



44th Annual Conference Takes Shape

Program

The program for the **44th Northwest Turfgrass Conference and Exhibition** schedule for September 17-20, 1990 at the Rippling River Resort in Welches, Oregon has been finalized by William Griffith, Conference Program Committee Chairperson.

This year's conference program will again include the mixed general and split session format that was so well received at the two previous annual conferences. One of the split session tracks will be designed for **golf course personnel** while the second track will be aimed at **parks, grounds and athletic field personnel**.

Speakers

Dr. A. J. Turgeon of Pennsylvania State University and Dr. Robert Sherman of the University of Nebraska, along with many other excellent speakers, will provide over 30 outstanding presentations including such topics as: pesticide regulation compliance; red thread management; pesticide spill response; computers and turf management; weed control in turf; putting turf; herbicide update; turf-soil relationships; tree fertilization; tank mixing pesticides; wild flowers and low maintenance; water use; integrated pest management; aquatic weed control; turf renovation; crowd control-rebuilding waterfront park; sprayer selection and calibration; and more, more, more!

Pesticide Recertification and GCSAA CEUs

Oregon and Washington pesticide recertification credits and GCSAA CEUs will be available for program attendees.

Exhibition

The 7,000 square conference center, one of the largest meeting facilities of any resort in Oregon and Washington, will serve as the center for our conference Monday evening welcome reception and exhibition. The show will be in a table-top format encompassing a hosted delectable hosted hors d'oeuvres reception. The response from selected potential exhibitors to the new show format and scheduling is exciting and everyone is looking forward to it.

Accommodations

The Rippling River Resort and Conference Center is the essence of simple elegance in a spectacularly beautiful "all Oregon" alpine setting...tall fir trees, crystal clear river, lush fairways, nestled in the foothills or Mt. Hood, just east of Portland.

The resort is a full service resort facility with over 200 hotel rooms and condominiums, two restaurants, meeting

space for over 1000 people, swimming pool, sauna, hot tub, six tennis courts, a BBQ area and bicycle rentals.

Transportation

Portland International Airport is served by all major commercial airlines. At the airport you will find all the normal automobile rental services. The resort is a short, beautiful 45 minute drive from the airport.

For those driving, the resort is located 45 minutes east of Portland just off Highway 26 at Welches, Oregon.

Golf

The annual men's and women's Turfgrass Conference Golf Tournaments will be held Monday on the Rippling River Resort golf courses. Rippling River is headquarters for over 250 golfing events annually. Over 70 rental carts are available in addition to a complete line of rental equipment. The pro shop and sport boutique offer excellent shopping values.

At present, there are three separate nine-hole courses available for play with an additional nine-hole course on the drawing boards. The original 2665-yard South Course was built in 1922 by founder Billy Welch. Rated at 33, the course plays through tall firs and features three outstanding par threes. The 3341-yard North Course was built in 1968 by Gene Bowman and it carries a rating of 35. The West Course, the most challenging carries a rating of 35 and plays along the Salmon River.

Turfgrass Facilities Tour

The third annual Turfgrass Facilities Tour will also be conducted Monday. The tour plans are being finalized now; however, a three stop tour is expected with a variety of information topped with an outstanding box lunch.

Spouse/Guest Offerings

As usual, a luncheon and tour are being planned for spouses for Tuesday and Wednesday. In addition, the resort offers an abundance of recreational opportunities for those not involved in the professional development sessions.

Registration Materials

Registration packets for attendees will be mailed near the end of the summer. Potential exhibitors will receive sign-up materials around the same time. Keep an eye open for your materials.

For further information on the Rippling River Resort, contact: Rippling River Resort, 68010 East Fairway Avenue, Welches, Oregon 97067 (503) 622-3101.

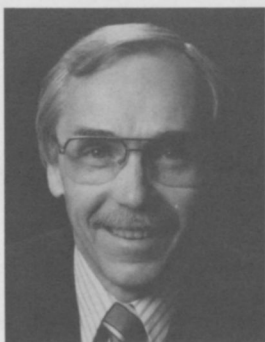
For further information on the conference and conference-related activities, contact: NTA, P.O. Box 1367, Olympia, Washington 98507 (206) 754-0825.

President's Corner

by Dr. William J. Johnston

"How to Participate in the NTA"

In the last issue of Turfgrass Topics I promised to discuss ways that we all could participate more in the Northwest Turfgrass Association. To participate effectively we need to be informed, or know where information we need can be obtained. In most instances, information can be obtained by contacting the NTA Office, whose address and phone number are given prominently below; other specific phone numbers are also given. The motivation for preparation of this list is to open more lines of communication so that we all can participate more fully in the benefits of NTA membership and to enable the NTA Board of Directors to better serve you.



William J. Johnston

NORTHWEST TURFGRASS ASSOCIATION
P.O. BOX 1367
OLYMPIA, WASHINGTON 98507
(206) 754-0825

To join the NTA:

Write or call the NTA Office for application forms and information or contact the membership committee chairperson, David Jacobsen (503) 224-6100.

To contact an NTA Board of Directors member:

Current board members are listed on the back cover of each issue of Turfgrass Topics along with their address and phone number.

To learn about NTA coming events:

Consult the Calendar of Events listed on the back cover of each issue of Turfgrass Topics. Important turfgrass meetings in the northwest are listed. These events need to get on your calendar. If you are aware of an important turfgrass event that needs publicity, contact the NTA Office well in advance of the event so it can be listed in the Calendar of Events.

To participate in the activities of a regional turfgrass group:

Write or call the regional group (officers are listed in your 1989/90 NTA Directory p 66-73) and express your interest.

To become or recommend a candidate for an NTA office:

Contact the chairperson of the NTA Nomination Committee Mike Kingsley (509) 255-6602 and express your interest in nominating yourself or a colleague.

To serve or assist on an NTA committee or join a work group:

Familiarize yourself with the work of the specific committee by contacting the chairperson to express your interest and describe your qualifications. Contact the following:

Nominations - Mike Kingsley (509) 255-6602
Conference education program - William Griffith (509) 527-4336
Conference golf tournament - Alan Nielsen (206) 256-1530
Conference spouse program - Rebecca Michels (206) 228-5779
Conference Turfgrass Tour - Pat Nibler (503) 682-6076
Membership - David Jacobsen (503) 224-6100
Publications - Blair Patrick (206) 754-0825
Research & Scholarship - Tom Wolff (206) 868-1600
Exhibits (Conference & Summerfest) - Pat Nibler (503) 682-6076
Long Range Planning - Rebecca Michels (206) 288-5779
Summerfest golf tournament - Don Hellstrom (206) 684-7521

To provide suggestions for new projects, services, or policies:

Write to NTA President William Johnston (Department of Agronomy and Soils, Washington State University, Pullman, WA 99164-6420) or to the chairperson of the committee whose work relates to the matter. Respond to requests published in Turfgrass Topics for suggestions from the membership. Attend the NTA annual meeting on Tuesday, September 18, 1990 at Rippling River.

To submit a nomination for honorary life membership:

Contact the NTA Office for the criteria and procedure for election.

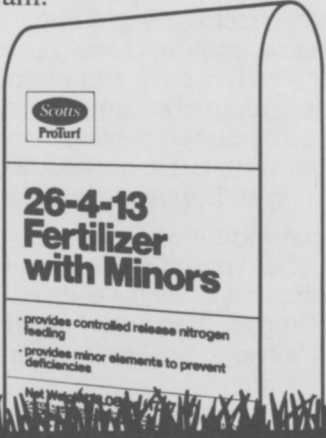
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Don Clemans
(206) 254-8748

Mark Jones
(509) 255-6033



To contribute to the Roy L. Goss Turfgrass Endowment Fund:

Dr. Goss has challenged the turfgrass industry to donate money for education and research. Roy has offered to match every \$15 donated with \$1 out of his own pocket. Contributions may be made to the Roy L. Goss Turfgrass Endowment Fund, 223 Hulbert Hall, WSU, Pullman, WA 99164.

To exhibit at the Turfgrass Summerfest or Annual Conference:

Contact Pat Nibler (503) 682-6076 or the NTA Office (206) 754-0825..

To submit items for publication in Turfgrass Topics:

Send material regarding recent publications of turfgrass interest, people in the news, announcements of forthcoming meetings and conferences, etc. to Blair Patrick at the NTA Office. Material should be received the 1st of the month preceding publication of Turfgrass Topics.

To submit an obituary for publication in Turfgrass Topics:

Send a signed obituary notice to the NTA Office.

To send a letter to the president or editor of Turfgrass Topics:

Do you agree or disagree with the contents of a recent issue of Turfgrass Topics? If yes, send a letter to me or the NTA Office. Do you have something important to share with the membership regarding the turfgrass industry or the NTA? If yes, send a letter.

To advertise in Turfgrass Topics:

Contact the NTA Office (206) 754-0825. Advertising deadline is the 15th of the month preceding publication.

As I stated in the last issue of Turfgrass Topics, one of the purposes of the NTA is to serve its members. Its ability to accomplish this task is in direct proportion to the involvement of the membership in the organization. I again urge all members to become actively involved in the NTA in 1990. I hope to visit with all of you at the 1990 Turfgrass Summerfest on June 25th at Canterwood Golf and Country Club, or on June 26th at the WSU Puyallup Turfgrass Field Day and the display/demonstration at High Cedars Golf Club.

1990 Turfgrass Summerfest

If you haven't already registered, don't miss the NTA Turfgrass Summerfest June 25 & 26, 1990. The Northwest Turfgrass Association, with the corporation of the WSU Puyallup Research and Extension Center, Canterwood Golf & County Club, and the High Cedars Golf Club, is sponsoring the event.

The event is planned to provide the opportunity for friends, colleagues, co-workers and everyone involved with the turfgrass industry to get together to share problems (and solutions); hear about recent research activities; see the "state of the art" in industry equipment demonstration; and, practice your golf game.

Monday, June 25th, the R. L. Goss Research Golf Tournament will be held at Canterwood Golf and Country Club.

