NORTHWEST TURFGRASS TOPICS

The Official Publication of the Northwest Turfgrass Association Vol. 32, No. 4 Summer 1989

43rd Annual Conference Ready To Go

All the speakers are committed, the menus selected, facilities reserved, busses chartered and all those other details that are normally part of a conference like the NTA 43rd Annual Conference are now finalized. Registrants are signing up at a rate that indicates this may be one of the best attended conferences yet and preliminary exhibitor sign-up indicates the pavillion will be sold out very shortly.

We are all looking forward to a great conference and we hope to see you there.

Registration and Program Packets were mailed late in June. If you didn't get your packet, contact the NTA office now at (206)754-0825.

First Summer Turfgrass-Fest Successful

The first NTA Summer Turfgrass-Fest was a booming success. Despite the rain on Monday at the golf tournament for research, the turnout was great and everyone had a wonderful time. Nearly $4,000 was raised for the Turfgrass research fund.

Special thanks and appreciation is owed to **Wally Staatz** for donating his course, High Cedars Golf Club, for the golf tournament Monday and the equipment exhibition and cookout lunch Tuesday. Thanks are also in order to **Wilbur-Ellis, Elanco,** and **Pro Grass** for their significant donations, paying for the steak cookout and some of the tournament prizes.

Stan Brauen reported that the turnout for the WSU Field 5 Field Day was the largest ever — an estimated 250-300.

Following the field day on Tuesday, there was a great turnout for the equipment show and lunch cookout. All in all, it was a great two days!

Goss Tapped For Sports Turf Council

Dr. Roy Goss, past executive director of the Northwest Turfgrass Association, has accepted an appointment to the National Sports Turf Council Board of Directors.

The National Sports Turf Council advises on sports field construction and safety practices.

Other new appointees joining Roy on the council are Dr. William Knoop (Texas) and Dr. Colman Ward (Alabama).

1988/89 Turfgrass Scholarship Recipients

Oregon State University (OSU) student Gary Yates and Washington State University (WSU) student J. Eric Chapman are the recipients of the **NTA 1988/89 Turfgrass Scholarships.**

Mr. Yates, a senior in the OSU Horticulture Department is majoring in Landscape Maintenance — Turf Option. Mr Chapman is a senior in the WSU Agronomy Department majoring in Agronomy with Turfgrass Option.

Turfgrass scholarships are awarded annually to students who demonstrate a strong interest in a turfgrass related career, outstanding scholastic achievement and a financial need.

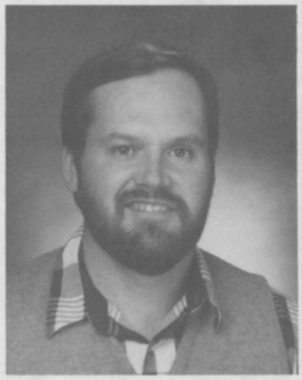
How Much Water A Sprinkler Uses

If you use a revolving sprinkler on a hose stand, most of them have a fractional number on the nozzle where the water comes out, usually stamped into the side. This tells you the nozzle size that determines the approximate amount of water discharged in gallons per minute as shown below.

Nozzle Size	Discharge in GPM @ 50 psi	@ 100 psi
3/32	1.85	2.62
7/64	2.52	3.57
1/8	3.29	4.66
9/64	4.17	5.90
5/32	5.14	7.28
11/64	6.23	8.81
3/16	7.41	10.48
13/64	8.70	12.30
7/32	10.09	14.27
15/64	11.58	16.37
1/4	13.18	18.64

To find your total water use, multiply the approximate discharge rate figure for your sprinkler nozzle from the appropriate water pressure range column by the number of minutes of operation. For example, a sprinkler with a 5/32" nozzle operated for 15 minutes at about 50 pounds per square inch of water pressure will discharge about 77.1 gallons (5.14 gpm x 15 minutes).

