

Volume 14

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

This is it . . . the last newsletter of the millennium! As the year winds down for many, it revs up for the Delaware Association of Nurserymen. We hold two of our three educational events within two months. Our Ornamental & Turf Workshop was held on November 9th at Hockessin Memorial Hall. More than 110 individuals participated in this event. The Delaware Horticulture Industry Expo will be held January 12th and 13th at a new location—the Modern Maturity Center in Dover, DE. This should prove to be an exciting event! Featured speakers include Tony Avent, Owner, Plant Delights Nursery, Inc., (International Mail Order Business) featuring rare and unusual perennials, hostas, natives; Martha Simon-Pindale, President, Bluemount Nurseries; Joel Lerner, Founder and CEO of Environmental Design; and Joanne Kostecky, Founder and President, Joanne Kostecky GARDEN DESIGN, Inc. Based on member feedback, there will also be a Certified Nursery Professional Prep course offered this year. Attendees will be able to brush up on the material covered in this rigorous exam with faculty from the University of Delaware. We hope you will be able to join us for this event.

On October 19th, ten individuals sat for the Certified Nursery Professional core and/or specialty exams. Congratulations are in order for the following individuals:

New CNPs

Rob Baker
JB Landscaping
Landscape Specialist

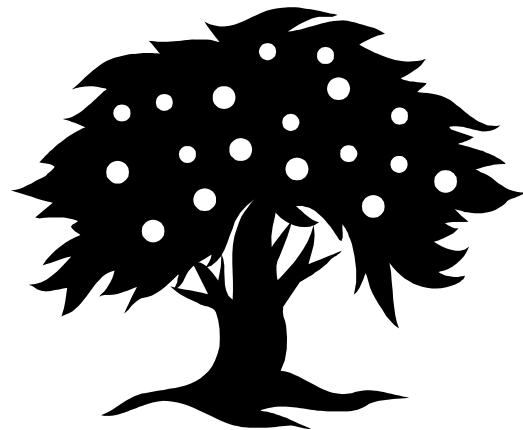
Pat Hogan
Delaware Rive and Bay Authority
Landscape Specialist

New Specialities Added:

Elmer “Skip” Bowman
Delaware River and Bay Authority
Garden Center Specialist

Tammy Blades
Southern State Milford Co-op
Landscape Specialist
Garden Center Specialist

Len Brinsfield
Delaware River and Bay Authority
Landscape Specialist



FROM THE PRESIDENT
Naomi McCafferty
Delaware Association Nurserymen

It is time to reflect at the end of the season, the end of the tax year, and the end of my two years as president of the D.A.N. Serving as president has been rewarding. I have made many friends all over the state. I have enjoyed learning about all your different businesses. This is a network I can utilize for years to come.

The first challenge of my tenure was to replace our executive director. Our selection committee chose wisely with the hiring of Valann Budischak. Everyone should meet her because she has an infectious energy and you'll leave wanting to be more organized like her. It is truly amazing how she can cram ten pounds of stuff into a five-pound bag. I'd like to thank Valann for all her hard work!!!

Over the last two years we've changed the format of some D.A.N.'s events. We've had a golf outing added to our summer expo in 1998 & 1999. This has become a day to get together for classes and pesticide credits and have some fun on the golf course. We are now changing the winter expo. This year we'll have a two-day format instead of three. We hope this will fit everyone's schedule better. We are also changing the location to a new facility in Dover. This will accommodate our growing need for a larger meeting facility.

Of course I cannot fail to mention the D.A.N. Board of Directors. I would like to personally send my thanks to: Susan Barton, Heidi Carey, David Coker, Lynn Harrison, Norman Hedrick, Ginger Hogan, Bruce Paulish, Matt Reynolds, Al Sonchen, Steve Sterling, John Wiest, and Jay Windsor. All of these folks were dedicated enough to give their time to attend meetings and events to help the D.A.N. go strongly into the next year. These folks are as busy and over-

scheduled as the rest of us but they found time to represent you. We should all thank them.

It's been a pleasure working with everyone at the association!!

Naomi McCafferty

Gardens are not made by singing "Oh, how beautiful," and sitting in the shade.

__Rudyard Kipling

Welcome to our new member:

Netherland Bulb Co.
Attn: Laura Raymond
13 McFadden Road
Easton, PA 18045

The D.A.N. regrets to inform you of the deaths of two of our past/present members. Our deepest sympathies to the friends and family of these fine individuals:

Larry Tackitt
Apex Lawn & Garden Center/Service
831 S. DuPont Highway
New Castle, DE 19720

Bob Mazzetti
Delaware River and Bay Authority
P.O. Box 71
New Castle, DE 19720

U of D NEWS
Susan Barton
Extension Specialist

Ornamental Horticulture Programs for 2000 have been divided into four major tracks— Business Management, Pest Management, Production and Landscape & Turf. We have reduced the prices of many programs to help you send more employees. We have also varied the formats. Some programs run for multiple sessions and others are completed in a morning, afternoon or evening. In many cases you have the option of attending all or part of a course, depending on your interests. We hope we have created a series of programs that meet your business needs.

Here are the classes offered this winter season:

Business Management Track:

Building Your Presence on the World Wide Web January 11, 13, 18 1-3 PM
Location: Townsend Hall Room 006
Instructor: Jo Mercer
Cost: \$10

Entrepreneurship in Horticulture

Writing a Business Plan Feb. 9 7-9 PM
Networking and Developing Cooperative Opportunities Feb.16 7-9 PM
Financing Feb.23 7-9 PM
Location: Kent County Extension Office, Dover
Instructors: Gordon Johnson, Susan Barton
Cost: \$5 for each session

Personnel Management March 8 1-3 PM
Location: NCC Extension Office, Newark
Instructors: Gordon Johnson, Susan Barton
Cost: \$10

Understanding Financial Statements

March 15 1-3 PM
Location: NCC Extension Office, Newark
Instructor: Susan Barton
Cost: \$10

Pest Management Track

Pests Below the Ground* Feb. 15 1-4 PM
Location: NCC Extension Office, Newark
Instructors: Bob Mulrooney, Dewey Caron
Cost: \$10

Landscape Trouble Shooting Workshop*

March 7, 9 3-5 PM
Location: Research & Education Center, Georgetown
Instructors: Jay Windsor, Derby Walker
Cost: \$10

Diagnosis & Control of Insects on Woody Ornamental Plants*

March 21, 23 3-5 PM
Location: NCC Extension Office, Newark
Instructor: Dewey Caron
Cost: \$25

Identification & Control of Diseases on Ornamental Plants*

Location: Research & Education Center, Georgetown
Instructor: Bob Mulrooney
Cost: \$25

Production Tract:

Greenhouse Production Series*

January 22, 29 February 19, 26 9 AM –12 PM
Location: Greenhouses in Kent/Sussex Counties
Instructors: Gordon Johnson, Jay Windsor
Cost: \$15
Session 1: Greenhouse structures, equipment, environment
Session 2: Growing environment, media, containers, watering, fertilization
Session 3: Pest management*
Session 4: Plant material, propagation, sales, production costs

Introduction to Commercial Nursery

Production March 1, 8, 15, 22 7-9 PM
Location: Research & Education Center, Georgetown

Instructors: Gordon Johnson, Jay Windsor
Cost: \$15
Session 1: Basics of nursery production
Session 2: Herbaceous perennial production
Session 3: Woody container production
Session 4: Marketing and business development

Nutrient Management for Turf, Landscape Maintenance And Nursery Production

March 16 9 AM-3 PM
Location: Kent County Extension Office, Dover
Instructors: Gregory Binford, Gordon Johnson
Cost: free

Landscape & Turf Tract:

Turf Workshop* February 29 1-4 PM
Location: NCC Extension Office, Newark
Instructors: Susan Barton, Bob Mulrooney, Dewey Caron
Cost: \$10

*Pesticide credits will be awarded for attendance at these courses.

