NORTHWEST TURFGRASS TOPICS

The Official Publication of the Northwest Turfgrass Association Vol. 37, No.2 Winter 1993/94

48th Northwest Turfgrass Conference Rescheduled

The Northwest Turfgrass Association's **48th Northwest Turfgrass Conference** location and dates announced at the conclusion of the 1993 conference have been changed. The conference is now scheduled for **September 26-29, 1994** at **Salishan Lodge** in Gleneden Beach, Oregon. Logistical complications with the original site led to the change of schedule and location.

Those NTA members who attended the 41st conference in 1987 will remember the outstanding experience everyone had when Salishan served as the conference site. If you didn't make that conference, you want to be sure to get to this one.

Preparations for the conference are well underway. Meeting space, the golf course, and a block of lodging rooms have been reserved. The Conference Program Committee is working on the program and getting presenters committed and the Conference Hospitality and Events Committees are planning their activities.

Planning and preparations are in the able hands of the following conference committee chairpersons: **Becky Michels**, companion program; **John Monson** and **Don Clemans**, education program; **Mark Snyder**, golf tournament; **Tim Haldeman**, sponsor program; and, **Jim Dusin**, tours. Registration, hospitality and logistical arrangements are handled by staff. The committee chairs and staff, working within parameters established by the NTA Board of Directors, make-up the network of individuals responsible for this year's conference.

Conference Education Program Taking Form

The education program for the Salishan conference is shaping up well. Among the various presenters will be **Tom Watschke** from Pennsylvania State University, **Larry Gilhuly** and **Jim Moore** from the USGA, **Tom Cook** from Oregon State University, **Stan Brauen**, **Gwen Stahnke** and **Bill Johnston** from Washington State University.

The program will be organized in two tracks again this year one for golf course superintendents and one for other grounds maintenance managers.

Salishan Golf Links To Host Golf Tournament for Research

In Scotland, golf links are built upon land reclaimed from the sea. The style of play is a rugged, challenging encounter with the elements enhanced by the native beauty of the surrounding area.

Salishan Golf Links reflects this tradition. The course has been created in harmony with nature. The trees and coastal vegetation surrounding the areas of play are left as natural as possible. As on Scottish golf links, the tees, landing areas and greens on this 18-hole championship course are beautifully maintained by Superintendent Mark Snyder and his crew.

Salishan looks like it was laid out by a trio of golfers who wanted to settle a bet right then and there as to who was the better golfer. Erratic and unconventional, it has a character all its own.

Crazy touches are everywhere. The ninth tee is nowhere to be found, unless you drive your golf car up the road toward some condos, where a little patch of turf sits perched like an eagle's nest above a distant fairway. Head professional at Salishan Links, Grant Rogers, calls number seven "the par-4 that's never been parred," because it's long (426 yards from the back tees) disappears around a corner, and then climbs to an uphill green. He may as well call the front nine "the nine that's never been parred," because it is immensely long and challenging. Lying snug against Siletz Bay, the back nine begins to make sense as the links feeling sinks in. A sand dune awaits errant shots on the right side of the 12th fairway; traps of sand and sea grass protect a small green at the 13th.

Conference Kick-off Reception is A Must

For the last three years, one of the highlights of the conference has been the **Conference Kick-off Reception** the first evening of the conference. The event always draws a full house. Golf tournament winners are announced and prizes are awarded; a grand selection of heavy hors d'oeuvres; and, the opportunity to rekindle old acquaintances and make new ones, all contribute to an evening of fun and enjoyment. This hosted event is a must for everyone.

President's Report

"Leadership in information, research and support of turf and ground professionals."
NTA Mission Statement

"behold the turtle, he makes progress only when he sticks his neck out."
Cervantes

(With those words in mind, I would like to take this opportunity to introduce you to the T.U.R.F. (Turfgrass Universities Research Fund.) program.

The T.U.R.F. Program is a proposal of the Northwest Turfgrass Association designed to provide meaningful, sustained, broad base support for turfgrass research at Oregon State and Washington State Universities. Our goal is to collect one dollar per golfer in Oregon and Washington to help support and improve our existing research facilities and educational programs.

To accomplish this goal we will need to enlist the cooperation of our regional and local golf associations. Our idea is to add a one dollar surcharge onto the existing handicap systems. The dollar for TURF campaign has the potential to raise in excess of $150,000 per year. That is a large part of the additional funding we will require to sustain our existing research and education programs. Total current contributions to research from existing sources average nearly $100,000 per year. Funding requests submitted to the NTA Board so far this year total in excess of $400,000., a number that far exceeds our existing capability even with the possibility of matching funding from outside agencies such as the USGA.

An Advisory Council, as allowed under our by-laws, has been formed to support the TURF program. This council or committee is made up of representatives from all areas of the industry including; universities, industry, golf course superintendent associations and the USGA in addition to the Executive Board and Executive Director of the NTA. This committee has met and has determined a course of action that is appropriate for our purpose, one that has been approved by the Board of Directors.

In accordance with that plan, a written program proposal description was assembled by a team headed up by Tom Wolff and David Jacobsen. A materials presentation team including Tom Cook and Larry Gilhuly prepared an Audio/Visual program to compliment the written package. On January 18th, a formal presentation was made to a joint meeting of the WSGA and PNGA Executive Boards. As we go to press, the result of that meeting is uncertain, pending future meetings of the full Boards of Directors of the WSGA and PNGA. The ball is now in their court.

As we have in the past, we will continue in the future to support turfgrass education and research as best we can. The burden of that support has always fallen to us and we accept it as a part of our mission. And, we do it very well, raising literally hundreds of dollars per member. The fact is, the burden has become more than we can bear alone. It is time that the end users of our products, high quality turfgrass facilities, help pay the freight.
The environmental concerns of today and tomorrow make education and research more important than ever. Our industry needs unbiased facts in sorting through the future uses of fertilizers and pesticides, in dealing with the negative public perceptions of that chemical use and in developing alternative management methods. All of this in addition to the more traditional benefits of research.

In the final analysis, it is the end user, the golfer, the ball player, the park user, the general public and not us, who has the most to gain or to lose if our existing research and education programs are cut back or lost altogether. The TURF Program is just a first step down a long road towards individual participation in the funding of regional turfgrass research and education. For the good of all of us.

Tom Christy, President

Salishan Offers A Variety of Amenities

Salishan has as many things to do if you have the energy to do them. A network of **walkways, jogging trails** and **nature paths** maintained throughout the grounds offer opportunities to discover the grounds and beach.

