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

Summer has arrived---I think! As I write this article it is 63° outside. That's twenty degrees colder than the day before. It can't seem to make up its mind. D.N.L.A. has been busy gearing up for our 1999-2000 events. The Summer Expo will be held on August 17th at Garrisons Lake Golf Club. We will once again have the opportunity to visit with exhibitors, hear from some outstanding speakers, and obtain a pesticide credit. We will feature a Pig Roast for lunch, followed by our 3rd Annual Golf Tournament. Topics for discussion will include: "Turf Weed Control"; "Building Landscape Retaining Walls"; "Drip Irrigation For The Home Landscape"; and "Current Treatment Alternatives For Insect Control". Registration forms are forthcoming. Please plan on attending what promises to be a great day.

The 2000 Ornamental and Turf Workshop and the 2001 Delaware Horticulture Industry Expo are currently on the drawing board. The Turf Workshop will tentatively be held the week of November 6th, and the DHIE will be held on January 17th and 18th at the Modern Maturity Center in Dover. More information will follow throughout the next several months.

The D.N.L.A. participates in several events per year that focus on the general public. These events enable us to help educate the public, as well as promoting the advantages of enlisting the services of a D.N.L.A. member. This year's events include the DE State Fair (July 26); the Land & Sea Harvest Festival (September 30); and Tree Spree hosted in part, by the DE Center for Horticulture (October 14). If you find yourself attending one of these events, please make it a point to stop by our booth.

Last but far from least, please keep in mind our Landscape Awards Program. In order to be eligible, the landscape must meet the following criteria: entry must be located in Delaware; must be designed and installed by a current D.A.N. member; and must have been completed in the past 24 months. A committee judges all landscapes. So take your photographs now and call me for an application! Applications must be submitted by September 28th with photographs and/or landscape plans.

A warm welcome to our newest member:

BRT Consulting, Inc.
310 East Park Place
Newark, DE 19711

In other news, Turf Equipment and Supply is opening an office/warehouse in Delaware. Their new address and phone number is:

Turf Equipment and Supply Co.,Inc.
RD3, Box 267A
Frankford, DE 19945
(302) 732-9290.

Brian Whicher is the manager of the new location.

FROM THE PRESIDENT
Steve Sterling
Delaware Nursery and Landscape
Association

Summer is already upon us and thanks to Mother Nature we had a great spring with plenty of rain.

Richard Sterling of The Sterling Nursery (also my father) has recently been appointed to the Delaware Nutrient Management Commission (DNMC). DNMC's mission is "To manage those activities involving the generation and application of nutrients in order to help maintain the quality of Delaware's ground and surface waters and to meet or exceed federally mandated water quality standards, in the interest of the overall public welfare." I think his involvement in this commission will benefit the whole association. I will keep you informed of their progress.

Another important topic I would like to mention is a list of 40 invasive plants I recently received. This list is solely the opinion of **one** member of The Invasive Species Council and **not** the entire council. A few examples are: Norway maple, English ivy, Winged euonymus, Japanese barberry, Yellow iris and European privet. This is very concerning because these plants are main staples in our industry. I will be contacting DNLA's representative, Steve Castorani, for his opinion on this subject.

Sue Barton and Valann Budishak have been working very hard to make this year's Summer Expo educational and enjoyable. I hope to see everyone there.

U of D NEWS
Susan Barton
Extension Specialist

Don't forget about the Ornamental Horticulture Short Courses for 2000. Here are the classes offered during the rest of this season:

Pest Management Track

Pest Walk* September 7, 9 AM to 12 PM
Location: Research & Education Center
Instructors: Bob Mulrooney, Dewey Caron
Cost: \$10

Weed Identification and Control*
September 11 and 13, 3-6 PM
Location: New Castle County Extension Office
Instructor: Gordon Johnson
Cost: \$10

Landscape & Turf Track:

Turf Diagnostic Clinic*
July 11, 8:30 AM - 12 PM
Location: New Castle County Extension Office
Coordinator: Bob Mulrooney
Cost: \$25

Perennials for the Shade
July 13, 18 and 20 3-5 PM
Location: U of D Botanic Gardens
Instructor: John Frett
Cost: \$25

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

As you travel around the state this summer, keep your eyes open for Enhancing Delaware Highways sites. We have installed 25 pilot sites throughout the state. Enhancing Delaware Highways is a joint project sponsored by the

University of Delaware, Delaware Center for Horticulture and the Delaware Department of Transportation. With initial funding from NUCFAC (urban forestry) we begin planting in the Fall of 1998. Each season we have added several new pilot plots. One of our plots—a meadow-type planting of herbaceous forbs and grasses is looking good on the infield of the exit ramp from I95 southbound to northbound 896. Look for *Oenothera speciosa*, *Coreopsis lanceolata* and *Rudbeckia hirta*—all blooming. They provide nice accents to a gracefully swaying bed of grass surrounded by closely cut turf on the rest of the infield. On the exit to southbound 896, you can see an area about the same size that DelDOT has stopped mowing last summer. There are no flowers yet, but the grasses and attractive shape of the area add interest to the cloverleaf infield.

Another great site is on Route 1 just outside of Milford. In the area between Route 1 and the exit ramp, a profusion of *Asclepias tuberosa* is blooming. *Rudbeckia hirta* is also blooming and a thicket of *Rhus copallina* should provide great fall color.

Steve Castorani (Gateway Garden Center) has contributed to a new pilot site in Hockessin at the intersection of Route 41 and Valley Road. We created a more intense horticultural plot with masses of mostly native plants and a few accent dogwoods and junipers. We hope the planting will be both visually pleasing and relatively low maintenance to provide a model for community gateways and high priority accent plantings.

Another higher profile planting is going in near the toll plaza on Route 1 in Dover. In this case we are planting plugs into existing turf (without using Round up) to see how effectively the plugs can out compete the turf and take over.

MAINTAINING A SAFE WORKPLACE Bob Decker

Keeping your employees safe makes sense – and saves dollars. In fact, according to the National Safety Council, U.S. companies lost over \$127.7 billion in workers' compensation claims in 1998. But by correcting unsafe conditions on your property, you can reduce the possibility of costly lawsuits, unnecessary damage to your business and protect your employees.

Florists' Mutual Insurance Company has been serving the floral/horticultural industry for more than 110 years. During that time, loss control representatives have inspected thousands of landscaping operations and have found that the most common workplace hazards are those that would seem to be the most obvious.

Based on their observations, listed below are five of the most common risk factors and advice on how to correct the potential problems.

Wet surfaces/floors. Uneven surfaces, walks, holes and changes in level are major sources of “slip and fall” injuries. Wet areas also are a cause, where frequent watering and algae growth can contribute to slippery conditions. To cut down on the possibility of these injuries:

- Post warning signs, especially in slippery areas.
- Level uneven areas and fill in holes.
- Fence areas that can't be leveled.
- Treat walking surfaces to reduce algae growth.
- Routinely inspect walkways.

Cluttered aisles. Hoses left in aisles, as well as trees and shrubs that protrude into walkways are tripping hazards. Bags of seed and/or fertilizer and storage pallets also can present safety hazards for passersby. To prevent these types of

injuries, you should:

- Check aisles on a daily basis to be sure they are free and clear of obstacles.
- Be certain hanging items above walkways and doorways are secure and out of reach.
- Make sure tool displays are secure and sharp edges don't protrude into aisles.

Poor electrical wiring. Poor wiring is one of the biggest causes of fires. The most common electrical violations found are temporary wiring situations, excessive use of extension cords (including those made of "Romex" wiring) and improper splicing. To prevent the possibility of an electrical fire, heed the following advice:

- Have your electrical system inspected by a professional electrician.
- Join wires by standard twist connectors. Wires that are twisted together can loosen and arc, which generates heat and more arcing, potentially causing a fire.
- Check extension cords to make sure they are of an adequate capacity for the load they are carrying.
- Do not place extension cords under carpets; cords can break down from constant foot traffic and can smolder undetected, potentially causing a large fire.
- Never plug one extension cord into another extension cord.
- Be certain that all joints are inside a junction or receptacle box.
- Keep breaker and service boxes away from wet walls and protect them from leaks.

Improper chemical protective gear. It is important that employees wear the proper protective gear when working with chemicals, especially in their concentrated forms. Loss

prevention specialists say employees most often avoid using their safety gear while mixing chemicals and when applying chemicals during really hot days. To avoid employee chemical injuries:

- Arrange spray schedules so that employees are not applying chemicals during the hottest part of the day.
- Check chemical labels for specific information regarding recommended protective gear.
- Remind employees that using chemicals contrary to label directions may endanger their health and that it is a federal offense.

Inadequate machine guarding and power equipment safety practices. While it has been said that "familiarity breeds contempt," it may be more accurate to say that "familiarity breeds carelessness" in the case of the power equipment used daily in many landscaping businesses. That's why it is so important that owners and employees keep safety measures in mind at all times to avoid injuries and costly workers' compensation claims. In order to protect your employees from serious injury or death resulting from contact with moving machine parts you should check to see that all power equipment is properly guarded.

