are available for retail outlets that will explain the program to customers. Plant tags are attached to the plants to identify it as a JCRS. Either the retailer or wholesaler can put tags on the plants. Leaflets developed for each plant will provide cultural information. Ongoing information on the plants and on the program itself will be disseminated through trade publications and the popular press.

How can you support this program?

By buying and growing these plants. If you are a wholesale grower or have a retail business and want information on purchasing. JCRS tags, posters or leaflets, contact: Bill Wilder, NC Association of Nurserymen, P.O. Box 400, Knightdale, NC 27545, 919-266-3322.

Here are the inaugural JC Raulston Selections

Eleutherococcus sieboldianus variegatus (Beautybriar Shrub, Fiveleaf Aralia). I call this plant, The Plant Formerly Known As Acanthopanax or TPFKAA. Yes, those pesky taxonomists searched far and wide for a name more intimidating than Acanthopanax and they found it! Still, I predict great things for this shrub. It is deciduous with short, inconspicuous

thorns which are quite sharp. This means the deer won't eat it, which I believe is becoming one of the most important determinants for shrub-use in the suburban landscape. Another plus is its ability to thrive in dry shade. And finally, it just looks darn good. It has a soft, fluffy, creamy appearance that belies its thorny interior. TPFKAA grows in sun or shade, wet or dry soils, 8' high and 8' wide. If you need a screen, cluster or specimen in a difficult area, consider TPFKAA. Just go to your garden center and say, "Do you have The Plant Formerly Known As Acanthopanax?" Zone 4.

Illicium parviflorum (Anise Shrub). This fairly well known southeastern US native broad-leaved evergreen can give a different look depending on how it is sited. I've seen it in shady sites with the leaves 8" - 10" long and 4" - 5" wide, giving it a lush, tropical look. The color is an appealing olive-green. In contrast, when planted in full sun on poorer soils, it usually has much smaller leaves and more yellow color. In both cases, though, the leaves hold an extremely pleasant licorice fragrance that is released when crushed. For me, the fragrance alone is reason to grow this *Illicium*. It has no disease or insect problems and can grow 8' to 14' tall. Zone 7.

Viburnum awabuki 'Chindo' (Chindo Viburnum). This plant came back with JC from the 1985 Korean expedition. He selected it from a schoolyard on Chindo Island for its large mass of red berries. Unfortunately, it doesn't seem to set fruit here. The 15' high plant at the Arboretum was covered with clusters of small white flowers this spring but set only scattered fruits. Fortunately, there are other reasons to grow this plant. Its use is mainly for hedges or screens. The Chindo has very handsome, glossy evergreen 6" leaves. It grows quickly to 15' but can be pruned to maintain a lower hedge. It is tolerant of sun or shade, wet or dry soils, with no pest problems. The Chindo does appear to

be a solid zone 7 plant, however the colder the winter the better it will do with some protection. It produces extremely strong upright branches and can be planted close together for hedges.

Ilex x 'Carolina Sentinel' (Carolina Sentinel Holly). This is a narrow, upright evergreen for hedges and screens. It has glossy 1"-2" leaves with red berries in winter. It grows at a moderate rate to 20' and is beginning to be available in the wholesale trade. I saw a three year old hedge at J.C. Taylor's house on the Fall Garden Tour. He planted them as cuttings in a shady location and they are now about three feet tall. It has no pest problems and tolerates sun or shade, wet or dry soils. Zone 6.

Campsis grandiflora 'Morning Calm' (Vine of the Morning Calm). This is a selection made by JC in Korea. It is a cousin of our native trumpetvine, *Campsis radicans*, but is decidedly less aggressive. Once you see the luscious 3" coral flowers with yellow throats and hot pink veins, you can't even sleep until you possess one or two. However, you'd better get over it pretty quickly because it is not widely available. In fact, Gilbert's Nursery is the only source I was able to track down. It seems that it roots best on juvenile wood but flowers best on adult wood. So, there are production problems to overcome and it probably won't be widely available for some time. Zone 6.

Liquidambar styraciflua var. *rotundifolia* (Fruitless Sweetgum Tree). You can't use those nasty gumballs as an excuse not to plant sweetgums. I'm sure most people know the story of how this tree was found in the 1930's and languished around until JC started pushing it. The leaves are rounded, it tolerates a variety of sites, has excellent fall color, grows quickly to 60' and has no pest problems. Zone 6.

Loropetalum chinense var. *rubrum* 'Burgundy' (Burgundy Pink Loropetalum). Has a plant ever

gone from 0 to 20 million in eight years? This plant was not even in the US before 1989, when it entered by many routes, causing enough confusion that DNA testing was employed to sort out all of the cultivars (see *J. Environ. Hort.* 14(1):38-41, March 1996; also see Dirr in *Nursery Management and Production* 11:30-31, 1995). JC was one of the first in the country to get this plant. The National Arboretum named it Burgundy. It has burgundy evergreen leaves and sizzling pink flowers in late spring, blooming sporadically throughout the summer and fall. It grows rapidly into an irregularly rounded shrub 8-12' high and wide. The main reason for the millions in production is that it looks good during homeowner spring fever frenzy. It looks so cute in a one gallon pot its hard to imagine it would ever get to 15-20'. Give it plenty of space, unless you want to prune it regularly. Zone 7.

Ilex x 'Carolina Cardinal' (Carolina Cardinal Holly). A deciduous holly is a notoriously hard sell in the nursery business. People just aren't going to garden centers in great numbers when the red berries are at their peak. They look very nondescript in leaf. The Carolina Cardinal has some nice features, though. First, the plant has a very heavy fruit set and the berries are quite persistent throughout the winter. Second, it has a lovely spreading habit that looks good in a small garden. It is a good deciduous holly for garden designers to keep in mind. It grows in sun or shade, moist or dry soil to 8' tall and about as wide. This holly is from a seedling, probably an *I. serrata* hybrid. The branches make colorful decorations during the holidays. The berries attract birds all winter. Zone 5.

Hydrangea macrophylla 'Pia' (Pia Hydrangea). At the Arboretum, we planted this one foot dwarf hydrangea seven years ago. It is now a very rounded shrub three feet high and wide. It is healthy and vigorous with profuse pink blooms, of the hortensia type, throughout most

of the summer. Ours is planted in fairly deep shade, where Pia performs best. Unlike many hydrangeas, Pia flowers remain pink even in acid soils. It is of unknown origin but according to one source, named in honor of Pia di Tolomei, one of Dantes tragic heroines in *The Divine Comedy*. Pia has found a strong niche in the marketplace and is widely available. It is being sold for use in shady patio or courtyard gardens, or for mixing with larger hydrangeas. Zone 6.

Rosa pimpinellifolia 'Petite Pink Scotch' (Petite Pink Scotch Rose). This is one of few roses JC ever promoted. It was discovered near Wilmington, NC and came to JC's attention via The Antique Rose Emporium of Texas. It has very fine foliage that reminds me of asparagus fern. In May it is solid with small pink flowers. It grows rapidly to two-three feet and tolerates almost any soil conditions. I think it looks best where it can trail over a low wall. If you have a spot in the garden that gets hot sun and has little water, this might be a good plant to try. Zone 6.

Gardenia jasminoides 'Kleim's Hardy' (Kleim's Hardy Gardenia). This cultivar is hardier than your average gardenia. Most people report that the tops die back between 5-10 degrees F. But there are still reports of it surviving 0 degrees with no damage to the tops. It is selling well at garden centers and is becoming widely available. The flowers are single, 1" to 3" long and occur profusely in May, June, and sporadically until frost. They are extremely fragrant but tend to turn an unsightly brown when finished blooming. It grows best in part sun to light shade and prefers winter protection. The leaves are evergreen, 2" to 4" long, thick and glossy. Plant it near a deck, walkway or patio where people can enjoy its tantalizing fragrance. Zone 7b(?).