Tuesday, June 26th, the annual Turfgrass Field Day at the Turfgrass Field Day at the WSU Puyallup Research and Extension Center, Field Laboratory - Farm 5 will be held.

Following the field day there will be a **Turf Grounds Maintenance and Irrigation Equipment Display and Demonstration** and great luncheon cookout at High Cedars Golf Club. Wally Staatz, owner/manager of High Cedars Golf Club, has donated his club and facilities. Registration information has been mailed but if you need a packet, call the NTA Office (206) 754-0825.

1990/91 Board Director Positions

The Nominations Committee, chaired by Mike Kingsley, is soliciting the names of individuals interested in serving as board directors on the NTA Board of Directors.

There will be at least three board director vacancies on the Board. The board director positions will be open for election at the Annual Meeting of the Members held during the 44th conference. Board Directors are elected for three (3) year terms.

If you are interested, please contact the NTA Office at (206) 754-0825.



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Research and Scholarship Fund Raising Campaign

Tom Wolff, chairperson of the NTA Research and Scholarship Fund Committee, asks everyone to remember the 1989/90 Research and Scholarship fund raising campaign currently underway.

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 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 develop the education program 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 participate significantly in the advancement of present and future knowledge. Through this fund, each of us can financially contribute to industry research and education advancements.

Donation forms have been mailed to members and industry supporters. Contributions are tax deductible and those contributing to the research and scholarship fund each year are recognized in the NTA Annual Directory.

Buy a share today in better turfgrass for tomorrow.

Fertilization, Mowing and Water are Keys to Quality

LAGUNA HILLS, Calif. —

"You can do more with turf in terms of appearance easier and quicker than any other part of the project," says Dan Heiny, owner of Allseasons Landscape. "Irrigation, fertilization and mowing are the keys."

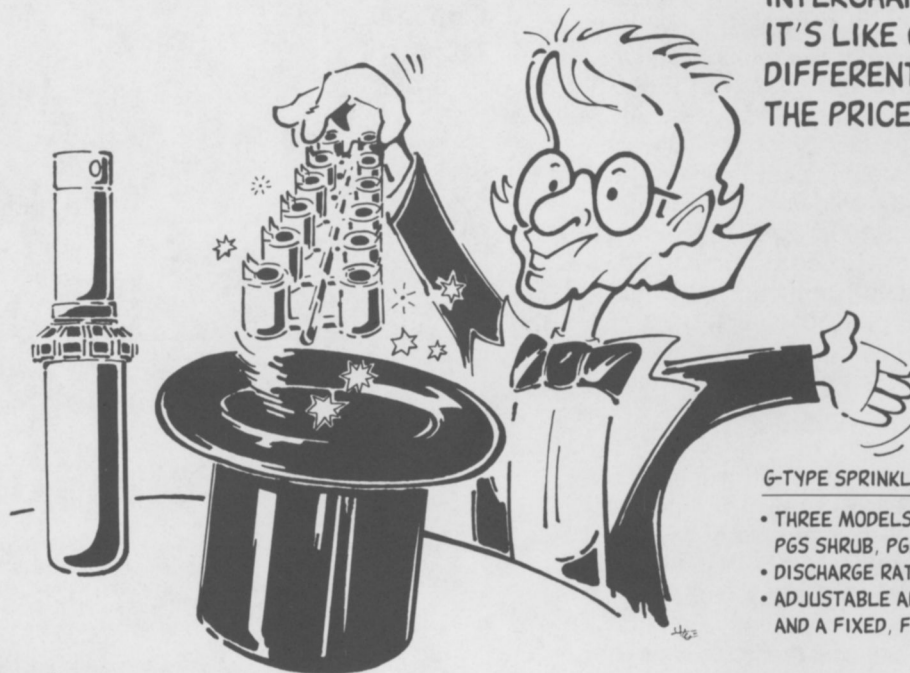
Heiny offered tips to fellow landscapers at a recent show. Here are excerpts:

- Always mow dry ground. Be sure the lawn is not watered the day prior to mowing. Also, never mow twice in the same direction.
- Fertilize every month with a uniform supply of fertilizer.
- Don't use string trimmers around trees. If customers insist on grass abutting trees, tell them it's risky. Instead, use a hoe, shovel or handpick to make a six-inch dirt barrier around the tree. And be sure not to mow too close to the tree.
- Aerify regularly, "It'll make you look like a real whiz," Heiny says, "An aerifier is one of the best machines you can use," Afterwards, water to break up the plugs, then mow.
- Test soil moisture regularly.
- Check drainage regularly, especially on rainy days.
- Clear weeds in the walkways. "It's something that gives the extra little detail to a project," he says.
- Check for tree roots in the asphalt. If unchecked, they will eventually break the asphalt and you could be held liable.

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- Specify snail and gopher control. These are time-consuming jobs, so the contractor should not be responsible unless they are specifically stated in the contract.

Source: Landscape Management/March 1990

Industry Associations Meet to Form New Coalition

Turf and Landscape trade organization at both the national and state levels are finding it necessary to join forces and create a more powerful voice in the political arena in order to counteract the political forces that may adversely affect the industry.

Nine industry associations agreed, during a meeting in September, 1989, to draft governing documents for a new industry-wide coalition, the Landscape & Environmental Resource Council. Participating in the meeting were the American Society of Landscape Architects, the American Sod Producers Association, the Associated Landscape Contractors of America, the International Society of Arboriculture, the Irrigation Association, the National Arborist Association, the Professional Grounds Management Society, the Professional Lawn Care Association of America and the Lawn Institute.

Those participating in the meeting expressed a continuing need for a unified voice on issues that affect the represented industries, as well as an improved means to more fully cooperate with each other on joint projects.

The group also advanced several projects initiated during its first meeting, which was held in Chicago in February, 1989. The group agreed to undertake an economic profile survey of its nine member groups, to circulate appropriate publications in development for review and potential endorsement, to expand its inventory listing of educational programs and publication, to identify legislative and regulatory issues of potential importance to the groups, to define environmental benefits provided by all segments of the groups represented, and to develop computer-linking specifications and procedures.

The next meeting has been set for March 29, 1990, in Washington, DC. At that time, the group intends to act on a mission statement and develop formal guidelines for governance, issues identification, reporting, public relations and funding.

For more information, contact Doug Fender, Executive Director, American Sod Producers Association, 1855-A Hicks Road, Rolling Meadows, IL 60008. 708-705-9898.

Source: Turf Tales/March 1990

McCarthy Receives GCSAA Scholarship

Thomas J. McCarthy of Bellevue, WA, has received one of ten 1990 scholarships presented by the Golf Course Superintendents Association of America (GCSAA).

McCarthy is majoring in horticulture — specializing in turfgrass management — at Oregon State University.

McCarthy has attended Oregon State since September 1988. He has worked in turfgrass management at the Sand Point Country Club in Seattle, WA.

Organized in 1926, GCSAA is an international professional association dedicated to promoting the principles and techniques of responsible golf course management. This year, GCSAA's Scholarship and Research Fund presented a total of \$28,500 to its ten scholarship finalists. Since its inception in 1956, GCSAA's Scholarship and Research Fund has provided more than \$750,000 in financial support for individual students and university research programs.

NTA Scholarship Awarded for 1989/90

Michael T. Conklin, a student at Oregon State University, and Kurt Noonan and Clifford J. Timms, both students at Washington State University, are the recipients of the 1989/90 Northwest Turfgrass Association Turfgrass Management Scholarships.

Scholarship recipients are determined through an application and screening process conducted by the NTA Research and Scholarship Committee. The scholarship program is designed to provide assistance and encouragement to students pursuing a career in the turf industry. Each recipient received a \$500.00 scholarship.

1990/91 NTA Annual Directory Advertising Space

The last opportunity to purchase advertising in the 1990/91 NTA Annual Directory is nearing. Those interested in being included as advertisers need to contact the NTA Office now for advertising information and order forms.

Seed Research Forms Technical Advisory Committee

Seed Research of Oregon is happy to announce the formation of the Seed Research technical advisory committee. The advisory committee consists of thirteen golf course superintendents from around the country who have demonstrated professional excellence and dedication to the turfgrass industry.

The purpose of this committee is to advise Seed Research on the specific needs of golf courses regarding turfgrass species, varieties, blends, and mixtures. The committee will also evaluate new Seed Research products, assist in writing technical papers on turfgrass management and to advise on future marketing programs.

The members of the Seed Research advisory committee are: Armeny Suny, Castle Pines golf Club, Castle Pines, Co; David Fleming, Golf Properties Management, Inc., El Cajon, CA; Tony Anfinson, Riverside Country Club, Portland, OR; Charles Joachim, Champions Golf Club, Houston, TX; Lee Redman, Sunset Country Club, St. Louis, MO; Ken Goodman, Bull Valley Country Club, Woodstock, IL; Kevin Ross, Falmouth Country Club, ME; Raymond Beaudry, Patterson Club, Fairfield, CN; Jeff Broadbelt, Chester Valley Golf Club, Malvern, PA; Walter Montross, Westwood Country Club, 800 Maple Ave. East, Vienna, VA; Bob Farren, Resorts of Pinehurst, Pinehurst, NC; Ralph Heinz, The Landing, Savannah, GA; Scott Lewis, Menlo Country Club, Woodside, CA and Henry Singh, City of Roseville, Roseville, CA.

Tank Insurance Required Soon

ORLANDO, Fla. - Is underground storage tank insurance a big deal? It must be, since the Environmental Protection Agency has set an official deadline for financial responsibility for groundwater contamination caused by leaky containers: October 26, 1990.

Thankfully, the GCSAA has made the insurance for this latest government assault bearable with an affordable insurance program.

Financial Guardian of Kansas City is the underwriter for the insurance. Cost of coverage will range from \$431 per year up to \$1685. Premiums are reduced by seminar and self audit credits. The coverage provides \$1 million in aggregate coverage, and includes a \$1000 minimum deductible and third party liability coverage.

Bare steel tanks more than 20 years old will not be covered. According to Richard Shanks, a Financial Guardian spokesperson, no company but Financial Guardian will insure a bare steel tank that is more than 15 years old.

