Anti-transpirants – Winter Sprays to Protect Broadleaf Evergreens

Nick Polanin, Somerset County Agricultural Agent, Bill Hlubik, Middlesex County Agricultural Agent, Rich Obal, Monmouth County Agricultural Agent, and Pete Nitzsche, Morris County Agricultural Agent

Most landscape maintenance professionals are familiar with anti-transpirants. These liquid, spray-on products, sold under trade names such as Wilt-Pruf, Nu-Film, Vapor-Guard, and Stressguard, to name a few, form a plastic-like, waxy coating that can minimize transpiration (water loss from a plant’s foliage and stems). Transpiration is an essential process for the uptake of water and nutrients from the roots, photosynthesis, and evaporative cooling of leaves on hot days.

Background

To further understand how anti-transpirants help leaves protect themselves, we need to know more about leaf anatomy and physiology. The outermost layer of leaf consists of cells known as the epidermis. On the outside surface of the epidermis is a coating of waxy material known as the cuticle. Leaves have small openings called stomata where transpiration takes place. Some water loss can also occur directly through the leaf cuticle or epidermis, but cuticle thickness varies greatly by plant species. Generally speaking, conifers have thicker cuticles and resist water loss as compared to the thinner cuticles of broadleaf evergreens.

The rate of transpiration from the leaves is greatest on plants growing in full sun on warm, windy days. Water loss through the stomata is replaced by water absorbed through the roots. When water is unavailable to the roots (drought, frozen ground) or the rate of transpiration exceeds the roots capability to absorb water, plant stress occurs. This imbalance in the water intake – loss ratio can cause wilting, foliar and possibly root injury. The use of anti-transpirants can significantly reduce the impact of this water intake - loss ratio imbalance.

Broadleaf evergreens, no matter how cold hardy they may be, need special attention prior to winter. Winter-kill or winter desiccation is the terminology used to describe plants that are damaged during the winter months. The cause of this damage is simply a result of a temperature/water imbalance. During the winter plants go dormant, but evergreens will continue to transpire under certain conditions. In the late winter/
early spring months when the ground is still frozen and the days begin to become sunny and warm, leaves begin to transpire sporadically while the roots are still unable to replace this moisture loss. This may result in damage to the plant, most noticeable in its foliage - water movement is extremely slow in soils or stem at temperatures below 40°F. If the area is especially windswept, the effects of desiccation are accelerated. This damage is generally not noticed until very late winter or early spring following a sunny, warm spell. Nearly all broadleaf evergreens are susceptible to winter desiccation, especially those with the larger leaves such as rhododendron.

**Using Anti-transpirants**

With our unpredictable winters, there are several things that can be done to prevent or at least minimize the effects of desiccation. One of the first and single most important is to start watering your plants before the ground freezes. These plants will need to be watered very well to provide them with an adequate amount of water, and also to increase the efficacy of any anti-transpirant application. In addition, proper mulching practices will assist in “winterizing” your shrubs, while also adding organic matter to the soil for the following year’s growing season. This will greatly assist valuable evergreen shrubs such as rhododendrons, azaleas, hollies, boxwood, laurel, and other ornamentals.

Tests have shown that anti-transpirants do not reduce winter-burn when the air temperatures are below freezing, but are most useful when the air temperatures are above freezing but the soils are still cold or frozen. Most successful winter spray programs of anti-transpirants begin in late fall/early winter when the air temperature is above 40 degrees, with reapplications according to label instructions, including a late winter/early spring application when the temperatures allow it. Anti-transpirants are flexible, colorless and can be long lasting. The polymers used in anti-transpirants vary in chemical composition, but all function by increasing cuticle thickness and integrity to minimize water loss. Sprayers should be washed out immediately after use with warm soapy water to prevent internal sprayer parts from becoming sticky and clogged with dried concentrate.

According to Richard Harris, James Clark, and Nelda Matheny, authors of “Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines” (1999), there are several types of anti-transpirants. Some are reflective materials that reduce absorption of radiant energy (heat), lowering leaf temperatures and reducing transpiration; some are emulsions of wax, latex, or plastics that dry on the foliage and form thin films that minimize escape of water from the plant; and some are chemicals that affect the guard cells around stomata and prevent them from opening fully, thus decreasing the loss of water vapor from leaves. There are drawbacks to some of these. The reflective materials may leave a colored coating on the plant that may not be aesthetically acceptable, and may also reduce photosynthesis. The spray emulsions reduce water loss, but they can also reduce photosynthesis. The chemicals that keep stomata from opening seem to allow more carbon dioxide in than water vapor out, successfully addressing the water intake – loss ratio imbalance.