Reprinted from *VNA Newsletter*,
January/February 1998.

BE ON THE LOOKOUT FOR THE ASIAN LONGHORNED BEETLE

James F. Stimmel

Pennsylvania Department of Agriculture

Nurserymen, landscapers, and shade tree enthusiasts - particularly those in the extreme eastern areas of Pennsylvania - should be on the lookout for an introduced woodboring beetle known as the Asian longhorned beetle (ALHB). This large insect has the potential to kill or seriously damage many species of shade trees.

Although this beetle has been intercepted at U.S. ports of entry on numerous occasions, it was never found established in the United States until early summer of 1996, when it was found killing street trees in Brooklyn and Amityville, New York. Since the discovery of breeding populations in these two areas, extensive survey and eradication activities have been undertaken and all infested trees identified in the survey have been destroyed.

The insect itself is a striking black and white cerambycid - or longhorned - beetle (Fig. 1). Females are up to 2 inches long and males are slightly smaller. Larvae become large (as long as 1.5 inches), but are never seen because they are concealed within their galleries as they bore through the wood. External evidence of this borer's presence, not including limb and tree

mortality, is the conspicuous exit hole the adult produces when it chews its way out of the wood. The hole is perfectly round, with a diameter of 3/8 to 1/2 inch. If it is close enough to the ground, a pile of sawdust may lie immediately beneath it. In the Brooklyn eradication project, the “quick and dirty” method to determine whether a hole in a tree was an Asian longhorned beetle exit hole was to try to insert a pen into the hole. If the hole was large enough for the pen to fit inside, it was considered an ALHB hole and the tree was condemned. No other insect in our regional fauna is known to produce such a large, distinct exit hole in hardwoods.

Unfortunately, this borer colonizes the tops of trees first, and the infestation spreads downward. This habit makes detecting the initial stages of infestation in mature trees virtually impossible, and only after exit holes (and possible dieback) are present is there much possibility of detection. Consequently, the survey method used by agents in Brooklyn and Amityville was to scan trees from the top down with binoculars during the dormant season, when there were no leaves present. It’s easy to understand how tedious and error-prone this detection method is. Only in the very late stages of infestation do the exit holes show up low enough on the main trunk for easy observation. As long as the tree has a significant amount of living tissue, it is subject to attack. It was interesting to observe that exit holes were present even on partially exposed surface roots. Limbs can be attacked by dozens of borer larvae simultaneously. I observed some limbs that took on the appearance of having been machine-gunned, there were so many emergence holes.

The really impressive damage, however, is revealed with an infested tree is cut down and the heartwood is exposed. Borer larvae tunnel haphazardly through the wood, working both with and across the grain, crossing the

heartwood, riddling it with galleries. Cross sections of heavily infested limbs actually look like pieces of Swiss cheese. The only use for such wood is firewood - it is unfit as sawmill timber.

Asian longhorned beetle attacks an extremely wide host range. When describing what tree species the beetle attacks, it is probably easier to list trees it does **not** infest rather than those it does. It does not seem to feed in oaks or tulip poplar, but will readily attack maples, elm, cherry, beech, ash, and many other shade trees. It is not a strong flier, and it is estimated that beetles will not disperse more than 1000 yards in one year. In heavily wooded stands, ALHB is thought to prefer the trees around the border of the stand rather than the dense interior.

A real danger in spreading this pest lies in transporting infested firewood. Often, tree companies or private contractors are called upon to remove dead trees, which they cut into firewood and transport to distant locations for sale. If these trees are infested with ALHB, their transport can spread the beetle over long distances. It is thought this is how the infestation began in Amityville. New York officials related a story about how they narrowly escaped having infested firewood moved from Amityville to the vast forested areas of the Adirondacks.

Regulatory officials are fairly certain the ALHB was introduced into the Brooklyn area in dunnage (wood and timber used for packaging and securing cargo) associated with large sewerage pipes imported from China. The beetles have been intercepted occasionally in such dunnage at ports of entry, and a large sewer restoration project took place in Brooklyn during the late 1980s in which the pipes were imported from the beetle’s native range in China. Thus, ALHB is thought to have been present in Brooklyn for 8-10 years. Although an

extensive eradication project was undertaken in the Brooklyn and Amityville areas, the possibility exists that some beetles escaped the detection and eradication process and that the infestation still exists.

At this time there are no known methods to survey for the beetle's presence other than visual surveys for emergence holes and damage. Entomologists have not been successful in isolating a pheromone for use in trapping projects, and no other attractants (i.e., food, color, or shape) are known to lure this insect. Thus, no trapping methods have been developed for use in detection surveys. Because early, low level infestations are so difficult to detect, these borers are found only after populations have become established and have reached serious levels.

The large amount of commerce and migration of people between the New York city area and the extreme eastern margin of Pennsylvania makes the possibility of this beetle's accidental introduction into Pennsylvania a sobering reality. Obviously, the arrival of the Asian longhorned beetle into this area would be a serious occurrence.

If you observe any hardwoods with large, perfectly round holes of 3/8 to 1/2 inch diameter in the trunk, or if you see and can capture and **large** black and white longhorned beetles, please contact an entomologist or plant inspector with the Bureau of Plant Industry.

Reprinted from *Regulatory Horticulture*, Fall 1997, Vol. 23.

POINSETTIAS

The best of the best in Indiana

<u>Cultivar</u>	<u>Comments</u>
Freedom Red	Still the No. 1 red; early, large bracts; ships well even with large bracts; best postharvest life of available cultivars.
Festival Red	Similar to Freedom Red, but a bit more vigorous.
Red Splendor	An excellent plant with upright growth. Later than Freedom Red; smaller bracts.
Bright Red Freedom	Better, brighter color than Freedom Red; bracts much slower to color than Freedom Red.
Success	Excellent color and form; late to flower; bracts slow to develop.
Pepride	Excellent color and oak-leaf-shaped bracts. Small bracts and plant compared to Freedom; extra growth time required for height; responds well to close spacing.
Snowcap	Excellent white, better color than Angelika White; compares well to Whitestar.
Whitestar	Excellent white, better color than Angelika White; compares well to Snowcap.
Maren	An excellent pink, the very best pink color.
Sonora Jingle	The best of the Jingle Bell types; good contrast in color; plant tends to be short unless given extra growing time.
Marblestar	The best color of the marbles; has foliage spots during production that are hidden by outstanding bracts.
Monet	Excellent bract color that improves with plant age; a very unusual poinsettia.
Silverstar	An outstanding novelty poinsettia; bright red bracts with variegated

foliage.

average if boxed and shipped.