"Make no mistake," says Robert Ochs, GCSAA legal counsel, "the EPA will enforce the law, and it will be costly once it's enforced."

7 Ways to Get More Done During the Normal Work Day

Here are a few suggestions by Dr. Roger Fritz, President of Organization Development Consultants in Naperville, Ill., to help make your time more productive. One may work well for one individual; another for someone else. Experiment with each technique to find the one that works best for you.

1. Do it immediately. Rush jobs do deserve priority... but all work should be weighted for relative importance.

2. Don't avoid unpleasant tasks. The problem with avoiding an unpleasant task is that you carry its emotional burden with you until it's done... and that slows you down.

3. Take care of the easier jobs first. For the slowstarter, this can be a good way to "build up a head of steam"... and hopefully, the momentum will keep you going. A good list of accomplishments, early in the day, can provide an emotional uplift for more trying tasks ahead.

There are other situations in which this technique is useful. At a meeting where controversial decisions must be reached, for example, better relations may result if the easier problems are resolved first.

4. Do jobs in the order of their importance. This can be an excellent approach unless all the important jobs are tiring and/or boring. It is not an excuse to put off the item of lesser priority, however, so be sure that all tasks are handled within a reasonable period of time.

5. Alternate Difficult and easy tasks. Alternating the difficult with the easy provides you with an occasional rest and with something to look forward to. The variety can increase your motivation.

6. Group Similar tasks. It's just good sense to complete several tasks that require the same data, the same materials or the same personnel before going on to something else. It reduces duplication of effort and provides you with "momentum" from one task to the next. However, be sure that you don't use this approach as a means of avoiding other, less appealing tasks.

7. Change tasks about every two hours. This approach can be helpful when you are doing routine, monotonous tasks. A different type of work can relieve the boredom, lift the spirits and give you something to anticipate.

Source: Clearing House Newsletter

Jacklin Seed Company Recognized

Jacklin Seed Company is proud to have been selected by the editorial board of *Seed World* publication as one of three "Seed Industry Giants."

The editorial stated:

"This is *Seed World's* second annual edition focusing on 'The Seed Industry Giants.' Last year we noted the 'giants' issue had been a difficult and challenging one to prepare. This year proved no different - the main reason being 'giant' can connote different things to different people.

"It should come as no surprise that we highlight companies like Pioneer and Sandoz, since they are considered the world's largest seed companies in terms of sales. This year, however, we also feature Jacklin Seed Company. While certainly not the size of the multinational in employee numbers or sales, Jacklin remains a leader in the turfgrass business. Its owners also are forward-thinking in the area of research."

The November issue of *Seed World* then detailed Jacklin's operations.

Course Superintendent Testifies On Golf's Environmental Impact

Speaking about the environmental safety and benefits of golf courses, William R. Roberts, CGCS, an officer of the Golf Course Superintendents Association of America (GCSAA), testified March 28, 1990 before the Congressional Senate Environment and Public Works Subcommittee on Toxic Substances.

As part of the hearing on the use, regulation and potential health risk of commercially applied chemicals on turfgrass, Roberts' testimony highlighted two areas in which GCSAA is considered to be the industry-leader:

Research Into the Effect of Turf Chemicals on Groundwater - An independently conducted, GCSAA-funded study completed on Cape Cod, Mass., showed that virtually no turf chemicals move through the soil structure into groundwater and that golf courses which employ best management practices in their application of turf chemicals can greatly minimize the risk of potential groundwater leaching.

Education Programs - The membership of GCSAA is responsible for preserving the delicate balance of the golf course environment and, to that end, has developed a

highly structured educational and certification program for its members.

Roberts, a golf course superintendent at Lochmoor Club, Grosse Pointe Woods, Mich., was invited to testify by Sen. Harry Reid (D-Nev) because of GCSAA's recognized leadership in the field of turf chemical application and research.

Six Big Mistakes To Avoid When Hiring

Some managers get involved with recruiting and selecting new employees so infrequently that it is understandable that they never really get good at it.

When it is time to hire, they are often so caught up in the day-to-day activities and problems of the job that they don't find the time that is necessary for a successful hiring process.

Hiring for the wrong job.

The first mistake managers make in hiring is when they add another person without analyzing the workflow or the workload. You should hire for the position that will solve your problems best. And that position may not even exist at the moment.

Here's an example: You manage a department with three senior people all performing the same work, and a junior or support staff person. The workload increases to a point where your existing staff can't complete it. Do you hire another senior person with all the necessary skills at the senior salary level? Or do you take the least skilled activities they perform, the "C" functions, from each of your three people and create a new medium value position. Now, of course, your senior operators have more time to spend on their "A" activities. These are the duties you hired them for in the first place and which they are more challenged to perform.

If you follow this second suggestion, you have another decision to make. You can promote your junior and hire a new support staff person, or you can hire a new person from outside to fill the newly created position. Either salary level is lower with the second method than that of another senior member. So, with a little creative workflow analysis, you have saved salary dollars and motivated everyone in your department.

Not setting objectives

The second mistake many managers make when they need to hire is they do not prepare complete job and candidate specifications. When the preparation step is lacking, all the following steps break down. The interview, for example, becomes haphazard, the interviewer talks more than the applicants so, they gather only technical information and use unsystematic methods of evaluation.

You need to understand the job duties and responsibilities so you can decide "what a candidate should do" in the way of education, experience, track record, etc. From the job specifications, you can also make some decisions about "what a candidate should be like" in the way of personal characteristics. You should also consider the "personality" of your department supervisor, and hire an applicant with a personality that "fits."

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This specifications stage is critical. You have to know what ideal profile you are ultimately searching for so you can plan the questions and the other pertinent investigation tools you need to uncover the relevant information necessary to make a valid decision. In other words, you must have a goal before you can plan how to reach it.

Divide the qualities you are looking for into "musts" and "wants". A must is a minimum requirement. It can't be negotiated, therefore it is a knockout factor. A reasonable number of musts is five or fewer. The more you itemize, the smaller the population you have from which to choose. The wants are everything you are looking for in the ideal candidate.

You should realize that it is highly unlikely that you will be able to find a candidate to satisfy *all your wants*.

"Being able to type 65 wpm" should not be a must. "Being able to type" is a must; "at 65 wpm" is a want. "Having sales management experience" is a must; "five years experience" or "in our industry" are wants.

Making it difficult for applicants

Now that you have made the decision to hire and have written a job candidate spec, you can write your recruiting ad or call your personnel agency. Don't make the mistake of approaching this in terms of your interests. Your wanting "sound knowledge of computer payroll applications" doesn't really grab the interest of many payroll clerks. What shipping agent is concerned about your need for "a candidate experienced in the container trade"? You should approach the writing of your ad or the discussion with your recruiter from the applicants' point of view. Tell them what they want to hear.

Tell payroll clerks that you have a "pleasant, friendly atmosphere" or provide the "most up-to-date computerized system". Shipping agents will want to know about the prestige of your firm and that "to support you, we provide the most complete communication and locating network available to the industry". Consider the headline and the first paragraph of the ad as your sales presentation for the job and your organization.

Asking applicants to mail a resume to a blind box number in care of a newspaper or magazine is a mistake because this approach makes it as difficult as possible for people to reply.

The easiest way for busy, motivated, qualified working

people to pursue your opportunity is to telephone you. So, include your name, phone number and your address for out of town applicants. Certainly, you are going to get calls from people who are not qualified. Yes, you are going to be tied to the telephone for a couple of days. But that's better than not even knowing about the qualified person who doesn't have an updated resume because he/she is relatively happy in their current job.

If recruiting is a major function of your job, you should do anything necessary - suffer through all those many phone calls - to discover the best available candidate for the job. If you just don't have the time to follow all the right steps, you should use a third party recruiter.

Actually, it is a mistake not to use a third party professional recruiter. (They put their phone numbers in their ads.) If your agency works on a contingency basis, it won't cost you anything unless you hire their applicant. So you can see what your ad produces and compare it to what the agency produces. In the end, you hire the best candidate knowing that you have drawn from the largest candidate bank available.

Not weighing the results from all sources

There are many selection tools available to a hiring manager and you should use them all. Don't make the mistake of putting the entire decision on one device.

In many supervisor's minds, the interview is the most important tool. However, the results from the interview should be corroborated with the results of tests, reference checks, other written evaluations, and third party interview opinions inside and outside your organization. If one reference is less than complimentary about a specific candidate, you would want to weight it against your other findings. It is highly likely the positives will outweigh the negative and you would go ahead. There are no "perfect people", so there will be some negatives with every applicant. Your job is to put them in perspective in relation to the job, your corporate culture, etc.

One very important tool to use when selecting people is Management Judgement. Yes, your intuition (often referred to as a "gut feeling"). Hiring decisions are just like any other decision you make in life: you wish you had more information or more accurate information before you make that decision. Of course, you want to be sure you make the right choice. But, there comes a time when you have to face the situation and perform one of your major responsibilities as a manager and make a decision.

Remember, however, to add your intuition only after you have gathered as much information as is practical using the other selection tools available.

Demanding specific experience

Another mistake made more often lately by manager is they put too much emphasis on the applicant's specific experience. "Can do" considerations are important, but only generally. Sales managers in particular ask for years of their specific industry experience. It has been said that 87 percent of properly selected candidates fail because of personality factors.

So, instead of spending the bulk of the selection time determining the applicant's technical skills, the greater portion should be spent predicting whether the individual "will do" the job.

For example, you are trying to decide between two close applicants for a word processing position. The first

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one has the personality and the motivation that complements your firm's environment and will be promotable in the future, but he/she doesn't have experience with the specific software your firm uses. The other applicant has the precise software experience, a stable work history and good references. It is recommended that you hire the first individual. It is easier to train a willing person on your software than to motivate the second applicant after the novelty of the job wears off. You will get better long term results which is really why you are hiring.