President's Corner



I hope the warm summer weather finds your turfgrass in good condition. If it isn't, maybe you should have attended the NTA Summer Turfgrass-Fest held in Puyallup in mid June. The Turfgrass-Fest started with a scramble golf tournament at High Cedars Golf Club followed by a steak barbecue at the clubhouse. The second day started off with the field day at Washington State University's research center at farm 5. Stan Brauen led the tour and showed an overflowing crowd the latest research which he and the staff are currently working on. After the field day, the NTA sponsored a hands-on large equipment show with proceeds going to research.

The NTA is very proud to be funding a portion of the current WSU and OSU research and is always looking for new ways to generate more money for turfgrass research. The Turfgrass-Fest was just such a vehicle, but its not enough. We had eight exhibitors at the hands-on show and could fill the driving range at High Cedars. This goal is not out of reach and with a membership the size of the NTA's, it should be obtainable.

To pull off an event the size of the Turfgrass-Fest, you need people to go above and beyond the call of duty; we had many. Wally Staatz, owner of the High Cedars Golf Club donated the golf, provided the staff for the barbecue and donated the use of the area for the large equipment show. A great deal of thanks goes to Wally. Wilbur-Ellis and Elanco donated the steak barbecue dinner, thanks to Wayne Stewart and his crew. Norm Whitworth donated the towels in the tee packets and with help from Bo Hepler organized and ran the golf tournament — a lot of work. Good job, guys. Pat Nibler from Pro Grass donated $100 in pro shop gift certificates. Thanks to the suppliers who came out to show their equipment at the hands-on-show — Barnett Implement Co.; Briargreen; Hobbs & Hopkins, Ltd.; Machinery Components; Puget Sound Seed Co.; Turf Equipment Northwest, Inc.; United Pipe and Supply; and Western Equipment Company.

And a special thanks to WSU and Stan Brauen for cooperating with the NTA in organizing its Turfgrass-Fest around their field day. But the biggest thanks goes to those who came and participated – 62 golfers on Monday and around 200 field day and exhibit attendees on Tuesday. Without you, it just couldn't have happened. I can only hope that the golfers who braved the rain in the research tournament will be dried out by NTA conference tournament in September, because its only a little over a month away. We do hope to see you all in Tacoma in September. The conference promises to be one of the best.

FRESH, STURDY, MATURE
GRASS
FROM OUR PLOT TO YOUR LOT

Your turf is professionally grown and especially adapted for Northwest conditions. We insure a quality product at reasonable prices. Also, we supply large caliper shade trees.

OREGON TURF & TREE FARMS

CALL OR WRITE FOR FREE BROCHURE
PORTLAND
223-8871
WOODBURN
981-8873
18381 Boones Ferry Rd. N.E.
Hubbard, OR 97032

Maintained Turf Area in USA

The total area of maintained turf in the USA is 32,300,000 acres or 50,469 square miles. 20,112,800 acres of that maintained turf is in lawns and 1,488,000 acres is in golf courses.

1989 NTA Exhibit Exhibitor Invitation

Exhibitors interested in participating in the **1989 Northwest Turfgrass Conference and Exhibition** sponsored by the Northwest Turfgrass Association being held Turesday, September 19, 1989 at the Sheraton Tacoma Hotel and Tacoma Bicentennial Pavilion are invited to contact the NTA Office, P.O. Box 1367, Olympia, WA 98507, (206) 754-0825 for registration information.

We are anticipating a turnout of 300-400 professionals interested in the latest research technology, equipment and products for the maintenance of golf courses, parks, grounds and lawns. We have reserved the Tacoma Bicentennial Pavilion, a 14,000 square foot beautifully refurbished, carpeted exhibit space with room for around 100 exhibit booths.

Hellstrom Replaces McCoy As NTA Director

Mr. Ric McCoy, Golf Course Superintendent at Glendale Golf & Country Club in Seattle, has resigned his position as an NTA Board Director due to work obligations with all the new activity and development of the club. Ric's service on the NTA Board this past year and a half has been sincerely appreciated and we wish him the best of luck with his development activity.

Replacing Ric will be Mr. **Don Hellstrom,** Golf Course Superintendent at Jackson Park Golf Course in Seattle. Don will serve as interim director until the annual meeting, at which time an election will be held to fill the balance of the unexpired terms.