Some of the most common danger zones include:

Fans. Ventilation fans can present one of the most common safety hazards if not properly guarded. The fan blades fly wheel and pulley system must be protected to prevent accidental contact. The best way to do this is with a protective screen with openings no larger than one-half of an inch. Louvers are usually adequate for the outside, but if the fan is located in an area where there may be small children, a

wire screen should be placed inside the louvers as well. All circulating fans should have guards installed that will not allow fingers to reach through and contact the fan blades and/or motor. Some older fans have guards with openings larger than one-half of an inch. These should either be retrofitted with smaller guards or replaced.

Production equipment. Potting machines, soil mixers and conveyors also present hazards to employees, ranging from pinched skin to parts of the body coming in contact with an agitator or shredder. All power transmission parts should be thoroughly enclosed, including V-belts, chain drives and shaft drives.

Potting machines. The drill head on a potting machine is especially dangerous because the operator stands very close to the point of operation. The drill head should be guarded so that the operator or a passerby cannot contact the moving head.

Soil mixers. Soil mixers come in a variety of sizes and shapes, ranging from modified cement mixers to large commercially designed units. Some mixers originally were designed for other purposes and may lack the needed safeguards. In addition, the mixer itself should be properly protected. The top should have a hinged guard with an interlock that will prevent the machine from operating with the top open. If there is no top cover, the opening should be protected with metal bars in a crisscross fashion to prevent anyone from falling into the hopper.

Conveyors. The most common danger point on a conveyor is the “nip point” formed by the conveyor belt and end roller. The point should be guarded so that fingers or clothing cannot accidentally be pulled into the machinery.

Other machinery. Air compressors, sprayers and packaging machines also require protective

guards. All V-belts on air compressors and sprayers, whether fixed or portable, should be completely enclosed. Power staplers should be equipped with ring guards that will not allow operations of the stapler if fingers or hands are in the point of operation.

Mobile Equipment. Proper training is vital in the operation of mobile equipment such as tractors, forklifts, tree spades and bobcats. OSHA requires that only trained and authorized personnel operate this type of machinery. As a rule, most nursery and garden center operators do not permit an employee without a driver’s license to operate any mobile equipment. In addition many states do not allow anyone under age 18 to operate power equipment.

Tractors. It is imperative that the power take off (PTO) be properly guarded. Establish and enforce a company policy that prohibits employees from riding on mobile equipment unless they are sitting on the seat provided by the manufacturer. Additional riders on equipment should be prohibited – they can pose a distraction to the operator and increase the chance for an accident.

Lawn mowers. Lawn mowers are so common that they frequently are overlooked. Most new mowers have the required guards, but many of the older mowers do not. All mowers should have a self-closing guard for the emptying chute. Side chute mowers should have a guard at the rear to prevent the mower from rolling back over the operator’s feet. All new mowers have a lever incorporated in the handle, which will automatically stop the blade and/or motor when released. Older mowers without this feature should be replaced.

Saws and grinders. In service shops, all table saws and radial arm saws should have blade and anti-kickback guards installed. These guards keep the stock from flying back when ripping

lumber and prevent accidental contact with the blade. Grinders should have a guard around the grinding wheel, a face shield over the front of the wheel and a tool rest at the bottom. The face shield prevents metal sparks from coming in contact with the operator's face and the tool rest prevents the part being worked on from jamming against the abrasive wheel, which can cause it to fly apart. OSHA regulations require the distance between the grinding wheel and the base of the tool rest be no greater than one-eighth of an inch.

Finally, if a guard is removed from a piece of machinery to change a belt or make an adjustment, replace it immediately.

Do not allow employees to bypass or remove machine guards when using equipment. You should conduct regular evaluations of the equipment used to see that all guards are present and free of damage.

Although accidents do happen, you can take steps to minimize the damage they can cause. Ensuring that workers' compensation insurance is in force at all times can go a long way in protecting your business.

An accident takes only a second, but the effect can last for years. Encouraging safe practices among your employees can spare you the expense of costly claims and protect your employees from injuries.

For more information on safeguarding your business, contact Florists' Mutual Insurance Company at 800/851-7740 or visit our website at: www.floristmutual.com

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INTERNET – KEYS TO A PROFESSIONAL WEB SITE **Linda Engstrom, APLD**

1. Sign-up with a good server/provider who can give you a fast connection, and as many bells and whistles as possible within your budget. A speedy server, and 24hr. assistance with real people waiting to help you can be a lifesaver, especially when you're new at the game.
2. Make sure that your address (URL) isn't a mile long. You don't want; www.user/of/someone/elses/domain. You really need your own domain name for a business web site. Register a URL that in itself tells people about your business ... i.e. Gardenplanner.com
3. Develop a marketing strategy: Educate first, sell second. Your web site should educate your prospective clients. If you can share some of your knowledge, people will see how much you know about landscape design. Ask yourself these questions:

Why do I need a web site?
Who is my target audience?
What will be my focus? What types of information would appeal?
What makes my business unique?
What valuable resource can I provide?
How can my site be interactive? (What makes a web site different from an ad in the yellow pages! Consider searchable databases, a forum, or a discussion group.
4. Draw up an outline or map of your web site, showing how people will navigate through it. Include any outside links that might benefit your business or help bring people to it through a reciprocal link. Avoid

unnecessary page stops that delay viewers from getting to where they want to go!

5. Pay particular attention to creating a good-looking, memorable main/home page that will compel visitors to investigate further. It should contain a professional logo, a crisp, fresh look and simple navigation links. Don't fill up your page with too many frames, icons and moving animations! Also, be sure your main page contains a clear objective and an invitation...When someone comes to your site, is it obvious how the site can help him or her? Keep important information near the top of the page.
6. Even if you plan to use a 'wysiwyg' web-design software tool, take the time to learn some basic html and to invest in a few books and free/shareware. You will have much more control over designing and editing your page if you understand the basic principles of html code and the process of editing. Download an FTP (stands for File Transfer Protocol) program so that you can easily transfer your web files from your computer to your web host. Take advantage of the wealth of informational resources that are already on the web. Look at and study the 'source info' (html code) for the web pages that appeal to you.
7. Use forms to get to know your viewers. A sign-up form for a free, email newsletter or product/service/web site updates are cost-effective ways to stay in touch with your prospects. It is also the single most effective (A key tip here...don't ask a million questions in your subscription form. They may be interested in your e-newsletter but may shy away if they have to reveal too much information about themselves. Ask for their first name and email address only. If you scare them away, they may never be back.) If you need help getting set up for

regular email contact to your private list, see <http://bizweb2000.com.contact.htm>.

8. Lure the first-time visitor back by changing your content as often as possible. A dynamic site reflects a vital and energetic business. Notification of changes to your web site will help get those repeat visits. Do it seasonally, or once a month! There is nothing worse than seeing a site stagnate in dated or old material. Avoid the 'under construction' sign. Don't post your site until it is fully operational! Research indicates that these factors drive repeat customers back to a site:

High-quality content:	75%
Ease of use:	65%
Quick to download:	58%
Updated frequently:	54%
Coupons & incentives:	14%

9. Once you have your site posted, the real work begins – promotion!

Properly registering with the major search engines is a must. I recommend you do the majors manually, by visiting each search engine. Be sure to write a good, keyword-rich description of your site so you have it for each engine when you get there.

Here's a list of the engines you can start submitting your URL to...find the link that says "add URL" then follow the directions and guidelines at each site:

Alta Vista: <http://www.altavista.digital.com>
Excite: <http://www.excite.com>
HotBot: <http://www.hotbot.com>
Infoseek: <http://www.infoseek.com>
LookSmart: <http://www.looksmart.com>
Lycos: <http://www.lycos.com>
WebCrawler: <http://www.webcrawler.com>

Yahoo: <http://www.yahoo.com>

You can also buy banner ads on busy sites, sponsor email publications, write e-mail articles for other sites, and e-mail the webmasters of other horticultural-related sites to ask for reciprocal linkage. Then just wait for the business (and e-mails) to roll in!



THE ALIENS ARE AMONG US.....
Jim Parkhurst
Extension Wildlife Specialist
Dept of Fisheries and Wildlife Sciences

Throughout the last decade, we have witnessed a tremendous increase among landowners in the amount of interest in and actual on-the-ground implementation of management efforts to improve the quality of their lands. One area where substantial activity has occurred falls within what we might generically call “wildlife habitat improvement.”

People enjoy wildlife for a variety of reasons: viewing, photographing, hunting, feeding, or just knowing that they are out there; and many landowners have made great strides toward creating the kinds of habitats that will allow them to pursue the types of activities related to wildlife that they desire. However, in the rush to create that “perfect” habitat, we often tend to overlook some of the subtle consequences that may result from our actions. I believe most people today do recognize that any purposeful tinkering they impose upon a system will cause associated ripples back through that system. We have all heard and recognize that jingle of “...for every action, there is an equal and opposition reaction.” Well, this is especially true when we start tinkering with habitats. Although we may have specific objectives relating to what we want to create or improve for the benefit of a specific species (or group of species), we tend to forget that, as a direct result of the actions we take to “help” that species, other animals will be affected negatively. The specific habitat needs of these other resident animals can no longer be satisfied by the “new” habitat. Therefore, as a part of any sound management planning effort, consideration also must be given to the potential existing benefits that might be lost while you eagerly anticipate the new benefits obtained as a direct result of your habitat improvement work.