Hiring in your own image

Senior people in an organization and entrepreneurial personality types who tend to make decisions quickly often make the mistake of hiring in their own image. Actually, it is recommended that you don't hire anyone who reminds you of yourself.

It is unfortunate when a less capable candidate is hired because he/she has some similarity to the hiring manager. You don't want to hire in a narrow image. Much though should be given to meeting your firm's organizational goal through expanding and enriching the diversity of its personnel. A McGill University study showed that managers who fall into this category tend to make their hire/no hire decision within the first four minutes of an interview and that unjustifiable weight is given to one unfavourable impression.

It appears that those who are guilty of hiring in their own image are also committing several of the other mistakes.

Hiring mistakes are costly in more ways than one. In dollars it has been estimated the mishiring can easily cost two or three times the annual salary. The non-dollar costs include loss in productivity, the negative effect on morale, the lost management effort while they are tied up hiring and training, the increased administrative workload and cost, and on and on.

So don't let these mistakes interfere with your hiring practices. Invest your time in following the positive rules so you can realize the highest return when making hiring decisions.

Source: Green Master

Groundwater, Turf Management, and Public Perception

by Michael L. Agnew, Iowa State University

Groundwater is defined as any water which occurs beneath the surface of the earth in a saturated geological formation of rock or soil. It accounts for the drinking water of half the total United States population and 95 percent of the rural populations. At one time, groundwater was generally thought to be protected from contamination by impermeous layers of subsoil, clay, rock, and the soils' own degradation process. However, in 1979 the pesticide Aldicarb was found in wells on Long Island and in Wisconsin. This along with detection of nitrate in groundwater, forced groundwater contamination to become the top environmental issue.

The primary sources of groundwater contamination can be classified as either point source or nonpoint source contamination.

Point source contamination can be traced back to a specific source. In 1988, the U.S. Environmental Protection

Agency reported that deficient septic tanks, leaking underground storage tanks, and agricultural activities (i.e. fertilizer application) were the most frequently cited sources of groundwater contamination.

A nonpoint source of contamination is one that cannot be traced back to a specific source. In water that did not meet state use designations by the EPA, nonpoint sources of pollution were cited as the cause of water quality degradation in 76 percent of lake acres, 65 percent of stream miles, and 45 percent of estuarine water. Examples of nonpoint sources of contamination include agricultural fertilizer and pesticide runoff, agricultural fertilizer and pesticide movement through the soil, and sediment from construction sites.

Factors Influencing Contamination

Understanding the soil type, solubility of chemicals, water table depths, topography, and vegetation can assist in the site evaluation for groundwater protection.

Soils that have higher infiltration and percolation rates are more susceptible to groundwater contamination. Sandy soils, modified sand golf greens, and modified sand athletic fields are examples of areas having high percolation rates. With the exception of native sandy soils, these areas are constructed in a 12 to 24-inch soil profile with water diverted from the modified soils to soils with lower percolation rates. However, native sandy soils can be found in most states. These areas are highly susceptible to groundwater contamination.

The solubility of pesticides can directly influence groundwater contamination. The EPA has identified several turfgrass pesticides as having potential for leaching into the groundwater. They are Carbaryl, Chlorothalonil, 2, 4-D, DCPA, Dicamba, Fenamiphos, and Trifluralin. Only a few of these products actually remain soluble in water. The Farm Chemical Handbook provides information on pesticide solubility.

Fertilizer sources also vary in their rate of solubility. Nitrogen is more likely to move into the groundwater when present in the soil in a soluble form. Soluble forms of nitrogen include synthetic nitrogen sources (ammonium nitrate, ammonium sulfate, calcium nitrate) and urea. Slow-release nitrogen sources have a lower water solubility than the soluble forms of nitrogen. Within the slow-release nitrogen group, some slow release nitrogen sources are more soluble than others. For example, ureaform and milorganite are less soluble than short chain methylene urea.

Nitrogen Sources

Slow Release	Water Soluble
Natural Organics	Synthetic Inorganics
• Milorganite	• Ammonium Nitrate
• Sustane	• Ammonium Sulfate
• Restore	• Calcium Nitrate
Synthetic Organics	Synthetic Organics
• Ureaform	• Urea
• Methylene Urea	
• Sulphur Coated Urea	

The depth of the water table directly affects the susceptibility of the groundwater to contamination. Shallow water tables are more likely to be contaminated than deep aquifers. In Iowa, much of the drinking water is from shallow water sources.

The topography of the site also influences the movement of fertilizers and pesticides. Heavily sloped areas are more like to lose water, nutrients, and pesticides through runoff. All other conditions being the same, it stands to reason that the greater degree of slope, the greater the water loss due to the increased velocity of water flow. The length of the slope also influences the movement of fertilizers and pesticides. The greater the extension of the sloped area, the greater the concentration of the flooding water.

The presence of vegetation on the soil surface will greatly affect the loss of fertilizers and pesticides through both runoff and leaching. The kind of grass, the thickness of the stand, and the vigor of its growth greatly affect runoff and the rate of great importance in the control of pesticide and fertilizer movement. A thick, healthy stand of cultivated turfgrass is much less susceptible to runoff than are pastures. Pastures are more compacted and are not as thickly vegetated as lawns. In research conducted at Penn State, nutrient loss through runoff was greater on seeded sites than on sodded turfgrass sites. The loss of water by percolation is also less on vegetated lands than bare soil. The roots of a turfgrass plant will be in the upper 8 to 12 inches of the soil profile. These roots are excellent extractors of soil water.

In summary, sandy turfgrass sites treated with soluble chemicals are more prone to leaching loss, whereas heavy clay turfgrass sites on sloped areas are more prone to runoff loss.

Management Practices That Protect Groundwater

The manager of a turfgrass site has ultimate control on protecting the groundwater. This is especially true for sandy turfgrass sites. Thus the nitrogen source, nitrogen application rates, timing of nitrogen application, and irrigation practices can directly influence groundwater contamination on sandy sites.

As stated previously, slow-release nitrogen sources have a lower solubility than inorganic nitrogen sources. Slow-release nitrogen sources are recommended for use on sandy soils. Research has shown that nitrate leaching is less when applied as a natural organic form (Milorganite) or a synthetic organic form. (ureaform)

If soluble nitrogen sources are preferred, rates should be adjusted to prevent movement through the soil profile into the groundwater. For example, nitrogen applications with urea on high sand content golf greens should be at a rate of .1 to .25 lb. N/1000 sq. ft. per application. Anything greater may leach below the root zone. Once this occurs, the nitrogen is no longer available for plant use. However, if slow-release nitrogen sources with a high water insoluble nitrogen ratio are used, N rates can be as high as 2 lb. N/1000 sq. ft. per application on Kentucky bluegrass.

Certain types of weather will favor nitrogen leaching. For instance, cool rainy weather favors the movement of nitrogen beyond the root zone into the groundwater. Increased leaching potential occurs because cool temperatures decrease denitrification, volatilization, microbial activity and plant nutrient uptake. Thus, application of high rates of nitrogen on sandy sites during the late fall, winter or early spring can lead to nitrate movement into the groundwater.

Irrigation practices that result in water movement below the root system will increase potential nitrogen and pesticide leaching. Irrigation on a daily basis during cool months will increase leaching losses. On the other hand, infrequent deep irrigation to well below the root system will more than likely move nutrients with the water. Irrigation should only be provided to replace what water has been removed by plant uptake and evaporation.

Source: NYSTA Spring 1990 Bulletin 138

Thoughtful Tree Planting

by Paul Verneulen, U.S. Golf Association

To the novice golfer or average club official, planting a tree on a golf course seems fairly straightforward. After all, it only takes a short trip to the nursery and 10 minutes to dig a hole.

Well, not exactly. An improperly placed tree of the wrong species can seriously interfere with the original intent of the course architect or, even worse, completely destroy a putting green.

The following are 10 guidelines that one should ponder before attempting to plant a tree. Hopefully, these guidelines will help ensure that a new tree becomes an asset to the entire club rather than a thorn in the superintendent's side.

Before reviewing these guidelines, please realize that each may not always apply strictly in all situations. For example, a large tree planted 25 yards away from a putting green on the south side will cause greater problems than a tree planted the same distance on the north side, due to heavy shading.

