

PRESIDENT'S CORNER

Bo Hepler

There are a lot of things the board is trying to accomplish this year besides the regular duties. These issues are not only worries for the board, but should be areas of concern for each of you as well. This is why I am extending the invitation to each of you to express your ideas or thoughts as we all face the future of the Northwest Turfgrass Association together.

Dr. Roy Goss will be retiring around January of 1988 and unless you have served on the board or looked into the workings of the NTA, I don't believe you can imagine the work that he has done for this Association. There are several key roles that Roy plays which will need to be replaced if this Association is going to continue to serve the Northwest turf industry at the same professional level it has over the last forty years. The board has formed a special committee to search out the possibilities of using a management firm or executive secretary to do the detailed work such as bookkeeping, billing, publishing, etc., for the Association and fill these areas which in the past Roy has been instrumental in filling.

We believe that the NTA thus far has only reached about half of the turf industry in the Northwest. A management firm would be able to help us use more effective ways of reaching these people.

Any person working in the turf industry is a representative of all of us in the field. Everyone in the field needs to belong to, and be active in this Association to keep up with what is happening now, and in the future with regard to turfgrass. We must actively recruit these people so that we can have the finest, well managed turf areas as possible.

This year's chairperson for membership is Tom Cook of OSU. Tom has a lot of good ideas for locating a possible five hundred plus new members from Northwest turf industry. I know we are going to see a big jump in membership this year due to Tom's efforts.

We have a good board of directors this year serving the NTA, which practically guarantees that we will be able to accomplish a great deal. I will be speaking of each of them in our up-coming issues and their projects which they have undertaken.

CONFERENCE SITE: SALISHAN LODGE 1987

By Mark Snyder

Plans and details are being worked out for the 41st Northwest Turfgrass Conference at Salishan Lodge next September.

Salishan has set aside a "block" of seventy rooms, of which twenty have already been reserved by conference attendees. For those of you who have not visited Salishan within the last two years, many enjoyable surprises will await your return this fall. Notably, the remodeled Dining Room and the new Sports Fitness Center, to name just two new facilities. We welcome your stay at the Lodge during the conference and invite you to call for reservations, toll-free at: 1-800-452-2300 for inside Oregon and 1-800-547-6500 for out of state guests.

Sharing the Lodge with the NTA will be another group of conference guests, but all of the necessary meeting space for the turf conference has been reserved on a complimentary basis.

The golf tournament, for both men and ladies, will be played on our 6300 yard course; which is rated number two in difficulty in the State of Oregon.

Plans are in effect for a "Supplier Field Day" on the East end of the Driving Range to compliment the evening "Supplier Social Hour and Show", Tuesday evening.

The Ladies Program is going to be fun! Lots of activities are scheduled, including tours of the European Wine Cellar at the Lodge, which houses more than twenty-thousand bottles of wine. Area shopping excursions to nearby Depoe Bay may include, for those "Sea-Faring" guests...on an optional basis...deep sea trips to watch whales, if ocean conditions permit.

Plan now to attend the 1987 Conference, as we look forward to your arrival at Salishan Lodge and a great conference experience!

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WISH ALL OF YOU
A MERRY CHRISTMAS & HAPPY,
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Set your calendar for Salishan Lodge this September. Our 1987 conference should prove to be very educational as well as enjoyable, especially after a long summer. In the meantime, best wishes are sincerely sent your way for a warm and cherry Holiday Season, and a profitable, green, healthy New Year.

1987 WESTERN CANADA TURFGRASS CONFERENCE

This year's Western Canada Turfgrass Association Conference will be held at the Sheraton Landmark Hotel at Vancouver, B.C., from February 23-25, 1987. This Conference has grown in quality and size over the past 15 years and is an outstanding production.

The conference not only has the educational program, but a good trade show and ladies program.

Some of the speakers on the educational program will include Dr. Steve Fushtey, Agassiz, B.C., Dr. Jack Butler, Colorado State University, Dr. Roy Goss and Dr. Gary Chastagner, Washington State University, WWREC, Puyallup, Mr. Dirk Oostindie, North Vancouver Parks, Brad Clark, Rainbird, Mr. Bruce McTavish - native plants, Mr. T. Thomas - Safety and loss prevention, and several other speakers with interesting topics.