Along with his board director duties, Don will be helping out on the conference golf tournament, as well as, serving as a moderator for some of the presentations made during the annual conference.

1989/90 NTA Publications Advertiser Invitation

The Northwest Turfgras Association is currently accepting advertisement orders for its quarterly newsletter, the TURFGRASS TOPICS, and its annual membership directory, the DIRECTORY, for the 1989/90 publication year. Advertising space is limited so advertisers will be accepted on a "first come - first served" basis.

The TUFGRASS TOPICS is an 8-12 page newsletter published four times a year by the Northwest Turfgrass Association. The association has members through the northwestern United States and southern British Columbia (Canada). The newsletter circulation includes over 600 managers of golf courses, parks, cemeteries, sports fields, campus and school grounds, etc.; representative of various industry-related companies e.g. lawn care, farm implement and machinery, irrigation system, chemical, fertilizer, and maintenance supply and materials; and golf course architects, landscape architects and contractors, and others.

The Annual Membership DIRECTORY is an 80-page publication published one time each year by the Northwest Turfgrass Association. The directory is distributed to the more than 600 association members described above.

Those interested in advertising in either publication, please request an **"Advertisement Order Form"** available from the NTA office, P.O. Box 1367, Olympia, WA 98507.

NTA Board Director Nominations

The NTA Nominating Committee is soliciting the names of persons interested in serving on the NTA Board of Directors.

Three board director positions will be open for nominations and election. Board directors serve for three (3) year terms and, as members of the NTA Board of Directors, they help determine the direction and policies for the regional organization and research foundation.

Anyone interested in more information about the positions and persons with nominations should contact the NTA Nominations Committee Chairperson, Mr. James Chapman (206) 762-0818 or Blair Patrick at the NTA Office (206) 754-0825.

Sports Turf Management Brochure

Professional Grounds Management Society (PGMS) announces the availability of a Sports Turf Management Information Brochure. This brochure was put together by the Lawn Institute to help managers produce better and safer sports turf. The brochure contains interesting articles reprinted from various publications, as well as papers by Dr. Daniel, research by the Lawn Institute on turfgrass varieties, diagrams of the layout of all types of athletic fields, and national contacts for information on sports turf management.

This wealth of information is availble to PGMS members for $7.00, and to non-members for $10.00; this price includes postage and handling.

Municipal Golf Course Bid Form Available

In an effort to simplify the bidding process for new golf course projects, the American Society of Golf Course Architects has developed a Request for Proposal form for municipalities planning public golf courses.

The RFP is a condensed, 12-page document listing project specifics for the golf course architect. The brevity of the proposal "simplifies the bidding procedure and encourages more course designers to respond to proposals," said ASGCA President Pete Dye.

The proposal produced by the ASGCA is broken down into six categories, including General Notice, Project Description, Scope of Services, Owner's Responsibilities, Submittal Requirements and Selection Process.

The proposal also lists additional responsibilities the architect will be expected to bear, including a feasibility study, site survey and preparation of an alternate plan.

Copies of the RFP can be obtained by writing to: The American Society of Golf Course Architects, 221 N. La Salle St., Chicago, IL 60601.

Ultra-slow-release N Source Is Studied

A University of Dayton researcher is working on a time-release fertilizer that could make fertilizing a once-a-year project.

Richard P. Chartoff, Ph.D., a professor of engineering materials, is trying to develop a coating similar to those used by drug companies on capsules. Chartoff was originally approached with the idea by Marysville, Ohio-based O.M. Scott & Sons, a major manufacturer of fertilizers. The company is providing Chartoff with $56,000 for a feasibility study.

The tricky part is to find an appropriate plastic coating and discover a way to get it on the surface of a urea fertilizer granule, either by spray or a chemical reaction that forms the plastic.

Aside from saving time, one of the chief benefits of this product is a decrease in water contamination through runoff because the fertilizer would be used up as it is released.

Though efforts are geared mainly toward fertilizer now, the future may hold similar encapsulation technology for pesticides, especially if environmental concerns continue to rise.