Indoor **tennis courts**, among the finest, offer superior acoustics, total indirect illumination and plexi-pave court surfaces. The tennis staff is happy to arrange games for guests without a partner and a ball machine is available for practice.

The indoor **recreation center** is a complete fitness facility with state-of-the-art exercise equipment, swimming pool, men's and women's saunas, hydrotherapy pool and an outdoor sun deck.

The Salishan Peninsula has is one of the Northwest's most secluded and natural **beaches**, with the Pacific Ocean to the west and Siletz Bay to the east. Low tides offer an opportunity for excellent beach combing.

A visit to the old-world style **wine cellar** beneath the Salishan Lodge is a memorable, unique experience—the perfect way to spend an afternoon hour. Salishan's wine collection of over 21,000 bottles has received many awards as one of the finest collections in the world. The lodge also offers an **art gallery**, **gift shop** and **library**.

Salishan Lodging and Dining Facilities

The conference headquarters, the **Salishan Lodge**, offers 200 rooms nestled gently on a grand green bluff with fir, hemlock and cedar trees, connecting with each other and the main lodge by covered bridges and walkways. All rooms are designed for privacy, quiet and views of the forest, the golf links or Siletz Bay. Each room features a wood-burning fireplace, balcony, prints and lithographs by Oregon artists and a covered carport.

Salishan offers a number of stellar dining spots, simple to fancy. Fanciest is The Dining Room, with award-winning cuisine featuring seasonal Northwest seafood, game and other delicacies. In the more informal Sun Room, they offer breakfast, lunch and dinner with picture window views.

Salishan Lodging *(continued from page 3)*

The Cedar Tree is the place for a sumptuous Sunday brunch. The Marketplace Restaurant on Siletz Bay is a great place for a casual lunch and dinner and the Attic Lounge is a favorite for beverages and a little night music and dancing.

The full range of lodging accommodations-motels, hotels, bed & breakfast and camping facilities-are available in the Lincoln City/Gleneden Beach/Newport area. For information contact the Lincoln City Visitor & Convention Bureau at 1-800-452-2151 or the Newport Information Center at 1-800-262-7844.

Getting To The Salishan

Flying into Portland, Oregon is probably the most direct route, if flying into the region. Portland International Airport is serviced by the major airlines and car rental agencies. It is recommended that car rental arrangements be made in advance.

The Salishan Lodge is located in Gleneden Beach, Oregon. It takes two hours from Portland and 3 hours from Eugene to drive to Salishan. When driving from Portland, the lodge is approximately 10 miles south of the junctions of highways 18 and 101. If driving from Eugene or the south, the lodge is approximately 17 miles north of Newport on highway 101.

1994 Research and Scholarship Fund Raising Campaign Kicks Off

Tom Christy, NTA President and Randy White, NTA Research and Scholarship Fund Committee Chairperson, recently announced the kick-off of the **1994 Research and Scholarship Fund Raising Campaign**. For the last few years NTA has annually given out over $35,000 in research grants and $5,000 in scholarships. The success of the annual fund raising campaign is a key factor in the level of support NTA can provide to these efforts.

Intimately involved with turfgrass management, we realize more than most, that today's turfgrass quality is the result of knowledge and technological gains resulting from research and education accompanied by hard work and effort. We owe our thanks to those who gave their time and money to make the research and education possible, for without them we would have to rely on our own individual trial and error methods.

Few of us are independently capable of, nor prepared to conduct the research or development necessary to keep the industry on the leading edge. Recognizing this, the Northwest Turfgrass Association created a research and scholarship fund to help make it possible for each of us to financially contribute to industry research and education advancements.

Donation forms will be mailed to members and industry supporters with the next month or so. Contributions are **tax deductible** and those contributing to the research and scholarship fund are recognized in the annual **Directory of the Northwest Turfgrass Association**.

Buy a share today in better turfgrass for tomorrow.

Annual Membership Dues Billings

The second notice of **Annual Dues Statements** for 1994 was just recently mailed to those that had not yet responded to the first notice mailed in December. Those who have already paid their membership dues for 1994 should not receive the second notice.

The NTA is a non-profit corporation founded in 1948 to help all people involved with and interested in turfgrass culture in the Northwest. The association has grown in the last few years from around 200 members to over 450 individuals involved in turf facilities development and maintenance in public schools, universities and colleges, parks, golf courses, cemeteries, sports fields, commercial facilities, home lawn care operations and others.

94/95 Scholarship Applications Sought

The Northwest Turfgrass Association is now accepting applications for turfgrass scholarships for 1994/95 academic year. Scholarships generally range from $500 to $1000.

Scholarship applicants should complete a copy of the enclosed **Scholarship Application Form.** Applications should be typed. Guidelines used when applications are considered include the following:

1. applicants shall be enrolled in a college or university in the Pacific Northwest working toward a turfgrass science related degree;
2. applicants must: have completed the first year at a two year community college or vocational/technical institute; be a junior or senior in a four year college or university; or be a graduate student;
3. applicants shall have outstanding qualities as individuals and students including integrity, initiative and leadership; and,
4. applicants shall have a desire to make a contribution to the turfgrass industry and profession in the Pacific Northwest.

All scholarship applications for 1994/94 should be submitted to the NTA office no later than **March 30, 1994**. Questions relating to scholarships should be directed to the NTA office-(206) 754-0825.

94/95 Research Grant Proposals Sought

The Northwest Turfgrass Association is now accepting proposals relating to turfgrass research for the 1994/95 academic year. Research proposals must be submitted in a prescribed format which is described in the announcement information enclosed in this newsletter.

Consideration of proposals will be in accordance with the following guidelines:

1. they shall be from sources within the Pacific Northwest;
2. they must be for activity that will directly benefit the turfgrass industry in the Pacific Northwest; and,
3. the activity shall be underway or initiation shall be imminent.

All proposals for 1994/95 should be submitted to the NTA office no later than **March 30, 1993**. Questions relating to research funding should be directed to the NTA office-(206) 754-0825.

1993 Conference Sponsors for Research Applauded

This was the first conference for the newly developed "Sponsorship Program."
Suppliers were invited to sponsor a tee or hole during the conference R.L. Goss Golf Tournament for Research by purchasing a sign to be displayed on the course and during other major events throughout the conference. Tom Christy, chairman of the committee that introduced the program this year, described the response as outstanding.