The ladies program will include some of the following features. Arrangements have been made for the ladies program on Monday, February 23 - Welcome and information coffee party followed by color draping. Tuesday, February 24 - British Columbia Pavilion at the Expo site to see Discovery B.C. and theatre, 'Trees of Discovery', 'Challenge B.C.' with presentation followed by lunch at Nat Baileys. If you were lucky enough to see it at Expo, see it all again on a guided tour without the lineups.

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EDITOR NOTE: It is the professional turfgrass manager's responsibility to avail himself of all educational opportunities for professional advancement. This is another excellent opportunity.

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WASHINGTON STATE UNIVERSITY WINTER TURF SCHOOL

Each year a turf school or short course is held on the Washington State University campus. This year, Drs. Bill Johnston and Ken Morrison have put together a good program with 1-1/2 days packed with interesting subjects. This turf school is designed for essentially anyone, but particularly those people concerned with managing commercial turf such as golf courses, parks, cemeteries, schools and sod farms.

The following is the program as it will be presented, so make your plans now to attend and be better prepared for 1987 maintenance.

MONDAY, JANUARY 5, 1987

- 12:00-1:00 Registration
Session Moderator: Dr. Ken Morrison, Extension Agronomist, WSU
- 1:00-1:15 Welcome to Washington State University
Dr. J. C. Engibous, Acting Director, Cooperative Extension Service, WSU
- 1:15-1:45 Foliar Fertilization of Turf
Dr. Roy Goss, WWREC, Puyallup
- 1:45-2:30 Theories and Principles of Reel and Rotary Cutting Units
Mr. Gary Shampeny, National Golf Sales Mgr., Toro Co., Minneapolis, MN
- 2:30-3:00 Chemical Disease Control for Turfgrasses
Dr. Ron Ensign, Dept. of Plant, Soil and Entomological Sciences, University of Idaho, Moscow.
- 3:00-3:20 BREAK
- 3:20-3:45 Update on Necrotic Ring Spot Disease
Dr. Otis Maloy, Extension Plant Pathologist, WSU
- 3:45-4:00 Necrotic Ring Spot Disease As It Affects The Sod Industry
Mr. George Thayer, Thayer Seed & Sod, Rathdrum, ID.
- 4:00-4:15 Necrotic Ring Spot Diseases As It Affects The Landscape Industry
Mr. Mike Damery, Damery's Flowers & Landscape, Colfax, WA.

TUESDAY, JANUARY 6, 1987

- Session Moderator: Mr. Bo Hepler, Senske Super Green, Yakima, WA.
- 8:00-8:30 Turfgrass Chemical Growth Regulators for *Poa annua* Control for Fairway Use
Dr. Jim Frelich, O. M. Scott's & Sons, Gervais, OR.
- 8:30-9:00 2,4-D Herbicide Update
Mr. Dick Maxwell, Extension Ag. Chemicals Specialist, WSU
- 9:30-9:45 NTA and IEGCSSA Membership—Why You Should Join!
Mr. Bo Hepler, President Northwest Turfgrass Association and Mr. Mike Kingsley, President Inland Empire Golf Course Superintendents' Association.
- 9:45-10:00 BREAK

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- 10:05-10:45 Athletic Fields Maintenance in Eastern Washington
Dr. Roy Goss, WWREC, Puyallup
- 10:45-11:15 Golf Greens Construction
Mr. John Steidel, Golf Course Architect, Kennewick, WA.
- 11:15-11:45 Golf Greens Construction-The Hard Way
Mr. Dan Vollmer, Golf Course Superintendent, Avondale-On-Hayden, ID.
- 11:45-1:30 LUNCH (No-Host)
Session Moderator: Mr. Mike Kingsley, Coeur d'Alene Golf Course, Coeur d'Alene, ID.
- 1:30-2:00 How New Turfgrasses Are Developed-Industry's Criteria
Dr. Doug Brede, Jacklin Seed Company, Post Falls, ID.
- 2:00-2:45 Maintenance Safety and Liability
Mr. Sam Angove, Spokane Parks Department
- 2:45-3:15 Fall Fertilization of Turf
Dr. Bill Johnston, Department of Agronomy and Soils, WSU
- 3:15 ADJOURN