Source: Landscape Management/December 1988


INTEGRATED TURF MANAGEMENT PROGRAM

LILLY MILLER.

COMMERCIAL TURF PRODUCTS

Fertilizers • Seed • Chemicals

The Chas. H. LILLY Co.

PORTLAND
(503) 256-4600
1-800-433-3015 (In Oregon)
1-800-523-3668 (Outside Oregon)

SEATTLE
(206) 762-0818
1-800-562-7013 (In Washington)
1-800-562-7823 (Outside Washington)

How Much Happened Yesterday?

When you add together all the activities Americans do in one day, the numbers can be surprising: For instance, each day:

We eat 200 million pounds of fruit and vegetables.

We eat 1.2 million bushels of potatoes and 228,000 bushels of onions.

We pour 450 billion gallons of water through homes, factories and farms.

One new insect species is discovered.

Rats and mice damage $2.5 million worth of property.

About 200,000 tons of edible foods are wasted.

We eat 50 million pounds of sugar.

Americans crush 85,000 bushels of cigarette butts.

Six million tons of manure are produced by farm animals.

We make 1.9 million sheets of plywood.

Aches and pains prompt us to ingest 575 bushels of pain reliever.

We are fortunate we can take these seemingly insignificant items for granted. Unfortunately our food supply cannot be taken for granted.

American agriculture has continued to increase its efficiency to the point now where one farmer produces enough food to feed 72 people. As our population expands into the next century, in order to feed our nation a farmer will need to squeeze even more food out of the same acre of land.

One of the management tools helping farmers increase production of healthy, disease free food has been pesticides. To help squeeze more healthy food out of the same acre of land in the future we will continue to need pesticides as a management tool.

Source: The Bottom Line/Winter 1988

Turf Research In The West

by Dr. Charles Glover

Turfgrass research and extension in the West continues to lose productive people through retirement. Two internationally known turfgrass workers retired within the last year. These retirements leave some large shoes to fill. Despite the loss of people such as Dr. Roy Goss and Dr. Arden Baltensperger, research extension efforts remain strong in the region.

Turf Culture

Dr. David Kopec at the Univ. of AR is experimenting with the calibration of crop coefficients and evapotranspiration to better understand water use in turfgrass. He is also looking into the feasibility of using leaf temperature as a guideline for turf irrigation scheduling in Arizona.

Dr. Bobby McCaslin, New Mexico State University, has been studying the effectiveness of sewage sludge, in particular 'Miloganite', to correct micronutrient deficiencies in turfgrass. The material has shown good results in correcting these micronutrient deficiencies, particularly iron. The response to the application of Milorganite and proper amounts of N, P, and K is a turf with good color, density, and desirable vigor.

Limited water and high costs for water has prompted screening of native species for use in turfgrass areas in the West where low inputs of water and fertilizer are used. Native grass species that have shown promise as desirable turfgrasses include blue grama, black grama, and buffalograss. Preliminary work in both New Mexico and Arizona indicate that these grasses have the ability to produce acceptable turf while utilizing less water and fertilizer than conventional turfgrass species.

Pest Control

Kopec, U. of AR, is involved with several projects that are looking at controlling nutsedge in bermudagrass. Some of the areas of interest include plant activity of the various chemicals used and competition of the bermudagrass at different mowing heights, both with and without chemical treatment. The increasing problems with nutsedge infestation make these types of studies quite pertinent to the management of turf in the West.

Another weed pest that is quite common in the West is crabgrass. Lee, NMSU, has been screening several chemicals for crabgrass control in Kentucky bluegrass turf. He has been looking at pre-emerge, post-emerge, and both pre- and post-emerge treatments. All pre-emerge treatments gave good initial control with Ronstar 50W at 2.5 lb. a.i. and prodiamine 65WDG at 1.5,2.3, and 3.0 lb. a.i. showing very good season long control. Acclaim applied at early plant development and again at late plant development gave excellent season long control at all rates tested. Tank mixtures or seperate applications of Dacthal or prodiamine and Acclaim gave excellent season long control at all rates used.