The sponsors whose names appear on the sign board below, which was on display through out the conference, deserve special thanks for being "Sponsors" for research during the 1993 annual Northwest Turfgrass Conference. Each sponsor's donation, other than the cost of a tee sign, went into the **NTA Research and Scholarship Fund.**

Irrigation Lines Inspection

This fall when you are blowing out your irrigation system, make plans to rent the air compressor again in the spring. This past spring I saw a Superintendent using his ingenuity in charging his irrigation lines with air. He pressurizes his system with approximately 80-100 PSI as his staff scouts the system for breaks. They do this by listening for where the air is "hissing" from the ground.

By locating the damaged pipe this way, repairs can be made immediately. There is no water to drain from the system, and no water to pump out of the repair area. Can you imagine fixing an irrigation break in a dry hole?

Research and Scholarship Sponsor Program Expanded

Turf grounds maintenance and irrigation suppliers and other interested parties will soon be invited to become a financial **Sponsor** of an activity or event during the **Northwest Turfgrass Conference** conducted annually by the Northwest Turfgrass Association. Around 300-400 golf course, park, sports facility, lawn grounds maintenance and ornamental professionals and suppliers interested in the latest turfgrass-related research and developments are usually in attendance.

The purpose of the **Research and Scholarship Sponsor Program** is to provide industry suppliers with an opportunity for **tax deductible** advertisement of their companies and, at the same time, through the reduction in conference costs, free up more conference receipts for funding research activity and scholarships. During the very successful trial year of the program, the focus was on golf tee sponsorship during the preconference R.L. Goss Golf Tournament for Research. Sponsors had a professionally-constructed, multi-color sign of their company logo and name at a tee plus a reproduction of the tee sign on a sponsor sign board that was displayed at all the major events during the conference.

The **Sponsor Program** will be expanded, beginning with the 1994 conference, to include a variety of conference-related sponsor opportunities, in addition to golf tees. Sponsor opportunities will include:

- **Golf Tees**

(preconference R.L. Goss Golf Tournament for Research)

- **Honoraria/Expenses**

(Preconference Seminar and Conference Presenters; Conference Key Note Speaker; Conference Entertainment)

- **Food Services**

(Preconference Event Luncheon; Presenters/Past Presidents Reception; Get Acquainted Reception; Annual Meeting Breakfast; University Advisory Group Luncheon; GCSA Advisory Group Luncheon; Women in Turf Breakfast; T.U.R.F. Program Advisory Council Luncheon; Coffee/Refreshment Breaks; et al.)

- **Underwriter**

(Overall Conference Support)

Depending upon the level of sponsorship, sponsors will receive recognition for their sponsorship ranging from signage at an event and during the conference to special recognition at the convention and throughout the year in the **Northwest Turfgrass Topics** newsletter and the annual member directory.

How Many Golfers Are There?

If all the golfers in the United States lived in the same place, they'd make a city larger than New York City, Chicago and Los Angeles combined. And just think of the wait for a starting time.

Certification Program for Turfgrass Professionals

At a November 17 press conference in Baltimore, the Professional Lawn Care Association of America announced the availability of the new Principles of Turfgrass Management training course and certification program.

The program, developed in conjunction with the University of Georgia, leads to the designation of Certified Turfgrass Professional. It is the first comprehensive national training course and certification program available for the lawn care industry.

Principles of Turfgrass Management is structured as a home-study, correspondence course. It covers 14 topics appropriate for all regions of the United States.

"In planning the course program, we wanted it to set a standard for the turfgrass industry in all parts of the country," said PLCAA Executive Vice President Ann E. McClure.

Course author Dr. Keith Karnok, Professor of Agronomy at the University of Georgia, says the program will allow lawn care operators to learn the technical aspects of turfgrass management without having to attend structured lectures or labs. "Along with the experience of working in the lawn care field, professionals receive valuable training on topics of great importance in today's industry," he said.

Topics covered include:

- types of turfgrass
- adaptation to soil and climate
- fertilization
- mowing and irrigation
- insects, weeds and pesticides
- turfgrass disease
- environmental issues and regulations
- customer relations

In addition to earning the designation of Certified Turfgrass Professional, those who successfully complete the course (by passing two monitored exams) will earn 12 University of Georgia Continuing Education Units (CEUs), equivalent to 120 hours of training. CEUs are recognized as a standard training unit in business and industry.

Scholarship Recipient Sends Thanks

Dear members of NTA,

I am writing to thank you for awarding me an NTA Turfgrass Management Scholarship. Your kindness has enabled me to finish my college education at WSU. You have provided me with the opportunity to strive for my career goals in the turf and golf industry. Thank you.

Sincerely,
Timothy A. Rowe

Cold-weather Equipment Maintenance

The basics of winterizing heavy equipment are, unfortunately, not basic to everyone and they're certainly not practiced as often as they should be.

The first step is to read the product operator's manual and make sure you do all routine maintenance tasks, including winterizing, to ensure top performance and minimum wear. But that advice is often ignored.

Most operators are busy. They've been working with heavy equipment for years and they tend to dismiss the impact of routine practices life shifting to a low-viscosity oil in winter, not realizing the dramatic effect on performance.

In addition, knowledge about winterizing and the inclination to take winterizing measures are directly linked to climate. You don't have to tell the guy who maintains parks and roadsides in northern Minnesota what happens if he doesn't keep his battery charged. It's when you get south of the really cold climates and into areas of intermittent cold that you see a serious gap in winterizing practices.

Something as simply as giving a machine plenty of time to warm up is especially important in winter. New engine oils make this somewhat less critical than it used to be, but they hydraulic oils still need to warm up to avoid component damage.

Diesel engines are very sensitive to engine rotation speed for starting, especially in cold weather. Most of the so-called winterizing basics result in an immediate improvement in starting and overall performance and a decrease in stalls and failures.

If an engine starts hard, a lot of operators leave their equipment idling for prolonged periods between use. We don't recommend this because it lowers engine temperature so the piston rings don't seal well. That puts more blow-by and deposits into the crankcase, and that causes engine damage.

If ongoing, long-term idling is necessary for any reason, operators need to change their oil more frequently and they should probably raise the idle rpm to reduce the problems.

The proper steps

Every manufacturer's recommendations for winterizing are different, as are the requirements for specific equipment types and models. That's why we strongly recommend referring to operator's manuals for product-specific instructions regarding mixes, levels and practices for fuels, oils, filters, coolants and all the other maintenance variables.

Of course, manuals get lost–that's where a good support service comes into play. The more information sources available for your equipment, the better off you are.

The following steps are necessary for proper equipment winterization:

• *Make sure all routine service is handled.*

The engine should be tuned up and the electrical and fuel systems should be in good operating condition.

This is important for equipment with gas or diesel engines, and it's especially important when equipment is older. A must-check is alternator output. It has to be in the normal range to keep the battery charged, especially in cold weather.