An area of growing concern relates specifically to one type of tinkering that we routinely undertake, namely the use of plant materials to “enhance” a site. How we use plant materials in habitat work can take many forms. Landowners have long been interested in creating food plots as a means to attract wildlife or provide increased opportunity to view animals. Alternatively, in cases where properties have been disturbed as a part of conducting other management practices (e.g., timber harvest), there is need to quickly revegetate, and stabilize these areas before erosion problems arise. Finally, there may be a simple desire to add a couple of new “wildlife” plants to the home landscape with hopes that some new critter might show up. The concern today lies in the selection of plant materials we choose to use. In recent years, there has been an alarming increase in our reliance upon exotic (non-native) species to fulfill these needs. Early on, few people recognized the impact these exotics were having on the native flora, but now we can see very clearly the negative consequences of our previous actions. Certainly no one needs to be reminded of what impact kudzu (*Pueraria lobata*) or tree-of-heaven (*Ailanthus altissima*) can have on the ecology of a site. In some areas, these plants have taken over completely or placed the survival of the native flora in jeopardy. And, as we learn more about biodiversity and what this ecological concept truly encompasses, the devastation inflicted by invasive exotics becomes clear.

Recently, Robert Paratley, curator of the University of Kentucky Herbarium, published an excellent overview article on the effects of invasive exotics that all landowners should learn more about. He paints an ominous picture of problems down the road, one where the problems inflicted upon our landscapes unfortunately seem to be getting worse instead of better. Certainly, the headline cases

involving kudzu and purple loosestrife (*Lythrum salicaria*) are fairly well known by most landowners. However, a large number of plant materials commonly used in habitat improvement projects over the years fall into the same list of exotics. Few landowners realize that most honeysuckles (*Lonicera* spp.), most lespedeza (*Lespedeza* spp.), Russian and autumn olives (*Eleagnus angustifolia* and *E. umbellata*), and fescues (*Festuca* spp.) species promoted since the 1950s for wildlife enhancement are exotic, and sometimes invasive, species. Mr. Paratley identified a number of characteristics that describe invasive plants, including the following:

- They produce small, but numerous, seeds.
- They reproduce within the first year of life.
- Most are capable of both seed and vegetative reproduction.
- Most seeds produced are dispersed widely by animals.
- They have very few specific or unique germination needs.
- These plants often are self-pollinating.
- They have few, if any, close relatives native to this country.

Capable of surviving a wide north-to-south gradient of conditions, they have been introduced on a very large scale.

Given this impressive list of competitive advantages, it is obvious why they have become so successful in areas where they have been introduced and why there is growing concern over the effects these plants will have on our native ecosystems. Animals that are dependent upon native plant species may suffer as these plants become scarce or vanish.

My purpose in bringing this issue to your attention is twofold: (1) we need to raise a level of awareness among landowners, natural

resource managers, consultants, and others involved in management planning about the serious consequences resulting from the invasion of exotic plant materials in this country, and (2) when habitat “improvement objectives are being fulfilled, we need to make our selections for plant materials from among those items that are indigenous to this area, rather than from those outside the system. Once established, these exotics are extremely difficult to remove or control. It is far better to never let them achieve a foothold than to try to eradicate after the fact. Biodiversity is an important concept, but its emphasis is, and should be, on diversity within the native system, not diversity based on the import of exotic biological material.

Reprinted from *The Virginia Gardener*,
<http://www.ext.vt.edu/resources>,
Department of Horticulture, Virginia Tech

FNGA TESTIFIES AT CONGRESSIONAL HEARING ON INVASIVE SPECIES

The nursery industry has a major stake in federal and state programs to safeguard agricultural and environmental plant resources from harmful invasive plant pests and noxious weeds, said Ben Bolusky, Executive Vice President of the Florida Nurserymen & Growers Association (FNGA) during testimony at a congressional hearing.

Bolusky testified on behalf of FNGA and the American Nursery and Landscape Association (ANLA) at the University of Florida’s Citrus Research and Education Center in Lake Alfred on Monday, January 3. The congressional hearing, chaired by Chairman Richard Pombo (R-CA), was set to review the harmful effects of invasive species on agriculture.

Florida is particularly vulnerable to the effects of foreign plant pests given the state’s subtropical climate and the level of foreign trade and travel that enters the state, explained Bolusky. Once a pest becomes established, the nursery industry often faces market-disrupting quarantines as well as new production challenges.

Bolusky emphasized that passage of H.R. 1504, “The Plant Protection Act”, is essential to address the needs of the U.S. agriculture community in an era of unprecedented international travel and commerce. New trading patterns pose new and dangerous risks, so all agencies must be armed with a menu of effective pest detection, prevention, eradication and other response programs to guard against the arrival, and combat the effects, of invasive plant pests and noxious weeds. H.R. 1504 would provide the framework for programs designed to prevent entry and establishment of these problem plants. It would also provide for enhanced penalty authority and

provide a balanced approach to state pre-emption. H.R. 1504 also would consolidate and streamline a confusing web of 11 plant quarantine laws, some of which have been modified very little since they were enacted 100 years ago.

Bolusky also emphasized the need for a restoration of funds to maintain critical domestic quarantine programs, like those for imported Fire Ants whose funding was virtually eliminated for fiscal year 2000. "Elimination of the federal share unfairly shifts the funding burden for pest survey and regulatory work to the states and industry alone," said Bolusky, "despite the clear federal objective of protecting uninfested areas from this pest."

"FNGA and ANLA are confident that H.R. 1504 will better position APHIS and its state partners to fulfill their increasingly challenging pest safeguarding roles," said Bolusky.

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NOTES FROM DELAWARE INVASIVE SPECIES COUNCIL ANNUAL MEETING

**Susan Barton
Extension Specialist**

The following is a summary two talks presented at the DISC Annual Meeting in June. Gary Schwetz, from the Delaware Center for Horticulture, provided the notes.

Rob Line, with DNREC Parks and Recreation described the tremendous pressure exerted by invasive exotic species in the Piedmont of Delaware. In the White Clay Creek Park, only 15% of the 3400 acres are considered to be high quality. Delaware land south of Middletown is less invaded probably because it is more isolated. Agricultural buffers provide isolation and there is a smaller population of both people and landscape plants.

Craig Regelbrugge from the ANLA discussed the significance of the nursery industry. This industry represents \$11 billion in production and \$40 billion in retail sales nationally. It employs 600,000 people. The industry is conservative and independent. It is diverse and decentralized. It is market and consumer driven and is undergoing increasing specialization. The nursery industry has historically relied upon introduced plants for its livelihood.

In 1999, a safeguarding review was conducted studying the USDA system for exclusion, detection and emergency response of invasive species. The review report offered 300 recommendations. Number 1 was the adoption of the Plant Protection Act (passed in May, 2000). The areas for clarification and focus of this act include: trade facilitation; environmental protection; information and international cooperation; weeds and detection; and smuggling and trade compliance.

With invasive plants, there are two issues. The first is to prevent new introductions. There are good screening models and decision trees to help the industry avoid the introduction of problem plants. The second issue is the management of existing problems.

There are no easy answers given the complexity of the invasive plant issue. Since the desire for new and different plants is a cultural reality, the market will always exist for introduced plants. We need to identify what we are trying to protect and avoid the extremes of the issue. Some states are ahead of others in developing plans of action. MA, CO and FL have voluntarily removed 12 plants from commerce based in their ecological impact, their potential for expansion, their difficulty of management and commercial value. Plants lists can be effective if they are used as a product rather than the driver of the process.

It is important to separate the invasive plants issue from “Nativism” or the “Natives Only Movement.”

Positive outcomes from dialogue and consensus might be regulation and voluntary restrictions; the identification of alternatives; research and development; and education.

The invasive species issue has critical mass. Something will happen in this arena. The nursery industry must respond by steering the process toward the middle.

ANLA EXCLUSIVE CONSUMER INSIGHTS

The American Nursery & Landscape Association (ANLA) has released to its members results of a landmark study (The Grapevine Report) on the gardening consumer. The study, conducted by the market research firm, P.K. Data, focused on national market trends and consumer behavior and explored merchandising and communication ideas, positioning concepts, and psychographics. The report is available exclusively to ANLA members until September 1; after that it will be available to non-members. For more information on ANLA membership, visit www.ania.org.

Key Findings

The Grapevine Consumer Network is a national panel of gardeners who have agreed to answer questions about gardening. Panel members revealed the following demographic and market trends:

The vast majority of head of households most responsible for lawn and garden purchase decisions are female (73.9%), up from 68.8% in 1998.

The local garden center or nursery is the preferred channel for live plants, flowers, and trees.

Garden centers hold the advantage over home centers and discount department stores in the quality of live plants (31.2%); salespeople who are knowledgeable on gardening (31.1%); and in the stocking of unique or unusual items (24.6%).

Gardening Time is Limited

The main motivations for gardening cited by respondents include:

“I enjoy watching things grow in my garden.”

“I work in the yard because it is a good way to relieve stress and relax.”

My primary focus in gardening is to add color to my yard.”