Guideline No. 1

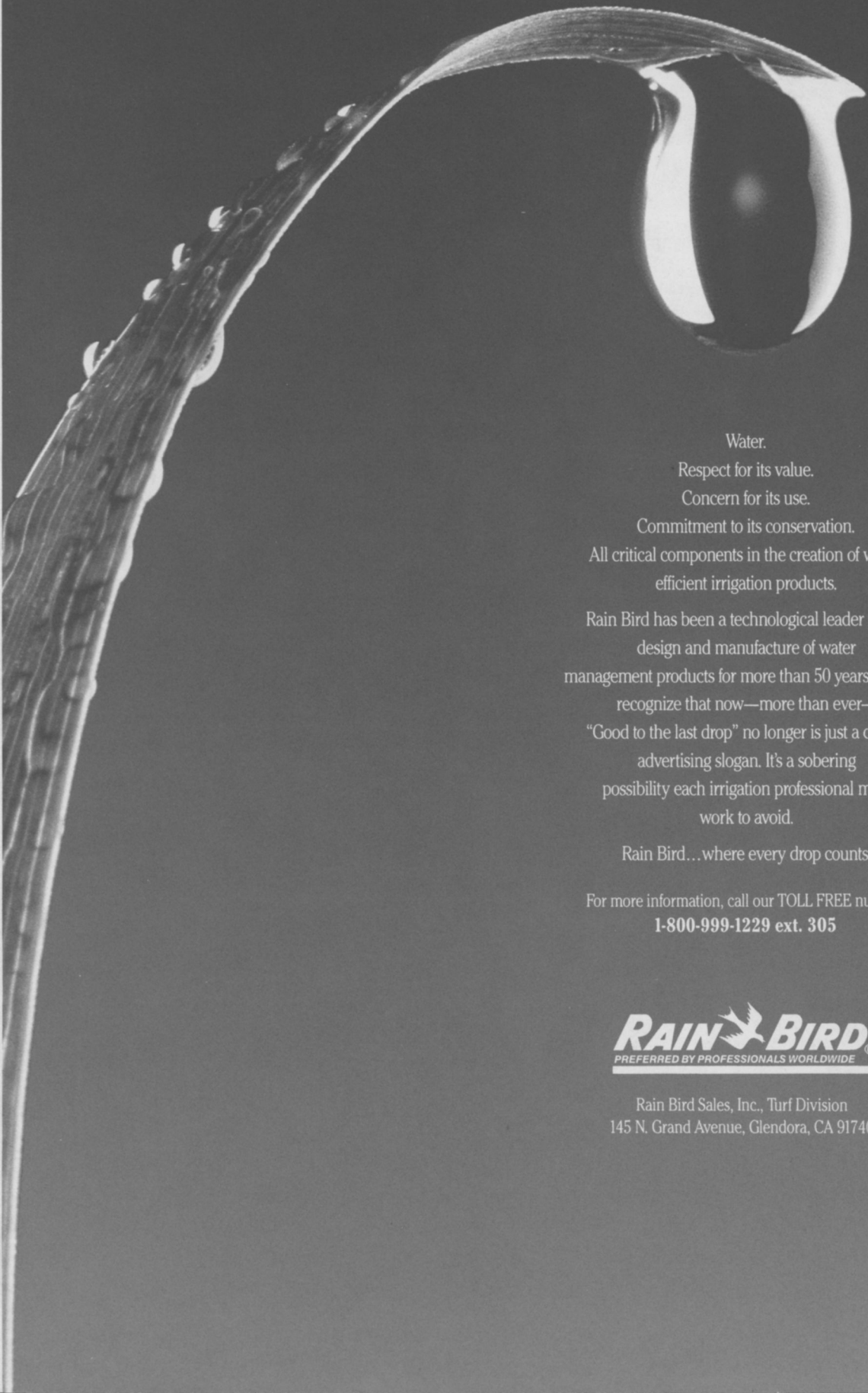
Make sure to select a planting location so that the mature canopy of the tree will not protrude on the line-of-flight between a tee and fairway. Trees with protruding limbs dramatically reduce the usable size of a tee.

For example, a tree planted too close to the front right-hand side of a tee will promote concentrated use on the left-hand side of the tee. The result of such concentrated divoting on one side of the tee usually promotes discussion about the superintendent's abilities. The solution to large overhanging limbs is usually sympathetic pruning that leaves the tree permanently disfigured. Actually, complete removal of the tree could be the best solution.

Guideline No. 2

To allow for vital air movement and exposure to sunlight, resist the temptation to plant dense groves of trees around greens, tees and fairways. Poor air circulation, especially in areas where greens are located, produces soaring temperatures and humidity during the summer that in turn promotes harmful disease development. Furthermore, poor air circulation and dense shade during the winter produces cooler soil temperatures that severely retard the growth rate, leaving greens helpless against foot traffic. In situations where poor air circulation and restricted sunlight penetration cause unacceptable turf loss, tree removal is absolutely necessary.

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Guideline No. 3

Never try to completely fill in rough areas between adjacent fairways with trees for the sake of safety. No matter how many trees you plant to protect neighboring players, the odds are the first high handicapper will find a way through. Once they do, look out!

The player automatically feels qualified to join the PGA tour and aims directly into the oncoming players, hoping to hit a high fadeback over the trees. If your intent is to protect golfers in adjacent fairways, then plant groups of trees strategically near the tee. This will prevent errant shots from even having a chance to stray. Leave several openings between adjacent fairways near the landing area so that if someone does stray, they have the opportunity to return to their fairway uninhibited.

Guideline No. 4

Never plant large trees closer than 75 feet from a green or tee, because they will become serious competitors for available water and nutrients. Most individuals are under the mistaken impression that tree roots cannot extend outward from the trunk further than the drip line of the tree. In reality, tree roots can extend outward from the trunk approximately one to one and a half times the total height of the tree.

For example, if a tree is 100 feet tall, its roots can extend as far 100-150 feet. Once tree roots have invaded underneath a green or tee, they sap water and nutrients away due to their overwhelming size. In situations where tree roots are a problem, sever them with a trencher and install a permanent barrier.

Guideline No. 5

Without question, flowering trees add unmistakable beauty to any course. However, due to their tender bark and dwarf stature, they are extremely sensitive to mower damage. This extreme sensitivity makes most flowering trees a poor candidate for use on golf courses unless they can be carefully protected. Augusta National is a good example. The beautiful flowering dogwoods and azaleas have been planted underneath pine trees where there is never an occasion to operate heavy mowing equipment.

Guideline No. 6

Try to avoid screening out scenic vistas. Scenic vistas include the clubhouse, ocean or mountain views, lakes or other open areas of the course. Once a scenic vista has been lost, it is usually forgotten and consequently may be lost forever.

Guideline No. 7

It is often best to avoid using a standardized tree planting as yardage indicators. Problems arise in the future when one of the planting is lost or damaged.

For example, if palm trees are used on each hole to indicate a distance of 150 yards, it will be impossible to replace a dying palm with one of matching size. In addition, a tree planted to the edge of the fairway can severely penalize a golfer.

A better means of indicating yardage may be to mark large, landmark trees already present throughout the course with a small wooden or metal plaque. The advantages of marking landmark trees is that they blend in with the course surroundings, they are already present throughout the course, and because of their size they can be seen by golfers that stray into adjacent fairways.

Guideline No. 8

When selecting a tree, choose species that match the existing vegetation and have favorable characteristics. Cottonwoods and large fruit trees are not good candidates for golf courses because they are either strong surface rooters or require continuous maintenance.

In addition, try to limit the number of different species as much as possible. A continuous vegetation scheme is often the trademark of many of America's highest ranked courses. For example, the site of this year's U.S. Open was Oak Hill CC in Rochester, N.Y. This particular course has a continuous theme of oak trees from the first tee through the 18th green. Courses that tend to plant a potpourri of tree species are usually unflatteringly referred to as tree zoos or specimen parks.

Guideline No. 9

Try to naturalize the appearance of large tree plantings by randomizing the distance between each tree. A good way to develop a randomized tree planting would be to hit several dozen golf balls into a rough area from a distance of 200 yards. Then place a small flag where each ball has landed and selectively remove one flat at a time until there are an appropriate number left.

Guideline No. 10

To prevent unnecessary neglect of newly planted trees, never plant more than the maintenance staff can adequately maintain. During the first year of establishment, small trees require extra attention and frequent hand-watering during the summer. If you must purchase trees in large numbers due to cost, it might be best to establish a tree nursery near the maintenance facility where they can be easily cared for. Then, over the next several years, slowly spread them over the course.

Summary

Remember that a good tree-planting program on any course starts with a long-range plan. What makes a golf course different from a park or from your front yard is the presence of sensitive putting greens and the integrity of the game.

The agronomic impact of misplaced trees is commonly seen in the form of shade, root competition and poor air circulation. Thoughtful tree planting should not only improve the appearance and playability of your course, but more importantly remove the thorn from your superintendent's side.

Source: Golden State Fairways

Ecological Side-Effects of Pesticide And Fertilizer Use On Turf

*by Daniel A. Potter, University of Kentucky
Professor, Department of Entomology*

Turfgrasses, which cover an estimated 19 to 25 million acres in the United States, are often the most intensively managed plantings in the urban landscape. A growing number of home lawns, golf courses, and other turf areas are being maintained with regular applications of insecticides, herbicides, fungicides, and fertilizers because of public demand for dense, uniform, dark green turf.

Pesticides and fertilizers are indispensable tools of the modern turf manager. However, it is clear from other agricultural systems that frequent or excessive chemical applications can sometimes have undesirable side-effects. Because pesticides may kill beneficial organisms as well as pests, their use can increase the risk of pest resurgences or outbreaks of secondary pests. For example, it is well documented that use of insecticides again key orchard pests such as the codling moth can severely reduce the populations of predatory mites, allowing injurious spider mites to reach outbreak levels. Pesticides and fertilizers may also affect earthworms and other soil-inhabiting creatures that play important roles in conditioning the soil and in the natural breakdown of plant litter.

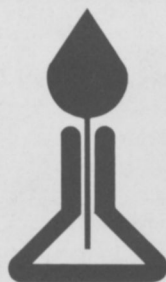
The observation that excessive thatch accumulation or outbreaks of pest insects rarely occur on minimally managed turfgrass suggests that healthy turf is a relatively stable habitat in which thatch production is balanced by decomposition and in which pest insects are held in check by predators and parasites. However, surprisingly little is known about the side-effects of common turf management practices on these important natural processes. The issue of the environmental side-effects of common turf management has added significance in light of charges leveled at the lawn service industry by certain elements of the media and general public that the use of pesticides on lawns and golf courses is ecologically and environmentally unsound. This article summarizes recent research which has begun

to clarify how turf management practices may affect earthworms, predators, and other beneficial creatures in turfgrass, and how this in turn may affect thatch decomposition and natural regulation of pest populations.

Thatch Accumulation and Decomposition

The Greek philosopher and scientist Aristotle called earthworms the "Intestines of the earth". Indeed, earthworms and other soil-inhabiting invertebrates have been shown to play a major role in the decomposition of plant litter and nutrient recycling in forest and pasture soils. These animals pull down and mix organic material into the soil, enrich the soil with their excreta, and help to fragment and condition plant debris in their guts prior to further breakdown by bacteria and fungi. Plant litter decomposition is much faster with the combined action of soil animals and micro-organisms; medium mesh, to exclude earthworms but admit smaller invertebrates such as soil mites; or coarse mesh, to admit all components of the soil fauna, including earthworms. In a companion experiment, thatch pieces were buried in identical coarse mesh bags in untreated turf, or in turf that had been treated with chlordane and furadan to eliminate the earthworms.