• *Use the correct oil.*

It's basic but still important. Using a heavier-weight oil makes for sluggish performance and adds to engine wear.

• *Check the battery.*

This means the battery needs to be clean, fluid must be at proper levels, and most important, the battery needs to be charged to at least 80 percent for consistent operation. Our tests indicate performance nose-dives when the charge gets below 75 percent.

Never grease the battery posts or connections. The grease melts when the battery heats during cranking, creating a bad connection that can do serious damage.

• *Be sure the ether system or glow plus are functioning.*

Direct-injection engines do not use glow plugs as a starting aid but indirect injection engines do. Use a voltmeter to see if electricity is getting to the glow plugs. Disconnect and test each glow plus individually using an ohmmeter. Specifications are listed in the operator's manual.

For engines using ether systems, check the operator's manual to be sure the ether system is properly activated while the starter is running.

One word of caution. Using ether in a glow-plug engine will cause engine damage and is dangerous to the operator.

• *Properly adjust controls before starting.*

Requirements for equipment vary, but with our skid steers, for instance, it's important that all hydraulic and propulsion control levers be in neutral before starting. When this isn't done, it adds a parasitic load to the engine and starter and makes for hard starting.

In some small units with declutch systems, the operator should check before he goes out on the job to make sure the declutch is functioning properly.

• *Find a good source for cold-weather blended fuels.*

Using blended fuels prevents fuel-system waxing that restricts fuel flow. The operator's manual specifies the appropriate mix and states whether a separate diesel conditioner should be used.

• *Note any required hydraulic oil changes needed for cold weather.*

Some equipment does not require hydraulic oil changes except in extreme conditions that call for an arctic blend. Check the manual for the specifics.

• *Incorporate cold-weather options as needed to improve starting.*

Manufacturers often provide cold-starting aids appropriate to respective climates. Customers also can order battery, oil-pan engine-coolant (block or tank) and fuel heaters from dealers. Check these heaters' working order before going into winter.

• *Use coolant according to manufacturer specifications.*

Fed O'Donnell, Case product performance manager for engines, agrees that it's important to pay attention to the operator's manual. "You need to live by the manufacturer's recommendations when it comes to equipment maintenance." O'Donnell says, "and that's especially true when it comes to coolants.

Coolant basics

Nearly half of all premature engine failures result from poor cooling system maintenance and related cooling failures. Cooling systems are more complex than they

Table 1. Types, symptoms, and causes of winter injury that most commony occur on golf course turf

Type of winter injury	Symptoms	Cause of injury: External forces	Cause of injury: Internal plant effects
A. Desiccation:			
(1) Atmospheric	Leaves turn distinctly white but remain erect; occurs most commonly on higher locations that are more exposed to drying winds; can range from small irregular patches to extensive kill of large areas.	A drying atmospheric environment including high winds and low relative humidity; in addition, soil water absorption is reduced at low temperatures or may be inoperative because the soil is frozen.	Desiccation of the plant causes shrinkage and collapse of the protoplasm that results in mechanical damage and death.
(2) Soil	Leaves turn distinctly white and are semi-erect; the tissues including the crown are very dry; commonly occurs in a more extensive pattern over the turf than does atmospheric desiccation.	Extended periods of soil drought due to a drying atmospheric environment and lack of precipitation or irrigation.	(Same as above)
B. Direct low temperature kill	Leaves initially appear water-soaked, turning whitish-brown and progressing to a dark brown; the leaves are limp and tend to lay as a mat over the soil; a distinct, putrid odor is frequently evident; occurs most commonly in poorly drained areas such as soil depressions; frequently appear as large, irregular patches.	A rapid decrease in temperature, particularly the adjacent soil temperature; kill most commonly occurs at soil temperatures below 20°F during the late winter-early spring freezing and thawing periods; may be associated with thawing of an ice cover that occurs from underneath.	Large ice crystals form within the plant tissues causing mechanical destruction of the frozen, brittle protoplasm; the higher the water content of the tissue, the larger the ice crystals and the more severe the kill.
C. Low temperature diseases:			
(1) *Fusarium* patch (pink snow mold)	Pink mycelium on leaves; 1 to 2 inch, tan, circular patches; or white mycelial mass on leaves, white to pink circular patches up to 2 feet in diameter	*Fusarium nivale:* favored by turfgrass temperatures of 32 to 40°F and moist conditions.	Parasitic action.
(2) Spring dead spot	Appears in the spring as irregular, circular dead spots of up to 3 feet in diameter; shoots, rhizomes, stolons and roots within the spot will be killed; affected spots commonly reoccur in the same location each year and may gradually enlarge.	Casual organism has not been identified; favored by turfgrass temperatures below 50°F and wet conditions.	Unkown
(3) *Typhula* blight (gray snow mold)	Light gray mycelium on leaves, especially at the margins of the advancing ring; whitish-gray, slimy, circular patches of up to 2 feet in diameter; brown sclerotia are embedded in the leaves and crowns, ranging up to 1/8 inch in diameter.	*Typhula itoana, T. idahoenis, or T. ishikariensis;* favored by turfgrass temperatures of 32 to 40°F, especially under an ice cover or during its thaw.	Parasitic action.
(4)Winter crown rot	Light gray, matted mycelial growth may be evident on the leaves; irregular shaped patches initially appear yellow and gradually deteriorate to a straw color; individual patches up to 1 foot in diameter may coalesce causing damage over a large area.	Unidentified low temperature *Basidiomycte;* favored by turfgrass temperatures of 28 to 32°F., especially under a snow cover.	Injury results from hydrogen cyanide gas produced by the saprophytic fungus; subsequently the fungus invades the host plant.
D. Traffic:			
(1)On frozen turfgrass leaves	Erect, white to light-tan dead leaves appearing in the shape of the footprints or wheels where they have been impressed into the turf.	Pressure of the traffic (shoes or wheels) on the rigid, frozen tissues; the problem most commnly occurs during the early morning hours.	Disruption of the frozen, brittle protoplasm that has ice crystals surrounding and extending into it during the early morning hours.
(2) On wet, slush covered turfs	Leaves initially appear water soaked turning whitish-brown and progressing to a dark brown; the leaves are limp and tend to lay as a mat over the soil; appears in irregular shapes associated with previous patterns of concentrated traffic; soil rutting may also be evident.	Snow cover thaws to a slushy condition causing increased hydration of the turfgrass crowns; traffic, including snowmobiles, force the wet slush into intimate contact with the turfgrass crowns; kill most commonly occurs if this event is followed by a decrease in temperature to below 20°F.	Not completely understood, but is related to the direct low temperature kill mechanism.