“Gardening is my way to contribute positively to the environment.”

Limited time is the single major factor that prevents respondents (60.5%) from gardening more than they currently do. Health/physical ability is second at (9.8%).

Gardeners Turn to Magazines and Friends

Respondents say that the three best sources of gardening advice are gardening magazines or newsletters (42.9%); other friends, family, neighbors, gardening experts/pros (30.3%); and gardening books (29.1%). Garden center or retail store employees were mentioned by 18.7% of respondents.

The top five magazines regularly read by respondents are *Better Homes and Gardens* (16.2%); *Reader's Digest* (15.0%); *Family Circle* (6.6%); *Good Housekeeping* (5.3%); and *Woman's Day* (4.5%).

Four Trends Predominate

“Cocooning,” remodeling, the graying of America, and entertainment are four consumer trends that impact the gardening industry. Cocooning is the tendency to retreat from life's daily pressures to the sanctity of the home. With 119 million housing units at an average age of 30 years, remodeling is prevalent, too, especially in light of renewed emphasis on urban reinvestment and controlling growth in suburban areas.

As Americans age, 89% of seniors 65-74 want to stay in their current/conventional homes and 96% of seniors 85 + feel the same way. By 2026, the 65 + age group will be 20% of the population. Stores that provide entertainment are most appreciated by 18-29 year olds (55%) followed by 30-44 year olds (36%) and 45-59 year olds (33%).

A Good Experience Brings Them Back

A well-received experience can boost sales from 40 to 200% - given the right product, in ample supply, and competitively priced. Thirty-two percent of shoppers are driven more by emotional factors such as fun and excitement than by logical factors such as price, quality and convenience.

Moreover, the self-service environment of stores such as Home Depot and Wal-Mart is perceived as boring. What can independent garden centers do? Provide a twist on customer service, merchandising, pricing, design, or events. In other words, provide a sensory experience and do something that will engage the customers so that they stay longer.

Consumers Will Respond to the Right Mix

Consumers' expectations of retailing are expanding. Customers are looking for time savings; accountability; credible information; location; accessibility; service; solutions; loyalty; experience; and competitive pricing. Garden centers must work to differentiate their stores in the marketplace. Tactics include blending recreational shopping with household shopping; giving warranties or guarantees; providing an onsite consultant or “Answer Guy”; improving hours of operation; and offering home delivery.

Also consider reducing transaction time, narrowing customer's choices; assisting before, during, and after the sale; offering a shopping cart; relying heavily on point-of-purchase merchandising; and catering to other hobbies (products or ambience).

Above all, forget market share. Focus on profitability. Chances are that making a garden center more convenient will improve efficiency. Consider alternative locations – follow housing development and population increases; gentrifying neighborhoods; and edge cities.

Plenty of Room for Independents

The independent garden center and landscape contractor both have a role in the lawn and garden industry. The green industry is an image business that sells tangible products and services for intangible uses. The garden center's name is its brand, as well as its protection against the national chains. Use and protect that name wisely.

Market to the Generations

The consumer products industry overall is dynamic because consumers change constantly. To survive, you must embrace change. Generational marketing plays a key role. Even kids as young as four to eight indirectly influence \$117 billion in consumer expenditures. Tweeners have \$9 billion in personal spending power. Teens assist with family purchases to the tune of \$47 billion and have over \$153 billion in personal spending power.

“GenY” (20s) are most swayed by reasonable prices and always being able to find what they want. “GenX” (30s) are “settling down.” Eighty percent want a home that reflects their personality and style. They also want straight talk – just the basics.

“Boomer – 40s” value convenience, affordability, and solutions.

“Boomer – 50s” are the heaviest spenders on home remodeling and buy products that restore energy, vitality, and physical attributes.

Nine states account for over half of all seniors (60+); California, Florida, Texas, Pennsylvania, Ohio, Illinois, Michigan, and New Jersey. This group is most motivated by health and financial security. The key is to subtly appeal to this group without reminding them of their age.

Study Your Market

To handle constant change, develop a plan:

Profile customers by conducting mystery shopping (both in your own store and in competitors).

Conduct in-store research (Why does someone buy?).

Do exit surveys to track broad trends/customer composition.

Other ways to profile customers include: transaction data analysis; employee feedback sessions; trading area analysis; and data sharing among peers.

Develop yet another profile for your trading area. Things to take into consideration include the population of the area and the composition of the households. A subjective evaluation of the area is vital, too. Is the area aging? Upwardly mobile? Declining? Rebounding? What other types of businesses are in the area? What about competitors? Who are they? Where are they? What are their hours?

To get this information, you can access the Internet at www.fedstats.gov (county level), or check with your local library. The local Chamber of Commerce, small business resource centers, and Department of Transportation are also valuable resources for this information.

Analyze Your Findings

With this information collected, analyze the results. What new information have you learned about your trading area? How might this information impact product selection, merchandising, and/or operations?

Do an operational audit, too. Determine what hours of the day and days of the week index higher than the average sales per hour. What days do revenues per employee index higher than the average?

Your environment is very important as well. Study traffic patterns, zoning changes, development notices, and business permit activity. Listen to the local business grapevine and join local organizations. Other environmental factors to consider include: your customers, the employment base; school calendars; local events and competitors.

Having gathered the essential information, ask yourself the hard questions. Are you in the location you want to be in? Are you selling to the customers you want to? What is your brand image? What are your customers saying you do well? Not so well? How do you stack up against your peers?

The Grapevine Report is available exclusively to ANLA members until September 1; after then it will be available to non-members.

Reprinted from the *VNLA Newsletter*, March/April 2000.

PLUM POX VIRUS AND ITS POTENTIAL IMPACT ON THE NURSERY AND LANDSCAPE INDUSTRY

Dr. Chuan Hong
**Hampton Roads Agricultural Research and
Extension Center**

Plum pox virus (PPV) is the cause of an extremely serious plant disease, affecting a number of *Prunus* species and was a quarantined pathogen in the United States. USDA declared an extraordinary emergency after plum pox virus was detected in Adam's County, Pennsylvania, in 1999. PPV was first observed on plums by growers in Bulgaria at the close of World War I. However, the first paper describing the viral nature of this disease did not appear until 1932 when Atanosoff named it "Sarka posslivite" meaning "pox of plum" (= Sharka). Sharka first spread in continental Europe, then progressed into England, Egypt, Syria, Cypress, Chile, India, and is now in the United States. About 100 million stone fruit trees in Europe are currently infected, and susceptible cultivars can suffer 80 – 100% reduced yield.

Symptoms

Plum pox virus symptoms appear on leaves, fruits, flowers, and even seeds. The severity of the symptoms varies according to the *Prunus* species and cultivar, PPV strain, season and location. Leaves and fruit show chlorotic (yellowing) and necrotic (browning) ring patterns, and chlorotic bands or blotches. Leaves and fruit also can be absent of symptoms, or have symptoms that lessen or disappear during the growing season. The fruit of apricot and plum can be misshapen and deformed, or rings may be present on their stones. Some peach cultivars may show colorbreaking symptoms on the flower petals. A fact sheet and symptom image gallery is posted at the American Phytopathological Society

(APS) website:

<http://www.scisoc.org/feature/PlumPox/Top.html>)

Epidemiology

Plum pox virus is the only recognized polyvirus infecting *Prunus*, with four major strains. Only one of the four strains had been detected in the United States. PPV has a broad experimental host range although it has a rather restricted natural host range within the genus *Prunus*. It infects peaches, plums, apricots, nectarines, almonds, and sweet and tart cherry. Virus isolates vary in their reaction to different hosts, and not all strains or isolates infect the same host range. *Prunus* species that have been proven to be hosts in nature, or by inoculation trials followed by back transmissions include:

Prunus armeniaca - Apricot
P. persica – Peach
P. persica var. *nectarina* – Nectarine
P. domestica – Garden plum (prune)
P. salicina – Japanese plum
P. instititia – Damson plum
P. cerasifera - Myrobalan plum
P. glandulosa – Dwarf flowering almond, Cherry almond
P. avium – Sweet cherry
P. cerasus – Sour (tart) cherry
P. amygdalus – Almond

Wild *Prunus* may serve as an important secondary host of PPV and can have an impact on plum pox epidemiology and control. In addition to the above natural hosts, several wild *Prunus* species are susceptible:

P. spinosa – Blackthorn
P. americana - American plum
P. bessey – Western sand cherry
P. mahaleb - Mahaleb or St. Lucie cherry
P. mume - Japanese apricot
P. pumila - Sand cherry

P. hortulana – Hortulan plum
P. davidana - David peach, Chinese wild peach
P. tomentosa – Nanking cherry
P. nigra – Canada plum
P. maritime – Beach plum
P. laurocerasus – English cherry-laurel

Many non-*Prunus* species, in at least nine plant families, have been infected artificially with one or more strains of the plum pox virus, and in some cases found naturally infected in the field. Most of these are herbaceous annuals but a few are perennial or woody plants and could serve as over-wintering sources of the virus. Some of the common hosts include:

Campanula rapunculoides
Chenopodium quinoa
C. species
Lamium album
L. amplexicaule
L. purpureum
Lupinus albus
Lycium barbarum
L. halimifolium
Medicago lupulina
Melilotus officinalis
Ranunculus acer
R. arvensis
R. repens
Silene vulgaris
Solanum dulcamara
Trifolium incarnatum
T. pratense
T. repens
Zinnia elegans
Z. violacea

Introduction of PPV to a new country or region is usually through propagative materials and the subsequent distribution of contaminated materials. At least 20 aphid species can transmit PPV. The efficiency of transmission depends on the virus strain, host cultivar, age of plants, aphid species, and time of year. *Brachycaudus*

cardui, *B. helichrysi*, *Myzus persicae*, and *Phorodon humuli* are considered four important vector species. Natural virus spread is low in July and August but high in spring and autumn. Spring flights of *B. helichrysi*, *M. persicae*, and *P. humuli* are most important for spread within and between orchards. Aphids can acquire the virus in probes as short as 30 seconds, and can transmit for up to 1 hour. Aphids that have been starved before feeding can transmit for up to 3 hours after acquisition. There is no correlation between the ability to transmit PPV and the ability to colonize *Prunus*. PPV can be spread in orchards by transient aphids as efficiently as aphids colonizing *Prunus*. Aphids were found to transmit PPV within 100-120 m of the source plants, but they have been shown to carry the virus on their stylets for several kilometers if starved during flight.

