



1993 Turfgrass Conference Registration Packets Out

By now, all NTA members and other interested parties should have received a **Registrant Registration and Program Packet** for the 47th Northwest Turfgrass Conference scheduled to be held in Yakima, Washington, October 11-13, 1993. The first mailing of registration packets went out in late June and the second mailing, to those not already registered, will go out in August. If, for any reason, you haven't received your registration packet and you would like one, call the NTA office.

Enclosed in this issue of the newsletter is a copy of the conference **Schedule of Events, Education Program and Registration (Basic and Special Events) Forms**. This year's conference is felt to be one of the best ever. Great, informative educational sessions; golf; tours-both educational and entertaining; scrumptious food; fun entertainment and a resort setting. What more can you ask for? We look forward to seeing you there.

Board Approves 93/94 Annual Budget

The NTA Board of Directors has approved a \$110,000 dollar budget for the fiscal year July 1, 1993 to June 30, 1994. This budget includes an appropriation of \$30,000 for research and scholarship funding of \$5,000. The association ended the 92/93 fiscal year with a net worth of just over \$105,000, an improvement of \$2,000 over last year at this time.

1993/94 Board Director Nominations and Elections

The NTA Nominations Committee, chaired by Immediate Past President Tom Wolff, will present a slate of board director nominees for the memberships' consideration during the annual business meeting of the members scheduled during the conference, Tuesday, October 12th. Tom is requesting that anyone interested in being considered for nomination for a board director position contact him through the NTA office. Nominations may also be made anytime, up to the closing of nominations during the annual business meeting, by written nomination (or petition) signed by not less than fifteen active members of the association. Members

present at the business meeting will vote on the election of the new board directors who are elected for three year terms.

\$58,000 Requested for Research

The Northwest Turfgrass Association has received requests for funding of over \$58,000 of research-related activity and nine scholarship requests for the 1993/94 academic year. During the 1992/93 academic year NTA budgeted \$18,000 for research grants but was able to actually give out over \$35,000 due to the results of a very successful fund raising year. This year the NTA board has budgeted around \$30,000 for grants hoping that last year's successful fund raising campaign will be matched or exceeded this year. In addition to the budgeted grant funds, the board has budgeted \$5,000 as the first step in the creation of an "endowment fund" to eventually serve as the core of research financial support.

Financially assisting grounds maintenance and turfgrass research is a major objective of the NTA. Donations for research and scholarships are received from the golf course superintendent associations in Washington and Oregon, an annual fund raising campaign, the R.L. Goss Golf Tournament for Research, and through a variety of other events and activities sponsored by the NTA.

93/94 Directory Preparation Begins

Preliminary work on the **1993-94 Annual Directory of the Members** has begun with printing and distribution planned for October or November following the annual conference. Now is the final opportunity to be sure you're included in the directory for the up-coming year so, if you haven't gotten your dues in yet or you have a change of address or phone that you haven't notified the NTA office about, now is the time to do it.

**1993
Conference Registration
Information Enclosed**

President's Message Annual Conference Invitation

On behalf of the Northwest Turfgrass Association (NTA) Board of Directors, I want to extend a cordial invitation to the members of the association, along with their colleagues, employees, spouses, friends and others interested in the turfgrass industry in the Pacific Northwest to attend and participate in the 1993 **47th Northwest Turfgrass Conference** scheduled for October 11-14, 1993 in Yakima, Washington at the Holiday Inn.



Research information; education offerings; the annual golf tournament for research; a turfgrass facilities tour; a pre-conference sports turf managers seminar; and more all contribute to a conference you don't want to miss.

Yakima will host the hundreds of golf course superintendents; parks, cemetery, school and other grounds maintenance personnel; professional consultants; landscape and lawn care personnel; equipment and product suppliers; research and extension staff; and others involved in the turfgrass industry from throughout the Pacific Northwest who will assemble for the outstanding professional development conference.

Articles & Bylaws Review

Board member Don Clemans, from Sisters Oregon, has agreed to head up a committee to review the association's Articles of Incorporation and Bylaws. It has been some time since these documents have been reviewed and the board felt now would be a good time to do so in light of the strategic planning efforts they have been going through this past year.

Research Fund Raising Campaign

The NTA Research and Scholarship Fund annual fund raising campaign has been kicked-off. More information on the campaign is in this newsletter and a separate mailing of a donation request will be coming to you soon. Please give this campaign your serious consideration. Research in the Pacific Northwest will suffer without our support.

Becky Michels, President

1993 Research and Scholarship Fund Raising Campaign Kicks Off

Rebecca Michels, NTA president and Jon Hooper, chairperson of the NTA Research and Scholarship Fund Committee, recently announced the kick-off of the **1992/93 R&S 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 plays a significant role in the level of support NTA can continue to 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 slow 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 week. **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.

Sponsor a Tee or Hole for Research

Turf grounds maintenance and irrigation suppliers and others interested are cordially invited to **Sponsor a Tee or Hole for Research** at the 1993 Northwest Turfgrass Conference **R.L. Goss Golf Tournament for Research** Monday October 11, 1993 at the Apple Tree Golf Course in Yakima, Washington. We are expecting 140 golfers for the tournament and a turnout of 300-400 golf course, parks, sports facility, grounds, lawns and ornamentals professionals at the conference.

Tee and hole sponsorships may be obtained in exchange for a \$400 (or more, if desired) **tax deductible donation** to the NTA Research and Scholarship Fund. Recognition for the donation will include a professionally done sponsor sign on a tee or hole, recognition throughout the conference of the donation, and recognition throughout the year in the NTA newsletter for the donation.

The objective of the "sponsor program" is to provide suppliers with an opportunity to advertise their services and or products, reduce supplier conference-related expenses, and at the same time, free up more registration income for the NTA Research and Scholarship Fund.

A **Sponsor a Tee or Hole for Research** sign-up form is included in this newsletter, for those interested.

Huston Appointed Hunter Sales & Marketing Director

Past NTA member, Charles Huston has been named Director of Sales and Marketing at Hunter Industries, Inc. Huston, who has directed the activities of Hunter sales representatives in 35 countries around the world since 1983, will now also be responsible for all marketing functions, including the development and introduction of new products and all corporate communications.

Farwest Equipment Recognized by Jacobsen

Farwest Equipment of Portland, Oregon, has been honored by Jacobsen, a division of Textron, for "unsurpassed customer satisfaction" and as its Dealer of the Year for outstanding sales performance and continued growth over the past three years. Based on post-sale surveys of Farwest's customers, the distributor received the highest satisfaction rating of any Jacobsen dealer in North America.

Farwest Equipment and Farwest Supply, which provides supplies for golf courses in the Northwest, are both divisions of Farwest Turf Equipment.

1993/94 Annual Directory Advertisers Sought

Advertising is currently being sought to help underwrite the cost of publishing the **Directory of the Northwest Turfgrass Association for 1993/94**, scheduled for distribution in the Fall. The cost of publishing the directory is covered by advertising, so membership dues can be used for information, research and scholarship activities rather than publication of this directory.

Planning for the directory has begun and any suggestions members may have concerning its content would be appreciated by the NTA staff. The annual directory includes: an alphabetical listing of active members by name with a cross reference by company; NTA Research and Scholarship Fund contributors; officers and committee chairs for the association; cooperative extension offices in the region; green industry publications and associations; and, a guide to sources for turf grass related technical assistance.