RESEARCH WITH EMBARK 2S AND FERROMEC TO FINE ANNUAL BLUEGRASS/ COLONIAL BENTGRASS TURF

S.E. Brauen

Annual bluegrass/colonial bentgrass turf has been treated with mefluidide (Embark 2S) for the past three seasons to determine the effects of this plant growth regulant on the color, visual quality, seedhead development and rooting of annual bluegrass. Prior to this period, our 1980-81 applications of Embark 2S, when applied at 3 pints per acre (0.55 oz per 1000 ft²) provided unacceptable quality to fine turf for a period of three weeks following application. However, further studies in 1982 and 1983 showed adequate growth control was attained at 2 pints per acre (0.36 oz per 1000 ft²) and the initial decline in turf quality seemed less severe as compared to previous experiences. Following a period of lower quality turf which occurred from one to three weeks after application, the treated turf then exhibited excellent quality from four to six weeks following application. The turf during this time was very uniform in growth, dark color and free of annual bluegrass seedheads.

About this time, researchers on the east coast were conducting similar studies and suggested that annual bluegrass may be better prepared to enter summer stress following Embark 2S application if one effect of elimination of seedhead development was to improve rooting mass or rooting depth or both which may condition the plant to be better able to avoid moisture stress. This concept seems feasible since reduced root growth following seed production has been reported in ryegrass species and, in general grasses with deeper and more extensive root systems are able to withstand greater moisture stress.

The data that have been reported so far seems to suggest that Embark 2S applied at the preflowering stage does not result in improved annual bluegrass visual quality during the following summer and fall period. This has been true in tests conducted at Puyallup from 1982 to 1986, at Ithaca, New York from 1980 to 1983, and at Columbus, Ohio in 1983 and 1984. However, the Embark 2S applications have been effective in reducing seedhead appearance in annual bluegrass, thus providing improved turf quality to a period of two to three weeks which begins at about four weeks following application. This quality improvement for a short period may provide an incentive to use Embark 2S to control annual bluegrass seedhead emergence in selected areas. This improved quality is primarily related to Embark 2S application time and the time-lapse after application.

A loss of quality for the period from one to three weeks after application may be unacceptable to many turf managers or users. Our efforts in 1985 and 1986 have been directed at attempting to find application systems that will lessen the phytotoxicity (reduced color quality) from one to three weeks following Embark 2S application. In 1985, the rate of Embark 2S applied to turf was varied from 1/4 pint to 1 pint per acre (.045 to .184 oz per 1000 ft²). In this test, the higher application volumes which were equivalent to Embark 2S solution dilutions decreased the discoloration (phytotoxicity) associated with Embark 2S application. In addition, including Ferromec as a tank mix with the spray also decreased the discoloration associated with Embark 2S application. The overall color improvement was two to four points on a scale of one to nine.

In 1986, the effects of Ferromec and ferrous sulfate tank mix additions to Embark 2S was again tested. On turf that had been fertilized alternately with urea and ammonium sulfate and had not received supplemental iron or sulfur, Ferromec and ferrous sulfate were highly effective in reducing discoloration following Embark 2S application. The degree of improvement in decreasing turf discoloration was related to the rate of iron application and iron was less effective in reducing discoloration as the rate of Embark 2S was increased. At 3/4 pint Embark 2S per acre (0.28 oz per 1000 ft²) turf discoloration with iron was rated at 4.5 while without iron the rating was 3.1. Untreated turf ratings were about 8.0. Although the high rates of iron improved turf quality as compared to non-iron treatments, the turf quality was probably unacceptable even for a short period. Seedhead elimination was excellent.

As the rate of Embark 2S was reduced, iron was more effective in eliminating discoloration, but annual bluegrass seedhead control was also reduced. About twenty to forty percent of the seedheads were eliminated at the Embark 2S rate of 1/4 pint per acre (0.091 oz per 1000 ft²) while the Embark 2S rate of 1/2 pint per acre (0.184 oz per 1000 ft²) controlled 60 to 80 percent of the seedhead emergence. The inclusion of Ferromec at 12 oz per 1000 ft² with the 1/2 pint Embark 2S rate provided marginal to acceptable turf quality with minimum discoloration. Thus, studies in 1985 and 1986 seem to suggest that Embark 2S at 0.2 oz (5 to 6 ml) per 1000 ft² may provide sufficient suppression of seedhead production and improve annual bluegrass appearance 4 to 6 weeks following Embark 2S applications during late spring. Increasing application volume *may provide* additional protection; however, some discoloration should be expected from one to three weeks following application. The consistent incorporation of this activity into a turf management program may reduce annual bluegrass seed populations which may alter future annual bluegrass regeneration. The window for application of Embark 2S for suppression of the greatest number of annual bluegrass seedheads has commonly occurred during the last two weeks of April.