You should receive a flyer for these classes soon. Please take a good look at these opportunities and sign up for those that will help you achieve success in your business or career. If these courses don't address your needs, please let me know (Susan Barton, 831-1375).

We are continuing to work with the Trees Add Life program. A display contest was conducted among pilot sites this fall. Hicks Nurseries won first place with a fabulous plexi-glass, cutaway display of the tree planting process in conjunction with the Trees Add Life banner and tree tags. To see photos and judges comments for all contest participants, visit our web site (treesaddlife.org). Based on suggestions from pilot site participants, we are developing a companion banner with promotional tree information—in other words, the benefits of planting trees. We will be presenting survey data and the new banner concept at the

Management Clinic in Louisville in February or look for updates on the website.

We are also putting the finishing touches on a report for DNREC that attempts to provide information about the nutrient impacts of urban horticulture. We quantified the land in each of four major categories of land uses—residential, recreational (parks, golf courses and athletic fields), transportation (highway right-of-way) and educational/institutional. Then we conducted surveys of various groups to characterize nutrient and landscape management practices. We collected information about homeowner practices from DE Speaks Out (a Cooperative Extension survey of 2400 households in DE) and a homeowner intercept survey conducted by Master Gardeners at two Delaware fertilizer retailers. We collected information from landscapers through the Green Industries: IPM/Nutrient Management Survey. And we collected information about golf courses and athletic fields through surveys and face-to-face interviews. We are able to estimate the nutrient contribution from each of these sources. We also characterized the adoption of best management practices by each of the populations. The results indicate that, in general, fertilizer rates applied are within the guidelines recommended by the University of Delaware. Also land totals in most of the land use categories are very small compared to the overall state land mass. But, these populations do not always follow best management practices. For example, most homeowners fertilize in the spring (rather than fall), remove their clippings and fail to test soil on a regular basis. This report will provide valuable information to the Nutrient Commission and help guide educational efforts in the future.

SURVIVAL TIPS FOR THE YEAR 2000
Susan Barton, Extension Specialist
University of Delaware

Larry Iorii, owner of Down to Earth, Inc. presented a great talk at the 1999 Ornamentals and Turf Workshop. He had some practical tips for fellow business owners. We received excellent comments about this talk on our program evaluations, so I thought I'd share it with a larger audience.

Larry began by pointing out that when he started his business in 1974, there were a wide variety of lawn care and landscape companies operating. To his knowledge, only five have survived. In this talk, Larry provides some survival suggestions for lawn and landscape companies.

Consulting – As the business grows, you may have trouble taking on new clients. The more you grow, the more you must depend upon increasing your labor force. Larry found that customers were seeking his experience and expertise. He wasn't able to take on new maintenance clients, but he was willing to provide advice. Several years ago, he launched the consulting division of his business. He markets consulting services through trade shows, conversations with other industry professionals, suppliers, university personnel, existing clients and horticultural societies.

Charge cards – As we say in the 90's and soon to be 2000's—"Charge it please!" Take advantage of the incentives provided by credit card companies. Larry uses credit cards to purchase many Down to Earth supplies including fertilizer, equipment, seed, repairs, company trips, parts, plants, tools, gas, mulch and education. He uses several credit cards that provide different benefits. First he spends on the GM card, which offers 5% of purchases toward the cost of a new GM vehicle. For

\$10,000 that equals \$500 per year and after 7 years, you can get \$3500 off a new vehicle. Larry purchases up to his limit (\$10,000) on the GM card each year. He accumulated \$2,625 from 1993 to 1995 and \$3,280 from 1996 to 1998. Then he switches to a U.S. Air Card. Each dollar spent equals one air mile. You need to spend \$25,000 for one free domestic flight. If you are spending the money anyway, why not fly free. One caution is—pay off the entire balance by the due date. This is not a low interest loan. It is simply a way to make your normal spending pay dividends.

Cash flow – Getting a spring credit line at the bank is an unnecessary expense. For personalized lawn care program, Down to Earth requires a 60% payment on March 5 and 40% on October 15. Commercial accounts pay in 12 equal monthly installments or 11 equal monthly installments with one large payment on March 1. Residential accounts are also billed monthly beginning with the first month of service. Mowing is never billed on a per cut basis.

By getting a handle on cash flow, Down to Earth has better purchasing power and is able to take advantages of purchasing discounts. There is an even flow of receivables and no credit line expenses.

Employees – Good landscape maintenance employees are hard to find. Sometimes a little creativity can help you configure an unusual, but effective work force. Down to Earth offers flex time and employs a number of part-time employees. Many of these employees work shift work in their "other job" and are anxious to earn extra money. Here are some sources they use—City of Wilmington firefighters, General Motors or other factory workers, schoolteachers, neighbors, and past employees. Sometimes other landscape companies provide labor to complete key projects. When that is reciprocal, everyone benefits.

These non-traditional employees eliminate the need for health coverage, paid holidays and large vacation blocks. They drastically reduce the rate for unemployment compensation. They eliminate the need to scout for work in down times because you don't have to carry extra employees. These employees do not move on, they miss no time and they are well educated and very responsible. To keep good part-time employees they are paid well, provided vacation comparable to the hours worked per week and included in a profit sharing plan.

Specialization – Numerous articles point out that companies who specialize, excel in profitability. However, warns Larry, “Don't put all your eggs in one basket.” Down to Earth specializes in lawn renovation, core-aeration and consulting.

Teamwork – Work with your competitors to meet the needs of the public. When you are too busy to handle the complete job, subcontract some portions. Put together teams of employees (from several businesses) to get large projects finished. When a maintenance client needs special work you are not equipped to provide, find them a good contractor. If your customer is satisfied, they will continue to be your customer.

Contracts and Proposals – Offer three-year contracts for commercial accounts. Avoid renegotiation every year.

Company portfolio – Start with a cover letter that explains you and your company. Include residential and commercial referrals and highlight the comparables. Provide information about your insurance company, including contact person and provide a copy of your pesticide license.

Change hourly rates – In 1996, Down to Earth increased the billing rate for foremen from \$24/hour to \$30/hour. Follow this math:

40 weeks of seasonal work
 8 hours a day per foreman
 5 days a week (allowing for rain days)
 2 foremen per day

This totals 3,200 hours per year. That \$6/hour increase results in \$19,200 more in your bottom line at the end of the year!

Dump fees – You should charge your customers to dump brush and grass. Look at the following analysis of dump fees.

Conservative estimate of landfill trips	120
Average dump fee for load	\$35
Average labor and gas to dump	\$20
Total cost for dumping (\$55 x 120)	\$6600

Cost to client for 12' stake body truck	\$135
Fee x 120 trips	\$16,200

\$16,200 – \$6600 = \$9600 in profit for dumping!

Buy your shop – When the company is financially stable, consider buying a shop. The objective is to purchase a property that will allow for multiple rents through lot, shop or office spaces. You can pay off your mortgage in 15 years. Look for property with a building and open land. Purchase more space than you need. Shops rent more easily than office space. If you rent office space, include a kitchen and bath. Subdivide bays and remember to rent the land around the complex.