Thatch pieces from each experiment were periodically dug up, reweighed, and analyzed for mineral soil content and loss of organic material. Dramatic differences were apparent in both experiments after only three months. Without earthworms the structure and composition of the



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thatch remained nearly unchanged, but the pieces were broken apart and dispersed when earthworms were present (Fig. 1). The most striking effect of earthworm activity was a significant increase in the amount of soil incorporated into the thatch, from about 30% soil content by weight without earthworms to about 70% soil by weight with worms present. The effect of this natural process is similar to that achieved by core cultivation or by topdressing as is practiced on golf greens.

Do Natural Enemies Help To Control Pest Populations?

In addition to familiar pest species such as white grubs, sod webworms, and chinch bugs, turfgrass is inhabited by a great diversity of insects, mites, spiders, and other small creatures which feed on plant debris, fungi, or other insects. Many of these creatures are predators or parasites which play a role in reducing pest populations.

Insecticides applied for the control of pest insects are generally also toxic to beneficial invertebrates. In one study, a single surface application of an insecticide reduced populations or predatory mites, spiders, and insects by as much as 60% (2). More than six weeks after treatment numbers of predators had still not recovered to levels found in untreated (control) plots.

There is a fair amount of circumstantial evidence that heavy or repeated insecticide applications can sometimes lead to increased pest problems. In Florida, for example, outbreaks of chinch bugs were observed on heavily treated St. Augustinegrass lawns, but not on untreated lawns where predators and an egg parasite of the chinch bugs were abundant (10). Similarly, reductions in populations of predatory mites following chlordane or carbaryl applications apparently contributed to resurgence of hairy chinch bug populations and outbreaks of winter grain mites on home lawns in New Jersey (15, 16). In Kentucky, outbreaks of greenbugs appear to be more common on high maintenance lawns than on untreated turf (8).

In another study (3), we compared the rates of natural predation on sod webworm eggs in untreated Kentucky bluegrass vs. turf that had been treated with a single surface application of chlorpyrifos (Dursban) at label rate. Eggs were obtained from field-collected female moths and placed on disks of filter paper in small dishes set level with the ground surface. Groups of 500 eggs were set out in untreated and treated plots at 1, 3 or 5 weeks after the insecticidal application, and the number of eggs that were eaten or carried off by predators was recorded. We were surprised to find that predators, primarily ants, consumed or carried off as many as 75% of the eggs in the untreated plots within 48 hours. It is also noteworthy that there was almost no predation in the treated plots for at least three weeks after the treatment. Predator populations were severely reduced by the insecticide, but had begun to recover by 5 weeks after the treatment. At that time, predation rates between treated and untreated plots were similar. To date, this study is the only experimental evidence that natural enemies are important in reducing pest populations in turfgrass, and that this process can be affected by pesticide applications.

Side-Effects of a Total Lawn Care Program

Although it is clear that application of pesticides and fertilizers can sometimes have undesirable side effects, a recent study (1) suggest that the overall impact of high-

maintenance lawn care programs on the turfgrass ecosystem may be less severe than might be expected.

Plots of Kentucky bluegrass were maintained for 4 years on a schedule of fertilizer, herbicide, and insecticide treatments and changes in soil and thatch characteristics, earthworm populations, and numbers of pests and beneficial insects were monitored. The plots received 5 lbs. of N/1000 ft. sq. per year, broadleaf weed control (2,4-D, MCPP, and dicamba) in spring and fall, preemergent crabgrass control (bensulide) in early spring, two applications for surface-feeding insects (chlorpyrifos), and diazinon in late summer for grubs. This annual schedule is similar to that used by many lawn service companies.

Even after 4 years on this relatively heavy treatment schedule there was no significant reduction in earthworm numbers in the treated plots. In fact, populations of some beneficial soil mites actually increased. Furthermore, there was only a modest decline in soil pH (6.2 to 5.9), perhaps because the site had been treated with agricultural limestone two years before the start of the experiment. Thatch accumulation was significantly greater in the high-maintenance turf (3.3 vs. 10.7 mm), but was still not excessive. While predator populations were reduced by insecticidal applications, the treated areas were by no means devoid of predators. Predators repopulated the treated plots by the following spring and some groups were, in fact, captured in great numbers in the high-maintenance than low maintenance turf. The apparent recovery of the turf from perturbations caused by our relatively heavy schedule of treatments suggests that the impact of more moderate programs would be even less severe and of shorter duration.

Other Considerations

Two other problems that may be encouraged by repeated pesticide use on turfgrass are acquired resistance of pests to insecticides or fungicides, and enhanced microbial degradation of pesticide residues.

Acquired resistance can become a problem when insecticides are applied repeatedly over a number of seasons. An excellent insecticide may be rendered nearly useless within a few years because of the development of a resistant insect strain. Acquired resistance has been documented for a number of turfgrass pests, including webworms, chinch bugs, billbugs, greenbugs, and several species of white grubs (11). Judicious use of insecticides, and alternation of materials from different chemical classes (e.g., organophosphate followed by carbamate) when treatments are necessary will help to delay or prevent the development of acquired resistance.

Enhanced microbial degradation of pesticide residues is a phenomenon in which an insecticide is degraded more rapidly than usual by micro-organisms. Enhanced biodegradation apparently occurs as a result of micro-organisms becoming adapted to a pesticide to the point of being able to use it as an energy source. The phenomenon has been demonstrated in soil for several insecticides, including diazinon, carbofuran, fensulfothion, and isofenphos. Recent experiments (6) indicate that this alarming pattern may also occur in turfgrass. When isofenphos (Oftanol) was applied to golf course fairways that had a history of isofenphos treatments, more than 90% of the insecticide degraded within three days. In contrast, practically no degradation occurred in previously untreated fairways. It appears likely that enhanced microbial degradation of isofenphos residues in thatch is the cause of at least some

reported cases of poor residual control of white grubs (6). Even more disturbing is the report that other insecticides, including diazinon, chlorpyrifos (Dursban), carbaryl (Sevin), and isazophos were rapidly degraded when applied to turfgrass that had been previously treated with isofenphos.

Final Thoughts

The intent of this article is not to support or condemn chemical turf care programs, but rather to provide "Food for thought" for the homeowner and professional turf manager. There are clearly many situations in which the use of pesticides is essential to the maintenance of quality turf. Although pesticide applications, like human medicines, may have some side-effects, these must be weighed against the overall benefits that the treatment provides.

The accumulated evidence suggests that turfgrass is a complex system with many buffers. However, we are only beginning to understand the roles of micro-organisms, earthworms, predators, and other creatures in maintaining this natural balance. It does appear that excessive or unnecessary pesticide applications can sometimes aggravate thatch and pest problems by interfering with the activities of beneficial organisms, or by encouraging the development of acquired resistance or enhanced microbial degradation. Awareness of these potential side-effects may make it easier to develop turf management programs that get the job done without disrupting the natural processes that are important to healthy turf. Homeowners and turf grass managers can minimize such problems by striving to use pesticides at the proper time and rate, and only as needed to control specific problems. Avoid repeated applications unless they are necessary. It is wise to alternate pesticides rather than use the same material year after year and, when feasible, to select those that have fewer known adverse side effects (e.g., earthworm toxicity). In general, it takes a better manager/grower to use less pesticide.

References available, call the NTA office, (206) 754-0825.

Source: NYSTA Spring 1990/Bulletin 138

Environmentally Sound Turf Management

To address growing concerns related to current pesticide application practices, the Golf Course Superintendents Association of America (GCSAA), in conjunction with the Environmental Protection Agency, is reprinting *Integrated Pest Management for Turfgrass and Ornamentals*, a compendium of articles on "IPM". GCSAA is underwriting the cost of reprinting the book in order to ensure its

availability to golf superintendents and other turfgrass managers.

The book contains articles that explain how to avoid unnecessary use of chemicals by advocating careful monitoring of pesticide applications. By stressing the judicious use of pesticides and herbicides through an IPM philosophy, golf superintendents can reduce their reliance on chemicals in maintaining their courses.

The book will be available May 7 through the GCSAA Office of Government Relations. Cost is \$10 for GCSAA members and \$12 for non-members.

NIP & GM Education Conference

This year, the National Institute on Park and Grounds Management (NIP & GM) 20th Annual Educational Conference will be held in Reno, Nevada, October 21-24, 1990. This is as close as they have been to the Northwest. They do hold Athletic Turf Management Seminars about every three years in the area, the last two in Seattle.

They usually have concurrent programs with one relating to turf management. The other two programs may have items of interest to NTA members also. Delegates can attend any session on any program, selecting what is most helpful to them.

A "half price" registration is being offered to NTA members who are current at the time of the conference. At this writing, they still have a few costs to plug in, but they think they will be close to 1989 costs. Those were \$145 for early registration for Institute members, \$190 for non-members, additional delegates from the same department, \$100 and \$125. Cost to NTA members would be half of these costs, so an Institute member who is an NTA member would really get a deal. This would only apply to delegates, not spouses. Some deadline on the offer will be established but none has been set, yet.

Pumping Tips

Preventive maintenance plays an important role in keeping pump equipment operating efficiently and reducing equipment failure. The majority of this service should be performed by a qualified technician. However, many components of the pump station require only nominal skills and instruction to maintain. Here are some of the components that can be serviced by in-house staff.

Pumps

The pump packing should never be tightened to prevent leakage, otherwise the pump shaft will wear and can break. Pump packing, after it has been "run-in", should have a small leakage around the pump shaft. The leakage cools the pump shaft and packing gland and should be enough to prevent the pump shaft and gland from getting hot. Allow approximately 60 drops per minute.

Over time, repeated tightening will compress packing. Additional rings may be installed as required to compensate, but no more than two additional rings should be added. After two rings have been added and there is no more adjustment available, it is time to repack the box. Have a qualified technician do this.

Most packing boxes have copper drains to carry the leakage back to the pump vault. These drains invariably get plugged and have to be cleaned periodically, otherwise the water drains on the floor, creating a real mess.