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NTA SCHOLARSHIP WINNER

Jon Heselwood, is presently the golf course superintendent at Eagle Bend Golf Club at Bigfork, Montana. John started out as a pre-med student at the University of Oregon and has decided that he would rather be a golf course superintendent and work with nature, so he has transferred his credits at Washington State University and is completing a degree in Agronomy with a turfgrass major.

Jon helped to build Eagle Bend and will continue with maintenance. He sandwiches in his golf course superintendent duties with alternate semesters at Washington State University. This is quite an undertaking and we certainly wish Jon well.

Jon could easily have turned to the golf professional ranks since earlier in his career he was a tournament golfer. He is also a member of the Northwest Turfgrass Association and the Golf Course Superintendents Association of America. We are pleased that Jon was chosen for a Northwest Turfgrass Association scholarship.

NECROTIC RING SPOT DISEASE RESEARCH AT WASHINGTON STATE UNIVERSITY IN PUYALLUP

BILL HAMMER AND GARY CHASTAGNER

Necrotic Ring Spot (NRS) is a disease affecting bluegrass and fine leaved fescue turf in North America. Since 1982, it has been reported in many areas of the United States and in the Pacific Northwest has been observed in Washington, Idaho, Oregon and British Columbia. NRS has been found to be a component of the disease complex formerly known as Fusarium blight. NRS is most often found on turf that was established from sod and is caused by the soil borne fungus *Leptosphaeria korrae*. This fungus also causes Spring Dead Spot, a disease affecting bermudagrass turf in the United States and Australia.

Disease symptoms usually appear as circular dead patches in late spring to early fall. The affected areas range in size from a few inches to several feet in diameter and actively growing patches may have a reddish brown margin. Some patches coalesce to form large irregular shaped areas. Grasses and broad leafed weeds can recolonize the centers of diseased patches giving a doughnut shaped or frog eye pattern. During the hottest part of the summer the turf may recover, masking the symptoms temporarily.

Under microscopic examination, dark fungal mycelium, also called runner hyphae, can be found on the roots of infected grasses. Fruiting bodies, called pseudothecia, containing spores are occasionally found on roots. Unfortunately, symptoms and or the presence of runner hyphae can not be used for positive identification of the disease. The symptoms can resemble dry spots or diseases such as Fairy Ring, Yellow Patch, or Summer Patch. Summer Patch is caused by a *Phialophora* spp. and also produces runner hyphae on the roots and crowns. Thus, in areas where NRS and summer patch occur, it can be very difficult to identify which disease is present based on symptoms and the presence of runner hyphae. *Leptosphaeria* fruiting bodies could be used for identification purposes but are not always present.

During the past three years, we have been studying the pathogenic variation, morphological characteristics, and sporulation of *Leptosphaeria* isolates obtained from diseased turf that have been collected from Washington State and from other parts of the country. Presently, trials are being run in the greenhouse and in environmental control chambers to study the influence of temperature and moisture levels on growth and pathogenicity of the collected isolates.

In the laboratory, we have found several simple, consistent methods to induce fruiting body production. These methods will make it easier to properly identify *L. korrae* and enable us to study the effects of temperature, moisture levels, and light on sporulation. At this time it is not know what role spores plays in spread of NRS and more research in this area is needed.

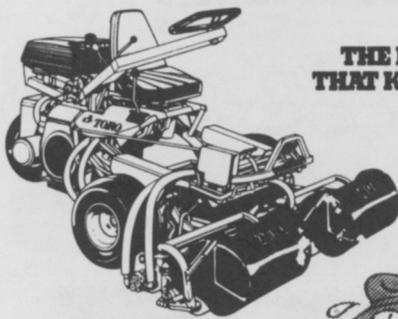
The results of these trials and increasing our knowledge about the biology of *L. korrae* and factors affecting the development of NRS will help in the development of effective control programs. As part of a continuing program, research is being carried out to evaluate the effectiveness of fungicides in the control of this disease. Results indicate that a single application of Ru-

(Continued on page 6)

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bigan in May will provide effective disease control during the late summer and fall, but yearly applications are needed. The experimental fungicides Banner and Spotless have also been effective in controlling NRS. For more information, complete results of the fungicide trials are published in the 1983-86 Proceedings of the Northwest Turfgrass Conference.