With all these good ideas, you should be able to find one to apply to your company in the year 2000. Happy New Year!



WHY DO YOUR CLIENTS LEAVE?

Jim Sargent
Penn State Extension

Every business has a natural attrition of clientele. Some of the reasons may include business relocation, owner death, bankruptcy, and sale of the business or several other scenarios. The secret of success is to minimize that attrition rate. Every business loses clients but do you know if your client losses are small or are they a huge trouble spot that needs immediate attention? You should find out.

When I took my first job out of college, I began working for a small feed company in Berlin, Pennsylvania as a feed salesman. The owner of the business had no prior experience in the feed business but thought it would be a good experience and a great place to raise a family. When I was hired, one of my first jobs was to call all of our current clients and introduce myself. I found this job to be very pleasant and spent the first week of my new job getting paid for talking on the phone. As many of you know, talking to people is one of my strong character traits and getting paid for doing it seemed like an easy way to make money! What I didn't realize was what he was going to have me do the next week.

One of the worst weeks of my life was about to begin. My assignment was to take the inactive customer list and find out why they left. Being new at the job I took my assignment very seriously until I talked to the first person on my list. Some of the words that came out of his mouth describing my boss and the way he conducted his business were even new to me. Needless to say, I had second thoughts about making the next call. Not only did I have to call these people, the owner gave me a truck, a map and directions to many of the businesses that

were former clients and wanted me to ask them face to face why they quit doing business with his firm. As the week wore on and after many phone calls and visits were made to inactive clients, I began to see a common theme coming to the forefront. I began to hear things like: "I was quoted a price of \$200 for feed and when the bill came it was \$275. I had sticker shock and couldn't believe how much extra it cost me." "I have been a client of yours for five years and the last time I came to your business you didn't recognize my wife or me. It appeared to both of us you didn't really care to see us."

It was sometimes difficult to listen to people without defending my boss and company policies. However, I really concentrated on listening to what the people were trying to say. Using the information I had gathered I presented it to the owner. It took several days for him to digest and analyze the information he received.

What came next was a surprise. He decided most of the people I had talked to were "nuts" and he was happy he didn't have to deal with them any more. The only problem with that attitude is that the stream of clients that were leaving was like a flooding river. After all, if a steady stream leaves your business without being replaced, you'll soon be out of business. His business lasted two more years before the bank took over.

What can you do to keep your clients? Several surveys conducted over the last few years keep finding that the number one reason people come back and continue to do business with you is that you show you care about them! You will not please every person all of the time, but you can take steps to improve communications in your business.

Take time to get better acquainted with your customers, especially the clients who really frustrate you. There may be an outside reason

for why they act the way they do.

Really listen. Listening will help you learn what your clients expect—and how to exceed those expectations.

Be positive. An exuberant attitude shows your commitment to excellence and will rub off on most clients.

Pay attention. If the lines of communication have become distant, don't hesitate to ask if something is wrong. Always giving the client the opportunity to express their discontent, this can head off a problem.

Never get defensive. Let your clients know that you always want their feedback on what works—and what doesn't work. When they do offer feedback, listen and thank them for it.

Showing clients that you care about them and value their business will help insure that your business will thrive into the future.

Reprinted from *Green Business Reporter*
Southeast Extension Region, Vol: 10 No. 9

DROUGHT MAY CAUSE EXCESSIVE WEED GROWTH

Most of the eastern half of the US experienced a near-record drought in 1999. As a result, beginning in October and November and lasting until early spring, these areas may see an increase in winter annual weeds. These kinds of weeds germinate in fall or early spring, then flower, fruit and die in summer. According to Joe Neal, professor of weed science at North Carolina State University, Raleigh, the major weeds of concern are horseweed (*Conyza canadensis*), annual bluegrass (*Poa annua*), Carolina geranium (*Geranium carolinianum*), evening primrose (*Oenothera biennis*) and winter annual thistles (*Carduus* spp. or *Cirsium* spp.). If left unchecked, these weeds compete with field-grown nursery stock and landscape plants for water, nutrients and light, which can reduce crop growth. Weeds also provide cover for mice and voles, which are also severe pests of nursery crops.

These weeds are typically controlled with late summer applications of pre-emergence herbicides. However, drought conditions at the time of application may reduce the effectiveness of these herbicides. If the drought continues into the fall, the effectiveness of postemergence herbicides may also be reduced. "Weeds are more difficult to control during drought conditions. Herbicides don't work as well," said Neal. Drought conditions and dry air help wind-dispersed seed float and spread. In addition, soil-applied pre-emergence herbicides are lost due to warm, dry-soil conditions. In dry soils, weed seed germinates even deeper in the ground, avoiding exposure to surface-applied herbicides.

Inadequate rainfall also contributes to weed problems. Pre-emergence herbicides need rainfall to move deeply enough into the soil to work. Neal said pre-emergence herbicides in

granular or spray forms require water to activate, so drought conditions render them ineffective. “If we don’t have rainfall to get the herbicides into soil, by October we may be seeing the effects of poor weed control,” he said. Without enough moisture, postemergence herbicides do not absorb as readily into foliage. However, under drought conditions, even if herbicides absorb into a weed, they do not translocate to kill the roots.

Neal said there are two ways to effectively control weeds in drought conditions: timely and effective use of herbicides or cultivation. All herbicide applications should be accompanied with thorough irrigation. If weeds emerge, apply postemergence herbicides two to three days after irrigation or rainfall. Do not irrigate immediately after application because herbicides will wash off the foliage.

Neal cautions not to wait until spring to apply postemergence herbicides because weeds are easier to control when small and young. He recommends applying post-emergence herbicides in late fall. Call your local state extension office to find out which postemergence herbicides should be applied, and follow instructions on the label.

If cultivation is used to kill weeds, Neal recommends not cultivating in late fall, a practice that would leave the ground bare and susceptible to erosion in winter. Neal said the best time to cultivate is in spring.

Jeff Derr, a weed scientist at the Virginia Tech extension office, Virginia Beach, agrees with Neal that herbicides should not be applied in drought conditions. “If (weeds) show signs of wilting, it is not a good time to apply the herbicides,” he said. “If the forecast for the next two weeks calls for hot and dry weather, hold off treating weeds.”

A winter cover crop can also help prevent emergence of winter weeds. Check with a local state extension office to find out which cover crops are appropriate in your area.

Neal said this year of drought should serve as an example for years to come. “If (nurseries) can’t use water because of the drought, then they’ve got to make plans for the next time it happens and have adequate water available,” he said. “We’ve seen a number of nurseries suffer because they have expanded production beyond their irrigation capacities. Nurseries need to carefully assess their water requirements and add irrigation capacity if needed.”

Reprinted with permission from *American Nurseryman*, October 1, 1999, Vol. 190, No. 7.

EXPECT MORE PLANT DISEASE NEXT YEAR DUE TO DROUGHT-STRESS

**Scott Aker, IPM Specialist
U.S. National Arboretum**

Seven plant diseases to look for and what you can do to control them

In many regions, the 1999 drought will be remembered as the worst of the century. While rainfall in recent months has ended the drought for most of us, the detrimental effects are sure to linger into the coming year. Expect to see some diseased plants. Although moisture is needed for most fungi and bacteria to successfully infect a new host, the stress of drought weakens trees and shrubs and primes them for new infections. Here are some of the diseases typically associated with drought and how to manage them.