Potential advertisers wanting information on advertising should contact the NTA staff at the NTA office- (206) 754-0825.

Retail Sales Tax to Apply to Landscape and Horticultural Services

Beginning **July 1, 1993**, persons performing landscape maintenance and horticultural services must collect retail sales tax from their customers, except when performing horticultural services for farmers. Except for those activities which are taxable as public road construction, some landscaping activities, such as the planting of trees and shrubs, are already subject to retail sales tax.

The rate of tax is determined by where the services are performed. Depending on the location, combined state and local sales tax rates range from 7.0 to 8.2 percent.

Taxpayer Information and Local Sales and Use Tax Changes, mailed quarterly with the *Combined Excise Tax Return*, contains a county/city listing of all rates.

Sales tax applies to landscape maintenance and horticultural services performed July 1, 1993 and afterward, regardless whether the contract may have been negotiated before that date. This means that sales tax must be added to long term contracts for services performed after June 30, 1993.

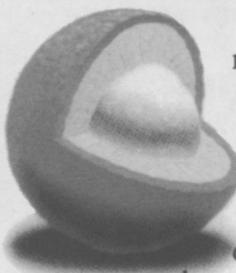
Income received for performing landscape maintenance and horticultural services (except for horticultural services performed for farmers) will be taxable under the Retailing business and occupation tax classification rather than the Service classification. This reduces the tax rate to 0.471 percent for the Retailing classification from 2.13 percent for the Service classification.

Providers of landscape maintenance and horticultural services no longer have to pay sales tax on fertilizers and insecticides. These are considered items for resale and can be purchased from suppliers using resale certificates. However, persons providing horticultural services to farmers are considered consumers of fertilizers and insecticides and must continue paying sales tax when purchasing such products.

Sales of horticultural services to farmers are not retail sales and are not subject to sales tax. Providers of these services also will continue to pay business and occupation tax under the Service and Other Activities classification (2.13 percent of gross income). By statute, farmers are persons who, on their own lands or land to which they have a current right of possession, produce agricultural products for sale.

For further information, contact the Washington State Department of Revenue, Taxpayer Information and Education Section at 1-800-647-7706.

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Renovation Time is \Coming Are You Going To Be Ready?

by James R. Chapman

Dry, parched, burned, withered or struggling, patchy, weedy. This summer is leaving a mark you will have to work to erase. The ongoing water crisis (don't think for a minute it will end with fall rain) has ruined many landscapes and brought dilemma to our industry.

Do we renovate? Do we try to maintain what we have? Can we do either effectively? Yes, yes and yes. It is opportunity time and you can start working now to be ready for it, or you can wait and watch others create new markets and new client relationships.

So many of the turf and ornamental areas have struggled without the crisis. The water situation just greased the final skid. Now it can be done over and done correctly. The poor soil, incorrect drains, non-functional or non-covering irrigation heads, layered sod, etc. can be brought up to standard, replanted and maintained with relative ease in the future. Work could begin in August so that turf areas are planted before mid-September.

Where to begin?

Identify problems and causes. Don't just fix the surface. That's what caused most of the problems, and cosmetics will only get you by until the next crisis. You may find an attitude change carrying over from politics – it's time to do it right!

Bring in more organic amendments, not just ground organic debris, but composted and shredded and nutrient balanced. Good compost is hard to beat but most of what

we have had access to in the past is just chopped waste and often was just layered over a hardpan to look good before the sod was laid. Now you can either till in the material existing, add more of a better blended product and till that into what is underneath, or remove what is on top and start over again.

If the underlying soil is good, perhaps sandy but just dried out, go ahead with aerification (holes 2" apart), slice twice over, rake off debris, and seed. Use wetting agents and soak everything well. If you desire to topdress, the material used should match the underlying soil fairly closely. An option is a 80-90% fine sand with peat of matching fineness carefully blended.

Role of Organics

Organic materials are good when mixed with sand and/or soil to modify the soil/sand character. Organics are not meant to support turf or ornamentals alone – exceptions exist, of course, such as pots and container plants.

Good organic amendments improve air/water spacing and holding capacities, encourage microbial activity, function to enhance nutrient retention and response. But, organics are part of the soil support and should not inhibit these functions.

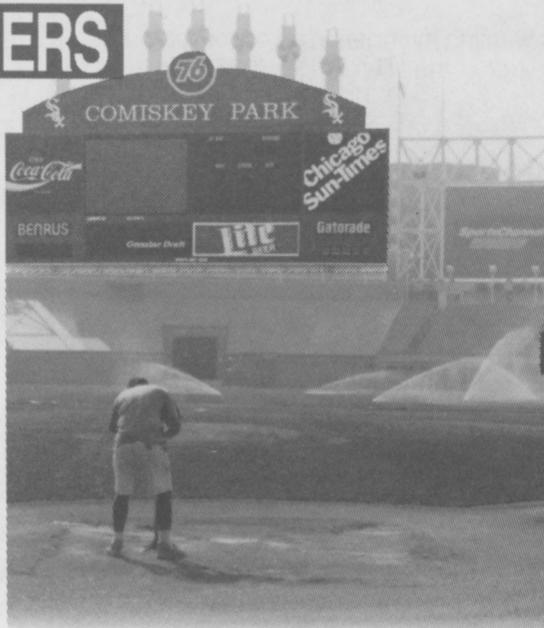
Good organic soil amendments will be composted, shredded and screened to 1/2" or less, amended with lime and other nutrients to furnish a pH and nutrient balanced product that won't pull fertilizer components away from plant roots trying to grow into it. If the material is composted properly, the plant material source isn't important; although cattle manure or human waste should probably be avoided.

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Wetting Agents

Don't forget the use of wetting agents just as soon as watering is allowed or rain begins. Either granular or liquid formulations will help move water into the dry soils more efficiently and help water get into the soil particles (rather than just sticking to the surfaces). Use of wetting agents will improve the water holding capacity of the soil and reduce water runoff, especially if the existing lawn is thatchy or sloping. The first application should be heavier.

What to do now

Right now you can precondition turf toward faster recovery by applying organic or organic base fertilizers with 100% of the nitrogen from slow release sources. Obviously a natural organic is all from slow release sources, not just the nitrogen, which can make organics a better bet under stress conditions.

Organic fertilizers (such as the 8-2-4 Whitney Farm product mentioned above) can be applied without waiting for rain. They will wait patiently for adequate moisture to provide good growing conditions (favoring plant response and soil bacteria activity) before breaking down into usable nutrients.

The fertilizers with soluble fractions could release with a light rain and the concentrated fertilizer salt would burn if additional rain or water didn't quickly follow. This could even happen if the primary source was considered slow release, such as sulfur coated urea, though it is more likely with regular urea, ammoniated nitrogens, and potassium chlorate (muriate of potash).

You can be doing something besides moaning about the present or the future. Perhaps the first step is realizing we have moved abruptly into a new environment. As much as we might long for the past, that is like wishing we were teenagers again. New products, new philosophies, new cost structures, new opportunities, new challenges are here and coming. We can't ever seem to get complacent. Every year we get to travel new roads, open new doors. Of course, it be nice to do it 20 years younger but, ah well.