The best of the best in Florida

<u>Cultivar</u>	<u>Comments</u>
Freedom Red	Continues to be the best overall variety in terms of growth habit, appearance and postproduction performance. Protect against bract edge burn, weak branches and late stretch.
Festival Red	Similar in appearance and growth habit to Freedom. May be slightly later and slightly taller.
Spotlight Dark Red	Good dark-leafed variety for midseason flowering. Branches better and is more vigorous than average varieties. Bracts display well under indoor lighting. Postproduction quality is average for dark-leafed varieties.
Sonora Red	Good dark-leafed variety for midseason. Less vigorous than average. Excellent as 4-in. plant and baskets. Makes good 6-in. plant and larger with proper scheduling. Bracts tend to droop if grown too warm. Good in postproduction, except that epinasty can be a problem in shipping.
Success	Best variety for late-season flowering. Postproduction is better than other light-green-leafed varieties. Bracts display well under indoor lighting.
Pepride	Very interesting oak-leaf-shaped bracts. Low vigor. Excellent as 4-in. plant and baskets. Needs adjusted scheduling for 6-in. plant. Needs very little if any growth regulator. Will stretch at end like Freedom if warm or crowded.
Silverstar	Good novelty red with variegated leaves. Postproduction can be poor if boxed and shipped.
Maren	Good growth habit. Best pink in warm climates. Flowers early. Is subject to botrytis if held in the greenhouse too long. Postproduction quality is less than

Snowcap	Good white for flowering with Freedom. Very vigorous.
Whitestar	Good midseason white. Not too vigorous.
Peterstar White	Good white for later flowering. Not too vigorous.
Marblestar	A very impressive variety, but can be difficult to grow. Learn to grow it before producing big numbers.
Monet	Best of the novelty types. Can be sold early to replace Pink Peppermint. A very attractive late variety for upscale markets. Stem breakage can be a problem. Grow like v-14 Glory.

Reprinted from *GrowerTalks*, February 1998.

**WHAT IS LABELED FOR WEED
CONTROL IN THE GREENHOUSE**

**Stanton Gill
Regional Specialist,
University of Maryland Cooperative
Extension**

There are several reasons for controlling weeds in the greenhouse. First, weeds serve as a hiding place for several insect and arthropod species including whiteflies, thrips, aphids, mites, slugs and snails. The second reason is that weeds can serve as reservoirs for impatiens necrotic spot virus (INSV), tomato spotted wilt virus (TSWV), and several other viruses. Thirdly, weed seeds can end-up in pots and containers.

**The following herbicides are labeled for use
in greenhouses:**

Roundup Pro, Finale, Reward, Scythe and Envoy. Roundup Pro is a non-selective, systemic herbicide. Finale is a non-selective contact herbicide with limited systemic activity. Reward and Scythe are both non-selective contact herbicides with no systemic activity. Reward and Scythe are both non-selective contact herbicides with no systemic activity. Envoy is a contact herbicide that selectively kills annual and perennial grass weeds.

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RECREATING TRAFFIC FLOW
Susan Barton
Extension Horticulture Specialist
University of Delaware

Plan your customers' journey through your garden center to provide the most complete shopping experience possible. Don't let chance control which displays your customers see. Create traffic flow that follows a planned path through the garden center.

When customers step out of their car into your parking lot, what do they see? Are signs and displays posted to guide customers to the store entrance? If not, these should be displayed prominently. A well-landscaped entrance can entice customers to enter. Once indoors, people tend to turn right. Arrange displays in a logical progression from the area to the right of the entrance throughout the rest of the store. Place a gazebo or similar focal point in the center of the store. Customers instinctively travel counter-clockwise around the strong central feature stopping at each department along the way.

The shape and configuration of your store may dictate a traffic pattern. Study the way people tend to travel and plan your displays accordingly. Use dividers or focal points to shaft traffic patterns when necessary. Entice customers to the next significant display or department with views that lead to interesting features or focal points.

Plan transitions from one department to the next. Signal transitions by a change in floor covering. Start with concrete in the greenhouse; use brick in a pottery department; and indicate the gift section with carpeting. Or use floor covering to mark the main path through the garden center. The "yellow brick road" concept works well for garden centers that have a confusing layout due to multiple additions.

Use signs to direct customers to the next department. Place archways between departments to create the feeling of transition. No one can resist exploring a path that curves out of view after passing through an archway.

Break large sales rooms into smaller spaces by using structures or small buildings within the larger building. Display gift items in small, elegant spaces. Create a more sophisticated atmosphere than you use for pesticide and fertilizer display.

People tend to move toward bright lights. If the store has a lower light level, the entrance to a bright greenhouse will be inviting. Features, such as gazebos, must be well lit in order to appear inviting.

Lead customers into the outdoor sales area by placing a water feature, specimen planting or structural feature about 50 feet from the doorway. Use signs to describe the products found in the outdoor sales area. Create an attractive view from the doorway. Provide a smooth transition by locating a lath area adjacent to the greenhouse or sales room.

Organize products in meaningful departments in the outdoor sales area. We in the industry, tend to think in terms of conifers, broad-leaved evergreens, and shade trees. Are these the categories your customers care about? Try grouping plants by uses, such as screening or hedge plants, groundcovers, or woodland transition plants. In addition to identifying the plant category, suggest a possible use.

In addition, use banners to pull customers out into a large outdoor sales area or into a sales area located far from the sales building. Molbaks in Seattle experienced a dramatic increase in tree and shrub sales when they used banners to mark the pathway to their remote sales area. They pull the customer along with

bright-colored flags and mark four special idea gardens with banners that picture a specific garden theme.

Wide, straight aisles promote speedy travel and open views. Most garden centers use a system of right-angled or 45 degree-angled paths to move customers efficiently through the sales area. Garden centers in wooded sites can use curved paths to promote a leisurely stroll through the displays. Let your garden center image and site configuration control your choice of paths. Make all paths wide enough to handle two nursery carts at one time.

Plan display gardens to promote traffic through the entire outdoor sales area. People will walk towards a garden to investigate it more closely and view plants along the way. Don't relegate display gardens to the parking lot or main entrance. Use display gardens to suggest plant uses and combinations as customers consider each product.

Don't let traffic flow just happen in your garden center. Evaluate your current traffic flow by watching your customers or asking an employee to role play as a customer. Then make changes to improve your customers' shopping experience. Guide them through the entire garden center in an order that makes sense and promotes sales.

This article was provided by the American Nursery and Landscape Association and its grower, retail, and landscape divisions, in partnership with your state association. For more information on ANLA, call 202/789-2900; fax 202/789-1893.

ANGELS IN THE NURSERY

Jean Fogle Fort Valley Nursery

Angels have soared to popularity in the past several years. Everywhere you look, you see angels. Angels are in the movies, books are written about them, they adorn shirts, even radio shows feature them. There are many nonbelievers and for years everyone has argued their existence.

The debate has finally been settled! Angels are among us, and wield enough power to change the course of a business. How do we know? It is happening Fort Valley Nursery as we speak - but first a little background.

Fort Valley Nursery has been serving the valley for nearly 20 years, providing quality services and products. Our landscape division managed by Warren Schennum, offers residential and commercial landscape design and installation that keeps a 4-5 man landscape crew busy every day. Randy Fogle oversees our sixty-acre nursery growing facility, which is located in Fort Valley. We are currently growing 60-70 varieties of flowering and shade trees. The nursery is equipped with drip irrigation and harvesting is done with a mechanical tree spade. Terry and Jean Fogle co-manage the Garden Center located in Woodstock, providing a wide array of landscape plants and garden accessories. It is one of these garden accessories combined with Jean's freelance photography that opened a door to a new opportunity that we couldn't ignore.

When *Country Living Gardener* published a photo essay of Jean's that featured concrete garden angels, the editor thought the readers would want to purchase the angels for Christmas presents. She offered to list Fort Valley Nursery in the resource section, and see what happened. We thought we might sell a few angels, but really thought the shipping cost would limit

sales. Once the magazine hit the stands, we were off and running, selling and shipping angels all over the country. In the end, we sold them to 43 states and Canada. We found the appeal of the angels outweighed the shipping costs. Always dealing on a local level, the angels helped us start to think of ways to market nationwide. After much research, and discussion, we decided to focus our energy on a new venture. A month ago we closed our flower shop division of the nursery to make room for a production area. Our angels led us to fly on the worldwide web, selling not only angels, but wreaths and garden accessories as well.