EDITOR NOTE: Bill Hammer is a graduate student working on a masters degree in the Department of Plant Pathology at WSU. During the past 2-1/2 years Bill has been working on necrotic ring spot at WWREC at Puyallup. Funding to support Bill during this period has come from Washington State University and proceeds from the Chicona Farm, which is administered by WWREC.



INTRODUCING YOUR NEW DIRECTOR NORMAN J. WHITWORTH

Norm graduated from San Jose State University in California with a bachelor of science degree and proceeded on to become a golf course superintendent. Following his tenure as golf course superintendent, he worked for major fertilizer and chemical companies for several years.

In 1972, Norm started the Norm Whitworth Turf Products Company, and in 1981, he initiated Norm Whitworth Consultants.

Norm's company represents Tee-2-Green Corporation, Turf-Seed, Inc., H. J. Stoll Company (Simplot), and Wilbur-Ellis Company.

Norm's wife is Linda, and they have three children, all boys.

Norm has been a member of the Northwest Turfgrass Association for 19 years, has previously served on the Board of Directors and was President of the Northwest Turfgrass Association in 1982. Norm is chairman of the Promotion and Finance Committee, and you will be hearing lots more from Norm.

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INTRODUCING YOUR NEW DIRECTOR JIM CHAPMAN

Jim Chapman has been associated with the turf industry for over 29 years, including working as an assistant golf superintendent, operating his own lawn service businesses, and 22 years in commercial turf sales and services. He is a member of several service groups including those for nurserymen, landscapers, cemetery owners, lawn care maintenance people, golf course superintendents, and commercial spray applicators. Currently Manager of Commercial Turf Services for Lilly/Miller, Jim lives in Bellevue with his wife, Julia (who works at the Broadmoor Golf Club in Seattle). Their two sons are both in college - Jud at WWSU and Eric at WSU (Turfgrass Major). You may reach Jim at work (206) 762-0818 or 1-800-562-7013. He has been on the NTA board before, serving as Treasurer and Program Chairman.

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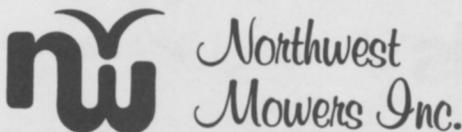
INTRODUCING YOUR NEW DIRECTOR KEN WEIDERSTROM

Ken Weiderstrom was born in Seattle, Washington on June 25, 1939 and graduated from Roosevelt High School where he was a varsity baseball player. He attended the University of Washington and received a bachelor's degree in finance and, again, was on the University of Washington varsity baseball team.

Prior to graduation from the University of Washington, Ken says that he sold Christmas trees. After graduation from the University of Washington, Ken went to work for the People's National Bank until 1980, where he was a branch manager.

On April 1, 1980, Ken purchased in partnership the Northwest Mowers, Inc. in Seattle where they handle lines of Jacobson, National, Olathe, Standard, Par Aide, and in February 1982, they acquired the Cushman and Ryan lines of equipment.

Ken is a single man and enjoys golfing, fishing, boating, photography, and most spectator sports.



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INTRODUCING YOUR NEW DIRECTOR RANDY SHULTS

Randy Shults is presently the superintendent at Tualatin Country Club at Tualatin, Oregon. Prior to becoming golf course superintendent, Randy served as assistant superintendent for two years at the same club and succeeded on to the top job.

Prior to his work at Tualatin, Randy served as golf course superintendent at Summerfield Golf Course.

Randy served as President of the Oregon Golf Course Superintendents Association from 1981 to 1984, and is presently serving as a director of the Oregon Golf Course Superintendents Association.

Since coming in as director of the Northwest Turfgrass Association, Randy has been appointed chairman of the Research and Scholarship Committee.