Bacterial Leaf Scorch

This bacterial disease, recognized by the very distinctive scorching that occurs on leaf margins, commonly affects oaks in the red oak group, elms, red maples, and sycamores. Although the disease probably is vectored by leafhoppers, controlling leafhoppers with an insecticide is not effective since the bacteria can be transmitted before the insect is killed.

The best control is to monitor trees carefully in summer and remove any diseased branches, cutting all the way back to the trunk. If the bacteria has spread to the trunk, nothing can be done other than injection with an antibiotic (which usually is prohibitively expensive and only partially effective). If entire trees are affected, plan for their eventual replacement.

Verticillium Wilt

With an extremely wide host range and amazing ability to persist in landscape plantings,

verticillium is a constant threat. This soil-borne fungus often slowly kills Japanese maples, 'Kwanzan' cherries, Norway maples, and many other broadleaf trees. Old or drought-stressed trees can succumb quickly. The fungus often results in a circular band of greenish-brown stained tissue just inside the sapwood as the disease spreads upward from the roots.

The best management practice is to maintain plant vigor and avoid planting susceptible hosts in sites where verticillium wilt has been a problem. Trifoliolate maples such as *Acer henryi*, *A. griseum* are resistant to verticillium.

Dogwood Anthracnose

Although new infections start in cool, wet spring weather, this fungal disease spreads more aggressively in trees stressed by drought. The foliar stage of the disease doesn't permanently damage the tree, but it can easily and quickly travel to the cambium via watersprouts and adventitious shoots along the large branches and trunk.

To control spread of the disease, be sure to remove these succulent shoots. Many fungicides labeled for anthracnose diseases also are effective: Begin cover sprays as soon as leaves have fully expanded. Planting a resistant species such as *Cornus kousa* or an interspecific hybrid is a good long-term solution.

Botryosphaeria Canker

The fungus *Botryosphaeria* has an extremely wide host range. It is particularly common on azaleas and rhododendrons, viburnum, and redbud, and often can be present in apparently healthy plants without doing serious damage until the plant is stressed by drought.

Usually the disease can be recognized by the pie-shaped chocolate brown stain that appears

on the cut surface of infected branches. Also look for flagging branches on the first hot days of summer. The only effective control is to prune out infected branches immediately, leaving only healthy, uninfected wood. Be sure to prune back until you no longer see any stain in the resulting cut.

Sphaeropsis Blight of Pines

Formally known as diplodia tip blight, this fungal disease has decimated many of the Austrian pines that were planted in great numbers just after the middle of the century. All pines, except those bearing needles in sets of five, are subject to this disease, but Scots, Austrian, and Japanese black pines are most susceptible. Tip growth is infected as it elongates in spring; by mid-summer, needles become brown and crispy.

Fortunately, fungicides are effective if you apply them when candle growth has completely elongated and again 10 days later. Infected cones spread the fungus, so winter removal of all cones and infected branches could be helpful.

Leucostoma Canker of Spruces

The most common problem with Colorado blue spruce, this disease precludes the development of old specimen trees of this type in humid parts of the country. Drought weakens the defenses of spruces and allows this fungus to kill branches at the skirt of the tree and progress upward, often killing or disfiguring the trees.

Although it is a canker disease, the cankers retain their bark and are not sunken. Look for the copious sap flow that results from the canker to find the infected source branch. Fungicides are not an effective control. Remove infected branches to the main trunk to prevent spread.

Seiridium Canker

Leyland cypress, one of the most popular evergreens, is commonly damaged by this fungus as the tree reaches maturity, especially if it has grown in a hedge or screen planting where plants are subject to root competition and severe drought stress. Branches throughout the tree suddenly turn brown; in severe infections, large branches die and the leader usually dies back.

Seiridium canker is most damaging where summers are hot. Fungicides are not effective in controlling this disease; infected branches should be pruned out. Thin screen plantings to allow at least 20 feet between trees as they mature to reduce root competition.

Reprinted from *AABGA Newsletter*, December 1999, No. 299.

BORING INSECTS YOU SHOULD KNOW!

**David J. Sheltar (the BugDoc), OSU
Extension Landscape Entomologist**

Don't let the title entice you to skip over this section because you think that all insects are boring! The insects discussed herein are some of the most difficult to manage and are important killers of many of our ornamental trees and shrubs. Over the years, I have found that most of you have some knowledge of borers, especially the bronzed birch borer, ash/lilac borer and bark beetles. However, I have also found that there is considerable lack of knowledge and misunderstanding about how borers attack plants, the kinds of borers we encounter and what are the best approaches to control.

Borer Categories

Most entomologists divide the borers up into taxonomic categories. The two main insect groups that contain the most species of borers are beetles (the Coleoptera) and moths (the Lepidoptera).

Coleopterous (Beetle) Borers

The most common beetles which bore into ornamental trees and shrubs are the roundheaded or longhorn borers (family Cerambycidae), the flatheaded or metallic wood borers (family Buprestidae), and the bark beetles (shothole borers or engraver beetles) (family Scolytidae). Several, less common, weevils (family Curculionidae) are borers.

Roundheaded borers usually attack dead or dying trees or tree parts. Those that attack apparently healthy plants usually bore into the heartwood and may cause structural damage. Sudden death of the plant is rarely caused by heartwood borers, but the plants maybe broken in wind or ice storms. Common examples are

the locust borer (*Megacyllene robiniae*), northeastern pine sawyer (*Monochamus scutellatus*), roundheaded apple tree borer (*Saperda candida*), poplar borer (*S. calcarata*), and the recently introduced Asian longhorn beetle (*Anoplophora glabripennis*). The adults are called longhorn beetles because they have antennae that may be much longer than the body. The larvae are called roundheaded borers because they make round or oval tunnels (in cross section). When the adults emerge, they usually make large round or slightly oval holes.

Flatheaded borers often attack apparently healthy trees, and the larvae feed in the cambium and sapwood areas. However, only weakened or stressed trees are severely damaged or killed by these borers. If the larvae completely tunnel round a branch or trunk before the tree can reconnect the vascular bundles, girdling and sudden death can occur. Common examples are the bronze birch borer (*Agilus anxius*), the flatheaded apple tree borer (*Chrysobothris femorata*), and twolined chestnut borer (*Agilus bilineatus*). The adults are called metallic wood borers because most have bright iridescent copper, green or blue coloration. The larvae usually have very flattened bodies and the tunnels are very narrowly oval in outline. The adults make D-shaped or very oval emergence holes.

Bark beetles usually attack weakened trees and often do so in mass. When a female beetle finds a weak tree, she may release an aggregation pheromone which attracts many others to the site. This often results in numerous "gum drops" or small pitch masses on the bark. The larvae usually tunnel sideways from the adult egg laying tunneling and their overlapping burrows, during a mass attack, girdles the tree. Common examples are the European elm bark beetle (*Scolytus multistriatus*), the shothole borer (*Scolytus rugulosus*), the pine engraver (*Ips pini*), and the red turpentine beetle

(*Dendroctonus valens*). Bark beetles make small, perfectly round emergence holes that are usually 2-4 mm in diameter.

The recently introduced European pine shoot borer (*Tomicus piniperda*) also breeds under the bark of killed or weakened trees, but the adults feed in pine shoots during the summer.

Weevils which bore into trees are usually called “terminal weevils” because they usually attack the branches of trees. The white pine weevil (=Sitka spruce weevil) (*Pissodes strobi*) is the most commonly seen pest in this group. The black walnut curculio (*Conotrachelus retentus*) has larvae that burrow into shoots of black walnut. Weevil larvae are generally robust, C-shaped, grubs without legs.