When we closed the flower shop, we saved an integral part of it. Karen Stovall, has been our head designer for eight years, and was the one responsible for the success we encountered with the flower shop. Her incredible sense of color and balance are now being utilized in the designs she is creating for our website. Surfing the net has shown us that few wreath designers have Karen's ability and style. Using both artificial and dried materials, Karen has designed wreaths that offer the consumer more. Most people find it frustrating to have the perfect wreath for the holidays, and only be able to use it for one month of the year. Our winter wreaths grace doors or entryways during the holiday season, but can be left up to add cheer during the dreary winter months. The year 'round wreaths go one more step and are perfect for the busy person who needs one less thing to do. Find the perfect spot, hang the wreath, and leave it!

Another item we felt would be popular is a gift for those people who are impossible to buy for. We have taken a galvanized bucket and filled it with some of the latest garden tools. This bucket also has a pair of Wonder gloves TM, the only gloves I have ever bought and actually worn. Sunflower seeds add a colorful touch and something to use the new tools on. We think

these buckets will please any gardener lucky enough to receive one.

After much adjusting and changing, the website is now up and running. *Country Living Gardener* is featuring one of the angels in their "Grapevine" section that features new products. The magazine is now reaching subscribers and due on the newsstand the end of October. These new products will be available at our nursery in Woodstock and we invite you to come in and see them. We hope you will visit our website at www.fvnursery.com. We would be happy to hear your comments.

Jean Fogle, Fort Valley Nursery
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**SLANT FENCE IS LOW-COST ANSWER
TO PROBLEM OF DEER DEVOURING
VALUABLE CROPS**

**Charlie O'Dell, Extension Horticulturist
Dept. of Horticulture, Virginia Tech**

Over the past several years deer have become the number one pest of horticultural crops, as well as of home gardens and landscaped grounds in both the suburban and rural communities of Virginia (and Delaware!).

Countless types of repellents have been tried with varying degrees of short-term success. However fencing them out is the only successful method for long-term deer control. The big drawback has been that the construction cost for an 8-foot or taller conventional woven-wire fence is prohibitively expensive for larger agricultural fields and home grounds.

In 1995, after repeatedly losing three acres or more of strawberry plants to deer each winter for several years, strawberry grower Hugh French in Cumberland County tried something different. He constructed a five-foot-tall, seven-stand, high-tensile, electrically-charged slant deer fence. The fence design was developed by Gallagher Corporation, a New Zealand fence manufacturing company (with dealers worldwide) that first published the design in 1984. For the past three years, French has had 100 percent deer control with the slant fence that surrounds 12 acres of strawberries.

Before constructing his fence, French's efforts to reduce deer feeding included obtaining state wildlife control permits that allowed massive deer elimination by hunting each year. However, the deer damage to his strawberry plants seemed to increase as more animals were eliminated each year. Other growers are now beginning to enjoy similar success in deer control with their own slant fences. We decided to give the fence a try after deer severely

damaged the summer 1997 research planting of Eastern strawberries at the Kentland Research Farm near Blacksburg. Unknown varmints, possibly groundhogs (or deer), also devoured several varieties of snap beans adjacent to the strawberry plots. We joined Hugh French and others with slant fences, looking forward to providing no more 'salad-bar' landscape for the wildlife with our horticultural crops.

Apparently the three-dimensional effect of the slanting tiers of wire confuses deer's depth-of-field vision so they will not jump the fence either at night or during the day. Normally a 5-foot fence would offer absolutely no impediment to deer intent on devouring horticultural plants. Part of the slant fence's success also may be credited to the electrical fence charger designed by the Gallagher Corporation, especially for deer conditioning and control without harming them. When they approach the slant fence and touch an outer top wire, the electrical jolt lets them know the fence is not deer friendly, nor is it friendly to dogs or children. Good neighbors will certainly post signs warning others not to touch or try to climb through the electrified slant fence.

Small animal exclusion, such as for groundhogs, also can be achieved by placing the lowest of the seven electrified wire stands just a few inches off the ground. Normally the seven wire strands are placed about one foot apart for the six strands up to the vertical line posts, with the seventh or top wire placed on the end of the slant posts protruding some one-and-a-half feet outward beyond each vertical post.

We used 8-foot treated landscape timbers for the line posts placed two-and-a-half feet in ground with five feet above ground. Some people cut the posts back to a four-foot height. We spaced our line posts every 30 feet along the perimeter. The crew bolted an eight-foot landscape timber to each line post at a slanting angle allowing the

top end of each slant post to protrude outward from each line post so that top ends of slant posts were five feet above the ground. The bottom end of each slant post rests on, not in, the ground.

The fence design uses flexible, spring-loaded, 14-gauge high-tensile wire. It is designed to withstand the impact of deer, falling trees thermal expansion and contraction, and snow and ice loading with minimal maintenance or repair.

Minimal weed control is necessary with the high-power electrical energizers specifically designed for the slant fence. Growers may elect to use an industrial strength fence-line or right-of-way herbicide application under the slant fence to provide multi-year vegetation control from one application. However, don't use soil-persistent vegetation control herbicides near valuable shade trees or landscape plants, and heed and follow all instructions on product labels. For under a dollar per running foot for purchased fence supplies (not counting labor), this is the most economical, long-term solution to the horticultural deer damage control problem in Virginia. For larger agronomic crops requiring thousands of feet of perimeter fencing, the cost for deer-exclusion fencing may be prohibitive, even for a slant fence.

Trade names are used for information purposes only. Virginia Cooperative Extension, Virginia Polytechnic Institute and State University, and Virginia State University do not warrant those mentioned nor do they imply discrimination against those not mentioned.

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TIPS ON DIAGNOSING ABIOTIC PLANT PROBLEMS

**Ray Bosmans, Regional Extension Specialist
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Often you are asked to diagnose an ailing tree or shrub. If you are lucky there may be an obvious insect or disease problem and the diagnosis may be straight forward. However, making a diagnosis when there are no apparent biotic (pathogen or pest) causes can be a real challenge. An accurate diagnosis, whether biotic or abiotic, involves both science, (botany, entomology and pathology) and art (strategy, investigation and decision making). Abiotic problems can be very difficult to diagnose because they include site conditions, weather and cultural practices.

Determining the difference between the "symptom" and the "sign" of a problem is the first step in making a diagnosis. A "symptom" is the plant's reaction to the causal agent. Typical distress symptoms of an abiotic problem may include very slow growth, poor foliage color, scorch, sparse growth, die-back, or the death of the plant. A "sign" is the actual presence of organisms such as insects, mites, or fungal mycelia. Insect or disease injury may be present but not severe enough to be the primary cause of the problem.

Common Site and Cultural Problems

Soil Grade Changes: Grade changes typically are done during or after new building construction. Any addition or subtraction from the natural soil grade will affect a root system. Sometimes very young plants adjust to minor soil grade changes. However, older, well established trees and shrubs are very sensitive to grade changes around their root systems. Soil placed over roots reduces soil aeration and soil placed against the trunk decays lower trunk

bark. If a soil grade change must be done, plan to construct tree wells and perforated pipe systems to provide the roots with the needed oxygen. Three inches of soil is the maximum depth that can safely be added, without making special provisions. No soil should touch the trunk. Problems caused by soil grade changes take a long time to manifest. Usually dieback or death of a tree does not occur until two or three years later. Drought or excessive rain will hasten the decline. Unfortunately, when distress symptoms manifest it is usually too late for any recovery even after the excess oil has been removed.