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Motors

The vertical motors used with the turbine pumps have two lubricated bearings thrust and guide bearings. The thrust bearing is more critical because it is the one carrying the weight of the pump shaft. On most motors the thrust bearing is more critical because it is the one carrying the weight of the pump shaft. On most motors the thrust bearing is on the top and is oil lubricated. Light turbine oil is used and it should be changed twice per year. The color of the oil should be monitored. If the oil blackens, this is a sign of the oil overheating and that the bearing is going out. Guide bearings are generally grease lubricated and on the lower part of the motor. These bearings should be lubricated at least twice per year. Be sure to remove the grease relief plus is not removed, grease can be forced into the motor and short out. Before replacing the plug, run the motor until warm and allow the grease to expand.

Clean the screens covering air passages. If the screens are covered with debris, cooling air flow will be restricted, causing the motor to run hotter and shorten its life.

Control Valve

Control valve strainer requires cleaning periodically. Most often the screen is screwed into the side of the valve and requires draining the upstream piping. The control valve can be simply locked shut and the upstream piping drained. Muriatic acid does an excellent job of cleaning the screen.

Have your service technician review the preventative maintenance procedures with your staff. Routine inspection and simple maintenance by in-house staff will build a better understanding of the equipment and reduce risk of equipment problems and down time.

Source: Cactus and Pine, GCSA

Reducing Mower Downtime

by Robert L. Tracinski, John Deere & Company

While most lawn care specialists probably don't think of themselves as mechanics, even the best in the business are only as good as their equipment. Engine trouble, poor performance and equipment that's just not doing the job can mean frustration and lost profits.

Some of the most common mower problems involve basic operational systems like the engine or transmission: others may affect the end result, such as an uneven cutting job. Whatever the situation, you don't have to be an expert mechanic to deal with it. By learning to recognize and correct routine mower problems quickly and efficiently, you can devote more time to the productive work lawn care.

With a big mowing job ahead, the last thing you need is a temperamental engine. A variety of factors, from weather changes to worn parts, can contribute to hard starting.

Your first task is to determine whether you're getting a spark. Using insulated metal pliers, remove the spark plug and touch the threaded area of the plug to a metal surface on the engine. Turnover the engine and look for a blue spark. If you don't have a good spark, the problem may be in the ignition or electrical system.

First try replacing a worn or corroded spark plug with a fresh one. Next, take a look at the battery condition. Check

cause the battery to run down. Among the possibilities: accessories are left on after the vehicle is turned off, draining the battery; the vehicle has been idle for three months or more, during which time the battery has deteriorated; battery cables or connections are heavily corroded, leading to voltage seepage.

If you do get a good spark after testing the spark plug, the problem may be in the fuel.

Fuel Problems

Be sure you're using fresh fuel with an alcohol content of less than 10 percent, and the right blend for season. Often, engines that start just fine in winter won't budge in summer, and vice versa. That's because summer-grade fuel can be less volatile in winter, while winter blends can cause vapor lock in warmer weather. If you're not sure what blend of fuel you're using, check with your filling station.

Another culprit may be the fuel system. Check fuel flow. Pulse lines should be connected and the fuel vent open and clear. Look for pinched or blocked fuel lines, especially in cold weather when moisture or ice can form; keep the tank full in winter to prevent moisture condensation.

If the fuel system checks out, try the carburetor. Make sure it's clean, and compare the adjustments on your carburetor to the settings recommended in the operator's manual. If you routinely store your mower for the winter or extended periods of time, be aware of possible problems caused by leaving fuel in the tank.

Fuel that remains in a vehicle during long-term storage can deteriorate, turn to varnish and cause engine difficulty or damage.

Remove Fuel

Before storing a vehicle for more than three months (or less in warmer environments), it's best to remove all fuel from the system. If you don't drain the fuel, be sure to add a stabilizer. Use one ounce of stabilizer per gallon of fuel, then run the engine for at least five minutes to insure that the stabilized fuel is distributed to all parts of the system.

If you must store a vehicle with fuel and without adding stabilizer, replace the fuel and filter and remove and clean the carburetor before use.

Heavy oil consumption

If the mower consumes too much oil, the engine isn't operating as efficiently as it could be. One symptom of this problem is blue smoke blowing from the exhaust during mowing.

Over consumption of oil usually indicates an engine problem. If you suspect this is the case with your mower, use the following checklist to identify the specific engine problem:

Oil level is too high. Drain off the excess and keep an eye on the level in the future.

Improper weight oil being used. Review the operator's manual for recommended weights for summer and winter operation.

Operation of engine above recommended speeds causes oil to foam. Follow guidelines for engine operation in the operator's manual.

Overheating engine thins the oil and causes it to break down. Refer to the operator's manual for instructions on cleaning the cooling fins.

Slow response from a hydrostatic transmission, steering difficulty or a slow deck lift speed can also mean

reduced productivity. To get back up to speed, check the oil level according to the procedure outlined in the operator's manual. Check for moisture in the oil. Change the oil filter if you have problems with contamination or if it has not been changed in the past season.

If a hydraulic filter is plugged with debris, it will restrict oil flow. Fill the filter with the proper oil before installing it in the mower.

Uneven cutting, skipped areas or poor performance indicates a problem with the mower deck or cutting blade. In some cases, striping may depend on the cutting conditions. For example, wet grass may be more prone to uneven cutting than drier turf. If possible, wait until the grass is dry before cutting, and this particular problem may solve itself.

It's also possible that you're trying to do the job too fast. A slower ground speed may solve the problem. Also, cutting too much grass at one time often results in an uneven lawn. Try taking less of a cut—1 1/2 inches at most.

If the grass you're cutting is exceptionally fine, it might help to go to a lower lift blade.

If the problem is the mower, there are several possible culprits. First and most likely is a dull blade. Keep the blade sharp; corners should not be rounded. You can sharpen the blade yourself or take it to a dealer to be sharpened and balanced.

Cleaning underneath

Keep the underside of the mowing deck clean, and inspect to make sure that it isn't warped or distorted. If the deck has a toe guard at the discharge chute, check that the guard is not bent or damaged.

If you're using a belt drive model, be sure that the belt is properly tensioned and that the idler moves freely.

Safety features are designed to reduce problems during mowing. While they do not cause problems in and of themselves, they can lead to trouble if an operator decides to tamper with or remove them for any reason.

Don't invite additional problems. Before mowing, always make sure that safety mechanisms are in place and working.

What if, despite your best efforts, you can't seem to locate or correct a mower problem? The next step may be to go to your dealer for help. It's a good idea to use dealers who service what they sell.

Some manufacturers have established a "hotline" service which allows a dealer to call the manufacturer, describe a problem and get an answer in one phone call. In any case, your dealer should be able to assist you in solving the problem.

It doesn't take an expert mechanic to keep equipment up and running and business at its best. Learn to identify common mower problems, correct the trouble at its source, and get back to business.

Source: Landscape Management/April '90

Upgrading Your Irrigation System

by Robert B. Nichol, CGCS

Most golf courses have an irrigation system these days. The extent and complexity varies widely, however,

ranging from having 3/4" spigots adjacent to the greens; to state-of-the-art computerized, weather-monitoring automatic systems. Sooner or later an irrigation system will have to be upgraded or replaced because of breakdown, labor problems, or a little of both.

In any case, a lot of research and work is involved no matter how extensive the changes are. If you are entertaining thoughts of making changes, give yourself a head start for when the time comes by presenting your problems, gripes, etc. to the people pulling purse strings. If you do not have the facts concerning past, present and expected repair costs, labor breakdowns, and general condition of the system, you will have a hard time selling your ideas to your superiors.

Take the time to document everything about the irrigation system. Study the maps (if any exist) of the underground facilities, to determine if any piping changes are needed. Make sure you know what kind of pipes are in the ground. Any good for twenty-five years or so. If you have P.V.C. plastic or transite (asbestos-cement) it should be useful for forty or fifty years. Pipe that is too small for your proposed changes will have to be replaced (a good rule of thumb is to have a flow rate of no more than five feet per second). **Be careful!**

If you cannot find documentation as to when the pipe was installed, assume it is as old as the facility and proceed from there. You could wind up with egg on your face (or worse) if changes are made, and the present pipe fails to perform the job.

Next, look at the control system, if there is any. Think of what is there, and what is really needed, or wanted. Again, keep in mind that the useful life of underground electrical systems for irrigation control is finite: Twenty-five years is about all you can expect, and have it be reliable. If problems have been cropping up, your best bet is to replace it, also.

The most versatile controls available today are computerized: Buckner, Motorola, Rain-Bird and Toro all offer computerized control systems (as well as electro-mechanical). The microprocessor controls will do everything but yell at your employees, and should be considered seriously if the money is available. Carefully review the options, and how they fit into your irrigation schedules, give the flexibility of the various computer programs. The cost of these computer controls varies, but estimate \$20,000 to \$25,000 more than an electro-mechanical control system to cover the software, computer, extra control wiring and electrical "line conditioners" necessary for the protection of the microprocessors. If computing is the way you would like to go, you will again have to sell the advantages over the extra cost. The flexibility, ease of control, accuracy of control, and in some cases, having fewer controllers in the field can be selling points. Pump running times can be reduced, and the accuracy of control can reduce water usage, compared to manual or simple automatic control. Another advantage of a system with a computer is having the equipment there for other purposes. The software for the irrigation program does not use up all the computer storage capacity, so other programs can be utilized. Software can be obtained to run your pesticide program, monthly reports, inventory control and spreadsheets, to increase your overall efficiency.

The sprinkler heads on the course are an important variable to deal with, but you will probably find that the type of head chosen will be more according to personal preference. Do you like brass or cyclac?

Impact, cam or gear driven? Valve-in head or valve-under-head? Pressure-regulated or not? This decision is the most subjective, and if you feel strongly about one style over the other, make your reasons known. Your decision may not be the final one, but give it your best shot. The most important aspect of sprinkler heads is the installation. An improperly installed head will either not work as intended, or even fail prematurely. Swing joints should be assembled tightly enough to prevent leaks, but loosely enough to accomplish their intended purpose-to absorb shock. There are also pre-assembled swing joints that seal with double o-rings, not thread tightness, and these should be investigated. If you are undertaking the installation yourself, consult with your local distributor or an experienced installer for the correct method. A lot of aggravation can be avoided down the road, at very little or no cost.