Lepidopterous (Moth/Caterpillar) Borers

The common Lepidoptera which bore into stems and wood of ornamentals usually belong to four families: the clearwing moths (family Sesiidae, =Aegeriidae), the carpenterworms and leopard moths (family Cossidae), twig, tip or shoot moths (family Tortricidae), and the snout moths (family Pyralidae).

The clearwinged moths are active daytime fliers which look like bees or wasps. The white larvae with brown head capsules bore into stems, roots and trunks of plants. Common examples are the lilac/ash borer (*Podosesia syringae*), banded ash borer (*P. aureocincta*), dogwood borer (*Synanthedon scitula*), rhododendron borer (*Synanthedon rhododendri*), and peachtree borer (*Synanthedon exitiosa*). Most of these borers cause sections of bark to sluff off, branches to break, or sudden death if the larvae girdle the branches or trunks.

The carpenterworm (*Prionoxystus robiniae*) and related leopard moths are heavy bodied moths with small wings. The larvae are large

white caterpillars covered with diagnostic black spots. They excavate large galleries in wood of a variety of trees, often causing considerable structural damage.

The twig, tip and shoot moths include a large number of small moths that have larvae which bore into the buds and developing shoots of plants. The larvae are small, pinkish or tan bodied, and have dark heads. Common examples are the European pine shoot moth (*Rhyacionia buoliana*), Nantucket pine tip moth (*R. frustrana*), spruce budworm (*Choristoneura fumiferana*) and maple twig borers (*Proteoteras* spp.).

The **pyralid moths** usually have larvae that are pinkish, tan or flesh colored and the bodies are often marked with rows of small spots. Common examples are the American plum borer (*Euzophera semifuneralis*) and the Zimmerman pine moth (*Diorytria zimmermani*). Both of these pyralids attack the branches and trunks of host trees, often producing conspicuous masses of sap or pitch mixed with their sawdust like frass) fecal pellets). Some other pyralids are shoot borers.

Other Ways of Categorizing Borers

I prefer to categorize borers into groups according to their mode of attack and potential to severely damage or kill their host plant. My categories are (yes, this is really arbitrary):

Undertaker Borers – These are the most common borers found in landscape plants. They are ones that usually attack recently dead or dying plants. Remember that a tree or shrub that has been girdled from root dieback, vascular disease infection, mechanical damage and a variety of other causes may not appear to be dead. The leaves or needles may appear green, though wilted and the average home gardener may not notice anything wrong. I prefer to call

them “**Plants of the Living Dead**”! People may not know that the plants are really dead, but the borer adults figure it out, almost at the instant of happening. Unfortunately, days to weeks later, when the plant finally shows the signs of being dead (you know, “My tree suddenly turned brown!”), the borers are in full activity and they usually get blamed as the CAUSE of death. There is nothing you can do about “undertaker borers” other than appreciate their ability to point out “plants of the living dead.” Remove the plant and start over!

In Ohio, most of the bark beetles and sapwood feeding longhorn beetles fall into this category. There is also a variety of wood boring wasps that are undertaker borers (e.g., pigeon termex horntail and maple wood wasp).

Stressed-Plant Borers – The vast majority of borers fall into this category. They have the ability to find plants that are in poor health or temporarily stressed. The most important stress appears to be anything related to slowing or stopping the vascular system of a plant. Poor root system, drought, heat, and vascular diseases are common causes of vascular system stresses. The concept is rather simple. Most plants defend themselves from borers by trying to “gum up the invader” or “pitch them out.” If enough sticky or resinous sap can be placed where a borer is trying to invade plant tissues, the insect often is trapped and killed. Some plants have the ability to simply encase the small invading borer in callous tissues! If the plant has enough energy and nutritional reserves to force this sudden growth, the pest is encapsulated and killed. There is also an increasing body of information that suggests that plants can often produce defensive chemicals in response to damage. These defensive chemicals can be lethal to the offending insect. In any case, most plants that are under vascular and/or nutritional stress have much less of an ability to “pitch out,” encapsulate or produce defensive

chemicals.

There are many theories as to how stressed-plant borers find their hosts. I suspect that each borer may use a variety of methods to locate their hosts. I classify the theories into three groups: sound location, odor/taste (chemical) location, and random chance.

The sound location theories rely on the fact that trees produce ultrasonic acoustical (sound) emissions. Apparently, when a plant is functioning “normally,” liquids are flowing through the vascular bundles, mainly through the process of transpiration. However, when the tree is under vascular stress (from severe drought or girdling) the liquid columns in the vascular bundles break, causing ultrasonic snaps and clicks. These sounds can be detected and converted into visual recordings or sounds that we can hear. There are commercially available sensors (stress meters) that are being marketed to measure the frequency of these sounds. The other fact that is known is that many insects can detect (hear) sounds in this ultrasonic range. So, if you put the two facts together, certain borers may be able to detect stressed trees from the frequency of ultrasonic snaps and clicks that are being produced. Unfortunately, there is little researched-based information in the literature that has confirmed that this IS what is going on!

The odor/taste theories rely on the facts that plants produce a variety of chemicals which can be detected by insects. Some chemicals are produced in much greater quantity when certain plants are under stress while other chemicals have their concentrations changed when a plant is under stress or under attack.

Again, if a borer can detect the differences in these chemicals, it may be able to assess the plant’s susceptibility to attack. There is a fair amount of research-based information that these chemicals play a major role in borer activity.

However, much of the current debate is on how far or close the borer has to be in order to detect these chemicals and what kinds of plant stresses cause changes in the chemicals.

The random chance theories suggest that many of the borers simply lay their eggs on many potential hosts and the larvae are usually successful in invading the stressed plants but are cast out or killed by the healthy plants. Again, there is some research-based information that indicates that some borers have this random behavior, but most borers seem to be able to preferentially locate and oviposit on stressed plants.

Constantly Attacking Borers

These borers are the ones that are constantly trying to invade a host and most seem to have the ability to get into their host but rarely kill the plant. These may disfigure the plant and under stressful conditions, can cause the death of the plant. Examples would be the Zimmerman pine moth, white pine weevil, and maple shoot borer. Zimmerman pine moth larvae often get established in damaged or weakened trees. Once they have invaded the tree, they often come back to the same tree, year after year. They may cause branch breakage and death, but they rarely girdle the whole tree. The maple shoot borers tunnel into newly expanding shoots causing their death. The tree usually sends out more shoots below the damage and the result is a bushier growth habit, but never death of the tree. Some of the clearwing moths may also be put into this category. I have seen flowering dogwoods that have been attacked for years by the dogwood borer. The trunk may be missing some bark but the trees flower each spring. Only at unpredictable times do the dogwood borers overwhelm the tree.

Reprinted from *VNLA Newsletter*,
September/October 1999.

IS YOUR BRANDING IRON READY?

Bonnie Lee Appleton
Blue Crab Press

First came patents, then came trademarks, and now the big deal in the green industry seems to be branding. The December issue of *Greenhouse Grower* listed their top “What Was Hot”, and in the #2 position was “Branding”. Pick up any of our nursery or greenhouse trade publications and somewhere, whether in the editorials or the features or the news stories or the press releases, you’re bound to find something about, or someone who is, branding.