Thoughts on Managing Turf During the Dog Days

by Dr. Frank S. Rossi

As a former golf course manager, I always wondered why we held our most important tournament during the hottest, most humid days of summer. It seemed to me that if the members wanted to showcase the course, May or September were better months. However, schedules as they are, I guess someone has to host a tournament in the heat of the summer. So let us think about what the grass plants are experiencing.

Summer months in the north generally provide average daily temperatures in the high 80s to low 90s, with 60 to 90 percent humidity. Certain areas in the northern Great Lakes and along the shore experience only 20 to 30 percent humidity, which could create a climate similar to Arizona. Still, increased temperatures warm the soil, depending on rainfall and soil type, into the high 70s. Accordingly, through understanding cool-season turfgrass ecology or just by observing the turf, you know that the plants are into the summer dormancy period. Soil temperatures will clear 65 percent Fahrenheit causing roots to die back, thereby reducing the rate of shoot production.

However, irrigation allows for some measure of control over the growing conditions by providing available moisture, reducing evaporative demand and cooling soil temperatures. Yet, the ability to irrigate, which enhances the growing conditions on one hand, could create a favorable micro environment for plant pathogens and encourage summer annual weeds.

Irrigation practices could be considered the most vital aspect of a high-intensity turfgrass management program and are probably the least understood. Research has identified several monitoring tools to aid in determining the amount of water needed to maintain healthy plants. For example, irrigation needs can be established based on evapotranspiration (ET) data as a measure of water loss from the turfgrass ecosystem (soil and plants). Yet, recommendations for irrigation timing and frequency are not well defined, and the best time to apply water may not be possible logistically. Additionally, maintaining adequate soil moisture in the turn root zone does not guarantee that the evaporative demand will not exceed the soil's ability to conduct the water to the roots, which could result in turf wilt. This situation supports the concept of light daily irrigation during the heat of the day to reduce evaporative demand. However, many argue over the inefficiency of irrigating because of the potential for water evaporating into the atmosphere. Ideally, a well-designed irrigation program will supply some percentage of water lost on a daily basis to ET and supplement with light daily applications to reduce midday moisture stress.

During the summer months when it's hot, I tend to eat less and generally will drop a few of those "cabin fever" pounds I gained in the winter. I still need regular nutrition, but I don't like to feel loaded down. Your turf is the same way. It needs good fertility, but, in general, it will not respond well to excess nitrogen (N). One advantage of the summer months are the warm soil temperatures which promote microbiological activity. This activity will release naturally available N from decomposing organic matter or N from a natural or synthetic slow release organic source you apply. In each case, the N becomes available to the plant in a more controlled and regular fashion without overloading it, providing of course you do not over-apply. This type of fertility program should maintain the plants in a healthy state and allow for adequate growth and recovery potential during those summer tournaments.

A second summer fertility option is light, frequent foliar applied N (approx. 0.2 lb N/M² weeks) to greens and tees while supplementing with iron applications to maintain good color. I believe this practice maintains the plants in a healthy condition, since N remains regularly available to the plants as they require it. In general, one must develop a "feel" for the nutritional needs of their specific sward and develop an integrated fertility management program which keeps the plants healthy and ultimately could reduce pesticide use.

Summer pest problems from weeds, insects and diseases are of particular concern as a result of the reduced competitive ability of the turf. In my experience, if summer annual weeds such as crabgrass and goosegrass are present, you already have heard an earful from your membership. As these weeds become larger, they become more difficult to control, especially in close-cut bentgrass or annual bluegrass stands where most herbicides will

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Dog Days *(continued from page 6)*

cause injury. It is best to control these weeds before they are able to establish and to watch them closely if they do become established. Frequent light rate applications of Acclaim is a viable strategy for controlling young grass weeds; however, the larger weeds are the most difficult to control and will prompt the most complaints.

In the disease area, anthracnose and summer patch will be causing many superintendents trouble during the summer months. Occasionally, these diseases have been found acting in concert with each other, i.e., the anthracnose will infect the plant followed by the summer patch organism which will brown the turf out. Anthracnose symptoms are typically patches of turf reddish brown, then yellow, then tan to brown. Fungicides are usually needed for curative control; however, good management practices that reduce stress will aid recovery. Summer patch is difficult to diagnose due to the general chlorotic decline of the turf. Because the summer patch organism severely inhibits root function, cultural practices that alleviate stress and promote root development reduce disease severity. For example, research from Rutgers University has indicated that raising height from 1/8" to 5/32" significantly decreased summer patch severity, suggesting a non-target influence. There remains much debate regarding irrigation practices for summer patch management; however, all agree that reducing midday moisture stress by syringing will aid plant health.

One aspect of turfgrass disease which has remained clear in my mind is what I call "cool-night salvation." Pythium and brown patch which are high-temperature and high-humidity diseases, particularly in the evening, do not become pathogenic during cool summer nights. However, when these diseases become active they can devastate a sward and will require decisive action by the superintendent to avoid turf decline and death. So pray for cool nights if your fungicide budget is tight, and avoid night watering if nights are hot and humid.

Many insect problems begin to manifest during the warm summer months and must be addressed prior to severe visual damage. In Michigan, the two big challenges are the Black Turfgrass Ataenius and the European Chafer. Generations of these insects will feed on turf roots when the turf can ill afford any further root dysfunction. Cutworms on the close-cut surfaces could also cause substantial injury if not managed and as with all insect pests, require careful monitoring and an integrated management program to minimize turf loss. Research is being conducted on irrigating to mask injury and proper timing of insecticide applications to maximize efficacy. A final note about the

increase in ant populations on fine turf areas: It is vital that the superintendent identify the type of ant present, since many species are beneficial to the microenvironment. I understand and have seen the unsightliness of the ant mounding; however, excessive pesticide use to reduce these populations could have long-term ecological impacts and warrants the use of any alternative available.

Summer, for many, is the most enjoyable time of the year since the outdoors abounds with activity. The golfing public has come to expect a high level of quality from the American golf course, without regard to the strain placed on the grasses and the superintendent managing that sward during the "dog days." Proper planning and careful monitoring throughout the season will aid in reducing stress during these months. Because we often ask the plants to provide a surface that taxes their biology, however, challenges will arise that require prompt and decisive action. Remember, turfgrass management is as much an art as it is a science, and there is no reason why you as a manager shouldn't enjoy the summer also.

Is Oregon's Turf Industry Changing?

by Chuck Buffett

"Change or die" may be the strong recommendation for companies involved in the turf industry in the Pacific Northwest. The industry's first wake-up call in the decade of the 90s was the mandatory water restrictions imposed by the cities of Portland, OR, and Seattle, WA, last summer. In addition, there are other trends of change appearing on the horizon.

"The water issue has tremendous power and impact on the turf industry," says Donna Kluehe, president of Emerald Hydro-Turf Inc., a Portland hydro-seeding company.

Last year several landscapers went out of business because of water restrictions imposed by the city of Portland, Kluehe says. The fact is the city water supply is inadequate to meet the future needs of the area, she adds. With projected 500,000 additional people in the Portland area in the next 20 years, demands on water use will be even more intense.

"As a business, be ready to be challenged each summer whether we are in a drought or not," Kluehe believes.

Last year's drought has heightened business awareness, forcing companies to get more creative on how they do business. Kluehe suggests companies change their business approach.