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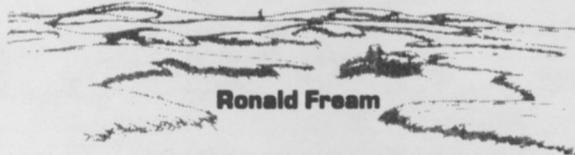
PRELIMINARY FIELD STUDIES WITH RUBIGAN TO CONTROL ANNUAL BLUEGRASS IN BENTGRASS PUTTING GREEN TURF

J. L. Gullikson and W. J. Johnston

The use of the fungicide Rubigan 50W (fenarimol) for the control of annual bluegrass (*Poa annua*) in creeping bentgrass turf is under continued research at Washington State University. Field studies have been carried out on the WSU golf course to evaluate the effects of multiple applications of Rubigan on annual bluegrass populations in a bentgrass putting green. Monthly and bimonthly applications of Rubigan were applied to the bentgrass green in late fall, winter, and early spring of 1985-1986. Cumulative rates ranging from 0.6 to 0.8 oz Rubigan 50W per 1000 ft² were included in the trials. Annual bluegrass populations were monitored over the course of a year. Color and quality ratings were also taken.

Preliminary results indicate that fall and early winter applications of Rubigan had a greater effect on reducing annual bluegrass populations than did early spring applications. The greatest reductions were seen when single applications of 4.0 oz Rubigan 50W per 1000 ft² were made in early winter, or when early winter applications of 4.0 oz were preceded with early fall applications of the same rate. While the above treatments caused reductions in annual bluegrass populations, they were also responsible for the greatest declines in bentgrass quality in ear-

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ly spring. The most promising results were seen with monthly (Sep., Oct., and Jan.) applications of 2.0 oz per 1000 ft². This treatment not only gave good results for reducing annual bluegrass but showed minimal effects on the bentgrass turf in 1986. Although this treatment shows promise, it exceeds the labelled rate of Rubigan 50W for annual bluegrass control.

The above results are based on one year's data. The study is being continued to examine the long term effects of Rubigan applications on annual bluegrass and creeping bentgrass turf. Studies are also being conducted at WSU to evaluate the effect Rubigan applications have on seedling growth of bentgrass and annual bluegrass, and the competitiveness between the two grass species.

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A WARM THANK YOU TO THE CONTRIBUTORS TO THE NTA SPECIAL RESEARCH FUND

Once again, it is time to say 'thank you' to all of you who have contributed to the Northwest Turfgrass Association Special Research Fund in 1986. As we have said a number of times before, without this type of support, your research and scholarship programs would essentially be nonexistent. We want you to know how important you are and how much we appreciate it. We sincerely hope that you will continue your support in the future and encourage others to join in with a small contribution that collectively will be a significant boost to all turfgrass programs.

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Hayden Lake Golf Club Hayden Lake, ID
Hi-Cedars Golf Club Sumner, WA
Don Hogan & Associates Seattle, WA
J-B Sod Silverton, OR
Jacklin Seed Company Post Falls, ID
Kah-Nee-Tah Resort Warm Springs, OR
Carl Kuhn Mercer Island, WA
Lake Wilderness Golf Course Maple Valley, WA
Lakeside School Seattle, WA
Leavenworth Golf Club Leavenworth, WA
L'il Augusta Golf Club Redmond, WA
Linden Golf Club Puyallup, WA
Longview Country Club Longview, WA
Manito Golf & Country Club Spokane, WA
McCormick Woods Golf Course Port Orchard, WA
Meridian Valley Country Club Kent, WA

Montco Products Corp.
Moses Lake Country Club Moses Lake, WA
Nanaimo Golf & Country Club Nanaimo, BC, CANADA
Nile Country Club Seattle, WA
Northshore Golf Club Tacoma, WA
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Oregon Golf Association Portland, OR
Oregon Golf Course Superintendents Assoc.
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City of Portland West Delta Golf Course Portland, OR
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Happy New Year

OUR APOLOGIES TO FARWEST TURF EQUIPMENT

We have discovered an embarrassing omission in the 1986 program for the Northwest Turfgrass Conference. Farwest Turf Equipment's advertising and generous support of the Northwest Turfgrass Association was omitted and we hope that you will accept our apologies.

Farwest Turf Equipment and Northwest Mowers jointly share in the trade show each year and both have been generous supporters of the Northwest Turfgrass Association. David Jacobsen and his company have been most generous with Oregon State University in helping to provide equipment for program operations at OSU.

Once again, we sincerely appreciate the tremendous support from our commercial friends.