Integrated Pest Management (IPM) practitioners know a plant’s growth requirements and tolerance levels for various stressful conditions, and utilize all available strategies in their tool box to plan, create and maintain a sustainable landscape. In short, anti-transpirants are tools to help plants growing in otherwise optimal conditions to endure stressful, short-term conditions. They will not correct improper selection and placement of plants, improper mulching or inadequate watering of plant material in your landscape – only you can prevent those mistakes.

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**Employee Training from Page 6**

delegated responsibilities. They will be the best individuals to tell and sell the less “mature” (less advanced) personnel about job competence. In other words, well-trained employees produce good management supervisors.

**How & Where to Get Started?**

Hopefully, the numerous Rutgers Cooperative Extension short courses and educational meetings are attended for more than just the pesticide credits that they offer. Perhaps the greatest value of these courses, conferences and seminars is initially becoming aware of the vast amount of information and knowledge that the true landscape professional needs to continue to learn. Certainly one of the goals of practicing landscape IPM methods is to be thought of as professionals and not simply laborers. Continued education and training are indispensable in the quest to reach this goal.

See the Calendar of Events on page 7 for upcoming courses and conferences. For Landscape IPM and the Spanish series course offerings, visit the Cook College Office of Continuing Education web site at: [http://www.cookce.rutgers.edu/programs/landscape.html](http://www.cookce.rutgers.edu/programs/landscape.html) or call their office at 732-932-9271.

Adapted from a presentation delivered by Robert J. Ash (Professor/Training Consultant) at the N.A.A., TCI Expo, Balt. M.D., 11/98.
De-Icing Salts Can Injure Roadside Vegetation
Ann B. Gould, Ph.D., Specialist in Plant Pathology

Winter is just around the corner, and with it comes winter weather. De-icing salts are used in New Jersey to make roadways, driveways, and sidewalks safer by melting snow and ice. In the Northwest, up to 1/2 inch of salt is applied to road surfaces each year. De-icing salts are usually applied during snow storms before the snow can accumulate. These salts dissolve in water to form a brine that has a freezing point much lower than water. The brine melts ice and helps to prevent the formation of more ice as temperatures drop.

Runoff from treated pavement contains dissolved salts that may injure adjacent vegetation. Affected foliage in plants sensitive to excessive salt appears “scorched” and drops prematurely. In severe cases, the death of twigs, branches, and sometimes the entire plant, may occur.

The most commonly applied de-icing salt in New Jersey is sodium chloride, or rock salt. To improve traction, salts are usually mixed with abrasives such as sand, cinders, gravel, and sawdust, which can accumulate along roadways and cause problems with drainage.

How does de-icing salt affect vegetation?

Plants are injured by salt when foliage is exposed to “salt-water spray” from passing vehicles. In addition, salt-laden water moves through the soil profile and contacts roots. Mechanisms of salt injury include:

- **Salt increases water stress.** Salt accumulates on the surface of affected plant tissue. In the root zone, water molecules are held very tightly by salt ions. Roots must expend considerable energy to absorb water from a salt solution. Although sufficient water may be present in the soil, the plant may have difficulty absorbing it and a condition known as “physiological drought” occurs. In sensitive species, this may result in depressed growth and yield.
- **Salt affects soil quality.** The sodium ion component in salt becomes attached to soil particles and displaces soil elements such as potassium and phosphorus. As a result, soil density and compaction increases and drainage and aeration are reduced. Plant growth and vigor are poor under these conditions.
- **Salt affects mineral nutrition.** When the concentration of both the sodium and chloride components of salt in the root zone is excessive, plants preferentially absorb these ions instead of nutrients such as potassium and phosphorus. When this occurs, plants may suffer from potassium and phosphorus deficiency.

- **Salt accumulates within plants.** The chloride component of salt is absorbed by roots and foliage. Although this ion can accumulate in any plant part, it is usually concentrated in actively growing tissue. Plants repeatedly exposed to salt over long periods of time may accumulate chloride ions to toxic levels, resulting in leaf burn and twig die-back. The injury a plant sustains increases with a rise in foliar chloride levels. Foliage in direct contact with road salt sprayed by tires and wind becomes desiccated and may appear “burned.”