Soil Compaction: When soil is compressed by heavy construction equipment, trucks, cars, and heavy pedestrian traffic, the soil structure is damaged. Roots must have the oxygen present in the macropore spaces in the soil. These spaces are reduced or eliminated by compaction. Wet soils with a high clay content compact the quickest and require years of freezing and thawing to gradually loosen. Soil compaction is a slow but sure process that causes poor growth and even death of a mature well-established tree. Compacted soils can be improved by incorporating liberal amounts of organic matter prior to planting. Compacted soils can be improved by incorporating liberal amounts of organic matter prior to planting. Compacted soil under existing trees can be improved with vertical mulching. Vertical mulching involves drilling two inch wide holes ten inches deep in the soil throughout a trees' root system. Fill them with peat moss, compost or pine bark mulch. These small columns of organic matter will improve water and air penetration. The addition of gypsum or lime is beneficial in breaking up heavy clay soils.

Changes in Water Flow: Changes in the natural flow of rain water can have an adverse effect on plants. Sometimes these changes are made to correct a drainage problem elsewhere

on the site. Diverting the water may add more water to a tree or shrub than it can handle. A common problem is a down spout that does not drain away from the house because of excessive mulch or other obstruction. The resulting puddling in the garden is damaging to plants. Sometimes, this damage does not appear until dry weather when the plant dies of a damaged root system.

Mechanical Root Damage: The majority of the important feeder roots of plants are located within the upper six inches of the soil. Any digging, trenching, or rototilling within the root area will cause harm. People easily forget the damage done when they install a driveway, patio or otherwise excavate their yard. They feel that if the plant does not show distress symptoms immediately that all will be okay. Unfortunately this is not true. Root damage may haunt the plant months or even years later depending on the environmental stresses that occur.

Soluble Salt Damage to Roots: Another type of root damage is caused by excess fertilizer and misplaced ice melt products. High rates of fertilizer burn roots, resulting in leaf scorch or death of the plant. Ice melt products, especially those with rock salt, cause severe damage when they get into plant roots. A soluble salts test, if done as soon as possible before too much rain, will reveal the problem of over fertilization or ice melt product damage. Soluble salts test results above 2.5 million are excessive for trees. With either type of damage, irrigation to leach the fertilizer salts is the course of action.

Poor Soil Drainage and Roots: The efficient movement of water through the soil is critical to root health. Soil with good porosity, such as one rich in organic matter, is capable of handling large quantities of water with no harmful effects on plant roots. Unfortunately, most landscape soils are not this ideal and drainage during rainy weather is a challenge.

Some popular landscape plants, such as azaleas, rhododendrons and yews, are very prone to root decay and are pre-disposed to root fungal diseases when growing in wet sites. Check the condition of the roots when digging out a dying plant. Dead roots are black or brown when scraped. Consistently wet soils will also have a foul odor from the anaerobic bacteria growing in it.

Lower Trunk or Stem Damage: Some decline and die-back problems in woody plants are caused by stem or trunk damage. Sometimes this damage is very close to the ground or even under the ground and is overlooked at first glance. Any bark removed or damaged creates a strain. Bark can be damaged by rabbits, voles, groundhogs, mowers and weed trimmers. A small amount of bark loss can be tolerated by most woody plants, but large sections or repeated damage that ends up as large masses of scar tissue are a serious problem.

Girdling roots are another common problem with the lower trunk of trees. A girdling root is a root that is growing around the trunk at or below the soil line gradually strangling the trunk. Some trees such as maples, zelkovas, elms and birch are particularly prone to their formation. Trees and shrubs that were container grown and become pot bound also have a good chance of developing girdling roots. It is important to spread roots of pot bound plants to prevent this from occurring.

Planting Too Deeply: This is quite a common problem. Plants may be planted too deeply from the time of planting or they may have settled since planting and become too deep. What is too deep? Even planting one-inch too deep can spell trouble. Often trees are planted as much as three or more inches too deep. Deep planting causes bark deterioration at the soil line, which will eventually kill the plant. It takes time, usually a few seasons, for a newly planted tree

or shrub to die from this. It will try to survive but it will be a constant struggle. Some new growth may develop each spring only to die off during the stress of summer. Advanced symptoms of depth related stress are cankers and bark cracking on the trunk. A tree may hang on until fall but not survive the winter because of insufficient storage of food reserves from the top into the trunk and roots.

How Does One Determine If a Tree is Too Deep? A properly planted established tree has a flaring at the base of the trunk where it joins the root system. If this is not visible, be suspicious of deep planting or another problem such as girdling roots. Perform a root collar excavation by carefully removing the soil from around the trunk to where the root growth starts and the trunk flares out. This is known as the root collar. If the tree was recently planted too deep, carefully lift the tree and replant it. To avoid excessive settling in future plantings don't loosen the soil in the bottom of the planting hole. It is also recommended to plant trees and shrubs with the top of the root ball slightly above the existing soil line. This practice is particularly helpful when planting in heavy clay soils that tend to drain poorly.

Excessive Mulch: This is a silent killer, one that is done with all good intentions. People add mulch to trees and shrubs every year believing it is the "correct" thing to do, when in reality it begins to accumulate to depths of five, six or more inches. Mulch conserves soil moisture, protects roots from high temperatures and reduces weed growth. The recommended depth to do all this is three inches. As the old mulch decomposes it can be gently worked into the planting bed to improve the soil or removed and worked into other gardens. Additional mulch may be added occasionally to supplement what's already there. If complete remulching is desired the old mulch should be removed before the new is applied. Excessive mulch will reduce

the oxygen reaching the roots. The roots will grow upward into the mulch for more oxygen. The problem is that during drought when the mulch dries out the roots in the mulch die. When mulch is allowed to remain against the trunks of trees and shrubs, the bark will die and the entire plant can eventually die.

Summary: The most difficult plant problems to diagnose are usually not caused by an insect or disease but are cultural and site related. In a natural, undisturbed soil, nutrition deficiencies usually are not that much of a factor since most soils in Maryland have fairly good levels of nutrients. However, in an urban or disturbed soil there may be very high pH and micro nutrient problems. You are more likely to see damage caused by excessive fertilizer than a deficient amount. Take the time to ask as many background questions that the client can answer as this information can be a critical part of the puzzle.

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PESTICIDE NEWS

Insecticides:

ACEPHATE 75 SP - Micro-Flo - This new generic product will be available this coming season.

Fungicides:

FOL-R-FOS 400 (mono+ di potassium salts of phosphoric acid) - UIM Agrochemicals - EPA has approved registration to control Phytophthora and Pythium diseases in ornamentals and bedding plants for Phytophthora disease in conifers and Pythium diseases in turf. (FR Vol. 63, 1-5-98)

PENNCOZEB 80 (mancozeb) - Elf Atochem - Added to their label the usage on Christmas trees to control needle cast, pine gold rust and Scirrhia brown spot.

Herbicides:

COOL POWER (MCPA/triclopyr/dicamba) - Riverdale - A new combination herbicide developed for usage on turf. An ester formulation.

HORSEPOWER (MCPA/triclopyr/dicamba) - Riverdale - A new combination herbicide developed for usage on turf. An amine formulation.

MILLENNIUM (2,4-D/triclopyr/clopyralid) - Riverdale - A new combination herbicide developed for usage on turf.

PENDULUM 2G (pendimethalin) - American Cyanamid - A new formulations being developed for usage on turf, ornamentals and non-crop areas.

RESEARCH BRIEFS

Propagation:

Early-Season Fertilization Reduces Fertilizer Use Without Reducing Plant Growth. Early season fertigation, three to four weeks of 200 mg/liter N from water soluble fertilizer applied after spring potting, and then switching to once per week fertigation produced seedling of similar height to seedlings fertigated all season long. This fertilization practice reduced fertilizer application by 63 to 55% without reducing seedling growth. Early season continuous fertigation and then shifting to late season weekly fertigation can significantly reduce mineral nutrient application rates in containerized seedling production. (D.K. Struve and M.A. Rose)

Excerpted from J. Environ. Hort. 16(1):47-51.