The heart of an irrigation system is the pumping station. Unless you are a hydraulic engineer, again consult a specialist for his (her) opinions and expertise. An upgraded system will likely demand that at least the electrical control panels to modernized to support the field controllers. The latest technology is the variable frequency pump station, which reduces the sudden pressure surges and can be much easier on piping. Some electrical savings can be realized, also, but your overall sayings will vary greatly depending on region, electrical costs, and usage patterns.

Pump sizing is critical for the performance of the system, so pay attention to whomever your consultant is. If you are not sure the design will fit your needs, do not be afraid to get a second opinion. The pump station designer/manufacturers usually will design a system at no cost to you, in the hopes you will become a customer.

In the end, your decisions on upgrading a system will depend on the money available to you. This, in turn, will depend on your preparation. Get the facts, and present them in a professional manner. At the very least, you will have gained considerable knowledge of irrigation, and your goal of better playing conditions could be realized.

Is Coated Seed Worth It?

by Norman W. Hummel, Cornell University

Turfgrass managers have always looked for ways of hastening seed germination. Methods now used in the industry include pregermination of seed and seed priming. In recent years, a process of coating seed with fertilizer and fungicide was developed with improved stand establishment in mind. Nutri-Kote plus Apron® is a process that coats seed with 50% fertilizer and fungicide (metalaxyl) by weight.

Research conducted at Cornell compared Nutri-Kote treated perennial ryegrass and creeping bentgrass seed to untreated seed. The trials were planted as spring (May 25), summer (July 5), and fall (September 10) seedings at normal recommended rates. Nutri-Kote treated seed was also seeded at half rate. This treatment was included to see if a half rate of seed was sufficient to establish as acceptable turfgrass stand. The cost of Nutri-Kote treated seed is about twice that of untreated seed. Scotts Starter Fertilizer (18-24-3) was applied in conjunction with treated and untreated seed.

Perennial Ryegrass

Nutri-Kote treated perennial ryegrass seed had slightly greater seedling vigor than untreated seed in the summer seeding, and only at the higher seeding rate. We found half the number of plants present when we seeded at half rate. The half rate of Nutri-Kote treated perennial ryegrass seed, while having an economic advantage, is not an acceptable option.

The best turf was grown where we used starter fertilizer in the seedbed, regardless of seed coating. Coated seed is not an adequate substitute for a starter fertilizer in the seedbed. If you do not use fertilizer in a seedbed, however, a full rate of coated seed is better than untreated seed alone.

Creeping Bentgrass

The seedling vigor of creeping bentgrass was greatest where a starter fertilizer was used in the spring seeding, but seemed to reduce vigor in the summer seeding. Studies in North Carolina also had reduced establishment of bentgrass that was coated.

The half rate of treated seed usually produced thinner stands. Like the perennial ryegrass studies, these results demonstrated that coating seed is not an acceptable substitute for seedbed fertilization. The fact is seedbed fertilization masked any benefits from seed coating. Also, you must seed bentgrass at the full "seeding rate" to produce an acceptable quality turf.

What are the Benefits?

After looking at these results, one might ask "What are the benefits of using coated seed?" If the situation should arise where it would be impossible to apply fertilizer in the seedbed, coated seed should result in better stand establishment than uncoated seed. However, since you will have to seed at a full rate, your seed costs will be double that of uncoated seed. Seed Nutri-Kote treated seed at 10 lb and 2 lb seed per 1000 square for perennial ryegrass and creeping bentgrass, respectively.

Seed coating would be beneficial for extending a limited seed supply. When bentgrass seed was in short supply, some seed distributors coated a portion of their seed to stretch the amount that they had available to sell.

While coating seed with fertilizer and fungicide may seem to make good sense, our studies failed to find many benefits to coating seed.

Oregon Bureau of Labor and Industry Role

The following questions were given to Mary Wendy Roberts, commissioner of the Oregon Bureau of Labor and Industries. She provided the following written answers.

- Q. Can you explain what the BOLI Technical Assistance Unit does?
- A. The Technical Assistance Unit holds seminars for business and labor. The seminars, which are open to the general public, inform employers about the laws the bureau enforces. Upon request, the TAU will also hold a one-on-one seminar with a particular business.
- Q. Are there agricultural specialists in the TAU?
- A. There are no agricultural specialists in the Technical

Assistance Unit. The TAU trainers are specialists in all aspects of the laws enforced by BOLI, which cover all employers in the state.

- Q. Does an employer in the state automatically receive informational mailings from BOLI, or do employers need to request being placed on a mailing list?
- A. In order to receive specific publications from BOLI, or receive seminar notices, an employer must request to be on TAU's mailing list. The Bureau does maintain a mailing list of employers in the state who receive official mailings concerning minimum wage, parental leave laws, etc.
- Q. If an employer requests assistance from the TAU, for a serious problem, will the issue be turned over to an enforcement unit before resolution can be achieved?
- A. If an employer has a serious problem, he or she may contact our hotline number 229-5841. TAU will respond with an answer to any employer question within 24 hours.

TAU does not share any information discussed with an employer with BOLI's enforcement divisions.

- Q. Are seminars, posters and literature available from BOLI which are specific to agriculture?
- A. Yes. Once a year TAU holds a seminar for agricultural employers at the end of January. The work permit unit publishes a brochure about minors working in agriculture. And the publications from the wage and hour division address how laws apply to agricultural employers.

In addition the Wage and Hours Division holds a series of seminars for growers, farm labor contractors, camp operators and others with interest in establishing a migrant labor camp in Oregon. These seminars are held from March 5 through April 5 in locations throughout the state.

- Q. Are there currently programs in place to monitor the supply of agricultural labor in Oregon?
- A. Yes. We work closely with the Agricultural Labor Commission and the Employment Division which oversee such programs.
- Q. If there are monitoring programs in place, and a shortage exists, are they designed to react quickly to grower needs, such as at harvest time?
- A. Yes. The Employment Division recruits seasonal agricultural workers.

Source: OAN Newsletter

Information Worth Waiting For.

Agro Diversified Industries, manufacturer of hydroseeding tackifiers and related equipment, is offering a 26-page booklet entitled, *10 Ways to Reduce Hydroseeding Costs and Improve Seed Germination*. According to the company, it is the first information piece of its kind that recognizes hydroseeding as a discipline unto itself instead of a sideline for landscape contractors. For a free copy, contact ADI at Chimney Rock Road, Bldg. 3W, Bound Brook, NJ 08805, (800) 242-2476.

More than 120 videotapes, slide sets and manuals on horticulture-related subject—working safely with pesticides, professional sod laying, plant propagation, plant identification, etc.—are listed in a free catalog offered by Vocational Education Productions, California Polytechnic State University, San Luis Obispo, CA 93407. The materials are geared for high school and college students, and make excellent training tapes for workers in landscape architecture, gardening, lawn care and related fields. For a copy, write to the above address or call (800) 235-4146. In California, call (805) 756-2295.

Ryder Truck Rental, which will sell approximately 15,000 4- and 5-year-old vehicles this year from its leasing rental fleet, offers a free brochure on *How to Buy a Used Truck*. It contains information that is helpful to first-time as well as repeat buyers of used vehicles. Call Ryder at (800) 446-5511 or write PO Box 020816, Miami, FL 33102-0816, Attention: Used Vehicle Sales.

Proven techniques and products for growing and maintaining healthier, more beautiful turf and ornamental plans are detailed in a full-color, 32-page publication titled *Weed and Disease Control Guide for Turf and Ornamentals*. It includes descriptions of individual diseases and a detailed list of symptoms, conditions favoring development, susceptible plant varieties and photographs that illustrate disease appearance. For your free copy, write to Fermenta ASC Corporation, PO Box 8000, Mentor, OH 44061-8000.

Sources: *Grounds Maintenance/March 1990*

Projecting Crew Labor Hours

Do you wish for a system that would tell you how many crew members it takes to maintain a given site?

Ron Robertson, park services manager for the eastern area of Anaheim, Calif., can tell you exactly how many workers it takes to maintain each park, ballfield, grassed median, the city library grounds or even a new 5-acre park.

He uses PASS—the Park Acreage Standards System—that the parks division administrators developed in 1976. This is what they did:

1. Administrators conducted an extensive work-measurement study to determine the exact time and labor required to maintain grounds areas.

2. Staff members attended a special seminar at which they watched time-and-motion-study films and learned how to evaluate work efforts.

3. The staff then inventoried all city parks and grounds areas to determine the number of:

- Ballfields and acres to be mowed,
- Linear feet to be edged,
- Acres requiring litter pick-up, etc.

4. They developed standards for the length of time it takes to complete each activity—minutes per 1,000 square feet, per acre, per occurrence, etc.

5. Then they factored in the *frequency* of each activity for both the 9-month summer season and the 3-month winter season.

6. The result: PASS, the total labor hours required to maintain each park and grounds area.

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Calendar of Events

May 14

NTA Board of Directors Meeting
Contact: NTA Office (206)_ 754-0825

June 8-10

Oregon Seed Trade Association Convention
Contact: OSTA (503) 226-2758

June 25 & 26

NTA Summer Turfgrass-Fest
Contact NTA Office (206) 754-0825

July 11

Inland Empire Golf Course Superintendent:
Association Meeting
Contact: IEGCSA office

July 25-27

American Sod Producers Association Summer
Contact: ASPA (708) 705-9898

August 13

NTA Board of Directors Meeting
Contact: NYA Office (206) 754-0825

September 16

NTA Board of Directors Meeting
Contact: NYA Office (206) 754-0825

September 17-20

NTA 44th Northwest Turfgrass Association
Conference & Exhibition
Contact: NYA Office (206) 754-0825

October 10

Inland Empire Golf Course Superintendent:
Association Meeting
Contact: IEGCSA office

December 12-14

Second Annual Pacific Coast Turf and Landscape
Conference and Trade Show
Contact: Jones and Associates (509) 327-5904

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