Unlike animals, plants do not have mechanisms to excrete excess salt from tissues and can only “shed” salt in dead leaves and needles. Because conifers do not shed leaves on a yearly basis, they tend to suffer damage from accumulated salt more easily than do deciduous trees.

**How do plants respond to excessive salt?**

Plant species vary in their tolerance to salt exposure (Table 1). Plants that are tolerant of salt grow as well in saline soils (soils high in salt) as they do under normal conditions. Salt tolerance is directly related to the concentration of chloride ions in the foliage. Many herbaceous plants such as grasses adapt fairly readily to high salt levels. Among woody plants, tolerance varies with the species. Plant species with waxy foliage are generally more tolerant of salt spray.

In salt-sensitive plants, exposure to salt often results in an unthrifty appearance and poor growth. Other symptoms of salt injury include stunted leaves, heavy seed load, twig and branch die-back, leaf scorch, and premature leaf drop. In addition, plants stressed by excessive salt concentrations are more susceptible to biotic diseases and insect pests. The extent of injury a plant sustains in response to salt depends on:

- The kind and amount of salt applied. Remember: any salt that contains chloride can damage vegetation.
- The volume of fresh water applied. In well-drained soils, salt is easily leached. Salts tend to accumulate, however, in poorly-drained soils, so the potential for damage to vegetation in these soils is high. High volumes of water, whether from rainfall or melting snow, will decrease the possibility of injury. Rainfall also washes salt from foliage surfaces.
- The distance plants are situated from treated pavement. Plants within the “spray zone” of moving vehicles are more likely to sustain salt injury. Injury is usually most evident on the side of the plant that faces the highway.
- The direction of surface-water flow. The channeling of drainage water away from susceptible plants will prevent salt from coming into contact with plant roots. Plants situated up-slope or away from drainage areas are less likely to be affected.

See De-Icing Salts on Page 4
The time of year salt is applied. Salt applied in late winter and early spring is more likely to damage vegetation than is salt applied in early- to mid-winter. This is because there is less time for winter snow and precipitation to leach salt from the root zone before growth resumes in the spring. The depth and duration of soil freezing is also important. Dormant trees continue to absorb water and nutrients in unfrozen soils. Salted water can percolate through frozen soils, reaching active plant roots in unfrozen soil horizons.

**How is salt injury minimized?**

The best solution to the de-icing salt problem is to prevent contamination. Abrasives can be used instead of salt when treating driveways and walkways. If vegetation is located in areas where salt spray occurs, barriers or screens can be erected to protect plants during the winter months. Anti-desiccants may also help prevent injury when applied to evergreen foliage along the coast or where de-icing salt will be used. County, state, and municipal officials can help prevent salt injury by carefully training equipment operators and frequently calibrating equipment.

Once soil becomes contaminated with salt, damage can be reduced by leaching the salt with fresh water as soon as possible after exposure. Under certain circumstances, incorporation of gypsum at the rate of 50 lb/1000 sq ft into the top 6 inches of soil at the drip-line of trees may also be helpful. Furthermore, foliage exposed to salt spray may be washed with salt-free water to remove deposited salt.

When landscaping, place trees and shrubs that are sensitive to salt as far as possible from problem areas. Select planting sites that are not subject to salt-contaminated waters, and place shallow diversion ditches between roadways and plantings. When vegetation must be placed near roadways, utilize salt-tolerant plants.

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**Table 1. Salt tolerance of common woody landscape plants**