Emerald Hydro-Turf, for example, began about six years ago. Previously, it had been a general landscaping firm. Now its business is positioned in a new landscaping niche with perhaps two dozen other hydro-seeding companies instead of competing with several hundred other landscapers. Also, the company has found ways to get away from potential drought restrictions, Kluehe explains.

"You have to be prepared to travel and expand into cities not touched by water restrictions," she says. "Traveling may involve raising prices slightly. Many landscapers from Oregon went to the city of Vancouver and Clark County, WA for work where there were no water



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restrictions."

Emerald Hydro-Turf works with more than 30 water districts in the Willamette Valley to ensure continued access to business markets. Targeting new lawns at new large industrial sites is an important focus, due to fewer water restrictions on new lawn installation, Kluehe says.

Saving Water, Saving Money

With the increased cost of water use, cities are taking a hard look at methods of saving money by focusing on significant water savings. The city of Beaverton, though not affected by last year's drought, has begun serious water reduction steps in landscape areas around public buildings and street plantings.

"We lose plants because of vandalism of our above-ground irrigation system," says Scott Plamondon, Beaverton's landscape foreman. "There is expense in turf and plant replacement and system repair. Now we are beginning with the installation of a below-ground drip irrigation system."

The system, called Netafim, involves the installation of a plastic pipe in a parallel grid four to six inches under a turf area. Every few inches is a drip emitter.

This system allows the use of substantially less water, 50 percent or more, Plamondon says. First, money is

saved by reducing pipe size from two inches to one inch from the meter with a two-thirds savings each month in meter fees. Overall cost savings of the system is about 80 percent, he adds.

Besides the water cost savings is the public image benefit. In times of water awareness heightened by drought in summer, the public does not see water being used.

Determining how efficiently water is being used to irrigate turf and the rest of the landscape will become the big issue in Oregon in the near future, says Dick Hollenbeck, chairman of the Landscape Technology Department, Portland Community College, Rock Creek Campus.

A Certified Landscape Irrigation Auditor is frequently used in California. The auditor evaluates the water needs of a landscape site by calculating precipitation rates of the system, turf water requirements, soil water holding capacity, irrigation schedules and using evapotranspiration rates. This information is then used to determine the recommended minutes of watering time needed for each station throughout the year – an irrigation schedule.

Cost of water savings can be substantial, as much as a third or more by wisely using water, Hollenbeck says. Usually the savings in water cost the first year can offset the cost of hiring a water auditor, he adds.

Hollenbeck intends to teach a short course in water auditing in the near future. This could be added as a part of the Oregon Certified Landscape Technician program run by the Oregon Landscape Contractors Association and the Oregon Association of Nurserymen. Testing for this certification is at the college's Rock Creek Campus.

Turf Today and Tomorrow

"The turf industry is not going to vanish just because we had a drought," says Abbas Soltani of JB Instant Lawn, a sod and turf seed producer. "The water problem is not related to the turf industry. There are smarter, more efficient ways of using water." Soltani is the company's Northwest Oregon and Southwest Washington sales representative.

People will always want a lawn area, Soltani explains. There are many health benefits, such as production of oxygen and decreased water runoff and erosion. It is much more enjoyable to walk on turfgrass on a hot summer day than on concrete.

Meeting the demand for more water efficiency is the tall fescue variety Bonsai, marketed by JB Instant Lawn. This type of grass is well known for its deep root system. Those lawns seeded last year with Bonsai stayed green well into the dry summer. In fact, JB Instant Lawn received several calls late last summer from users of the grass in water restriction areas. The callers requested signs that they could put on their lawns stating it was a drought-resistant grass. Some home owners reported having difficulty persuading their neighbors that their green lawn was a result of a drought-resistant grass variety and not any illegal late-night watering.

Soltani sees demand for sod and seed to be heavy this year. Many lawns will have to be replaced from last year's weather. During a warm, dry week in March of this year, demand for sod was as heavy as the normal busy months of late June and early July, he adds.

Two economic factors, increasing cost of water and dumping fees for grass clippings, will cause the home owner to demand change, says Keith Hopkins of Hobbs &

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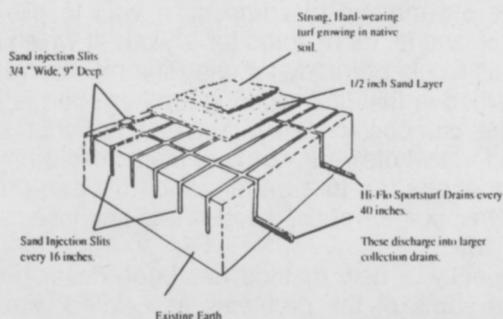
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Hopkins, a Portland grass seed and hydro-seed equipment distributor.

"People will still want green spaces," he says. "However, we will see more xeriscaping: drought-tolerant type plants in our lawn areas."

Hopkins forecasts big changes in how turf areas will look in the future. There will still be a formal lawn area for residential and business sites. However, he forecasts an increased use of transitional turf areas, an area described as somewhere between a formal lawn and the great outdoors.

"For a thousand years we have been trying to get the grass out of flowers and flowers out of the grass," Hopkins says.

The demand is growing for a lawn area that takes less money and time to keep green. The "ecology" lawn, usually a blend of hardy, drought-tolerant grasses and low-growing wildflowers, is becoming accepted. Hopkins sees more landscape designers using this low maintenance approach to areas in the landscape that do not require a highly manicured lawn but deserve more than just unsightly weeds or tall grasses.

Hobbs & Hopkins has developed its own blend of low-growing flowers and lawn seed mix called Fleur de Lawn (Pro-Time #755). A major component of the mix is Elka perennial ryegrass, a true genetic dwarf. The most important wild flower is the fine-textured yarrow (*Achillia millefolium*). Also included are Baby Blue Eyes, Strawberry Clover and English Daisy.

The advantage to this mixture is little or no irrigation after establishment, little or no mowing, and no fertilizer use. Because an occasional weed is not noticed with all

of the wildflowers, no herbicides are necessary. Mowing is necessary every three to four weeks to keep it at a height of four to six inches. The seeding rate is only one pound per thousand square feet.

"When everything went dormant in the summer, with no rain or added water, the clover and the yarrow remained green," Hopkins explains. "The Elka perennial rye grass recovered with the first rain in the fall."

For those who want a mixture that does not have flowers, optional mowing and little irrigation is PDX (Pro-Time 705 PDX), or Plants Developed for Xeriscaping. It is a mixture of dwarf perennial ryegrass and short broadleaf plants.

For the formal lawn areas Hopkins sees more work being done to improve existing soils. There is more to it than just adding more lime and fertilizer, he says.

"There is a growing trend to take lawn-care equipment used by professionals and make it more usable and adaptable for the home owner," Hopkins says. "And there will be more use of organic-based soil supplements, organic fertilizers."

The water issue may have been an important catalyst in increasing industry awareness of its own business direction. Fueled occasionally by drought, the momentum has been created and changes in the turf industry are happening now.

Source: The Digger, April 1993

The Rapid Composting Method

by Robert D. Raabe

Composting is a process in which organic substances are reduced from large volumes of rapidly decomposable materials to small volumes of materials which continue to decompose slowly. In this process, the ratio of carbon to other elements is brought into balance, thus avoiding temporary immobilization of nutrients. One of the many benefits of adding compost to the soil is that the nutrients in it are slowly released to the soil and are then available for use by plants. Decomposition will take place in soil if undecomposed organic materials are added to it, but in the breakdown process nutrients will be tied up and unavailable for plants to use. This may result in nutrient deficiencies and poor growth, especially if large amounts of material are added.