Table 2. Practices available to minimize winter injury on golf course turf

Type of winter injury	Practices that minimize injury: Turfgrass cultural	Soil management	Specific protectants	Turfgrass species most commonly affected
A. Desiccation:				
(1) Atmosphere	Moderate nitrogen nutritional levels. Elimination of any thatch problem.	Do not core in late fall and leave the holes open.	Conwed Winter Protection Blanket Polyethylene (4-6 mil) Saran Shade Cloth (94%) Topdressing (0.4 yd^3/ 1000 sq. ft.) Windbreaks such as snow fence, brush, or ornamental tree and shrub plantings. Natural organic mulches.	Annual bluegrass
(2) Soil	Moderate nitrogen nutritional levels. Irrigation or hauling of water to critical turfgrass areas.	(Same as above)	(Same as above)	Annual bluegrass
B. Direct low temperature kill	Moderate nitrogen nutritional levels. High potassium nutritional levels. Higher cutting heights. Elimination of any thatch problem. Avoidance of excessive irrigation.	Rapid surface drainage by proper contours, open catch basins, and ditches. Adequate subsurface drainage by drain tile, soil modification with coarse textured materials, slit trenches, and dry wells. Cultivation, especially coring and slicing, when compaction is a problem.	Conwed Winter Protection Cover Soil Retention Mat Enhancing a snow cover with snow fence or brush. Natural organic mulches such as straw. Soil warming by electricity.	Bermudagrass Annual bluegrass Red fescue
C. Low temperature diseases:				
(1) *Fusarium* patch	Moderate nitrogen nutritional levels. High potassium and iron nutritional levels. Moderate to low cutting heights. Elimination of any thatch problem.	Avoiding neutral to alkaline soil pH's	Cadmiums Benomyl Daconil Mercuries	Annual bluegrass Bentgrass
(2) Spring dead spot	Avoid excessive winter irrigation. Elimination of any thatch problem.	Provide good surface and subsurface drainage.. Cultivate when compaction is a problem.	Nabam, time the applications to be present when soil temperatures are below 50^0 F and the soil is water saturated.	Bermudagrass
(3) *Typhula* blight	Moderate nitrogen nutritional levels. Moderate to low cutting heights. Elimination of any thatch problem.	Provide good surface and subsurface drainage. Cultivate when compaction is a problem.	Cadmiums Chloroneb Mercuries	Annual bluegrass Bentgrass
(4) Winter crown rot	Elimination of any thatch problem.		Mercuric chloride (2 applications)	Annual bluegrass Bentgrass
D. Traffic:				
(1) On frozen turfgrass leaves	Apply a light application of water in early morning; this is most effective when the soil is not frozen and the air temperatures are above freezing.		Withhold or divert traffic from turfgrass areas during periods when the leaf and stem tissues are frozen.	
(2) On wet, slush-covered turf			Withhold traffic on turfgrass areas during wet, slushy conditions, especially if a drastic freeze is anticipated.	Annual bluegrass

Northwest Turfgrass Association

TURFGRASS RESEARCH REQUEST FOR PROPOSALS ANNOUNCEMENT

(for 1994/95)

The Northwest Turfgrass Association (NTA) is now accepting proposals relating to turfgrass research for the 1994/95 academic year.

Research proposals must be submitted in the following format:

1. a **cover page** (see attached form);
2. a one page **executive summary** to include: the title of the research project being conducted or proposed; the date of submittal; an indication of whether the proposed research project is a continuation of a project previously funded by NTA or a new project; a brief overview of the research project being conducted or proposed; and,
3. a **detailed explanation** of the research project being conducted or proposed, including: the date of submittal; a title fot the research project being conducted or proposed; information pertaining to its need, purpose, desired outcome; and anticipated activity schedule; information on the procedures to be employed; a budget for the project along with an overview of the anticipated sources of funding; and, how NTA will be kept informed on progress pertaining to the project.

Consideration of proposals will be in accordance with the following guidelines:

1. they shall be from sources within the Pacific Northwest;
2. they must be for activity that will directly benefit the turfgrass industry in the Pacific Northwest; and,
3. the activity shall be underway or initiation shall be imminent.

The schedule for consideration of applications is as follows:

December-January	Requests for Proposals announcements
February-March	Proposals received
April-May	Proposals reviewed and approved
June-July	Grant notifications
August-September	Grant disbursement

All proposals for 1993/94 should be submitted to the NTA office (P.O. Box 1367/Olympia, WA 98507) no later than **March 30, 1994**. Questions relating to research funding should be directed to the NTA office-(206) 754-0825.

Northwest Turfgrass Association

TURFGRASS SCHOLARSHIP ANNOUNCEMENT

(for 1994/95)

The Northwest Turfgrass Association (NTA) is now accepting applications for turfgrass scholarships for 1994/95. Scholarships generally range from $500 to $1000.

Scholarship applicants should complete a copy of the attached **Scholarship Application Form.** Applications should be typed.

Guidelines the NTA will use when considering applicants include the following:

1. applicants shall be enrolled in a college or university in the Pacific Northwest working toward a turfgrass science related degree;

2. applicants must: have completed the first year at a two year community college or vocational/technical institute; be a junior or senior in a four year college or university; or be a graduate student;

3. applicants shall have outstanding qualities as individuals and students including integrity, initiative and leadership; and,

4. applicants shall have a desire to make a contribution to the turfgrass industry and profession in the Pacific Northwest.

The schedule for consideration of scholarship applications is as follows:

December-January	Scholarships announcement
February-March	Scholarship applications received
April-May	Scholarship applications reviewed and approved
June-July	Scholarship notifications
August-September	Scholarship disbursements

All scholarship applications for 1994/95 should be submitted to the NTA office (P.O. Box 1367/Olympia, WA 98507) no later than **March 30, 1994.** Questions relating to scholarships should be directed to the NTA office-(206) 754-0825.