Subirrigation Success Varies With Taxa. Cuttings of woody taxa vary in their response to subirrigation. Previous research has demonstrated success of using the subirrigation method with cuttings of red maple and Japanese tree lilac. Results show success of the subirrigation method can equal or exceed the success of using mist for 'Goldflame' spirea, 'Pioneer' elm, 'Charles Joly' lilac. Yet the importance of the date of taking cuttings for some taxa, and the failure of the method regardless of date for other taxa underscore the importance of using the subirrigation method with caution. Propagators should test the method on samples of each taxa before subirrigation without mist is adopted commercially. (A.S. Aiello and W. R. Graves).

Excerpted from J. Environ. Hort. 16(1):42-47.

Rooting Rhododendron Stem Cutting With Subirrigation. Subirrigation allows growers to root many softwood and semi-hardwood

cuttings without mist. Decreasing soil pH from 7.5 to 4.5 resulted in rooting of 85-100 % with three different rhododendron cultivars. pH was reduced by adding milled sphagnum peat to the subirrigation solution. (T.A. Holt, B.K. Maynard and W.A. Johnson).

Excerpted from J. Environ. Hort. 16(1):4-7.

Field Production:

Review of In-Ground Fabric Containers. The in-ground fabric container is a tool used in producing field-grown nursery stock. Advantages and disadvantages of their use must be weighed before implementing them into a given production situation. Few economic studies have been conducted with the grow bags. Growers must be concerned with higher up-front costs of grow bags that may not be recovered for several years, depending on the crop cycle. Lower harvest costs and ease of harvest may offset some of the disadvantage of the initial cost. Lower harvest costs and ease of harvest may offset some of the disadvantage of the initial cost.

Research has revealed a variety of plant responses to grow bags compared to other production practices. Growth of some species was not affected, while growth of other species was decreased in the presence of the grow bags compared to plants of the same species grown without root restriction. Growth affects appear to be species and site specific. Plant growth in sandy soil may differ less with or without grow bags than in heavier soils. This difference may be due in part to the difference in water-holding capacity between soil types.

At transplanting, the grow bags must be removed. Removal can be laborious, and care must be taken to avoid breaking the root ball. If the bag is successfully removed while maintaining the root ball intact, most research

has shown no difference in plant establishment regardless of production method. After transplanting, however, plants grown in a grow bag require irrigation more frequently than field-grown trees. (J.C. Cole, R. Kjølsgren and D.L. Hensley).

Excerpted from HortTechnology 8(2):159-16.

Container Production:

BA Increases Offset Production on Hosta.

(G.J. Keever and T.J. Brass). Increasing offset production improves rapid multiplication of desirable hosta cultivars. BA (Pro-Shear) stimulates outgrowth of lateral buds in hosta. However, fewer additional BA-stimulated buds are likely to develop into shoots when two or three initial offsets are present on the stock plants than when zero or one offset is present.

Excerpted for J. Environ. Hort. 16(1):1-3.

Nursery Production and Landscape Establishment in Different Nursery Containers.

Red maple roots grew at similar rates, but the amount of circling roots was reducing by growing in low-profile containers, chemical root-pruning containers, air root-pruning containers, or in wooden boxes. Landscape establishment was similar for trees grown in all container types. More frequent irrigation improved landscape growth for all container types. (M.D. Marshall and E.F. Gilman).

Excerpted from J. Environ. Hort. 16(1):55-59.

Greenhouse Production:

Effect of Irrigation System on Poinsettia Growth.

Poinsettias were grown using hand (HD), microtube (MT), ebb-and-flow (EF), and capillary mat (CM) irrigations systems and were irrigated either daily (D) or as needed

(Intermittent, I). The MT and EF irrigation systems were both water- and fertilizer-efficient. The CM irrigations system was the least water-efficient. HD irrigation produced the smallest plants. The best combination was daily irrigation with EF or MT. Where water conservation is a concern, the best choice would be intermittent MT irrigation. (J.K. Morvant, J.M. Dole, J.C. Cole).

Excerpted from HortScience 33(1):42-46, 1998.

Clay Added to Soilless Media Promotes Growth of Greenhouse Crops.

The amendment of sawdust media with clay enhanced the growth and yield of crops tested in this study.(D.L. Ehret, B.J. Zebarth, J. Portree and T. Garland).

Excerpted from HortScience 33(1):67-70, 1998.

Landscape Installation and Management:

Effect of Primo on Bedding and Landscape Plants.

Primo (cimectacarb) provided growth suppression, but resulted in phytotoxic symptoms on all six bedding plants and 2 of the 4 woody plants tested. The rates used were those recommended for use on turfgrass. Therefore not only is Primo not an option for height control of ornamentals, but drift injury may occur when used on turfgrass. (G.J. Keever and J.W. Olive)

Excerpted from J. Environ. Hort. 16(1):11-16.

Effect of Root Severance on Growth of Sugar Maple.

Sugar maples were dug with 75 cm (ANLA Standard) and 90 cm diameter root balls and replanted in the same hole. Height, trunk diameter and twig extension occurred at a fraction of the growth rates found in undug controls (19%, 10%, 18%, respectively) for the following two years. There was no difference in growth rate between trees dug with standard or

larger-than-standard balls. This research shows that larger-than-standard balls (approx. 270 kg) will not increase transplant success as compared to standard ball size (approx. 180 kg). Further research is planned to investigate the benefit of larger-than-standard balls during suboptimal conditions such as drought stress. (J.R. Harris, P. Knight and J. Fanelli)

Excerpted from HortScience 33(1):21-23, 1998.

Packing Systems for Amaryllis Bulbs. The superior packing system for shipping and storing Dutch-grown Hippeastrum (Amaryllis) bulbs was hout-wol (an excelsior) combined with perforated polyethylene bags. (A.A. DeHertogh and L.B. Gallitano).

Excerpted from HortTechnology 8(2):175-79.

Control of Greenhouse Pests with Biorational Pesticides. Horticultural oil and insecticidal soap were as effective as conventional insecticides and miticides in controlling aphids, citrus mealybug, greenhouse whitefly and two-spotted spider mite on common greenhouse crops. Neem extract (Marogan-O or Azatin) was less consistent and provided intermediate to good control. Except for purple heart and wax ivy, repetitive sprays of hort oil, soap and neem, did not appear to result in any noticeable phytotoxicity nor affect the growth of the bedding and foliage plants examined in this study. Repetitive sprays of hort oil and soap significantly affected plant height and final quality of some poinsettia cultivars. (R. Miller and S. Uetz).

Excerpted from HortTechnology 8(2):185-92.

Fertilizer Rates for Hostas Grown From Tissue Culture. Hostas grew best within the medium was amended with 3 g (as compared to 1, 6 or 12 g/pot) of either Osmocote 14N-6P-11.5K or Sierrablen 17N-6P-12K slow release

fertilizer. (W. Britton, E.J. Holcomb and D.J. Beattie).

Excerpted from HortTechnology 8(2):203-06.

Marketing:

Retail Garden Outlet Requests Of Growers. Growers could help retailers achieve better value through a combination of steps including better plant quality, better variety of plants and improved labeling. (M.P. Garber and K. Bondari)

Excerpted from J. Environ. Hort. 16(1):20-26.