Other Research

Wu, Huang and Burau, UC Davis, used forage and turfgrass to study the accumulation of Selenium and Se-salt covariance to determine their use in land and water renovation. Species under study were tall fescue, crested wheatgrass, buffalograss, and bermudagrass. Distinct differences were observed for both Se uptake and salt tolerance but no direct association between Se and salt tolerances was found. Species with the greatest salt tolerance had less Se accumulation than those with less salt tolerance. Tall fescue appears to show promising potential for us on soils with relatively high levels of both salinity and Se.

Mancino, Torello, and Weher, U of A, measured the denitrification losses from 'Baron' Kentucky bluegrass sod. Losses were correlated with soil texture, SAT, and temperature. A silt loam and a silt soil were used. denitrification losses were quite low for both soil textures below 75% moisture saturation. Losses increased considerably when saturation was 100%. The relationship was quadratic and highly significant between percent saturation and denitrification losses. Linear relationships between denitrification losses and increases in soil temperature existed from 22 to 30 degrees C. Saturated soils resulted in the greatest losses. Results of this study indicate that denitrification losses on turfgrass may not be a serious problem except on saturated soils with high temperatures.

Gaussion, Baltensperger, and Coffey, NMSU, examined 32 clones of bermudagrass clones for response to reduced light intensity. They noted that bermudagrass clones responded to reduced light intensity by exhibiting shorter

(Continued on page 8)

JACOBSEN. UP FRONT IN LIGHTWEIGHT FAIRWAY MOWING.

Introducing the all-new Jacobsen LF-100, the 5-gang designed to increase your lightweight mowing productivity.

The wing mowers are up front for better visibility. So the operator can hold a closer line—even at mowing speeds over 5 mph—to take full advantage of the 100″ cutting width. This unique, up-front configuration also gives better access to all mowing units to quickly empty catchers and make mower adjustments easy.

Heavy-duty reels deliver a greens-like cut. New heavy-duty reel construction provides extra strength for long life in demanding fairway conditions. The fully floating, 22-inch steerable 7-blade reels are heavier, to follow ground contours closely, for that smooth, consistent Jacobsen cut that's the envy of the industry.

True lightweight mowing. Newly designed low-profile turf tires produce the lightest ground pressure, and the rear wheels roll on a different track than the front, so your tender turf thrives with less compaction. And the wide 4-wheel stance offers excellent traction, increased stability and a tight turning radius.