<table>
<thead>
<tr>
<th>Tolerant Shrubs</th>
<th>Tolerant Deciduous Trees</th>
<th>Tolerant Evergreens</th>
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<tbody>
<tr>
<td>autumn elaeagnus</td>
<td>boxelder</td>
<td>Austrian pine</td>
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<tr>
<td>bayberry</td>
<td>black cherry</td>
<td>Japanese black pine</td>
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<tr>
<td>California privet</td>
<td>black locust</td>
<td>pitch pine</td>
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<tr>
<td>honeysuckle</td>
<td>bur oak</td>
<td>red cedar</td>
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<td>Pfitzer juniper</td>
<td>English oak</td>
<td>white spruce</td>
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<tr>
<td>rugosa rose</td>
<td>green ash</td>
<td>yew</td>
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<td>yucca</td>
<td>honeylocust</td>
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<td></td>
<td>red oak</td>
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<td>Russian olive</td>
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<td>Siberian elm</td>
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<td>weeping willow</td>
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<td>white oak</td>
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<td>white poplar</td>
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<tr>
<td><strong>Sensitive Shrubs</strong></td>
<td><strong>Sensitive Deciduous Trees</strong></td>
<td><strong>Sensitive Evergreens</strong></td>
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<tr>
<td>boxwood</td>
<td>American linden</td>
<td>balsam fir</td>
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<tr>
<td>Japanese barberry</td>
<td>beech</td>
<td>Canadian hemlock</td>
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<tr>
<td>multiflora rose</td>
<td>black walnut</td>
<td>Douglas-fir</td>
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<tr>
<td>Van houtte spirea</td>
<td>flowering dogwood</td>
<td>eastern white pine</td>
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<td>viburnum</td>
<td>ironwood</td>
<td>red pine</td>
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<tr>
<td>winged euonymus</td>
<td>little-leaf linden</td>
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<td></td>
<td>red maple</td>
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<td></td>
<td>shagbark hickory</td>
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<td></td>
<td>silver maple</td>
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<td>sugar maple</td>
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<td></td>
<td>sycamore</td>
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Diseases of Turfgrass
Bruce B. Clarke, Ph.D., Specialist in Turfgrass Pathology

General
Anthracnose, rust, dollar spot, and stripe smut are active at this time. Refer to recent issues of this newsletter for additional information about the identification and management of these diseases.

New Turfgrass Fungicide
Insignia just received an EPA registration on Thursday, October 24, 2003. Insignia (pyraclostrobin) is a strobilurin (QoI) fungicide that controls a number of important diseases (e.g., anthracnose, dead spot, brown patch, Fairy ring, pink snow mold, gray leaf spot, powdery mildew, pythium blight, red thread, rust, summer patch, and take-all patch). Unlike the other QoI fungicides currently labeled for turf, Insignia will also suppress dollar spot development if used on a preventative basis. Like all QoI fungicides, tank mixing and alternation with different fungicide chemistries should be used to prevent or delay the development of fungicide resistance.

Pink Snow Mold
This disease, caused by the fungus Microdochium nivale (Fusarium nivale), should develop soon on golf and landscape turf. To prevent pink snow mold this fall, avoid excessive nitrogen applications, continue mowing turf until dormancy, and apply Banner, Chipco 26GT, chlorothalonil, Compass, ConSyst, Eagle, Heritage, Medallion, PCNB, Spectro, thiophanate-methyl or vinclozolin. For best results, apply any of these fungicides now and then repeat in late-January if the snow cover recedes. Do not, however, reapply PCNB after January 15 due to the possibility of phytotoxicity during warm weather next spring.

Stem and Crown Rust
These diseases are prevalent on susceptible Kentucky bluegrass and perennial ryegrass cultivars, respectively, at this time. As rust intensifies, affected turf prematurely yellows and orange pustules called uredia (reproductive structures) appear on leaf blades. To control both stem and crown rust, maintain adequate fertility and soil moisture, and apply Banner, Bayleton, chlorothalonil, Compass, Eagle, Heritage or mancozeb per manufacturer’s recommendations.

Stripe Smut
This disease, caused by the fungus Ustilago striiformis, is apparent on sensitive Kentucky bluegrass varieties. Symptoms appear as long black streaks (striations) between the veins of infected blades. These areas eventually rupture releasing abundant black smut spores. One well-timed application of an appropriate fungicide now will provide excellent control and is, therefore, far superior to multiple applications in the spring (mid-May). For best results, apply Banner, Bayleton, Cleary 3336, Eagle, Fungo, or Rubigan now per manufacturer’s recommendations.