Why Customers Defect. A study of Georgia garden centers revealed the following reasons for customer defection:

- 47% - Does not offer green goods or hard good that customer likes.
- 39% - Product or service specification not met
- 23% - Too expensive.
- 18% - Employees either not knowledgeable or not customer-oriented.
- 15% - Products or services in general do not appeal to potential customer.
- 14% - Plants and green goods do not look healthy, high-quality, maintained.
- 10% - Long lines at check-out counter or service desk.
- 7% - Facilities or parking inadequate for garden center business
- 4% - Plants or products returned because satisfaction was not realized.(F.E. Stegelin)

Excerpted from American Nurseryman, March 15, 1998.

Insect and Disease Control:

BotaniGard WP Control Greenhouse Insect Pests. BotaniGard contains an

entomopathogenic fungus. An entire crop of commercial poinsettias was produced using BotaniGard WP as the only pest control material. Trials indicate that BotaniGard is a viable alternative to conventional pesticides. It is compatible with natural enemies and provides excellent control of greenhouse insect pests. (B.C. Murphy, T. Morisawa and M.P. Parrella).

Excerpted from GrowerTalks, December 1997.

US National Arboretum Develops Two Potato Leafhopper Resistant Maple CVs. Two maple cultivars, *Acer rubrum* 'Red Rocket' and *A. rubrum* 'New World' show resistant to potato leafhopper, a severe pest of red maple. 'Red Rocket' has a columnar shape and its name can be attributed to the fiery-red leaves that highlight the tree in the fall. 'New World' first branches up, then out and weeps at a high level. This habit gives the orange-red cultivar a unique shape.

Excerpted from American Nurseryman, March 15, 1998.

Publications

Integrated Pest Management. A collection of IPM articles from 20 years of *Regulatory Horticulture*, is a handy reference for growers. You can obtain a free copy by calling (717) 772-5226. Written requests may be sent to: Karl Valley, Plant Protection Division, BPI, PA Dept. Of Agriculture, 2301 North Cameron St., Harrisburg, PA 17110-9408; FAX: (717)783-3275, e-mail: kvalley@pda005.pda.state.pa.us.

The 1998 Garden Conservancy Open Days Directory. Lists 39 private gardens in 26 states which will open to the public on select weekends from March through October. Includes description of garden, dates and times, and directions. Cost is \$10, (\$8 for Garden Conservancy members) plus \$3.50 shipping. To charge, call toll-free (888)842-2442, for information on local distributors, call (914)265-2029.

New Guidelines Answer Questions About Turfgrass Soil Prep and Watering. Two new fliers are available free of charge--*Soil Preparation For a Beautiful Lawn & Watering New Turfgrass Sod*. Complimentary copies of the new fliers can be obtained by contacting a near-by TPI turfgrass sod producer or by requesting them from the Turf Resource Center at Dept. S/W, 1855-A Hicks Road, Rolling Meadows, IL 60008.

Best Management Practices, Guide for Producing Container-Grown Plants. This 76-pg., 4-color handbook offers guidelines for implementing proactive management practices necessary to produce container-grown plants with minimal environmental impact and addresses such issues as Container Management Practices and Container Nutrition Practices. For more information contact: Virginia Nurserymen's Association, 383 Coal Hollow

Rd., Christiansburg, VA 24073-6721, Voice: 540-382-0943, FAX: 540-382-2716.

NJNLA Grower Locator Map. The NJNLA South Chapter has published a locator map of NJNLA member growers within the chapter. The map also lists the type of plant material grown by each grower. Cost is \$5 and may be obtained by contacting the NJNLA office 1-800-314-4836, FAX: 609-291-1121.

Weed Management in Horticultural Crops. This practical guide to hands-on weed management focuses on horticultural crops, including vegetable, tree fruit, nut, citrus, vine, landscape, nursery, and turf crops. It can be purchased through ASHS Press for \$29.95 plus shipping. Orders can be sent by fax to ASHS at (703) 836-6838 or by mail to ASHS Press, 600 Cameron Street, Alexandria, VA, 22314.

Allan Armitage's PhotoLibrary of Herbaceous Plants on CD-ROM. A companion to Michael Dirr's CD-ROM of woody plants, this CD-ROM contains over 1000 images of perennials, annuals, bulbs, ferns, greenhouse crops, cut flowers and ornamental grasses. Contact PlantAmerica, P.O. Box, 589, Locust Valley, NY 11560 or call 888-PLANTCD.

Calendar

April 21 - Delaware Native Plant Society. Next meeting will be held at 7 PM at the Aquatic Resource Education Center, Woodland Beach Wildlife Area, Rt. 9 (Hay Point Landing Road). For directions or questions, call Keith Clancy (302-674-5187)

April 21,28; May 5,12-(Optional exam: May 26)-Botany I for Gardeners-Plant Classification and Identification, Series I-Certificate of Merit in Ornamental Plants Program. (OPY198A). 1-3 pm. Outdoor lab session: Tues., May 19, 1-4 pm. Longwood's Continuing Education Program. Course fees include a detailed course manual, classroom sessions, guided plant walks, admission into Longwood, and access to the horticultural library during regular hours for the duration of the course. (OPY198E)-Evening 7-9 pm. Outdoor lab session: Sat, May 16, 9 am-12 noon. Location: Visitor Center Auditorium (Use Main Entrance) Cost \$79. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501

April 22,29; May 6,13,20,27-(Optional exam: June 3)-**Small Flowering Trees**, Series I-Certificate of Merit in Ornamental Plants Program. (OPF1198M). 9:30-11:30 am. Longwood's Continuing Education Program. Course fees include a detailed course manual, classroom sessions, guided plant walks, admission into Longwood, and access to the horticultural library during regular hours for the duration of the course. Guided plant study walks: Wed., May 6 & 27, 1-4 pm. (OPF1198E)-Evening 7-9 pm. Guided plant study walks: Sat., May 9 & 30, 9 am-12 noon. Location: Visitor Center Auditorium (Use Main Entrance) Cost \$129. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

April 29 - 1998 Mid-Atlantic Interior Landscape Conference, Longwood Gardens, Kennett Square, PA. Call Thomas Contrisciano, Penn State Cooperative Extension - Berks County (610)378-1327 for information..

May 4 - Perennial Garden Maintenance Workshop (PS11498M) - Longwood Gardens Continuing Education, 9 am-12 noon *or* May 5 (PS11598M), 9 am-12 noon. Location: Visitor Center Auditorium/Gardens (Use Main Entrance) Cost \$49. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

May 4 - Pruning Techniques for Perennials (SL1598) - Longwood Gardens Continuing Education for Spring 1998-Evening Lecture Series. Location: Conservatory Ballroom (Use Business Entrance), 7:30 pm, Fee: \$21 (Includes dessert reception). Lecture fees include admission to Longwood Gardens on the day of the lecture. (Note: the evening will begin with a brief ceremony honoring the recipients of the Series I & II Certificate of Merit in Ornamental Plants). For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

May 18 - Garden Design: The Complete Process (SL1698) - Longwood Gardens Continuing Education for Spring 1998-Evening Lecture Series. Location: Visitor Center Auditorium (Use Main Entrance), 7:30 pm, Fee: \$21 (Includes dessert reception). Lecture fees include admission to Longwood Gardens on the day of the lecture. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

June 2 - Pest Walk - Ornamental Short Course Series, UDBG, Newark, DE, 9 AM - 12 PM, Contact Susan Barton (302-831-1375).