1986 TURFGRASS CONFERENCE EVALUATION

Tom Cook summarized the 74 responses turned in by Conference attendees, and the following is a summary of the responses, which is probably fairly indicative of everyone's feelings about the Pasco site. In general, we were all pleased with the overall outcome, but each individual's evaluation is important to the Board of Directors of the Northwest Turfgrass Association.

Educational program	Excellent	Good	Fair	Poor	N/A
Conference location	33 (45%)	27 (36%)	7 (9%)	1 (1%)	6 (8%)
Lodgings	33 (45%)	32 (43%)	1 (1%)	2 (3%)	6 (8%)
Food quality	16 (22%)	40 (54%)	9 (12%)	3 (4%)	6 (8%)
Food service	13 (18%)	30 (41%)	18 (24%)	5 (7%)	8 (11%)
Meeting rooms	44 (59%)	29 (39%)	1 (1%)		
Educational program	53 (72%)	17 (23%)	3 (4%)	1 (1%)	
Banquets	19 (26%)	31 (42%)	5 (7%)	3 (4%)	16 (22%)
Trade show	42 (57%)	25 (34%)	3 (4%)	4 (5%)	

There were some 70 comments with respect to the most enjoyable aspects of the Conference, but most of them had to do with a well diversified and informative program with excellent quality speakers.

There was a smaller list of what aspects that the attendees did not like about the Conference. Some of the comments were things like 'Conference rooms were too dark, they couldn't stay awake' (next year we will provide Nodose - ED); 'Several speakers were long-winded' (your Editor promises to be more brief after 1988); 'College professors need to talk more layman's language rather than presenting material as a college class' (Editor agrees, up to a point).

One comment was with respect to lack of handouts on talks. Your Editor would like to remind you that all talks presented at the Northwest Turfgrass Conference have been duplicated in a Proceedings and will be mailed to you in very short order, perhaps by the time you receive this issue of Turfgrass Topics.

We do appreciate all of you filling out these evaluations since there are many good suggestions, including some 34 suggestions for Conference educational topics in the future. You can rest assured that your Program Chairman, Jim Chapman, is looking this list over carefully for next year's program.

TURFGRASS EDUCATION PROGRAMS AT WASHINGTON STATE UNIVERSITY

By Dr. Bill Johnston

The turfgrass management education program at Washington State University (WSU) was founded in 1942 by Professor Alvin G. Law. The first turfgrass conference was in 1948.

Last year, there were nine undergraduate turfgrass majors. There were two graduate students working on M.S. degrees. Enrollment in the turfgrass program is up over what it was in 1980; however, enrollment in agriculture as a whole is down.

WSU offers the four-year B.S. in agronomy. We also offer the M.S. and Ph.D. program.

The trend toward four-year college degrees in turf management has been established and will become more prevalent during the next 10 years. The demand for more intensive education at higher levels is very good. This is indicated by the increase we are seeing in the number of college-trained turfgrass professionals and in the enrollment in the college-level turfgrass culture correspondence course offered at WSU.

It is also very important that golf course superintendents continue their education over the years, and WSU strives to help.

In addition to field days and short courses, formal college training and credits can be obtained by correspondence. Some of the courses offered by WSU through correspondence relevant to turfgrass managers are turfgrass culture, soils, agricultural entomology, horticultural plants and gardens, plus several business courses.

In addition to a fine program, good field and laboratory facilities and an excellent faculty, our location is probably the most unique feature of the program. WSU is one of the few programs in the Pacific Northwest offering the B.S., M.S. and Ph.D. degrees in turfgrass science. Also, we have a very strong program in seed technology that complements the turfgrass program.

What makes us better is our excellent faculty and turfgrass field facilities - and the fact the WSU also has a strong graduate student program.

The turf program is supported by major programs in seed technology and physiology, weed science and biotechnology. The opportunities for academic achievement of the student are limitless.

To help turfgrass management students financially, College of Agriculture and Home Economics scholarships are available. The total amount is in excess of \$100,000. Of this, agronomy students received \$4,800 in 1985. Within the Department of Agronomy and Soils, there are scholarships available from various sources in excess of \$10,000. Specifically, scholarships that go mostly to turf majors are:

- Washington Garden Club, \$1,000
- Inland Empire Golf Course Superintendents Association, \$500
- Northwest Turfgrass Association, \$500
- Washington-Idaho Seed Association, \$1,000

I am not sure there is either a shortage or an excess of turfgrass managers today. The market for turfgrass managers has been continually expanding over the past decade, and thus there has been a steady demand for turfgrass majors. The important

(Continued on page 11)

thing is that our students have been finding jobs. About 85 percent of our turfgrass majors are placed in turfgrass management jobs, and about 30 percent are involved in golf course operations. About 10 percent of our turfgrass graduates are women.