The old method of composting was to pile organic materials and let them stand for a year, at which time the materials would be ready for use. The main advantage of this method is that little working time or effort is required from the composter. Disadvantages are that space is utilized for a whole year, some nutrients might be leached due to exposure to rainfall, and disease-producing organisms, some weeds, weed seeds and insects are not controlled.

Recently, a new method has been developed which corrects some of the problems associated with the old type of composting. With this process, compost can be made in 2 to 3 weeks. Extra effort on the part of the composter is required in exchange for this time saving, but for those who want large amounts of compost, or for those who wish to convert materials which are usually

(continued on page 9)

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NORTHWEST TURFGRASS ASSOCIATION
47TH Northwest Turfgrass Conference
SCHEDULE OF EVENTS

SUNDAY, October 10

3:00 pm - 6:00 pm Cascade Room
 Registration

3:30 pm - 5:00 pm Board Room
Board of Directors Meeting

5:30 pm - 6:30 pm Evergreen Room
Sponsor Tee/Hole Drawing and Reception (hosted)

7:30 pm - 8:00 pm Birchfield Manor
President's Reception for the Board of Directors

8:00 pm - 10:00 pm Birchfield Manor
President's Dinner for the Board of Directors

MONDAY, October 11

8:00 am - 12:00 noon Cascade Room
 Registration

9:00 am - 4:00 pm Maple Leaf Ballrooms A & B,
 *Pre-conference
 Evergreen Room
 Eisenhower Sports Complex
Sports Turf Managers Seminar and Sports Complex Tour

10:00 am - 4:00 pm Apple Tree Golf Course
 *Pre-conference
R.L. Goss Golf Tournament for Research

11:00 am - 4:00 pm Evergreen Room, Yakima
 *Pre-conference
 Area Arboretum
 Eisenhower Sports Complex
Turfgrass Facilities Tour

4:00 pm - 7:30 pm Cascade Room
 Registration

5:30 pm - 6:45 pm Maple Leaf Ballroom C
Presenters and Past Presidents Reception (hosted)

7:00 pm - 9:00 pm Lakeside Room
Conference Get Acquainted Reception (hosted)

TUESDAY, October 12

7:00 am - 2:00 pm Cascade Room
 Registration

7:00 am - 8:20 am Maple Leaf Ballrooms A, B & C
Conference Kick-off Continental Breakfast (hosted) and Annual Business Meeting

8:30 am - 10:40 am Lakeside Room
General Session I

10:15 am - 3:30 pm Assemble at Hotel Entrance
 *Companion Tour & Luncheon
 (Orchard, Cultural Center, Mural Art & Tortilla Factory)

10:40 am - 11:00 am Evergreen Room
 Break & Beverage Service

11:00 am - 12:00 noon Lakeside Room
General Session II

12:00 noon - 1:30 pm Lunch Break

12:00 noon - 1:30 pm Maple Leaf Ballroom A
NW Region GCSA Presidents Advisory Group Luncheon (hosted)

1:30 pm - 2:10 pm
Ornamentals Session A Maple Leaf Ballrooms B & C
Turfgrass Session A Lakeside Room

2:10 pm - 2:30 pm Evergreen Room
 Break & Beverage Service

2:30 pm - 3:10 pm
Ornamentals Session B Maple Leaf Ballrooms B & C
Turfgrass Session B Lakeside Room

3:15 pm - 4:00 pm
Ornamentals Session C Maple Leaf Ballrooms B & C
Turfgrass Session C Lakeside Room

6:00 pm - 10:30 pm Lakeside Room
***Reception, Annual Banquet and Program**
 (Guest Speaker—Sir Guthrie Dunham,
 International Sales & Marketing Director, Eldwood
 Granlee, LTD (Surry, England)
 US Introduction to the "Transfer Putter" and
 "Impressions of the US Golf Scene"

WEDNESDAY, October 13

7:00 am - 8:00 am Evergreen Room
 Wake-up Beverage Service

7:00 am - 8:00 am Maple Leaf Ballroom A
NW Region Universities Advisory Group Continental Breakfast (hosted)

7:00 am - 8:00 am Suite 248
Women-in-Turf Advisory Group Continental Breakfast (hosted)

8:00 am - 8:45 am
Ornamentals Session D Maple Leaf Ballrooms B & C
Turfgrass Session D Lakeside Room

8:45 am - 12:00 noon Assemble at Hotel Entrance
***Companion Tour & Continental Breakfast**
 (Capitol Theatre, Yakima Museum and Homespun Crafters Mall)

8:50 am - 9:30 am
Ornamentals Session E Maple Leaf Ballrooms B & C
Turfgrass Session E Lakeside Room

9:30 am - 9:50 am Evergreen Room
 Break & Beverage Service

9:50 am - 10:30 am
Ornamentals Session F Lakeside Room

10:35 am - 11:15 am
Ornamentals Session G Maple Leaf Ballrooms B & C
Turfgrass Session G Lakeside Room

11:20 am - 12:00 noon
Ornamentals Session H Maple Leaf Ballrooms B & C
Turfgrass Session H Lakeside Room

12:00 noon - 1:30 pm Lunch Break

12:00 noon - 1:30 pm Maple Leaf Ballroom A
93/94 Board of Directors Luncheon (hosted)

1:30 pm - 2:10 pm Lakeside Room
General Session III

2:15 pm - 2:55 pm Lakeside Room
General Session IV

2:55 pm - 3:00 pm Lakeside Room
Conference Closure

* Events not included in basic registraton

Monday, October 11

**PRE-CONFERENCE SPORTS
TURF MANAGERS SEMINAR** Jon Hooper, Moderator
NTA Vice President

GENERAL SESSION
Maple Leaf Ballrooms A & B
9:00 am - 12:00 noon **Safety and Playability
of Athletic Field Surfaces**
Dr. Donald V. Waddington,
Professor Emeritus
Department of Agronomy
Pennsylvania State University

**PRE-CONFERENCE
TURFGRASS TOUR** Tim Werner, Moderator
NTA Board Director

11:00 a.m. - 4:00 pm **Turfgrass
Facilities Tour**
Mr. Tim Werner,
Parks Maintenance Supervisor
City of Walla Walla

**PRE-CONFERENCE
SPORTSTURF MANAGERS
SEMINARY TOUR** Jon Hooper, Moderator
NTA Vice President

1:30 pm - 3:30 pm **Sports Complex Tour**
Dr. Donald V. Waddington,
Professor Emeritus
Department of Agronomy
Pennsylvania State University
Dr. Gwen Stahnke,
Turfgrass Extension Specialist
Research & Extension Center
Washington State University

Tuesday, October 12

GENERAL SESSION I
Lakeside Room Jon Hooper, Moderator
NTA Vice President

8:30 am - 10:40 am **Common Landscape
Litigation and Consequences**
Mr. Ted Stamen,
Urban Horticulture Advisor
Cooperative Extension/
University of California
Mr. W.O. (Robbie) Robinson,
Attorney,
Polsky, Robinson & Jones

GENERAL SESSION II
Lakeside Room William Griffith, Moderator
NTA Treasurer

11:00 am - 12:00 noon **Biological Herbicides**
Dr. Nick Christians, Professor
Department of Horticulture
Iowa State University