While branding may be relatively new to the green industry, it isn’t with regard to our everyday lives. Many of us say Xerox when we want a copier (or to copy something), Coke when we want a carbonated cola drink, and Kleenex when we want a tissue. The brand names of certain high profile products within a particular product line or category have become synonymous with the product line. It’s those brand names that we think of or ask for when a Canon or a Pepsi or a Scottie might do.

Until now the limited amount of branding that has occurred in the green industry has focused mainly on the herbaceous plants. Garnering considerable attention last year was EuroAmerican’s branded annuals line called “Proven Winners”. The brand name itself would tempt a “brown thumber” to pick a Proven Winners petunia or verbena over any of the rest of the petunias or verbenas they might be offered just because the brand name would boost their confidence level. Once consumers have success with those plants they’re bound to ask for others (which they can conveniently access by logging onto the Proven Winners web site).

Should our woody plants, the bigger ticket items that could benefit from some pull or “need” appeal rather than being push or “want” items, be branded? A few are in a somewhat indirect way when they’re included in groups of plants that are branded for attracting birds or bats or butterflies. Garden Center Magazine, in its December 1998 issue, showed bird gardening as part of “The Solution Series™” of Prides Corner Farms.

I had already jotted down the name “The Solution Series™” last fall as I thought about this column and the topic of branding. As an assignment in the graduate course on urban trees that I was teaching, my graduate students were writing a series of future Virginia Tech extension publications on trees for problem areas. The name “The Solution Series™” really seemed to apply to these trees, but since the name is now trademarked we’ll have to think of something equally as appropriate and descriptive.

My point is that it may make sense for everyone dealing with woody landscape plants – wholesalers, re-wholesalers, retailers – to consider whether or not branding might be a good advertising and marketing tool. I can see this in particular on the state or regional level to help accommodate hardiness (both heat and cold) and rainfall and other climatic and environmental differences.

In our southeastern Virginia or Tidewater area alone – where 1 ½ million people could latch on to a local plant brand – I would envision a brand like “Seaside Winners” that could be all annuals, perennials, and woodies that tolerate salt. It would apply whether we were right along the Atlantic Ocean or Chesapeake Bay, along one of the many brackish rivers or creeks, or had irrigation water that was contaminated due to salt-water intrusion.

A national brand for plants for problem areas might be branded just that – “Problem Solver Plants”. The brand could represent a cooperative effort among several growers if one grows only trees, another only flowering shrubs, and another only perennials. Those plants could be pooled to enable the rewholesaler or landscaper or homeowner to purchase a whole branded landscape or garden. (My alternative brand is “Plants for Downright Awful Sites”, which accommodates sites onto which the designer undoubtedly never stepped foot! Plants that would tolerate “wet feet” would, for example, have a label showing a plant wearing rubbers and a face mask and snorkel.)

By branding plants we give them a clear-cut identity. Additional identity can come from distinctive labels or containers. In the case of the new branded herb plant line “Herb Herbert”, 75 different varieties are color coded by intended use (green = kitchen; yellow = tea; orange = medicinal; blue = insect-repelling; purple = fragrant). In the case of Monrovia’s new joint effort with the National Audubon Society, branded red containers bear a label for each plant in their “Audubon Habitat Collection”. By creating a unique identity or personality for the branded plants, people will be predisposed to select them over the same herb or bird-attracting plants that may sit right next to them.

Though branding can equate to higher sales productivity for the branded plants, it also can equate to additional challenges. Since branded plants will be viewed as superior or premium or more “with it”, they must be consistently available, and of consistent quality, always delivering the benefits attributed to them. If their branding relates to something more trendy or ethereal (bat, bird and butterfly gardening) vs. something that will always be there, like it or not (compacted soil, polluted air, etc.), the brand may need to change from time to time as market

trends and conditions change.

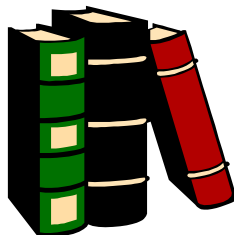
Marketing for branded plants requires a real commitment, and probably more dollars than selling “plain old” plants. Consumers, at all levels, must be convinced that a branded plant is worth their loyalty, and they must be able to easily recognize it from the rest of the plants they see. Once convinced, however, they’ll be back again, asking or looking specifically for the brand that gave them their money’s worth. Better give it some serious thought - Kmart and Martha Stewart have!

Reprinted from *VNLA Newsletter*,
September/October 1999.

Publications

AGRICULTURAL CHEMICAL BOOK III –

The 1999-2000 revision is now just off the press. It includes the latest on worldwide fumigants, growth regulators, repellents, pheromones, rodenticides and other chemicals that are used in the agriculture, horticulture and the PCO market. Available from Thomson Publications at \$24.95.



FOUR WAYS TO DEFUSE THE EFFECTS OF CONFLICT

Among the most daunting challenges bosses confront is managing conflict in the workplace. Wherever people interact on a daily basis, it’s inevitable. Still, there are proven ways to defuse the negative effects. Four suggestions:

1) Keep the focus on principles, not people.

While it’s true that conflict usually stems from disagreements between people, avoid casting anyone as a troublemaker. Deal instead with the principles involved, such as divergent opinions on how a product should be designed or marketed. When appropriate, play the role of mediator.

2) Within the “circle of conflict,” acknowledge every employee’s contributions.

Although you may need to side with a certain individual or several workers, emphasize that every staff member makes important contributions to the company.

3) Assert yourself as a calming presence. One of the worst ways to deal with a highly charged situation is to enter the fray with your own overheated rhetoric. Aim instead to be a soothing “voice of calm and reason.”

4) Act decisively when the situation demands it. Always approach conflict management by listening and learning. But when you recognize that serious damage is being done to the company or one of its departments, take strong remedial actions such as reassigning clashing employees. At this point you are focusing on people *and* principles.

Reprinted from *Communique*, *The publication for business owners*, Vol. 12, No. 10.

Pesticide News

Insecticides:

FLAGSHIP (thiamethoxam) – Novartis – EPA received an application to register this new active ingredient for the foliar and systemic control of insects in greenhouses and ornamentals. This would be a conditional registration.

ADEPT (diflubenzuron) – Uniroyal – The company has removed from its label the ornamental usage on poinsettias, Reiger begonia and hibiscus.

DEMAND CS (lambda-cyhalothrin) – Zeneca – Added to their label the usage on lawns, turfgrasses and ornamental plantings.

ENDEAVOR 50WG (pymetroziner) – Novartis - A new insecticide being developed for use on ornamentals to control aphids and whiteflies.

MAVRIK (fluvalinate) – Wellmark – Due to registration requirements they have deleted from their label the usage on commercial and residential turf. Unless withdrawn this will be effective on 2-22-2000. (FR Vol. 64, 8-25-99)

MERIT (imidacloprid) – Bayer – Added to their label the control of cutworms, royal palm bug, black fine weevil, psyllids, flathead borers, eucalyptus longhorn beetles and Japanese beetles to their ornamental label and the suppression of hairy cinch bug nymphs to their turfgrass label.

VISION (cyfluthrin/imidacloprid) – Bayer – A combination insecticide being marketed to the home and garden market to control various insects on lawns and ornamentals.

ENDEAVOR (pymetrozine) – Novartis – A

new insecticide being developed to use on ornamentals to control aphids and whiteflies.

GUTHION (azinphos-methyl) – Bayer – Following are the revisions agreed to by Bayer and the EPA on 8-2-99. All label changes must be made by 12-01-99. Existing stock in distribution must be re-labeled by 12-31-99.