Potential impact on the industry

Plum pox virus could have great impact on the nursery and landscape industry although most research to date has focused on stone fruit growing in orchards. PPV can infect not only many *Prunus* ornamentals such as peach, plum, cherry and laurel, but also a number of non-*Prunus* herbaceous annuals and perennials and woody ornamentals.

Recommendations

USDA is taking extraordinary measures to contain and eradicate this disease in the United States. Trees in the orchards where PPV was detected are being destroyed and USDA will pay for the removed and destroyed trees. In addition, a 16 statewide survey (including Virginia) for PPV is underway. Virginia Department of Agriculture and Consumer Services (VDACS) will conduct surveys in (1) orchards where *Prunus* tree stocks were originally purchased from Adam's County, PA; (2) other *Prunus* orchards; and (3) nurseries and

landscapes where *Prunus* ornamentals and other species of potential hosts to PPV are grown. VDACS will process samples suspected of PPV. It is recommended that growers send sample to VDACS when they are suspicious of PPV infection.

There is no cure or treatment for the disease once a plant becomes infected. Our first and best strategy is to avoid purchasing any ornamental materials from Pennsylvania, and in particular from the infested area of Adam's County. It is highly recommended that people who have to purchase ornamental materials from areas suspected of PPV infestation request a plant sample and have it tested before placing an order.

For more information contact:

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Hampton Roads Agricultural Research and
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1444 Diamond Springs Road
Virginia Beach, VA 3323455

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SUBSTRATE SELECTION

**Thomas M. Blessington, David L. Clement,
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Introduction

Substrates:

- Provide plant support
- Hold water for plant use
- Provide aeration
- Hold plant nutrients
- Larger soil particles provide better aeration but poorer water retention
- Addition of vermiculite (horticultural grade), bark, or perlite (horticultural) will increase aeration

There are two types of substrate:

Soilbased: contains a portion of field soil.

Soilless: no field soil added.

Growers must determine which substrate will meet their cultural habits. Infrequent watering practices require a high moisture substrate. Frequent watering practices require a peat moss or bark based mix. The grower should test several substrates. Watering practices may need to be altered so one substrate can be used in potting a wide range of crops.

Soil-Based Substrate

- Used to grow only a small portion of potted plants
- Use to grow only a small portion of potted plants
- Most cut-flower crops are grown using a soil-based substrate
- Contain equal parts:
 - Loamy field soil
 - Concrete-grade sand
 - Sphagnum peat moss with added phosphorus

- With sandy field soil, less sand is incorporated
- With soils high in clay, more sand is incorporated
- Sand is used to promote good aeration
- Sand substitutes include perlite and polystyrene
- Desired pH range is between 6.2 to 6.8
- Micronutrients need to be added
- Limestone is added to adjust pH

Soilless Substrate

- Reduced shipping cost due to lighter weight than soil-based substrates
- Ready to use
- Mixture requires saturation before use
- For more even distribution of components, mix coarse components (sand or perlite) before adding water
- Incorporate organic matter or clay to provide nutrient retention (peat moss, calcined clay)
- Add sand, perlite, or polystyrene to increase aeration
- Add a second organic material or clay to increase water holding capacity (peat moss, calcined clay)
- Limestone is added to adjust pH
- Micronutrients need to be added

Common Soilless Formulas

Peat-Lite Mixes

Mix A: 50% sphagnum peat moss: 50% vermiculite

Mix B: 50% sphagnum peat moss: 50% perlite

Bark Based Mixes

- Less expensive than peat substrates Fir, pine, and other hardwood bark is most commonly used
- Good aeration, nutrient, and water holding capacity

- To increase the water holding capacity, add sand, vermiculite, or peat moss
- Greenhouse crops require the addition of vermiculite or peat moss and sand to add moisture and nutrient retention

Substrate Mixes Available

Germination substrates:

- Fine vermiculite and peat moss
- High fine texture uniformity to insure even water retention in plug trays and appropriate placement of seeds
- High cost of ingredients

High moisture substrates:

- Vermiculite and peat moss
- Larger particle size to increase aeration in the larger pot size
- Proper watering is necessary to avoid over wet and dry conditions

Peat moss-based substrates:

- ie: Vermiculite, peat moss, and perlite
- ie: Peat moss and perlite only
- Easier to regulate watering requirements

Bark-based substrates:

- Contains vermiculite, bark, and perlite
- Lower price than peat moss substrates
- Composition depends on bark size
- More composted, finer bark holds more water, is similar to peat moss and combined with vermiculite
- Coarse, less composted bark is used with perlite or polystyrene which have less water retention and greater aeration

High aeration substrates:

- Vermiculite, larger bark, and perlite
- High aeration and good drainage
- Inexpensive substrate
- Good for plants in large containers

Reprinted from Nursery News, MD Coop. Ext. Newsletter, Vol. 62, Number 2, Spring 2000.

THE WATER IN NUTRIENT MANAGEMENT

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Engineering

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Department of Natural Resource Sciences and Landscape Architecture

The Water Quality Improvement Act of 1998 (WQIA) has established the requirement for nutrient management plans and the key word to many people is nutrients. While the application rate of nutrients is an important issue, nutrients move in water. Water is at the center of this issue and must be given full consideration. Nutrients may leach out of containers with overwatering or rainfall. Nutrients may be carried offsite in surface runoff. Most of the danger of pollution centers on the flow of water. Two of four areas that a plan must address deal with water.

Water management in a nursery operation involves concern about:

1. surface water runoff, both from irrigation application and storm water and
2. irrigation system operation and management.

A risk management assessment approach is being used to identify what risk of nutrient loss is present. The risk assessment process in developing a nutrient management plan is to examine the fixed and variable factors that center on water movement on the nursery site and to assign risk values to each factor. The total sum of risk values will indicate the relative danger of pollution from a given nursery operation. The end product – the Plan – will help the nursery owner identify high risk factors that might be addressed to improve the overall management and profitability of the nursery business.

An examination of the physical site will reveal the pathways for water to leave the site after irrigation events and after a storm event. Factors affecting the surface water runoff may include lined or non-lined waterways, including grassed, rock lined, bare earth and piped. Water runoff from parking lots and roofs of building may be separate from or mixed with nutrient laden water from growing areas. Water may flow into collection basins where sediment settles out and the water possibly is reused. Water may flow directly from the property into a stream. Erosion may cause washouts and runoff may carry sediments to local streams. There are different degrees of risk with each practice. In the risk assessment process, the pathways by which water travels from the property are identified and a risk value is assigned to each. From a management point of view, the high-risk areas or problem areas are assigned more points and stand out as the places to make improvements.

The irrigation system and its operation are a second area to examine. Each grower hopes the irrigation system was initially designed and built to apply water uniformly to a bed or field. This cannot always be assumed to be true. Nozzle or head changes since the original installation may have changed the characteristics of the system. If a system must be run longer to water one area because it is not getting as much water, then that is an indication of a problem. Water may be running off one end of a bed or field in the process. A check of operating pressures can help to identify this problem; water pressures should not vary more than 10 percent from one end of a lateral line to the other.

Sprinkler head spacing to achieve good overlap for application uniformity is another item to check. Cans can be spaced out in the bed or field to catch the irrigation water. Measure and compare the volumes of water in the cans to learn how much variability there is in the application process and where it affects the crop. In the

planning process, trickle/drip will be a lower risk than overhead sprinklers. The risk value assigned to overhead sprinkler systems will vary depending on the risk associated with each practice. Overhead application to closely spaced containers will yield a high irrigation efficiency (most of the water goes into the container). Liquid application of nutrients by overhead onto closely spaced containers will be lower risk than onto widely spaced containers.

These are but a few examples of situations that a grower, aided by a nutrient management plan writer, will identify and rate in a study of his/her operation. In a worst case scenario, the grower will learn there are several areas in which improvements would lower his/her risk of polluting. Most growers have taken action already to conserve water and nutrients and to protect their land from erosion. This process will document the activity. Other areas in the risk assessment process are substrates and nutrients. These will need to be assessed also in a similar manner.