ORNAMENTALS SESSION A Tim Haldeman, Moderator
Maple Leaf Ballrooms B & C NTA Board Director

1:30 pm - 2:10 pm **Drought Tolerant Ornamentals**
Mr. Dan Borroff,
Landscape Designer
Contractor
Dan Borroff Landscape

TURFGRASS SESSION A Tom Wolff, Moderator
Lakeside Room NTA Past President

1:30 pm - 2:10 pm **Wash Rack Environmental
Implications**
Mr. Larry Gilhuly,
Western Region Director
US Golf Association,
Green Section

ORNAMENTALS SESSION B Tim Werner, Moderator
Maple Leaf Ballroom B & C NTA Board Director

2:30 pm - 3:10 pm **Seasonal Color**
Mr. Keith Degler, Manager
Landscape Operations
Evergreen Services
Corporation

TURFGRASS SESSION B Randy White, Moderator
Lakeside Room NTA Board Director

2:30 pm - 3:10 pm **Sulfur-Calcium Phosphorus
Effects on Winter Diseases**
Dr. Stan Brauen, Coordinator
Research & Extension Center/
Washington State University

ORNAMENTALS SESSION C Don Clemans, Moderator
Maple Leaf Ballrooms B & C NTA Director

3:15 pm - 4:00 pm **Irrigation Water Auditing**
Mr. Jerry Bushree, Owner
Hydro-Alternatives

TURFGRASS SESSION C Jim Dusin, Moderator
Lakeside Room NTA Board Director

3:15 pm - 4:00 pm **Evaluation of New
Nitrogen Fertilizers**
Dr. Donald V. Waddington,
Professor Emeritus
Department of Agronomy
Pennsylvania State University

NORTHWEST TURFGRASS CONFERENCE OFFICIAL REGISTRATION FORM

Monday, October 11, 1993 thru Wednesday, October 13, 1993

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BASIC REGISTRATION

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<i>Pay this amount after Sept. 22, 1993</i>		\$120	\$195	\$65	\$105	\$30	\$25	FREE	
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1. _____		\$	\$			\$			\$
2. _____			\$	\$	\$	\$	\$		\$
3. _____			\$	\$	\$	\$	\$		\$
4. _____			\$	\$	\$	\$	\$		\$
5. _____			\$	\$	\$	\$	\$		\$
6. _____			\$	\$	\$	\$	\$		\$

NOTICE: Pursuant to the Americans with Disabilities Act, please describe here the type of auxiliary aid needed by you or your companion:

Total Basic Registration \$ _____

Total Event Registration \$ _____

Total Amount Enclosed \$ _____
(U.S. Dollars)

Registration fee is not tax-deductible as a charitable contribution, but may be deducted as an ordinary and necessary business expense.
CANCELLATION/REFUND POLICY: Twenty-five percent (25%) penalty on cancellations prior to conference opening date. No refunds after conference opening date. Cancellations **must** be in writing.
 Employees must be registered with a member or nonmember.
 RETURN THE **ORIGINAL** COMPLETED FORM AND PAYMENT IN FULL (U.S. Dollars) to NTA • P.O. Box 1367 • Olympia, WA 98507.
 For telephone inquiries: (206) 754-0825.

NORTHWEST TURFGRASS CONFERENCE OFFICIAL REGISTRATION FORM

Monday, October 11, 1993 thru Wednesday, October 13, 1993

FOR NTA USE

FIRM _____
 ADDRESS _____
 CITY _____ STATE/PROV _____ ZIP _____
 PHONE (WORK) (____) _____ PHONE (HOME) (____) _____

SPECIAL EVENTS REGISTRATION

	Golf Tournament Monday, October 11	ENTER HANDI- CAP	Turf Tour Monday, October 11	Sports Turf Seminar Monday, October 11	Companion Event Tuesday, October 12	Annual Banquet Tuesday, October 12	Companion Event Wednesday, October 13
Conference and Event Registration	\$75		\$20	\$35	\$35	\$30	\$25
Event Registration Only	\$125		\$35	\$60	\$35	\$30	\$25
Last Name							
1. _____							
2. _____							
3. _____							
4. _____							
5. _____							
6. _____							

First/Nickname
(please print or type)

	\$		\$		\$		\$		\$		\$
TOTALS											

Total Event Registration \$
(U.S. Dollars)

Registration fee is not tax-deductible as a charitable contribution, but may be deducted as an ordinary and necessary business expense.
 CANCELLATION/REFUND POLICY: Twenty-five percent (25%) penalty on cancellations prior to conference opening date. No refunds after conference opening date. Cancellations must be in writing.
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NORTHWEST TURFGRASS ASSOCIATION
P.O. Box 1367
Olympia, Washington 98507

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This year the Northwest Turfgrass Conference golf tournament, the **R.L. Goss Golf Tournament for Research**, will be held on the **Apple Tree Golf Course** in west Yakima.

The purpose of the tournament is to raise funds for the Northwest Turfgrass Association Research and Scholarship Fund and to have some fun. Apple Tree is waiving their green fees for NTA which is a major donation on their part toward our goal of raising funds for research and scholarships. The entry fee players pay will cover tournament-related expenses and provide funds for the R & S Fund.

This year's conference will not include any exhibiting. Instead, industry suppliers and any others interested are being urged to **sponsor a tee or hole for research**. Sponsorships will run \$400 for a tee or a hole. In exchange for sponsoring a tee or hole, the sponsor will get a professionally done sign on the golf course recognizing their sponsorship as well as a professionally done sign in the main meeting room used throughout the conference. Sponsors will also receive special recognition for their sponsorship throughout the year in the association's publications.

– Sponsorships must be received by September 30, 1993 –

Those wanting to sponsor a tee or hole for research should complete this form and return it with a check for \$400 (US dollars) per sponsorship payable to the **NTA R & S Fund** to the NTA office.

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Number of Sponsorships _____ **x \$400 (US dollars) each = \$** _____

GRASS ASSOCIATION
Turfgrass Conference
PROGRAM

Wednesday, October 13

ORNAMENTALS SESSION D Becky Michels, Moderator
Maple Leaf Ballrooms B & C NTA President

8:00 am - 8:45 am **Wildflowers in the Landscape**
Ms. Crystal Fricker,
Plant Breeder
Pure Seed Testing, Inc.