*Ornamental/Shade/Forest/Christmas Trees – All usage are deleted.

TALSTAR (bifenthrin) – FMC – As a result of the IR-4 Project they can now add to their label the usage on camellias, crape myrtle, English ivy, Chinese holly and linden.

Herbicides

TRUPOWER (MCPA/bromacil/clopyralid) – Riverdale – A new turf herbicide designed to control hard to kill broadleaf weeds.

PENDULUM (pendimethalin) – American Cyanamid – As a result of the IR-4 Project they can now add to their label the usage on white ash, Mexican fan palm, pygmy date palm and service berry.

PENDUIUM (pendimethalin) – American Cyanamid – As a result of the IR-4 Project they can now add to their label the usage on white ash, Mexican fan palm, pygmy date palm and service berry.

Fungicides

COMPASS 50WG (trifloxystrobin) – Novartis – Received EPA registration to use on ornamentals to control powdery mildew and rusts.

COUNTDOWN (chlorothalonil) – Zeneca – A new formulation developed for use on

vegetables, fruit trees and ornamentals to control various diseases.

DITHANE T/O (mancozeb) – Rohm & Haas – Added to their label the control of leaf spot and rust on ornamentals such as aster and pansy.

EMINENT (tetraconazole) – Sipcam Agro – EPA received an application to register this new active ingredient for the control of Cercospora leaf spot and powdery mildew on sugarbeets, leafspot, rust, web blotch and southern blight in peanuts and dollar spot, cooper spot, rust, southern blight, brown patch, red thread, anthracnose and powdery mildew control in turf. Comments must be received by 11-19-99. (FR Vol. 64, 10-20-99).

FUNGO (thiophanatej-methyl) – Cleary- Added to their label the control of grey leaf spot on turf.

HERITAGE (azoxystrobin) – Zeneca – Added to their label on ornamentals the control of root disease including leaf, tip and flower blights, leaf spots, downy mildew and rusts.

Miscellaneous

CYCOCEL (chlormequat) – Olympic – As a result of the IR-4 Project they can now add to their label for this growth regulator the usage on Egyptian star cluster and yellow shrimp plant.

SUMAGIC (uniconazole) – Valent – Added to their label for this growth regulator the usage on additional bedding plants, bulb crop applications and cutting dip treatment on chrysanthemums.

Research Briefs

Propagation:

Direct spring potting of ornamental grass divisions provides a simplified approach to ornamental grass production. Direct potting of dormant divisions into 7-L containers is effective for a range of ornamental grasses. This eliminates the liner stage of production. It may be useful for situations where plant material is plentiful, facilities are limited, and a simple approach is desired. For most of the grasses studied, smaller divisions are recommended for direct potting into 7-L containers. For a few species, larger divisions enhanced flowering, but pot size was inadequate and plants appeared nutrient and/or water stressed. (M. Brand)

Excerpted from HortScience, Vol. 34(6):1126-1128. 1999.

Greenhouse production:

Contamination of recirculated subirrigation water with growth retardants poses problems for growers. Results from this study illustrate that ancymidol and paclobutrazol are active at low concentrations in subirrigation water. Contamination of the water is possible from spray residues on bench surfaces, which can affect growth of nontarget crops irrigated with the same water. Growers who suspect contamination of subirrigation water with ancymidol or paclobutrazol can use a broccoli seedling bioassay test to estimate growth regulator concentrations. Grow sensitive crops in a bark-based medium to reduce the activity of ancymidol and paclobutrazol. (J.B. Million, J.E. Barrett, T.A. Nell and D.G. Clark)

Excerpted from HortScience, Vol. 34(6):1103-1105. 1999.

Landscape:

Evaluation of organic and mineral mulches.

Results indicate mineral mulches used in this study do not create growth-limiting soil environments. In fact, the capacity of crushed brick and pea gravel to conduct heat to soils below, particularly in early spring, may be responsible for the observed advantage in leaf dry mass for trees growing in these materials over those growing in soils kept relatively cool by insulating organic mulches such as shredded bark and screened pine. Mineral mulches used in this study proved to be relatively inert, causing equal or smaller increases in pH than shredded bark or wood chips.

These results however, should not be interpreted as an indictment of organic mulches. This research was conducted on fertile, well-drained soils. The organic matter and nutrient contributions made by organic mulches may be of less consequence than if the study had been conducted on poor soils. Moreover, had conditions been drier and warmer during the years of the study (1996-97), or if the experiment had been conducted in a warmer climate, organic mulches may have outperformed many of the mineral mulches. (J.K. Isles and M.S. Dosmann)

Excerpted from VNLA Newsletter, Sept/Oct 1999.

Calendar

January 5-7 – 2000 – MANTS, Maryland Nurserymen's Association Inc., Virginia Nurserymen's Association Inc. and the West Virginia Nurserymen's Association. Baltimore Convention Center. Contact: (800)431-0066 or fax (410)882-0535.

January 11, 13, 18 - Building Your Presence on the World Wide Web, 1-3 PM, Location: Townsend Hall Room 006, Instructor: Jo Mercer, Cost: \$10. Contact Susan Barton (302-831-2531).

January 9-10 – 55th Pennsylvania Landscape and Nursery Conference. Growing, learning, and networking with the best in the Pennsylvania Landscape Industries. The Penn State Conference Center Hotel, University Park, PA. For more information on course contact: Jim Sellmer, (814)863-2250, e-mail: jcs32@psu.edu or visit the web site for the latest news about the conference: <http://www.cas.psu.edu/docs/CASCONF/horted/reg.htm>

January 10-14 – Advanced Landscape IPM Short Course. Maryland Cooperative Extension. Plant Science Building, University of Maryland, College Park. Call (301)405-3913 or fax (301)314-9290.

January 11 – Copeland Lecture – The Gardener and Design: Consulting the Genius of the Place. Tuesday, 7:30 p.m. Space is limited; early registration is recommended. Members: \$12, non-members: \$17. For more information contact: Delaware Center for Horticulture, 1810 North Dupont Street, Wilmington, DE 19806-3308 or phone: (302)658-6262.

January 11-13 – Eastern Pennsylvania Turf Conference & Trade Show, Sheraton Convention Center, King of Prussia. Contact: PA Turfgrass Council (814)863-3475, Michael Smith (610)828-0253 for more information.

January 12 & 13 – Delaware Horticulture Industry Expo, Dover, DE. Contact Valann Budischak, 888-448-1203.

January 12, 13 – Symposium series: "The Art and Science of Natural Landscape Design." New Directions in the American Landscape, Morris Arboretum of the University of Pennsylvania and The Connecticut College Arboretum. Villanova University, Villanova, PA.- call (215)247-5777, ext. 156.

January 12 – The Best in Urban Design: 3 Cities 3 Sites 3 Strategies. Waterplace Park, Providence. PHS,

Philadelphia, PA, 6 PM. Contact Joan Kapczynski (215) 988-8865.

January 13-16 – 2000, NCAN “Green & Growin’ Show, North Carolina Association of Nurserymen. Benton Convention Center, Winston-Salem, NC. Call (919)266-3322 or fax (919)266-2137.

January 18 – Eastern Regional Landscape & Nursery Seminar, Delaware Valley College, Doylestown, PA. For information contact: David J. Suchanic (610)489-4315.

January 18, 20, 25, 27 & February 1 – Pesticide Short Course, Cedar Village, West Allentown, PA. For more information contact: Emelie Swackhamer (610)391-9840, Nancy Bosold (610)690-2655.