June 2,9,16,23 - What's That Plant? (GS11498A), 1-3:30 pm or evening (GS11498E), 6:30-9 pm. Longwood's Continuing Education Program. Location: Acer room/Gardens (Use Business Entrance/Park in lower lot) Cost: \$109. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

June 15-19, 1998 - Restoring the Urban Forest Ecosystem, The Urban Forestry Institute, Lago Mar Hotel, Fort Lauderdale, Florida. For information contact: IFAS Office of Conferences & Institutes (OCI), Tel:(352)392-5930, FAX:(392-9734), e-mail: kmgil@gnv.ifas.ufl.edu. Visit the Office of Conferences home page for conference updates or to register online: <http://gnv.ifas.ufl.edu/~conferweb/>

June 12 - Plant Disease Identification Workshop, (GS18998A), Longwood's Continuing Education Program, 1-4 pm, or June 26, (GS1998A) 1-4 pm. Location: Acer Room/Gardens (Use Business Entrance/Park in lower lot). Cost \$59. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

June 17-21 - American Association of Botanical Gardens

and Arborea 1998 Conference, Philadelphia, PA. Contact: AABGA:(610)925-2500, x-11; homepage, www.mobot.org/AABGA

June 23 & 24 - Quarterly Pesticide Applicator Training & Testing, Dover. For more information contact: Delaware Dept. Of Agriculture 1-800-282-8685 (DE only), (302)739-4811 (outside DE), Coop. Extension: New Castle County (302)831-COOP, Kent County (302)697-4000, Sussex County (302)856-7303.

June 24-28 - Garden Centers of America Annual Retail Tour - To stores in the Mid-Atlantic states of Pennsylvania, Virginia, Maryland and Washington, DC; Contact: kmagee@anal.org.

June 29 - The Geiger Companies Field Day, Harleysville, PA; contact: 1-800-433-4337.

June 30 - Garden Center Bus Tour to Central PA. Cosponsored by Delaware Cooperative Extension, PA Coop. Extension, D.A.N. and PNLA. Contact Susan Barton for more info. (302-831-1375).

July 6 - August 7 - Landscape Design - The New York Botanical Garden, Continuing Education Five-Week Summer Intensives. For a free 64-page course catalog: Call (718)-817-8747, Code:3319803A, FAX:(718)-817-8666, E-mail: conted@nybg.org - Website: www.nybg.org/edu/conted/conted.html

July 6-11 - Perennial Plant Association (PPA) Annual Meeting, Boston, MA; contact (614)292-6027.

July 11, 12, 13, 14 & 15 - Educational Seminars, 1998 Ohio Florists' Association Short Course and Trade Show, Greater Columbus Convention Center, Columbus, Ohio, USA. Sponsored by Ohio Florists' Association, with cooperation from The Ohio State University. For more information contact: Ohio florists' Assoc., 2130 Stella Court, Suite 200, Columbus, OH 43215-1033 USA, (614)487-1117, FAX: 614-487-1216, E-mail: ofa@ofa.org, Home Page: <http://www.ofa.org>.

July 12-15 - 95th American Society for Horticultural Science, Charlotte Convention Center, Charlotte, NC. Contact: ASHS, (703)836-4606, FAX:(703)836-2024, e-mail: ashs@ashs.org.

July 13 - August 14 - Floral Design - The New York Botanical Garden, Continuing Education Five-Week Summer Intensives. For a free 64-page course catalog: Call (718)-817-8747, Code:3319803A, FAX:(718)-817-8666, E-mail: conted@nybg.org - Website:

www.nybg.org/edu/conted/conted.html

July 20-24 - (Optional exam-July 24) - Conifers - Week-long Course, Series I-Certificate of Merit in Ornamental Plants Program. (OPN1198W). 9:00 am-5 pm., plus special evening events. Longwood's Continuing Education Program. Course fees include a detailed course manual, classroom sessions, guided plant walks, admission into Longwood, and access to the horticultural library during regular hours for the duration of the course. Location: Visitor Center Auditorium (Use Main Entrance) Cost \$259. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

July 30; August 6,13,20,27 - Garden Design Studio (AD1698E) - 6:30-9:30 pm. Location: Acer Room (Use Business Entrance) Cost: \$109. For more information contact: Continuing Education Courses, Longwood Gardens, Inc. P.O. Box 501, Kennett Square, PA 19348-0501.

August 5-9 - American Nursery and Landscape Association Annual Conference &

August 6-9 - Southern Nurserymen's Association Researcher's Conference and Trade Show. Contact: SNA (770)973-9026; SNA Infoline, (770)973-4636; www.sna.org.

August 6 - Pest Walk - Ornamental Short Course Series, Delaware State University, Dover, DE, 9 AM - 12 PM, Contact Susan Barton (302-831-1375).

August 11, 18, 25 - Herbaceous Plant Identification - Ornamental Short Course Series, UDBG, Newark, DE, 2-4 PM, Contact Susan Barton.

August (to be announced) - Irrigation Systems - Ornamental Short Course Series, New Castle County Extension Office, Newark, DE, Contact Susan Barton.

August 19 - Basic Landscape Management for Spanish-speaking Personnel - Ornamental Short Course Series, Fischer Greenhouse Classroom, Newark, DE, 10 AM - 2 PM, Contact Susan Barton.

August 20 - DAN Summer Turf and Nursery Expo, Smyrna, DE and Research and Education Fund Golf Outing. Contact Val Budischak (888-448-1203).

September 3, 8, 10 - Identification & Control of Diseases on Ornamental Plants - Ornamental Short Course Series, Fischer Greenhouse Classroom, Newark, DE, 6-8 PM, Contact Susan Barton.

September 12 & 13 - Power of Herbs: 7th Annual Weekend of Healing Plants Workshops, The New York Botanical Garden, Continuing Education. For a free 64-page course catalog: Call (718)-817-8747, Code:3319803A, FAX:(718)-817-8666, E-mail: conted@nybg.org - Website: www.nybg.org/edu/conted/conted.html

September 15 - Pest Walk - Ornamental Short Course Series, Winterthur Museum and Gardens, Winterthur, DE, 9 AM - 12 PM, Contact Susan Barton (302-831-1375).

October 6 & 8 - Diagnosis & Control of Insects and Weeds on Ornamental Plants - Ornamental Short Course Series, Research and Education Center, Georgetown, DE, 3-5 PM, Contact Susan Barton.

October 7-10 - Eastern Region International Plant Propagators' Society Annual Meeting, Toronto Hotel Toronto, Ontario, Canada. Contact: Margot Bridgen, 26 Woodland Road, Storrs, CT 06268, (860)429-6818, e-mail: mbipps@neca.com.

October 7, 14, 21 - Shrubs for the Landscape - Ornamental Short Course Series, Fischer Greenhouse Classroom, Newark, DE, 5-7 PM, Contact Susan Barton.

October 20 - Prepare for the next - Certified Nursery Professional Exam - Department of Agriculture, Dover, DE. For more information call: Val Budischak.

DAN Video Library

The DAN started a video library in 1988. There are many good videos still available from the library for a modest fee (to cover postage and handling). Borrow these tapes to improve your knowledge or for use in employee training. Take advantage of this resource!

<u>Title</u>	<u>Time</u>
Growing Beautiful Lawns	60 min
Plant Propagation, Vol. I	25 min
Working with Pesticides	120 min
Blooming profits: Merchandising Plants for the Garden	15 min
Elements of Pruning	30 min
How to Control Pests and Disease in the Landscape	180 min
Successful Customer Relations for Garden Center Employees	30 min
Loading and Unloading Nursery Crops	13 min
Planting and Staking Landscape Trees	20 min
Landscape Irrigation, Maintenance and Troubleshooting	30 min
Pruning and Shearing Nursery Stock	20 min
Integrated Pest Management	20 min

Rental Guidelines

1. Rental available to DAN members.
2. Request video in writing to Marianne McGloin, Executive Director, DAN, on company letterhead or use order form.
3. Rental fee - \$10 (includes outgoing postage)
4. Rental time - Must be returned 2 weeks from receipt of tape.
5. Late penalty - \$2.50/day

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Enclosed please find a check for \$ _____ payable to DAN.
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