TURFGRASS SESSION D Tom Christy, Moderator
Lakeside Room NTA Board Director

8:00 am - 8:45 am **Leachate Update**
Mr. Eric Chapman, Graduate
Crops & Soils Department
Washington State University

ORNAMENTALS SESSION E Tim Haldeman, Moderator
Maple Leaf Ballrooms B & C NTA Board Director

8:50 am - 9:30 am **Computerized Tree Inventory Appraisal**
Mr. Brad White,
Research Assistant
College of Forestry
Resources
University of Washington

TURFGRASS SESSION E Jim Dusin, Moderator
Lakeside Room NTA Board Director

8:50 am - 9:30 am **Prospecting for Native Grasses in the Pacific Rim Countries**
Dr. Doug Brede,
Research Director
Jacklin Seed Company

ORNAMENTALS SESSION F Don Clemans, Moderator
Maple Leaf Ballrooms B & C NTA Board Director

9:50 am - 10:30 am **Plant Diversity**
Mr. Jon Hooper,
Grounds Manager
University of Washington

TURFGRASS SESSION F Tom Wolff, Moderator
Lakeside Room NTA Past President

9:50 am - 10:30 am **1993 Research Update on European Crane-fly and Bullalograss Trials**
Dr. Gwen Stahnke,
Turfgrass Extension Specialist
Research & Extension Center/
Washington State University

ORNAMENTALS SESSION G Tim Werner, Moderator
Maple Leaf Ballrooms B & C NTA Board Director

10:35 am - 11:15 am **Hazard Tree Evaluation**
Mr. Brad White,
Research Assistant
College of Forestry Resources
University of Washington

TURFGRASS SESSION G Randy White, Moderator
Lakeside Room NTA Board Director

10:35 am - 11:15 am **Turf Photography**
Dr. Doug Brede, Research
Director
Jacklin Seed Company

ORNAMENTALS SESSION H Jon Hooper, Moderator
Maple Leaf Ballrooms B & C NTA Vice President

11:20 am - 12:00 noon **IPM Maintenance on Ornamentals**
Mr. Mike Johnson,
Research Assistant
College of
Forestry Resources
University of Washington

TURFGRASS SESSION H Tom Christy, Moderator
Lakeside Room NTA Board Director

11:20 am - 12:00 noon **Use of the Herbicide IGNITE for Chemical Edging**
R. William Johnston,
Agronomist/Turfgrass
Science
Crops & Soils Department
Washington State University

GENERAL SESSION III William Griffith, Moderator
Lakeside Room NTA Treasurer

1:30 pm - 2:10 pm **Soil Testing for Turfgrass**
Dr. Nick Christians, Professor
Department of Horticulture
Iowa State University

GENERAL SESSION IV Becky Michels, Moderator
Lakeside Room NTA President

2:15 pm - 2:55 pm **The Travails and Traumas of Transplanting Trees**
Mr. Ted Stamen,
Urban Horticulture Advisor
Cooperative Extension
University of California

PROGRAM SYNOPSIS**SUNDAY, October 10**

3:00 pm - 6:00 pm	Registration	Cascade Room
3:30 pm - 5:00 pm	Board of Directors Meeting	Board Room
5:30 pm - 6:30 pm	Sponsor Tee/Hole Drawing and Reception (hosted)	Evergreen Room
7:30 pm - 8:00 pm	President's Reception for the Board of Directors	Birchfield Manor
8:00 pm - 10:00 pm	President's Dinner for the Board of Directors	Birchfield Manor

MONDAY, October 11

8:00 am - 12:00 noon	Registration	Cascade Room
9:00 am - 4:00 pm	Pre-conference Sports Turf Managers Seminar and Sports Complex Tour	Maple Leaf Ballrooms A&B Evergreen Room Sports Complex
10:00 am - 4:00 pm	Pre-conference R.L. Goss Golf Tournament for Research	Apple Tree Golf Course
11:00 am - 4:00 pm	Pre-conference Turfgrass Facilities Tour	Evergreen Room Yakima Area Arboretum Sports Complex
4:00 pm - 7:30 pm	Registration	Cascade Room
5:30 pm - 6:45 pm	Presenters and Past Presidents Reception	Maple Leaf Ballroom C
7:00 pm - 9:00 pm	Conference Get Acquainted Reception	Lakeside Room

TUESDAY, October 12

7:00 am - 2:00 pm	Registration	Cascade Room
7:00 am - 8:20 am	Conference Kick-off Continental Breakfast and Annual Business Meeting	Maple Leaf Ballrooms A-C
8:30 am - 10:40 am	General Session I	Lakeside Room
10:15 am - 3:30 pm	Companion Tour & Luncheon	Hotel Entrance
11:00 am - 12:00 noon	General Session II	Lakeside Room
12:00 noon - 1:30 pm	NW Region GCSA Presidents Advisory Group Luncheon	Maple Leaf Ballroom A
1:30 pm - 4:00 pm	Ornamentals Session A & B Turfgrass Session A & B	Maple Leaf Ballrooms B&C Lakeside Room
6:00 pm - 10:30 pm	Annual Reception & Banquet	Lakeside Room

WEDNESDAY, October 13

7:00 am - 8:00 am	NW Region Universities Advisory Group Continental Breakfast	Maple Leaf Ballroom A
7:00 am - 8:00 am	Women-in-Turf Advisory Group Continental Breakfast	Suite 248
8:00 am - 12:00 noon	Ornamentals Session D-H Turfgrass Session D-H	Maple Leaf Ballrooms B&C Lakeside Room
8:45 am - 12:00 noon	Companion Tour & Continental Breakfast	Hotel Entrance
12:00 noon - 1:30 pm	93/94 Board of Directors Luncheon	Maple Leaf Ballroom A
1:30 pm - 2:10 pm	General Session III	Lakeside Room
2:15 pm - 2:55 pm	General Session IV	Lakeside Room
2:55 pm - 3:00 pm	Conference Closure	Lakeside Room

Note: Wake-up coffee service will be available prior to the start of each daily session in the Evergreen Room

Rapid Composting *(continued from page 8)*

wasted into usable compost, the effort is worthwhile.

There are several important factors essential to the rapid composting method. Because all are important, there is no significance to the order in which they are listed here.

1. Material will compost best if it is between 1/2 to 1 1/2 inches in size. Soft, succulent tissues need not be chopped in very small pieces because they decompose rapidly. The harder or the more woody the tissues, the smaller they need to be divided to decompose rapidly. Woody material should be put through a grinder, but most grinders chop herbaceous materials too finely for good composting. Chopping material with a sharp shovel is effective. When pruning plants, cut material into small pieces with the pruning shears—it takes a little effort but the results (and the exercise!) are good.

2. For the composting process to work most effectively, material to be composted should have a carbon to nitrogen ratio of 30 to 1. This cannot be measured easily, but experience has shown that mixing equal volumes of green plant material with equal volumes of naturally dry plant material will give approximately a 30/1 carbon to nitrogen (C/N) ratio. Green material can be grass clippings, old flowers, green prunings, weeds, fresh garbage and fruit and vegetable wastes. Dried material can be dead, fallen leaves, dried grass straw and somewhat woody materials from prunings. Such materials are easy to find in the growing season. During this time, paper bags, cardboard

boxes, cereal and milk cartons, and paper can be used for dried materials but they must be finely chopped or shredded. Newspapers can be used if shredded and separated by plant tissues so they do not mat. Matting is bad because oxygen is necessary for rapid decomposition and matting excludes oxygen. Any material which is cut green and is allowed to dry is considered green. Some green materials, such as grass clippings also may mat if care is not taken to separate them using dry materials.

3. Composting works best if the moisture content of materials in the pile is about 50 percent. This is not easy to measure, but with experience the correct amount of moisture can be estimated. Too much moisture will make a soggy mass, and decomposition will be slow and will smell. If the organic material is too dry, decomposition will be very slow or will not occur at all.

4. Heat, which is very important in rapid composting, is supplied by the respiration of the microorganisms as they break down the organic materials. To prevent heat loss and to build up the amount of heat necessary, a minimum volume of material is essential: a pile at least 36" x 36" x 36" is recommended. If less than 32", the rapid process will not occur. Heat retention is better in bins than in open piles, so rapid composting is more effective if bins are used. (In addition, the use of bins is much neater.) High temperatures favor the microorganisms which are the most rapid decomposers; these microorganisms function at about 160 degrees F (71 degrees C) and a good pile will maintain itself at about that temperature. A thermometer to measure temperatures

(continued on page 10)

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Composting *(continued from page 10)*

inside the pile is helpful although not necessary.