Take-all patch
This disease, caused by the root and crown infecting fungus, Gaeumannomyces graminis var. avenae, can appear on bentgrass greens, tees and fairways at any time in the fall and spring. Although take-all patch is difficult to control, best results have been achieved through the use of acidifying fertilizers during cool weather (e.g., ammonium sulfate) and preventive applications of Banner, Bayleton, Heritage, or Rubigan now and again in early December. If the disease has been particularly severe, fungicides should be reapplied twice next spring at

Plant Diagnostic Laboratory Highlights
Richard J. Buckley, Laboratory Coordinator

Turf
Dollar spot is the disease of the week in the laboratory this period. Unseasonably warm days in late-October and early-November kicked the disease is gear. Sclerotinia homoeocarpa, the fungus that causes dollar spot, does best in a wet turf canopy. Seems everything is wet lately, and the weather pattern of warm days and cooler nights increases the formation of dew and guttation fluids in the turf canopy, which makes an ideal situation for the disease.

Landscape
The tale of a rainy season - more of the same in landscape plantings - samples continue to be submitted to the laboratory with a myriad of leaf diseases and minor blights. Samples include: anthracnose on oak and maple; Phomopsis twig blight on holly; Cristulariella moricola on London plane; and a couple Diplodia tip blights. Phytophthora crown and root rot continues to be a problem for container nurseries. Samples diagnosed with the disease include rhododendron, acuba, and scotch broom.
Employee Training: Is it Worth it?
Steven K. Rettke, Ornamental IPM Program
Associate

The Value of Training
Those of us who have accepted the landscape IPM philosophy realize that employees require enhanced training to make quick pest control decisions in the field. More education is needed to implement the more complex pest control tactics that are required. It is also generally accepted that employees must have more knowledge if they are to successfully persuade clients to contract for IPM. Furthermore, if we want our clients to view our personnel as plant information specialists instead of merely equipment operators, then employee education and training are a necessity.

The above reasons are a straightforward argument for the value of employee training within our industry. However, one of the serious concerns of owners and managers of landscape companies is that their employees may leave the organization and go somewhere else (a competitor, for example) after they have invested money towards their training. This is a legitimate problem, especially since employee turnover rates are relatively high within the green industry. On the other hand, employee training can not only help make money for a company, but also can make the employee enthusiastic about working for that company and help in employee retention.

Employee/Employer Relationships
We need to change some of our old philosophies concerning our employee and employer relationships. Traditionally, an employee is often viewed as a “tool,” who is hired to produce profits for the company, but needs to be controlled by management. A more humanistic approach is to view the employee as a “resource,” who is hired to make a profit for the organization and should be managed by commitment. The obvious question is, “How do you persuade an employee to become committed to make a profit for the organization they work for?”

Many landscape companies spend a great deal of time and money maintaining their equipment and machines. However, all too many companies are not devoting the same amount of time and money towards “maintaining” their employees. It is probably even more important to maintain the human resource than the machine resource. It is important to understand that training can foster employee motivation. It is a popular misconception that pay and other compensations are the most important factors in motivating an employee. In fact, it has been stated by many managerial theorists that pay actually does not motivate an employee.

The Unrecognized Benefits of Training
1. Prevents Burnout: Organizations that spend a lot of money on the human resource can prevent employee burnout through the use of training. Over the years, as the employee increases their time with the organization, then their value to the company should also increase. Studies have shown that this is generally true for about the first 5 years during employment. Afterwards, that employee either stabilizes their value to the company, or actually begins to become less valuable, especially when no new training occurs. Research indicates that employees need to be re-motivated or re-challenged approximately every 5 years to prevent the downward slide of value of the employees to the organization.

The re-energizing of employees can be accomplished through job enrichment, job enlargement and job rotation (job enrichment = new challenges; job enlargement = more responsibility; job rotation = job cross-training). All three of the motivators listed above are greatly dependent on training. Of course, burnout can apply to managers and owners as well as employees. When the manager/owner experiences burnout, then it can spread like a cancer. It will spread to the employees who will pick up on this negative situation.

2. Helps Retention: As mentioned, training can help to retain employees in the green industry, which has a history of very high employee turnover. Employee retention usually increases dramatically with job training, resulting in increased responsibility, ability, production and increased compensation (increased compensation does not always mean higher wages per hour).

Pay alone is not a long-term job motivator. Employee job satisfaction vs. dissatisfaction levels is determined by numerous factors. Behavioral scientists have identified pay (plus benefits) and working conditions as “maintenance” factors, that the employees are either dissatisfied with or not dissatisfied with (there are obviously gray areas in between). On the other hand, such factors as the job itself, the challenge, advancement, and training are considered to be “motivators,” where they provide employees with satisfaction or no job satisfaction (again with gray areas between the two extremes). Notice the subtle difference between the maintenance vs. motivating factors. If you accept the ideas stated above, then pay is viewed more as being acceptable or not acceptable. Therefore, if pay meets a certain minimum acceptable level, then the employee is not dissatisfied. To motivate, however, then the other factors such as job training, advancement and challenge must reach certain satisfaction levels.