January 19-22 – Interior Landscape Conference. Associated Landscape Contractors of America. Broward County Convention Center and Embassy Suites Hotel, Fort Lauderdale, FL. Call (800)395-2522 or (703)736-9666; fax (703)736-9668; Internet <http://www.alca.org>.

January 22, 29 February 19, 26 - Greenhouse Production Series, 9 AM –12 PM, Location: Greenhouses in Kent/Sussex Counties, Instructors: Gordon Johnson, Jay Windsor, Cost: \$15. Contact Susan Barton (302-831-2531).

January 24-26 – 2000, CENTS Ohio Trade Show; Columbus, OH

January 24-28 – Professional Horticulture Conference of Virginia, Ltd. & Trade Show, “Growing Educated Horticulturists” - Virginia Beach Pavilion & Double Tree Hotel. Pre-registration deadline: January 7. For information call: (757)523-4734, fax(757)366-9604. www.phcv.org. P.O. Box 6446, Virginia Beach, VA 23467

January 25, 26, February 1, 2 – Evergreen Tree Identification, Smedley Park, Delaware County. For more information contact: Rick Johnson (610)690-2655.

January 27 – Northeastern PA Turf School & Trade Show, Woodlands Inn & Resort, Wilkes-Barre. For more information contact: Andrew McNitt (814)863-1368, PA Turfgrass Council (814)863-3475.

February 3 – Maryland Greenhouse Growers Conference, co-sponsored by the University of Maryland Cooperative Extension, Brookside Gardens, Wheaton, MD. Contact: 410-749-6141.

February 3-6 - 2000 – WNGA/NLA/GCA Management Clinic, Louisville, KY, Contact: ANLA (202)789-2900.

February 4 – Today’s Horticulture, hosted by: Longwood Gardens, Inc., The Professional Gardener Alumni Association of Longwood Gardens and The Chanticleer Foundation. Symposium registrations must be made in advance, no walk-ins will be accepted. Cost \$60 consists of admission to Longwood Gardens, all lectures and demonstrations, pesticide certification credits, lunch, refreshments and plant sale. For more information contact: Continuing Education, Longwood Gardens, P.O. Box 501, Kennett Square, PA 19348-0501, Phone (610)388-1000 Ext. 507, fax(610)388-9806.

February 7 & 8 – 35th Annual Shade Tree Symposium, Host Conference Center, Lancaster, PA. For more information contact: Elizabeth Wertz (215) 795-0411, Rick Johnson (610)690-2655.

February 8, 9 & 10 – Pennsylvania landscape and Nursery Conference Center. For more information contact: Dave Suchanic (610)489-4315, PA Landscape & Nursery Association (717)238-1673.

February 9, 16, 23 - Entrepreneurship in Horticulture-- Writing a Business Plan; Networking and Developing Cooperative Opportunities; Financing, 7-9 PM Location: Kent County Extension Office, Dover, Instructors: Gordon Johnson, Susan Barton, Cost: \$5 for each session. Contact Susan Barton (302-831-2531)

February 9,10 – New Jersey Trade Show. New Jersey Nursery & Landscape Association Inc. Garden State Exhibit Center, Somerset. Call (609)291-7070 or fax (609)291-1121.

February 15 - Pests Below the Ground, 1-4 PM Location: NCC Extension Office, Newark, Instructors: Bob Mulrooney, Dewey Caron, Cost: \$10. Contact Susan Barton (302-831-2531).

February 16 & 17 – Christmas Tree Short Course, Penn State Conference Center. For more information contact: George Perry (717)622-4225, Penn State Short Course Office-(814)865-8301.

February 16-18 – Landscape Contractors Conference, Bethesda, MD. Contact: Jennifer Lyons-Carter (301)405-3913.

February 17 - Winter Grounds Seminar, Kutztown Grange Hall. For more information contact: Judith Schwank (610)378-1327.

February 17 – The Best in Urban Design: 3 Cities 3 Sites 3 Strategies. Post Office Square, Boston. PHS, Philadelphia, PA, 6 PM. Contact Joan Kapczynski (215) 988-8865.

February 24 – KAFMO/PRPS Athletic Field Conference, Holiday Inn, Grantville. For more information contact: Dan Douglas (610)375-8469 x 212, KAFMO@aol.com

February 29 - Turf Workshop, 1-4 PM, Location: NCC Extension Office, Newark, Instructors: Susan Barton, Bob Mulrooney, Dewey Caron, Cost: \$10. Contact Susan Barton (302-831-2531).

March 1, 8, 15, 22 - Introduction to Commercial Nursery Production, 7-9 PM, Location: Research & Education Center, Georgetown, Instructors: Gordon Johnson, Jay Windsor, Cost: \$15. Contact Susan Barton (302-831-2531).

March 5-12 – Philadelphia Flower Show. The Pennsylvania Horticultural Society. Pennsylvania Convention Center. Call (215)988-8800 or fax (215)988-8810.

March 7, 9 - Landscape Trouble Shooting Workshop, 3-5 PM, Location: Research & Education Center, Georgetown, Instructors: Jay Windsor, Derby Walker Cost: \$10. Contact Susan Barton (302-831-2531).

March 8 - Personnel Management, 1-3 PM Location: NCC Extension Office, Newark, Instructors: Gordon Johnson, Susan Barton, Cost: \$10, Contact Susan Barton (302-831-2531).

March 15 - Understanding Financial Statements, 1-3 PM Location: NCC Extension Office, Newark, Instructor: Susan Barton, Cost: \$10. Contact Susan Barton (302-831-2531).

March 15 – Green Goods Retailing, Penn State Great Valley, Malvern, Montgomery County Cooperative Extension. For more information contact: Mary Conklin (610)489-4315, Jim Sargent (215)345-3283

March 16 - Nutrient Management for Turf, Landscape Maintenance And Nursery Production, 9 AM-3 PM, Location: Kent County Extension Office, Dover, Instructors: Gregory Binford, Gordon Johnson, Cost: free. Contact Susan Barton (302-831-2531).

March 21, 23 - Diagnosis & Control of Insects on Woody Ornamental Plants, 3-5 PM, Location: NCC Extension

Office, Newark, Instructor: Dewey Caron, Cost: \$25. Contact Susan Barton (302-831-2531).

March 22 & 29 – Estimating/Bidding for Installation, Penn State Great Valley, Malvern. For more information contact: Jim Sargent (215)345-3283.

March 28, 30 - Identification & Control of Diseases on Ornamental Plants, 3-6 PM, Location: Research & Education Center, Georgetown, Instructor: Bob Mulrooney, Cost: \$25. Contact Susan Barton (302-831-2531).

April 14 – The Mid-Atlantic Interior Landscape Conference, Longwood Gardens, Kennett Square, PA. For more information contact: Tom Contrisciano (610)378-1327.

June 27 – Maryland Greenhouse Growers Nutrient Management Conference, Prince George's Community College.

July 8-12 – 2000 Ohio Florists' Association Short Course, Columbus, OH, Contact (614)487-1117.

July 11-16 – 2000, ANLA Convention, Vancouver, BC Canada, Contact: (202)789-2900, www.anla.org

June 11-13 – The Ecology of Urban Soils: Designing and Managing Soils for the Living Landscape. St. Paul, Minnesota. Contact Cindy Ash (651)454-7250.

July 25-27 – 2000, PANTS, Ft. Washington, PA, Contact: (610)544-5775