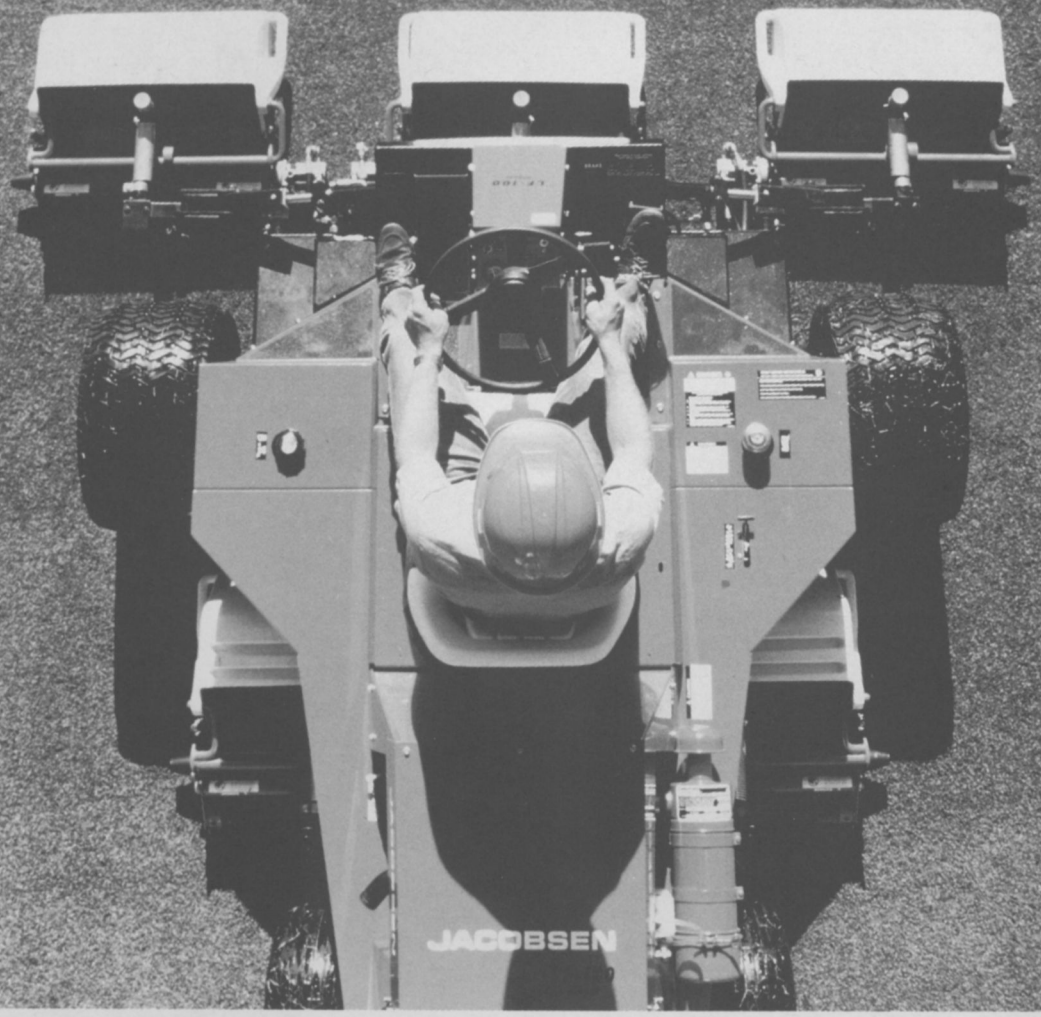
Built to last. The LF-100 has a proven, rugged chassis, a durable and simple hydraulic system and liquid-cooled diesel engine for a longer, trouble-free life on your fairways.

What's more, the entire machine is backed by your Jacobsen distributor, so you're never far from dependable parts and service support.

See all the LF-100 differences. Ask your Jacobsen distributor for a free demonstration. Attractive lease and finance plans available. Or contact: Jacobsen, 1721 Packard Ave., Racine, WI 53403.

JACOBSEN
TEXTRON
Jacobsen Division of Textron Inc.

© Jacobsen Division of Textron Inc. 1988



FARWEST TURF EQUIPMENT
2305 N.W. 30 AVE., PORTLAND, OR 97210
(503) 224-6100
TOLL FREE 1-800-727-TURF

NORTHWEST MOWERS
926 N. 165 ST., SEATTLE, WA 98133
(206) 542-7484
N. 7718 MARKET, SPOKANE, WA 99207
(509) 467-6604

FALLIS EQUIPMENT LTD.
11951 FORGE PLACE
RICHMOND, B.C. CANADA V7A4V9
(604) 277-1314

Famous Courses Have Ties To Oregon

PORTLAND – Some of the most famous golf courses in the world have one thing in common – they were born in Oregon.

The grass at Augusta National, Pebble Beach, Oakmont, Medinah and St. Andrews all comes from Oregon seed, according to officials of a growing grass seed industry.

"I would say that 98 percent of the all golf courses in the United States use Oregon grass seed at least to some extent," said Jim Carnes, president of International Seeds of Halsey. "We are on golf courses in all 50 states and the seed is going overseas, too."

Even in the South, where Bermuda grass is predominant for fairways and some greens, Oregon seed is used heavily for winter overseeding that gives courses a green coloring during periods when the Bermuda grass is dormant and brown.

"I would estimate that Augusta National uses about 100,000 pounds of Oregon seed a year for overseeding," Carnes said. "Most of the courses in Palm Springs use anywhere from 80,000 to 120,000 pounds of seed a year."

In addition, Augusta National's greens have Penncross, a popular bentgrass strain from Oregon, as their base.

"No country in the world can guarantee the quality of grass seed found in Oregon," George Theuwissen, a European seed company executive, said in a special report the MEDIAmerica published on the Oregon seed industry. "It is very difficult for any country to compete with Oregon right now."