DELAWARE NUTRIENT MANAGEMENT NOTES

In June of 1999, Governor Thomas Carper signed House Bill Substitute 1 for House Bill 250 – commonly referred to as the “Nutrient Management Act.” This is the first in a series of informational notes designed to provide information on the legislation and related issues in Delaware. This note will address the topics: 1999 Delaware Nutrient Management Act and the Delaware Nutrient Management Commission (DNMC).

“1999 Delaware Nutrient Management Act”

What is the purpose of the nutrient management act?

- To establish a certification program that encourages the implementation of best management practices in the generation, handling and land application of nutrients.
- To formulate a systemic and economically viable nutrient management program that maintains agricultural profitability and improves water quality.
- To establish a nutrient management planning program.
- To regulate those activities involving the generation and application of nutrients.

What is the timetable set by the act?

- **July 1, 2000** - All commercial process shall file a plan with the DNMC indicating how they will meet the requirements of the act.
- **July 1, 2003** - The DNMC shall begin official review of the nutrient management plans. One fifth of the plans will be reviewed each year between 2003 and 2007.
- **January 1, 2004** - Certification of all nutrient handlers must be completed.

- **2007** - The DNMC shall ensure that the State Nutrient Management Plan is fully implemented.

Delaware Nutrient Management Commission

What is the Delaware Nutrient Management Commission?

The Nutrient Management Act established a 15-member commission that is charged to “...develop, review, approve, and enforce regulations governing the certification of individuals engaged in the business of land application of nutrients and the development of nutrient management plans...” The members of this commission come from many different backgrounds and professions.

What are the DNMC’s Responsibilities?

- Consider establishing critical areas for targeting of other voluntary and regulatory programs.
- Establish best management practices to reduce nutrient losses to the environment
- Develop educational and awareness programs.
- Consider a transportation and alternative use incentive program to redistribute nutrients.
- Establish the elements and general direction of the State Nutrient Management Program.
- Develop nutrient management regulations.

How can I get involved in the process and voice my opinion?

- Meet and talk to commission members.
- Attend commission meetings; contact the Delaware Nutrient Management Program for dates and location (call Bill Rohrer 1-800-282-8685 or 302-739-4811).

David Baker, New Castle Co., grain farmer
378-3750

Edwin Brown, golf/lawn care industry
227-2053

Steve Corazza, New Castle Co. poultry farmer
653-3583

Dick Sterling, nursery industry
653-7060

Carlton Fifer, Kent Co. vegetable farmer
697-2141

Jeremy Homer, public citizen
678-3262

John Hughes, Div. Of Soil & Water-DNREC
739-4411

David Jones, environ. org., Ducks Unlimited
422-8017

Tony Keen, nutrient consultant
236-3417

Connie Larimore, Kent Co., poultry farmer
398-8304

Dale Ockels, Sussex Co. swine farmer
684-0456

Brian Schilling, commercial applicator
934-7684

Carl Solberg, environmental org., Sierra Club
492-1225

Bill Vanderwende, Sussex Co. dairy farmer,
Chairman 349-4423

Charles West, II, Sussex Co. poultry farmer
238-0137

Ex-officio Members:

Bill Rohrer, program administrator
739-4811

Hon. Nicholas DiPasquale, Sec. – DNREC
739-4403

Hon. Greg Syvester, Sec. – DHSS
577-4357

Hon. Jack Tarburton, Sec. – DDA
739-4811

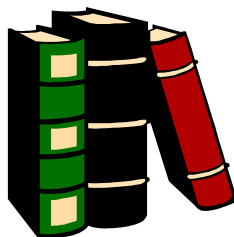
Publications

The Morton Arboretum’s Plant and Health Care Report. This is available both in print and online during the growing season, from early April through mid-September. The report, aimed at horticulture professionals and produced by the Arboretum’s research staff, pinpoints insects, diseases and weather trends affecting plants in the Midwest. The report is available online for free at www.mortonarb.org, or by sending \$20 to Plant Health Care Report, The Morton Arboretum, 4100 Illinois Rte. 53, Lisle, IL, 60532. For more information, call Donna Danielson at 630/719-7946.

Internet – Green Beam Opens New ‘Idea Exchange’ Area. The Green Beam (www.greenbeam.com) announces a new, fully interactive area where users may post questions and comments or reply to others. The new Idea Exchange is a bulletin board open to any user. Topics are categorized under two specialized headings, “Growing” and “Garden/Gift Retailing.” This site is the most content-rich site available to professional horticulturists. News is posted daily and other features appear weekly, including interviews with successful horticulture businesses, trend-watching by Branch-Smith editors, and marketing and cultural information about plants and flowers. Site also consists of; The Source List, The Show Room, The Playground, and other information of interest. Contact: Mike Branch, 800-433-5612 greenbeam@bsipublishing.com Branch-Smith Publishing.

Best Management Practices, Guide for Producing Container-Grown Plants. This 76-page, 4 color handbook is designed as a guide 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. Manual includes a 10-page, laminated summary of the BMP's designed for in-field use. Updates will be available periodically and will be provided to registered product owners for a nominal fee. The cost is \$30 for VNA members and \$40 for non-members. To order contact Virginia Nursery & Landscape Association, 383 Coal Hollow Rd., Christiansburg, VA 24073-6721, phone: 1-800-476-0055, fax: 540-382-2716, email: vna@swva.net.



Pesticide News

NEW BIOCHEMICAL PESTICIDE REGISTERED AS AN ALTERNATIVE TO METHYL BROMIDE

EPA registered a new biochemical pesticide, the Harpin protein (Trade Name MESSENGERTM) on April 19, as an alternative to conventional, synthetic pesticides such as methyl bromide. This biochemical pesticide is registered for use on field crops, trees, turf, and ornamentals to control a wide variety of fungal, bacteria, and viral pathogens as well as several insect pests. Unlike most pesticides, the Harpin protein does not act directly on the target pest. Instead, it activates a natural defense mechanism in the host plant, called systematic acquired resistance that makes the plant resistant to a wide range of fungal, bacterial and viral diseases. The Harpin protein also protects against certain nematodes and fungal diseases that have few effective controls except methyl bromide, a broad-spectrum pesticide that is believed to contribute to stratospheric ozone depletion and have adverse effects on human health. The Harpin protein is non-toxic and not expected to pose risks to human health or the environment. Because the product is applied at low rates and degrades rapidly in the field, no residues are expected on treated crops. In addition, studies demonstrate no toxicity to humans and no adverse effects on many species of wildlife (e.g., birds, fish, honeybees, aquatic invertebrates, non-target plants and algae). During its experimental use stage, the Harpin protein was used on tomatoes as a component of IPM programs, thereby decreasing the use of conventional pesticides by 70 percent while outperforming them in effectiveness. EDEN Biosciences Corp. of Bothell, Wash., was granted registrations for both the Harpin protein and MESSENGERTM (the only product containing this protein as an active ingredient).

For more information, see:
www.epa.gov/pesticides/biopesticides.

Insecticides:

LANCER (acephate) – United Phosphorus – A new formulation being introduced into the U.S. market.

OVIATION (clofentezine) – Scotts – Received a label to use on greenhouse crop trees, non-bearing fruit trees and Christmas trees to control mites and their eggs.

AVID (abamectin) – Novartis – Added to their label the control of whiteflies, aphids and thrips on ornamentals.

CINNAMITE (cinnamaldehyde) – Mycotech – As a result of the IR-4 Project they can now add to their label the usage on roses in greenhouses, ground beds and containers.

Herbicides:

CORRAL 2.68G (pendimethalin) – Scotts – A new formulation being introduced to use on ornamentals.

DEVINOL 2G (napropamide) – United Phosphorus – A new formulation for use in turf, flower gardens and landscape plantings.

GLYPHOSATE ORIGINAL – Griffin – A new name that will be marketed this year.

PENNANT MAGNUM (s-metolachlor) – Novartis – This is the new name for the active isomer of metachlor that is sold into the turf and ornamental market.

XCP BIO HERBICIDE (xanthomonas campestris pv. poannua) – Eco Soil Systems –

A new bio herbicide being developed for use on turf for the post-emergence control of annual bluegrass.

Fungicides:

CONTRAST (flutolanil) – Scotts – Received a label for usage on all ornamental crops.

ELEXA (chitosan) – Safe Science – Received a label to use on all greenhouse crops, herbs and shrubs to control powdery mildew, downy mildew and botrytis.

E-RASE (oil of jojoba) – IJO Products Inc – Added to their label for this biofungicide the control of powdery mildew on ornamentals.

NOGALL (agrobacterium radiobacter strain K-1026) – Bio Care Technology – EPA approved an application to register this new active ingredient as a biological control agent for the prevention of crown gall in nursery stock on non-food and non-bearing plants. (FR Vol. 65, 2-25-2000)

NORDOX (copper oxide) – Monterey Chemical 0 added to their label numerous new usages on fruit crops, vegetables and ornamentals.