Northwest Turfgrass Association

TURFGRASS SCHOLARSHIP APPLICATION FORM

(Applications and supplemental documentation must be typed)

Application Date _____

Student's Name: _____ Age _____

Mailing Address: _____

_____

_____

Institution: _____

Faculty Advisor: _____
Name Title Department

Advisor's mailing address: _____

_____

Applicant's major field of study: _____

Current class standing: _____Jr. _____Sr. _____Graduate Student

Accumulative grade point: _____ Last semester/quarter grade point_____

Accumulative grade point in major field of study: _____

Number of semester/quarter hours taken to date: _____

Experience in turfgrass work: _____

_____

_____

Experience on other jobs: _____

_____

_____

_____

(over please)

Name and relationship of any close relatives associated with the turfgrass industry: _____

_____

Name and relationship of any close relatives who are members of the Northwest Turfgrass Association: _____

_____

_____

List all other grants or scholarships, and amounts received, for the upcoming scholastic year: _____

_____

_____

Describe (in 500 words or less) your reasons for requesting a scholarship. Include in the above a brief autobiography, a statement of your sources of financial support, your commitment to the turfgrass industry and the Pacific Northwest, and future goals. (Complete on separate page and attach.)

Mail Application To:

Research & Scholarship Committee
Northwest Turfgrass Association
P.O. Box 1367
Olympia, Washington 98507

Application Submittal Deadline: MARCH 30 (postmark)
(Note- FAX submittals will not be accepted)

FOR FACULTY ADVISOR (Handwritten signature must appear)

I recommend this student for a Northwest Turfgrass Association Scholarship:

Signed _____ Date _____

Additional Comments:

Northwest Turfgrass Association Scholarships are awarded without regard to sex, race, creed, or national origin.

Cold-weather *(continued from page 6)*
used to be. That's why you need to know the basics and follow the specifics.

The first coolant basic is making sure the coolant mix is as specified in the operator's manual. Some manufacturers offer pre-mixed coolant. Case recommends a 50-percent concentration. Higher concentrations reduce heat transfer, and concentrations of more than 68 percent are excessively corrosive.

The second basic is to flush and refill after 2 years or 2,000 hours of operation, whichever comes first.

The third point to note is that antifreeze for heavy-duty equipment should always be less that 0.10 percent silicate. You wouldn't go down to the local gas station and pick up the same antifreeze you use for your car and put it in your backhoe or skid steer. The results of using the wrong antifreeze warrant the caution.

In low-flow cooling systems, a high-silicate antifreeze will hydrogel or sludge. In other words, you get hard particles that can damage the heater core and the radiator and ultimately result in a blown head-gasket or plugged radiator. Most major antifreeze suppliers formulate and supply heavy-duty, low-silicate antifreeze.

What type of coolant?

Many operators have questions about the type of coolant to use in their equipment. Ethylene glycol (EG) is the traditional standard antifreeze. It's effective, but more and more operators are requesting propylene glycol (PG), which is more environmentally friendly.

EG is toxic to humans and animals but PG is less dangerous. The same disposal practices are required for PG and EG because both pick up heavy metals and other toxins as they go through a cooling system.

It's important to remember that the two types of antifreeze should never be mixed. It's impossible to get an accurate measurement of concentration if EG and PG are used together.

You can measure EG concentration using a standard floating ball, but a refractometer is required for measuring PC concentration. A refractometer is fairly pricey, but as more people use them the price should come down. Many state and federal agencies are making the switch now.

Our Aging Population

By Glen Hiemstra

Yesterday I met Esther, the oldest person I have ever met. She is 102 and though confined to a wheel chair, was vital, alert, and humorous. As a 100 year-old she is a part of the fastest growing age group in America–those over 100, projected to increase 79% between 1990 and 2000. The second fastest growing age group are those aged 85-99, increasing 42 percent over the next ten years.

Two-thirds of the 65 year-olds who ever lived are alive today. In 1900 there were about 10 million people in the entire world aged 65 and older. By 1992 there were 342 million in that age group world-wide. By 2050 the number of people age 65 and older will expand to at least 2.5 billion. Twenty percent of the U.S. population is over 55 today, in 2001 the first baby boomer turns 55.

What do these numbers mean? That we are in completely uncharted territory. No human society has ever existed with so many elders. How will institutions and programs have to change when people are living so much longer, and in such greater numbers?

Consequences include the following: The average age in nursing homes is 88 and each day nursing homes become less like retirement homes and more like sub-acute hospitals. A person who retired at age 65 in 1983 and began to collect Social Security has by 1993 be re-paid all of their contribution, all of their employers contribution, plus reasonable interest. Yet if in good health this person may live another 20 years or more. (When Social Security was established the eligibility age was set at 65 because the average life span was 63, and the program designers expected that only a few exceptional people would actually need to collect.) Medicare, the health insurance supplement program for elders never anticipated eligibility periods of 20, 30, or perhaps even 40 years.

When I work with city councils and planners, I always ask what they are doing today to plan for an older population. What are they doing in terms of infrastructure, building codes, street design, transportation assumptions, and so on? You may not be surprised to learn that in general they do not think about it. In their minds eye, except for being more ethnically diverse, the future population looks just like it does today. Perhaps because so many of us deny our won aging, we do not really see just how different the future population is going to be and so we are not preparing for it.

Ten Years of Research on Winter Injury on Golf Courses: Causes and Prevention

By Dr. James B. Beard, Michigan State University

Dr. James Beard Gets An Apology

Following publication of the fall issue of the Northwest Turfgrass Topic we received a letter from Dr. James Beard pointing out the fact that we had used two tables from a book he had authored without acknowledgment of the source. We responded to Dr. Beard with an apology and an explanation that the following article, intended to be an explanation of the two inserted tables, had been inadvertently left out of the fall issue.

Winter injury of turf is difficult to understand because it results from the interaction of a number of environmental, soil, and cultural factors. Before a golf course superintendent can initiate the appropriate cultural program to prevent winter injury, he must determine the particular type or types of winter injury that occur most frequently at various locations on the golf course. This involves a study of the particular symptoms, including time of occurrence, soil type, topography, drainage characteristics, traffic patterns, and the probability of environmental stress. Such information is assembled over a period of years, and a specific program is established on the golf course in order to minimize the probability of winter injury.

CAUSES OF WINTER INJURY

The four major types of turfgrass winter injury that most commonly occur are presented in Table, (see newsletter insert), along with the symptoms and causes of injury. This information has been assembled over a 10-year period of extensive research at Michigan State University. The major types of winter injury are:

- Desiccation
- Direct low temperature kill
- Low temperature diseases
- Traffic effects

Note that ice sheet damage caused by oxygen suffocation or toxic gas accumulations underneath an ice cover are not listed. Detailed investigations at Michigan State University indicate that this type of winter injury rarely occurs. This is in contrast to the many articles by individuals indicating that this is a serious problem. Unfortunately, these earlier writers had essentially no information on which to base their comments other than data from research with alfalfa. The winter injury most commonly associated with extended periods of ice coverage occurs during freezing or thawing periods when standing water increases the crown tissue hydration and subsequent injury of the turfgrass plants when temperatures drop rapidly below 20 degrees F.