3. Training Produces Trainers: Training improves the “maturity” level of employees. Usually it not only enhances the ability of employees to do their jobs, but also their willingness to do it well. Therefore, the highly trained employees can become consultants and can be

See Employee Training on page 2
Hardscaping & Lighting: Focus of the South Jersey Landscape Conference

New Products and Marketing of Hardscaping, by Paul Cimini of EP Henry will be one of the featured presentations in the morning session of the South Jersey Landscape Conference and Trade Show on December 4th in Glassboro. Sponsored by the New Jersey Nursery Landscape Association (NJNLA) – South Chapter, in cooperation with Rutgers Cooperative Extension (RCE), the all day conference and trade show will be held at Masso’s Crystal Manor on S. Delsea Dr. Also featured in the afternoon session will be a talk on “Proper Use of Lighting in the Landscape” by Jim Dobrzynski of Shemin Nurseries in Chadds Fords, PA.

“As landscapers integrate into more services and products we need to provide more educational information for them”, said Jerry Frecon, Agricultural Agent with RCE of Gloucester County, and chair of the education program. “A regular and popular feature of our past conferences has been the sharing of new ideas and practices by South Jersey landscapers”, said Mr. Frecon, “We have an excellent panel of business people featured at the kick off of our morning session from 9:15 – 10:15 a.m.”

Pat Cullina of the Rutgers Gardens in New Brunswick will discuss “New Introductions and Old Favorites in the Landscape.” Larry Kuser, nurseryman and well-known lecturer will discuss “What Growers Never Tell You about Selecting Trees”, during the afternoon session.

Steve Rettke of Rutgers Cooperative Extension will discuss Wood Borers – the Ultimate Landscape Assassins and Dr. Ann Gould, Specialist in Plant Pathology will cover “Impact of Moisture in Disease Development”. Pat Hastings of RCE’s Pest Management Office will finish up the afternoon session with an update on Landscape Contractors safety regulations.

New Jersey Pesticide Applicator Units: 2 of Forest 2; 2 of, 3A, 2 of 6B and 8C, 1 Core and 2 units of PP2 will be offered to each attendee in the afternoon.

“We also expect to have a good trade show of exhibitors” said Keith MacIndoe, NJNLA South Chapter Chairman, “This should be worth the price of admission.”

Registration information is available by contacting the NJNLA at (609) 291-7070 or (800) 314-4836, or Jerry Frecon at (856) 307-6450. The program and registration forms are available at the following web sites http://gloucester.rce.rutgers.edu/ or http://www.gardennj.net/.

Pre-registrations can be faxed to 856-881-4191 before November 24th.

Submitted by Jerome L. Frecon, Agricultural Agent.

Calendar of Events

November 12, 2003 - South Jersey Nursery Meeting, Cumberland County Extension Office, 291 Morton Ave., Rosenhayne, NJ. All day meeting. Contact RCE of Cumberland County at 856-451-2800.

December 4, 2004 - South Jersey Landscape Conference and Trade Show, Masso’s Crystal Manor, 210 S. Delsea Drive, Glassboro, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester County at 856-307-6450 - Ext 1 or Carl Nordstrom - New Jersey Nursery & Landscape Association at 609-291-7070 or visit: http://gloucester.rce.rutgers.edu

December 6, 2003 - If Plants Could Talk, a gardening TV series, 12:30 NJN. For info on episodes, visit the IPCT web site at:http://ifplantscouldtalk.rutgers.edu.

December 9 - 11, 2003 – NJ Turfgrass & Landscape Expo, Trump Taj Mahal, Atlantic City, NJ. Contact Bea Devine at 732-821-7134 or visit: http://www.njturfgrass.org


March, 2004 - Spanish Series: Secrets of Successful Lawncare (March 2); Tree Identification I - Hazardous Trees (March 4); Intro to Plant ID (March 10), Proper Pruning Techniques for Landscape Plants (March 16). Cook College Office of Continuing Education. Contact OCPE at 732-932-9271 or online at: http://www.cookce.rutgers.edu.