I think over the next 10 years there will be a steadily increasing demand for turfgrass managers. This will be particularly true in the lawn care and service sectors of the industry.

Among our more distinguished alumni are Dr. Roy Goss, a leader in turfgrass research and extension for more than 25 years; Larry Gilhuly, western director of the USGA Green Section; and Tom Cook, associate professor of horticulture and head of the turfgrass teaching and extension program at Oregon State University.

The biggest issues facing turfgrass management education today are:

- Loss of excellent faculty to industry.
- General lack of funding for education.
- Students needing more training in English, mathematics, business and other studies - not just turfgrass management courses.

There will be a trend toward better and broader education of turfgrass managers, i.e., training in sciences, business and personnel management. Also, there will be more emphasis on learning other aspects of turfgrass management besides grass—for example, ground covers, shrubs, bedding plants and trees.

Compared to 10 years ago, today's turfgrass majors are more interested in the business aspects and personnel management side of turfgrass management. They are interested in a wide array of plant materials other than grasses to be used in the landscape. Also, they are more aware of pesticide safety and regulations.

Compared to 20 years ago, today's majors are more interested in the scientific aspects of turfgrass management - for example, chemical weed control, compaction and water management - rather than just the aesthetic side of turfgrass management.

For additional information on the WSU Turfgrass Management program, contact Dr. William Johnston, Department of Agronomy and Soils, Washington State University, Pullman, WA 99164-6420.



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LATE SEASON NITROGEN FERTILIZATION

By Roy L. Goss

Late season nitrogen applications to enhance turfgrass quality, density and root development has been a recommendation from the research program at Washington State University for over 20 years. Prior to that time, turfgrass areas in western Washington, Oregon and British Columbia were found to be nitrogen deficient during most of the winter and emerged in early spring with low vigor and turfgrass density. We also observed that moss establishment and takeover was significantly higher on lawns with poor fertility maintenance, especially in the late fall.

There was and, to a limited extent still is, some concern about over-stimulation of growth and enhancement of fall diseases, particularly Fusarium patch and grey snow mold from nitrogen applications. Under no circumstances have we ever recommended over 1 lb of nitrogen per 1000 ft² from soluble sources as late fertilization. September and October applications of nitrogen may enhance fall diseases and lack of winter hardiness when excessive applications are made. For this reason, nitrogen applications in September or October should not exceed 1 lb of nitrogen per 1000 ft² either.

Turf managers in eastern Washington observed color enhancement much later into the fall and better spring greenup and better spring vigor when their fall fungicides were applied in their fertilizer mixture. Since these observations, some fall nitrogen application has been the standard.

Recent work at the Ohio State University by A.J. Koski and J.R. Street have added further information to the late season nitrogen fertilization concept. Their research has indicated that root growth of cool season turfgrass species definitely occurs during the fall after shoot growth has slowed or ceased. Roots grow quite well when soil temperatures are between 40 and 65°F, while shoot growth is favored at temperatures over 55°. Their work showed that some root growth occurs as long as the soil remains unfrozen.

Koski and Street indicated that for the late season concept to work successfully, it is essential that the turf be green when the late October or November nitrogen application is made (Editors Note: Early November is generally recommended east of the Cascade Mountains, and late November to the first week in December for areas west of the Cascade Mountains). According to these researchers, the October-November application should be delayed if extended periods of unusually warm weather (average daily temperatures greater than 55°F) occur during November.

In summary, their research indicated that late season fertilization lengthens the fall-winter green period and enhances the rate of spring greenup without stimulating excessive shoot growth, thus allowing the turf plant to maintain higher levels of carbohydrates than when spring-summer fertilizer is used. Nitrogen applied during early spring increases shoot growth rates and decreases the levels of available carbohydrates in the plant, resulting in depressed root growth rates. Late season nitrogen applications have no similar negative effects on root growth. No winter damage or snow mold occurred as a result of late season nitrogen applications.

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