PREVENTING WINTER INJURY

Cultural steps can be taken to minimize the potential for injury in the future once the cause or causes of winter injury on specific turfgrass areas on the golf course have been established. The first prerequisite in minimizing all types of winter injury is a healthy turf with adequate carbohydrate reserves and recuperative potential. This phase of winter injury prevention is accomplished during the normal growing season, particularly in the late summer - early fall period. Practices to prevent or at least minimize the potential for turfgrass winter injury can be divided into cultural practices, soil management, and specific winter protectants.

The specific practices utilized in each of these categories are summarized in Table 2 (see newsletter insert). It should be noted that a number of them apply to more than one type of winter injury. In some cases, the practice that is effective in preventing one type of winter injury will actually increase the probability of damage from another type. For example, snow covers or winter protection covers used to prevent winter desiccation will also maintain temperatures near 32 degrees F which will enhance the probability of snow mold disease activity. This means that when such a practice is in use, steps should also be taken to apply a preventive snow mold fungicide application to the turfgrass area prior to installing the winter protection cover.

From a cultural standpoint, the proper control of plant and soil water relations is the most critical factor affecting all phases of turfgrass winter injury. Techniques to adjust the soil water status must be achieved during the summer period.

Finally, it is quite obvious that selection and planting of the appropriate turfgrass species and cultivar can be critical in minimizing the degree of turfgrass injury that may occur. Annual bluegrass is very prone to all types of winter injury. The bent grasses are considerably less susceptible to injury, and also have a greater recuperative potential from existing vegetative plant parts.

Source: Michigan Turfgrass Foundation.

New Computer Software of Oregon OSHA Rules

All Oregon Occupational Safety and Health Rules and regulations are available on a new software program called OR-OSHA-Trieve. The program places more than 2,000 printed pages of rules and regulations into a fast, easy-to-use system that operates on personal computers. Through a contract with TEXT-Trieve, Inc. of Bellevue, WA, rules and regulations will be updated on a quarterly basis. Also, additions, changes and deletions to the codes will be highlighted for easy reference.

The electronic format simplifies the tracking of thousands of rules and regulations., the software can quickly search its info base by words, key phrases, code chapters, group, section or site. Text can be printed or exported to a word processor for direct quotation in documents or employer manuals.

OR-OSHA is in the process of converting to the federal numbering system by June 30, 1993. After the initial conversion, approximately 90 percent of Oregon's regulations will match the federal numbering system. The OR-OSHA-Trieve will clearly show the Oregon initiated rules.

OR-OSHA-Trieve software is available to businesses through a subscription service offered by TEST-Trieve. To order contact Text-Trieve directly at 1-800-578-4955.

New Federal Pesticide Recordkeeping Requirements

As of May 10, 1993, private pesticide applicators will be required to keep records of restricted use pesticide (RUP) applications. This new requirement was mandated by the 1990 Farm Bill and became a final regulation this spring. Congress included these requirements in the Farm Bill as a response to public concerns about food or environmental safety, and to provide data to aid policy making and the pesticide registration process.

New requirements for commercial applicators

These regulations primarily impact private applicators because commercial applicators are already required to keep records. However, the new regulations add the stipulation that commercial pesticide applicators must now provide a copy of their RUP pesticide application records to a client within 30 days.

New requirements for private applicators

Private applicators must record the following information for federal restricted use pesticide (RUP) applications:

- the month, day, year of the application
- the pesticide brand or product name
- the EPA registration number
- the crop, commodity, stored product, or site that received the application
- the total amount of the RUP applied
- size of area treated
- name and certification number of the certified applicator (if the applicator is not certified, record the name and certification number of the person supervising the application)
- location of the application

The information should be recorded winning 30 days of the application and the records retained for two years from the application date. There is no required record form.

How to record the application location

The new law allows four options for recording the location of the application:

- identify the county, range, township, and section;
- maps or written description;
- a map and numbering system as used in ASCS or SCS programs;
- a legal property description.

Access to the record information

There is no reporting requirement for the records. Instead, the records must be accessible if requested by:

- U.S. Department of Agriculture,
- Michigan Department of Agriculture pesticide regulatory representatives,
- licensed health care professional who need the information to treat a person who may have been exposed to the RUP for which the record is maintained. In this case, the applicator may submit the record "information" rather than the actual record itself.

These records can also be voluntarily submitted for use in surveys by the National Agricultural Statistics Service (NASS). Data collected by NASS is used in reports for policy making and also to support pesticide registration data. The identity of growers providing information to NASS is kept confidential and is not used for enforcement.

Minimum Wage Raises to $4.90 Per Hour

Washington's minimum wage increased to $4.90 per hour for all workers aged 16 and older on January 1, 1994.

Workers under age 16 are entitled to $4.25 per hour unless they work for businesses not covered by the federal Fair Labor Standards Act, in which case they can be paid $4.17 per hour.

With the increase, the state's minimum wage exceeds the federal minimum wage by 65 cents an hour. The increased was approved by the1993 Legislature and signed into law by Gov. Mike Lowry in July.

Washington's minimum wage initially rose above the federal minimum wage January 1, 1990, due to initiative 518, which was approved in November 1988. The initiative requires the state legislature to regularly review the minimum wage to ensure it keeps pace with inflation.

The state's minimum wage supersedes the federal minimum wage because it is higher. Labor and Industries ensures compliance with laws that protect worker rights, including the minimum wage.

T.U.R.F. Program Introduced

Golf in the Northwest is faced today with challenges in the areas of environmental compliance regulation, public perception of the industry pertaining to pesticide and water use issues, and an ever increasing demand from golfers for improved playing conditions. At the same time, state tax limitation measures in Oregon and Washington are taking their toll on university curriculums and turfgrass education and research programs are coming under more and more fire and threat of elimination each year. Cutbacks have already occurred resulting in personnel being lost and funding decreased. At a time when turfgrass research and education is needed more now than ever, most important programs are facing an uncertain future.

During the fall of 1993, at his first meeting as newly elected Northwest Turfgrass President, Tom Christy recommended to the board of directors that a long time dormant group, the Advisory Council, be reactivated to work with him on addressing the issue of sustained support for turfgrass research funding in the Northwest.

Following two months of concentrated effort, the council proposed, and the NTA Board of Directors approved the **Turfgrass Universities Research Fund (T.U.R.F)** program. The program is a proposal of the Northwest Turfgrass Association designed to provide meaningful, sustained support for turfgrass research at Oregon State and Washington State Universities. The proposal involves the following two elements to help support and improve research and education programs at OSU and WSU: 1) working with the PNGA, WSGA and OGA to institute a system to raise one (1) dollar per golfer per year in Oregon and Washington, and 2) working with industry suppliers to cooperatively address the equipment needs of research programs and researchers.