PREVICUR (propamocarb hydrochloride) – Aventis – Proposed to EPA to register for use on turf and ornamentals. Comments must be received by 4-26-2000. (FR Vol. 65,3-27-2000)

ROOT SHIELD (Trichoderma harzianum) – Bio Works – Now labeled as a foliar spray on greenhouse crops to control Rhizoctonia, Phythium and Fusarium.

TOP SHIELD (trichoderma harzianum) – Bio Works – Received a new label for this bio-fungicide to be used on all greenhouse crops

including flowers, vegetables and herbs to control powdery mildew, downy mildew, botrytis and other foliar diseases.

TATOO C (propamocarb hydrochloride/chlorothalonil) – Aventis – Proposed to EPA to register this product on turf and ornamentals. Comments must be received by 4-26-2000. (FR Vol. 65, 3-27-2000)

CLEARY 3336 (thiophanate – methyl) – Cleary – As a result of the IR-4 Project they can now add to their label the usage on begonias in greenhouse beds and containers.

Miscellaneous:

TAENSA – The company has received EPA approval for its new bio-pesticide *Bacillus subtilis* strain FZB24 to suppress various diseases in ornamentals.

Research Briefs

Propagation:

Rooting cuttings of *Alnus maritima*. *Alnus maritima* (seaside alder) is a desirable woody plant native to three limited provenances (southcentral Oklahoma, northwestern Georgia and the Delmarva peninsula). Rooting percentages were greater for cuttings taken from mature plants in the Oklahoma provenance (55%) as compared to cuttings from plants in the Delmarva provenance (27%). IBA treatments enhanced rooting and rooting was higher when cuttings were taken in mid-June rather than mid-August. Preliminary data indicates that rooting may be enhanced when cuttings are taken from juvenile stock plants. (J.A. Schrader and W.R. Graves)

Excerpted from HortScience 35(2):293-295, April 2000.

BA stimulates offset production in established stock plants. BA-induced offset formation is an effective method to accelerate propagation of hosta; however, BA is most beneficial when plants are allowed to establish prior to applications. In the South, this establishment period is usually 3 or 4 weeks after potting. Allowing plants to establish prior to BA application will increase hosta's response to BA by increasing offset production, increasing the stage of development of offsets (resulting in higher rooting percentages, thereby minimizing cropping time. (H.C. Schultz, G.J. Keever, J.R. Kessler, R.R. Dute)

Excerpted from J. Environ. Hort. 18(2):63-65, June 2000.

Enhancing propagation of *Anemone x hybrida*. Fall flowering anemone are propagated by root cuttings. In surveys of

perennial growers across the US, fall-flowering anemones were cited most often as needing improvement in propagation. In this research, the weight of the root cutting did not influence whether or not a plantlet can be regenerated, and how rapidly, but larger cuttings will yield larger plantlets. Visible shoot buds are not an indicator or regenerative potential, since cutting regenerated regardless of the presence or absence of visible buds. Optimal nitrogen nutrition of the stock plant will shorten the time to regeneration, but optimal N rates vary with cultivar. K-IBA at low concentrations appears helpful in increasing the size of the resulting plantlet in some cultivars. (J.B. Dubois, R.A. Blazich, S.L. Warren, B. Goldfarb)

Excerpted from J. Environ. Hort. 18(2):79-83, June 2000.

Plant growth regulators and moisture retention gel stimulate bareroot conifer growth. Growth and survival of bareroot plants after transplanting is partially a function of the plant's capacity to produce new roots. Treatment of various conifer seedlings with Stimroot, ethrel, Hormogel or Alginate increased IAA content in roots. Growth increases were dependent on PGR and species, but results indicate that application of PGRs or other root-promoting materials to the roots of bareroot conifers before planting has the potential to be a cost-beneficial method for increasing root growth and decreasing transplant shock. The application of moisture retention gel to roots can increase root growth, possibly by mechanisms associated with changes in root IAA levels. (C.F. Scagel and R.G. Linderman).

Excerpted from J. Environ. Hort. 18(2):99-107, June 2000.

Priming wildflower sod increases production rate. Results of this study have shown that wildflower sod stability (its resistance to

breakage) was increased by sowing seed mixtures with a higher annual species content and by sowing at 10x rather than 2x the recommended rates for broadcasting in the field. Matric priming of the seed mixture, a technique accomplished with minimal equipment or expertise, likewise greatly enhanced sod stability. Increased sod stability would lessen the time required for wildflower sod production in the greenhouse or nursery. (W.G. Pill, E.E. Veacock and C.E. Polston)

Excerpted from J. Environ. Hort. 18(2):114-118, June 2000.

Greenhouse production:

Leaching salts from subirrigated poinsettia is unnecessary. Subirrigated plants accumulate salts in the top media layer. It is thought that these salts may contribute to postproduction leaf drop. This study showed that leaching with 1.5 L of water caused the salts to move to the middle and bottom layers of the growing medium but it had no detrimental short-term effect on the plants. Even though leaching with 3 L of water reduced salts in the entire growing medium, this study concluded that leaching of salts from subirrigated poinsettias is unnecessary to maintain plant quality and is not recommended. (M. van Iersel)

Excerpted from HortScience 35(2):247-249, April 2000..

Postharvest anti-ethylene treatments for cut flowers. 1-MCP gas, which is easy to apply, has potential as a postharvest anti-ethylene treatment for *C. gummiferum*, *C. uncinatum*, *Grevillea* 'Kay Williams', *Grevillea* 'Misty Pink', *L. perersonii* and *V. vitens* (all native Australian cut flowers). (A.J. Macnish, D.H. Simons, D.C. Joyce, J.D. Faragher, P.J. Hofman)

Excerpted from HortScience 35(2):254-255, April 2000.

Growth retardants enhance plant quality of *Coreopsis rosea* ‘American Dream.’ The growth retardants, B-Nine at 2,500 to 7,500 ppm, Cutless at 25 to 150 ppm, and Sumagic at 10 to 40 ppm would be useful in the production of superior ‘American Dream’ pink coreopsis crops in a greenhouse. These PGRs reduced plant size and enhanced plant quality. In addition to improved quality, the compact size of treated plants should facilitate shipping and handling. Bonzi did not suppress growth or affect flowering of pink coreopsis at any time. Growers who wish to sue these PGRs in the production of ‘American Dream’ pink coreopsis should be aware that growing conditions, including light, temperature, soil mix and fertility, and physiological stage of plant development can have a significant effect on PGR activity. (S.W. Burnett, G.J. Keever, J.R. Kesler and C.H. Gilliam)

Excerpted from J. Environ. Hort. 18(2):59-62, June 2000.

Nursery Production:

Ditches improve water quality. Ditches are valuable tools for reducing the amount of chemicals that enter bodies of water. Research with two agricultural pesticides, atrazine (herbicide) and Karate (insecticide) found that the ditch trapped 60 and 90 of the pesticides, respectively. Ditches work like wetlands to sequester storm runoff materials. (ARS News Service)

Excerpted from VNLA Newsletter March/April 2000.

Landscape:

Nitrogen and Carbon mineralization of manure and composts. An average of 16%, 7% and 1% of organic N was mineralized in manure, manure compost and plant residue compost, respectively. Overall N recovery in a fescue assay averaged 11%, 6% and 2% of total amendment N for manure, manure compost and plant residue compost, respectively. These composts showed relatively modest rates of N and C mineralization, indicating the value of these amendments in long-term soil building and their limitations in enhancing short-term N availability. (T.K. Hartz, J.P. Mitchell and C. Giannini).

Excerpted from HortScience, Vol. 35(2):209-212, April 2000.

Boxwood cultivars tested for hardiness. ‘Green Velvet’ and ‘Green Mountain’ exhibited less winter injury than ‘Winter Gem’ in two test sites in Kansas (zones 5 and 6). Performance was consistently better in ENE, NNE, E, ESE and WSW exposures. Plant performance was poorer at S and SE exposures. ‘Winter Gem’ suffered winter injury at the test sites, but by the end of the experiment (after several mild winters) it had grown larger than the other two cultivars. In protected sites and higher hardiness zones, ‘Winter Gem’ might grow faster than the other two cultivars. (A. LeDuc, L.R. Parsons and J.C. Pair)

Excerpted from HortScience, Vol. 35(2):205-208, April 2000.

Cold hardiness varies with plant age. Seedlings of *Pellodendron sachalinense* (corktree) were less hardy than mature specimens. Corktree seedlings were able to achieve midwinter hardiness levels comparable to that of the maternal parent after their fourth season of growth. These results provide

additional evidence that seedlings of certain woody plant species undergo an age-related transition of an unknown nature that promotes full expression of their genetic capacity for cold acclimation. Further study of this phenomenon could help researchers learn about the mechanism of cold hardiness in woody plants. (S. McNamara and H. Pellet)

Perlite soilless production is more profitable than traditional soil culture. An economic analysis revealed that perlite soilless culture system was more profitable than traditional soil culture. Sensitivity analysis revealed that income benefits could be further improved by even a minor increase in the product's price. High quality and better marketing strategies that lead to higher product price can also enhance investment benefits. (I. Grafiadellis, K. Mattas, E. Maloupa, I. Tzouranmani and K. Galanopoulos)

Excerpted from HortScience 35(2):304-305, April 2000.