5. The compost pile needs to be turned to prevent the pile from getting too hot. If it gets much above 160 degrees F, the microorganisms will be killed, the pile will cool, and whole process will have to start from the beginning. By turning the pile it will not overheat, and it will be aerated also, both of which are necessary to keep the most active decomposers functioning.

The pile should be turned so that material which is on the outside is moved to the center. In this way, all the material will reach optimum temperatures at various times. Due to heat loss around the margins, only the central portion of the pile is at the optimum temperature. Because of the necessity for turning, it is desirable to have two bins so material can be turned from one into another. Bins made with removable slats in the front make the turning process easier.

Bins with covers retain the heat better than do those having no covers. Once the decomposition process starts, the pile becomes smaller and because the bin is no longer full, some heat will be lost at the top. This can be prevented by using a piece of polyethylene plastic slightly larger than the top area of the bins. After the compost is turned, the plastic is placed directly on the top of the compost and is tucked in around the edges.

If the material in the pile is turned every day, it will take two weeks or a little longer to compost. If turned every other day, it will take about three weeks. The longer the interval between turning the longer it will take for the composting to finish.

6. Once a pile is started, do not add anything (with perhaps one exception, which will be mentioned in 9). The reason is that it takes a certain length of time for the material to break down and anything added has to start at the beginning, thus lengthening the decomposition time for the whole pile.

Excess material should be as dry as possible during storage until a new pile is started. Moist stored materials will start to decompose and if this occurs, they will not do a good job in the compost pile.

7. Nothing needs to be added to the organic materials to make them decompose. The microorganisms active in the decomposition process are ubiquitous where plant materials are found and will develop rapidly in any compost piles.

8. If done correctly, a pile will heat to high temperatures within 24 to 48 hours. If it doesn't, the pile is too wet or too dry or there is not enough green material (or nitrogen)

present. If too wet, the material should be spread out to dry. If too dry, add moisture. If neither of these, then the nitrogen is low (a high C/N ratio) and this can be corrected by adding materials high in nitrogen (such as ammonium sulfate, grass clippings, fresh chicken manure or urine diluted 1 to 5).

9. If the C/N ratio is less than 30/1, the organic matter will decompose very rapidly but there will be a loss of nitrogen. This will be given off as ammonia and if this odor is present in or around a composting pile, it means that valuable nitrogen is being lost in the air. This can be counteracted by the addition of some sawdust to that part of the pile where there is an ammonia odor—sawdust is very high in carbon and low in nitrogen (a high C/N ratio) and therefore will counteract the excess nitrogen. Other than adding water should the pile become dry, this is the only thing which should be added to a pile once it's started. Because composting can be done anytime, during the rainy season some covering of the pile may be necessary to keep the composting materials from becoming too wet.

10. Materials which should not be added to a composting pile include soil, ashes from a stove or fireplace, and manure from carnivorous (meat-eating) animals. Soil adds nothing but weight to a compost pile and will discourage the turning of the pile which is necessary for the rapid composting process. Wood ashes will not decompose. Most soils in California have a basic pH and as wood ashes are basic, they should not be added to a compost pile or to the soil. Manure from carnivorous animals such as dogs, cats, lions, tigers, etc., could contain disease-producing organisms that might infect humans. It is not known whether or not the rapid composting process will kill these organisms and therefore such manures should not be used—manures from herbivorous animals such as rabbits, goats, cattle, horses, elephants or fowl can be used.

11. The rapid decomposition can be detected by a pleasant odor, by the heat produced (this is even visible in the form of water vapor given off during the turning of the pile), by the growth of white fungi on the decomposing organic material, by a reduction of volume, and by the change in color of the materials to dark brown.

12. As composting nears completion the temperature drops and, finally, little or no heat is produced. The compost is then ready to use. If in the preparation of the compost, the material was not chopped in small pieces, screening the material through 1-inch-mesh chicken wire will hold back such pieces. These can be added to the next pile and eventually they will decompose.

Advantages of the rapid composting system include:

- The production of a valuable soil amendment from many organic materials which normally might be wasted.
- Compost can be made ready for use in as short a time as 14 to 21 days.
- Rapid composting kills all plant disease-producing organisms if done as described. It does not inactivate heat resistant viruses such as tobacco mosaic virus.
- Insects do not survive the composting process. Though some may be attracted to the pile, if they lay their eggs in the compost the heat will destroy them.
- Most weeds and weed seeds are killed. Some weeds such as oxalis bulbs, seeds of burr clover, some amaranthus seeds and seeds of cheeseweed are not killed by the high temperature in the pile.



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Involve Golf Course Superintendents in Course Construction

The president of the American Society of Golf Course Architects has called on developers to involve golf course superintendents in the construction of their courses.

"We try to get a superintendent involved at the start of construction so he can act as a project liaison, help interpret plans for the contractor and make suggestions that will ease maintenance," said ASGCA president John Clark. "For example, if we create a design that is difficult to maintain, he can bring it to our attention while changes can still be made."

With the superintendent present from the start of the project, it becomes easier to maintain the course according to its design, Clark said.

"Working together during the design and construction phase enables the superintendent to learn the intent of the original design", he said. "As the golf course evolves, the superintendent can help ensure that the layout remains true to the architect's original intent."

Education also enables a superintendent to become better acquainted with the purposes and perspectives of a golf course architect, Clark added.

"Being informed is 90 percent of understanding each other," he said. "The best ways to stay informed are through continuing education, attending conferences and exchanging information during the construction process."

Although few superintendents have the opportunity to be in on the development of a course from the beginning, they can always check the original plans to learn the architect's design strategy, Clark said.

"We must look to the superintendent to make sure we don't forget that the golf course must be maintained," said Clark. "We sometimes need to be reminded that a slope we've designed has to be mowed twice a week."

Architects also depend on the superintendent to monitor construction progress. "The superintendent has a lot of authority during construction," said Clark. "The contractor has to realize that he must satisfy the superintendent."

It's also important for the superintendent to be on site so he sees what goes underground, he said. "In particular, he needs to oversee the installation of the irrigation system and confirms that the greens, for instance, have exactly four inches of gravel, two inches of barrier layer and 12 inches of mix. When we leave a course, it's in his hands."

Source: A Patch of Green

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August 9, 1993

NTA Board Meeting

Contact: NTA (206) 754-0825

August 26-29, 1993

**Farwest Show and
Ornamentals NW Seminar**

Contact: (503) 678-1264

October 8, 1993

Musser Tournament

Contact: Norm Whitworth
(503) 650-3639

October 10, 1993

NTA Board Meeting

Contact: NTA (206) 754-0825

October 11-14, 1993

**NTA 47th Northwest Turfgrass
Conference and Exhibition**

Contact: NTA (206) 754-0825

December 1-2, 1993

Growing Grazy V

Contact: 1-800-275-9198

December 14-16

**OGCSA Chemical Applicator
Seminar & Turf Management
Show**

Contact: Dick Malpass
(206) 573-6969

January 27 (94)

**IEGCSA Inland Northwest Turf
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Contact: Julie Boyce
(509) 534-4161

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