January 18, 1994 a team consisting of Tom Christy, NTA, Larry Gilhuly, U.S.G.A., and Tom Cook, OSU, presented the T.U.R.F. program at a joint meeting of the PNGA and WSGA boards of directors held at Seattle International Airport in SeaTac, Washington. Responses from the two organizations to the proposed program are expected in the next month or so. Plans include a meeting with the OGA in the near future.

Governor's Council on Agriculture and the Environment

In response to Washington State Governor Lowry's Executive Order 93-08 establishing the Governor's Council on Agriculture and the Environment, the Northwest Turfgrass Association put out a call to members during the annual membership meeting at the Northwest Turfgrass Conference in Yakima, Washington asking individuals interested in being considered for appointment to the council to contact the association office as soon as possible. We received excellent response which resulted in two nominations being forwarded to the governor's office- Mr. Tom Corlett, Superintendent at Tam O'Shanter Golf & Country Club in Bellevue, Washington and Bo Hepler, General Manager at Senske Lawn & Tree in Yakima, Washington.

Irrigation Lines Inspection

This fall when you are blowing out your irrigation system, make plans to rent the air compressor again in the spring. This past spring I saw a Superintendent using his ingenuity in charging his irrigation lines with air. He pressurizes his system with approximately 80-100 PSI as his staff scouts the system for breaks. They do this by listening for where the air is "hissing" from the ground.

By locating the damaged pipe this way, repairs can be made immediately. There is no water to drain from the system, and no water to pump out of the repair area. Can you imagine fixing an irrigation break in a dry hole?

1993-94 Board of Directors

PRESIDENT
DIRECTOR A-1
Thomas A. Christy, CGCS
Golf Course Superintendent
RIVERSIDE GOLF & COUNTRY CLUB
8105 NE 33rd Drive
Portland, OR 97211
Phone: 503-288-3471

VICE PRESIDENT
DIRECTOR A-2
Timothy J. Haldeman
Parks & Facilities Maintenance Mgr.
CLARK COUNTY PUBLIC WORKS-PARKS & REC
4700 NE 78th Street
Vancouver, WA 98665
Phone: 206 699-2446

SECRETARY
DIRECTOR C-1
Tim R. Werner
Landscape/Grounds Manager
CITY OF WALLA WALLA
925 Whitman St.
Walla Walla, WA 99362
Phone: 509 527-4403

TREASURER
DIRECTOR C-2
Donald A. Clemans, CGCS, CPAg
Sales Representative
O. M. SCOTT & SONS
14437 Pole Court
Sisters, OR 97759
Phone: 503 549-3933

PAST PRESIDENT
Rebecca R. Michels
President
MESSMER'S LANDSCAPING SERVICE INC.
24664 156th SE
Kent, WA 98042
Phone: 206 228-5779

DIRECTOR B-1
Randy H. White, CGCS
Golf Course Superintendent
EVERETT GOLF AND COUNTRY CLUB
PO Box 2300
Everett, WA 98203
Phone: 206 353-7028

DIRECTOR B-2
James W. Dusin
Greenkeeper
APPLE TREE GOLF COURSE
8804 Occidental Ave.
Yakima, WA 98903
Phone: 509 965-9844

DIRECTOR B-3
Mike W. Erb
Sales Representative
WILBUR ELLIS COMPANY
1521 15th St. NW #5
Auburn, WA 98001-3504
Phone: 206 448-1869

DIRECTOR A-3
John W. Monson, CGCS
Facilities Manager
SEATTLE SEAHAWKS
11220 NE 53rd St.
Kirkland, WA 98033
Phone: 206 827-9777

DIRECTOR C-3
Mark L. Snyder, CGCS
Golf Course Superintendent
SALISHAN LODGE
PO Box 118
Gleneden Beach, OR 97388
Phone: 503 764-3667

STAFF
Blair Patrick, CAE
Executive Director
NORTHWEST TURFGRASS ASSOCIATION
P.O. Box 1367
Olympia, WA 98507
Phone: 206 754-0825

STAFF
Jerry Crabill
Administrative Assistant
NORTHWEST TURFGRASS ASSOCIATION
P.O. Box 1367
Olympia, WA 98507-1367
Phone: 206 754-0825

Calendar of Events

February 20-23, 1994 — **Western Canada Turfgrass Association 1994 Annual Conference & Show**
Contact: (604) 467-2564

February 27-28, 1994 — **NTA Board Work Session and Meeting**
Contact: (206) 754-0825

March 5-8, 1994 — **Canadian Golf Superintendents Association 45th Conference and Show**
Contact: (905) 602-8873

May 22-23, 1994 — **NTA Board Work Session and Meeting**
Contact: (206) 754-0825

May 24, 1994 — **OSU Field Day**
Contact: (503) 737-5449

August 8, 1994 — **NTA Board Meeting**
Contact: (206) 754-0825

September 25, 1994 — **NTA Board Meeting**
Contact: (206) 754-0825

September 26-29,1994 — **NTA 48th Annual Conference**
Contact: (206) 754-0825

September 27,1994 — **NTA Annual Meeting of the Members**
Contact: (206) 754-0825

– Pesticide Programs –

Contact WSU Conferences & Institutes (509) 335-2946 for "Pesticide Pre-License" and "Pesticide Recertification" programs in your area.

ADVERTISING/EDITORIAL DEADLINE
15th OF DECEMBER, MARCH, JUNE AND SEPTEMBER

NORTHWEST TURFGRASS ASSOCIATION

P.O. Box 1367
Olympia, Washington 98507
(206) 754-0825

Published at least quarterly by the Northwest Turfgrass Association. Blair Patrick, Managing Editor. Articles for future issues may be sent to the NTA office. Membership dues include the cost of subscription. Separate subscription price $15.00 per year. All comments herein are not necessarily endorsed by the association. Advertising should be addressed to the NTA office.

ADDRESS CORRECTION REQUESTED

NONPROFIT ORG.
U.S. POSTAGE
PAID
PERMIT NO. 385
OLYMPIA, WA

PETER COOKINGHAM N > 1364
Turfgrass Information File
MICHIGAN STATE UNIVERSITY
MAIN LIBRARY W212
EAST LANSING MI 48824-1048

Address Corrections: If address is wrong in any respect, please correct the above label and return it to the NTA office.