Insects:

Lace bugs don't benefit from supplemental nitrogen fertilization. Measurements of azalea lace bug survivorship, development time, age to first reproduction and clutch size showed no significant relationships to levels of fertilization in their host plant—azalea. Since azalea lace bugs feed on mature leaves and would be considered senescence feeders, it may be that they are adapted to low nitrogen levels. Azalea lace bugs are mesophyll feeders. These results are in contrast to results found with other insects that feed on phloem, who do respond favorably to increased N-status of their host plants. (C.A. Casey and M.J. Raupp)

Excerpted from Population Ecology 28(6):998-1003, December, 1999.

Insecticide dips control white grubs. This study confirmed that dipping B & B nursery stock with 24-inch root balls for 2 minutes in Dursban (0.25 lb ai/100 gal), which is 1/8 of the recommended rate, effectively controlled white grubs. Therefore dipping B & B roots balls in Dursban can be an effective regulatory treatment for minimizing unnatural dispersal of Japanese beetle and potentially other white grub species. (C. M. Mannion, W. McLane, M.G. Klein, D.G. Nielsen, D.A. Herms)

Excerpted from J. Environ. Hort. 18(2):89-93, June 2000.

Diseases:

Viruses found in *Ajuga reptans*. *Ajuga reptans* can serve as a reservoir for CMV and its satRNA, AMV and TSV (all significant plant viruses). Many of the tested plants were asymptomatic and since an insect vector spreads these viruses, could be spread to other perennial plants in production. Vegetative propagation could spread the virus more widely. The striking coloration of *Ajuga reptans* 'Royalty' could be due to the presence of SMV satRNA, which causes a white leaf syndrome and lethal necrosis disease in tomato. (J.R. Fisher and S.T. Nameth).

Excerpted from HortScience, Vol. 35(2):230-234, April 2000.

Subdue controls rose downy mildew. Subdue G and Subdue Maxx were the only effective treatments for rose downy mildew in this research trial. Unfortunately Subdue is not labeled for rose downy mildew control. Representatives from Novartis (maker of Subdue) do not anticipate adding rose downy mildew to the label for fear that the pathogen will become resistant to the control. (J. Elmhirst and P. Jurkemik)

Excerpted from American Nurseryman, May 15, 2000.

Marketing:

Perlite soilless production is more profitable than traditional soil culture. An economic analysis revealed that perlite soilless culture system was more profitable than traditional soil culture. Sensitivity analysis revealed that income benefits could be further improved by even a minor increase in the product's price. High quality and better marketing strategies that lead to higher product price can enhance investment benefits. (I. Grafiadellis, K Mattas, E. Maloupa, I. Tzouranmani and K. Galanopoulos)

Excerpted from HortScience 35(2):300-303, April 2000.

Customer perceptions of product and service quality. Of seven dimensions contributing to garden center quality, customers ranked plant quality as the most important dimension (30%) and responsiveness and assurance as half as important (15%); the other dimensions (tangibles, reliability, empathy, quality of non-plant products) were slightly less important (10%). Plant health and condition (32%) was the most important plant or product characteristic, followed by price (22%) and assortment and variety (21%). Areas for improvement (based on large gaps between expectation and perceptions) include 'clearly marking plant price,' 'willingness to offer guarantees,' 'plant health' and 'name labeling.' More frequent buyers (10 purchases/surveyed outlet/year) had higher reliability perceptions as compared with less frequent purchasers. (B.Behe and S.Barton)

Excerpted from J. Environ. Hort. 18(2):71-78, June 2000.

Calendar

July 12, 18, 20 – Perennials for the Shade. Ornamental Horticulture Programs, U of D, New Castle County Extension Office, Newark. 3-6 pm. Cost is \$10. Contact Dot Milsom 832-2531.

July 13 – Turf Diagnostic Clinic. Ornamental Horticulture Programs, U of D, University of Delaware Botanic Gardens, Newark, 3-5 pm. Cost is \$25. Contact Dot Milsom 832-2531.

July 13 – Grounds Managers Field Day, Montgomery County 4-H Center, Creamery, PA. Contact Scott Guiser (215)345-3283.

July 14 – Pest Walk – Lafayette College, Easton, PA. Contact Emelie Swackhamer (610)391-9840 for more information.

July 18, 20, 25 & 27 – Pesticide Short Course, Chester County Government Services Center, West Chester, PA. Contact Nancy Bosold (610)378-1327

July 20-22 – 2000 Cullowhee Conference – Native Plants in the Landscape. Western Carolina University, Cullowhee, NC. Contact: Sue Dietz (282)227-7397

July 25-27 – 2000, PANTS, Ft. Washington, PA. . Pennsylvania Landscape & Nursery Association. Ft. Washington Civic Center, Fort Washington, PA. Contact: Call(800)898-3411 or (717)238-1673; fax (717)238-1675; Internet <http://www.pantshow.com>

July 28 – 2000 Conference on Woody Plants for the Landscape and Garden Center Industries, Swarthmore College, Swarthmore, PA. Co-sponsored by Longwood Gardens, The Morris Arboretum of the University of Pennsylvania, the Pennsylvania Horticultural Society, The Scott Arboretum of Swarthmore College and Tyler Arboretum. This year's topics range from the best plants to use in the landscape to pest control. To receive a brochure contact: Longwood Gardens (610)388-1000

August 3-6 – SNA 2000 – Southern Nursery Association Researcher's Conference and Trade Show. Georgia World Congress Center, Atlanta, GA. Contact: SNA (770)953-3311; fax 770-953-4411, SNA Infoline, (770)-953-4636; <http://www.sna.org>

August 5-9 – International Society of Arborist Annual Meeting – Hosted by the Mid-Atlantic Chapter in

Baltimore, MD; Contact (757)363-3906, E-mail: bbple@vt.edu

August 6-9 – Annual conference and trade show. International Society of Arboriculture. Baltimore Convention Center, Call (217)355-9411 or fax (217)355-9516; e-mail isa@isa-arbor.com; Internet <http://www.isa-arbor.com>

August 7 – Hand on Cut Flower Production. ASCFG Mid-Atlantic Regional Meeting. Wollam Gardens, Jeffersonton, VA. Contact Wollam Gardens (540) 937-3222 or ASCFG (440) 774-2887.

August 9 & 10 – Penn State Turfgrass Field Days, Valentine Research Farm, Penn State. Contact PA Turfgrass Council (814)863-3475.

August 11-18 – International Society for Arboriculture Annual Conference, Baltimore, MD. Contact: ISA: (217)355-9411, homepage: www2.champaign.isa-arbor.com

August 16 – Keystone Athletic Field Manager's Summer Field Day, Brandywine Picnic Park, Pocopson, PA. Contact Nancy Bosold (610)378-1327.

August 17 – Summer Turf and Nursery Expo and 3rd Annual Golf Tournament. Garisons Lake Golf Club, Smyrna, DE. Contact Val Budischak, 888-448-1203.

September 7 – Pest Walk, Ornamental Horticulture Programs, U of D. Research and Education Center, Georgetown. 9 am to 12 pm. Cost is \$ 10. Contact Dot Milsom 831-2531.

September 11, 13 – Weed Identification and Control. Ornamental Horticulture Programs, U of D, New Castle County Extension Office, Newark. 3-6 pm. Cost is \$10. Contact Dot Milsom 832-2531.

September 14-15 – The AABGA Northeast Regional Conference, "The New Nature of Gardens – Rationalizing Cultivated Biodiversity with Regional Conservation," co-hosted by The Rutgers Gardens at Rutgers University, and the Frelinghuysen Arboretum which is part of the Morris County (NJ) Park Commission. The conference will explore issues of development distribution, selection, cooperation, evaluation, education, conservation and exploration as it focuses on plants and reexamines horticultural roles in an age of global gardens. Keynote address will be delivered by Rick Darke. There will be a breakout session on ornamental grasses and tours. Contacts: Patrick Cullina, Asso. Director, The Rutgers

Gardens (732_932-8451, cullina@aesop.rutgers.edu and Fred Spicer, Mgr. Of Horticulture, Morris County Park Commission (908)234-0092.

September 14, 21 & 28 – Herbaceous Perennial Use, Identification and Care, Springfield, Delaware County. Contact Rick Johnson (610)690-2655.

September 20 – Lehigh County Grounds Managers Field Day & Pest Management Update, Schnecksville Fire County Pavillion. Contacts are Emelie Swackhamer (610)391-9840 or Bill Berkheimer (610)820-3129.

September 23-27 – 15th International and 29th National Agricultural Plastics Congress, "Plasticulture 2000", Hershey Lodge and Convention Center in Hershey, PA. For more information call: (814)238-7045 or visit the society's Web site: <http://www.plasticulture.org>.

October 8-11 – Southern Region International Plant Propagators' Society; Chesapeake, VA; Contact (817)882-4148, E-mail: dmorgan@bispublishing.com

October 17 – University of Maryland Cooperative Extension and the Maryland Greenhouse Growers. Md. Dept of Agriculture, Annapolis, MD. Contact Suanne Klick, (310)596-9413.

January 17 and 18 – Horticulture Industry Expo, Modern Maturity Center, Dover, DE. Contact Val Budischak, 888-448-1203.