The industry arose partly by accident in the 1920s when farmers in the southern half of the Willamette Valley were going through tough times. They found that planting grass crops was a way to make use of the heavy, poor-draining clay soil.

Now the industry is a multimillion-dollar venture that pumps an estimated $600 million annually into the state's economy.

Research has produced dozens of varieties of the most successful strains of creeping bentgrasses, ryegrasses and tall and fine fescues.

While Oregon State University was the center of research for the seed industry for most of the century, the bulk of recent research has been financed by money from the private sector.

Bill Meyer, vice president of Turf-Seed Inc. of Hubbard, also is president of the company's separate research arm, Pure Seed Testing Inc., which has devoted 105 acres to testing and research.

So-called "wear machines" have been developed to test turf using rollers that simulate a golfer's spikes. In other research, dwarfism traits are being sought in grasses because mowing is the single largest expense of a golf course.

"There is a real demand for us to keep working in this area because the people representing golf courses are sharp," Meyer said. "They want nothing but top grasses."

Source: Seattle PI/June 1989

Olathe®

TORO®

THE BEST IN TURF MAINTENANCE FROM ONE RELIABLE SOURCE.

Your satisfaction is important to us. That's why we worked so hard to represent nothing but the best brands in turf maintenance equipment. So far, we think we've done a pretty good job. But we're not going to stop there. We are constantly testing and looking for new equipment that will help you do your job better and more easily.

Have you used or seen something you think we should stock? Give us a call. With your help, we're going to become your "one-stop" source for all your turf maintenance needs.

ONE CALL DOES IT ALL!

Western

Equipment Distributors Inc.

20224 80th Ave. S.
Kent, WA 98032
(206) 872-8858

E. 2824 Garland
Spokane, WA 99207
(509) 483-8665

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. I have listed some of the components that can be serviced by inhouse 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.

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 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 into the zerk fitting. If the plug 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 inhouse staff will build a better understanding of the equipment and reduce risk of equipment problems and down time.

Source: Cactus and Pine, GCSA Newsletter

TURF-SEED PRODUCTS
ARE DISTRIBUTED IN THE NORTHWEST BY 'THE CHIEF'

Norm Whitworth

KENTUCKY BLUEGRASSES
• Columbia • Midnight
• Challenger
• Galaxy Blend

FINE FESCUES
• Shadow • Flyer
• Fortress

HARD FESCUES
• Aurora • Waldina

SHEEPS FESCUE
• Bighorn

CREEPING BENTGRASSES
• Penncross • Penneagle
• PennLinks
• Pennway blend

PERENNIAL RYEGRASSES
• Citation II • Birdie II
• Omega II • Manhattan II
• CBS II Blend

TALL FESCUES
• Olympic • Apache
• Monarch
• Triathalawn Blend

Wildflower mixture
• Bloomers

Norm Whitworth
Turf Products Division
P.O. Box 68314 • Oak Grove, OR 97268
503/659-3114

Research *(Continued from page 4)*

stem internodes and leaves, reduced green foliage, lower chlorophyll, and reduced dry weight. Some clones were identified which exhibited moderate tolerance to reduced light intensity. This data indicates that there is sufficient variability present in bermudagrass to select for shade tolerance.

Francois, U.S. Salinity Lab at Riverside, screened three bermudagrasses for salt tolerance. Although bermudagrass is considered salt tolerant, differences between cultivars exist. Of the three cultivars studied, Tifton 10 was rated as moderately salt tolerant while Tifway II and Tifton 86 were rated tolerant.

New Cultivars

Jacklin Seed Co. and Peterson Seed Co. released the Kentucky bluegrass variety 'Classic' in 1985 and registered it with Crop Science in 1988. Classic is a moderately-dense, medium-fine, moderately aggressive, and moderately low-growing Kentucky bluegrass which has demonstrated good resistance to leaf spot, melting out, stem rust, and at least one of the causal agents of *Fusarium* blight syndrome. It has excellent winter hardiness, good heat tolerance, seedling vigor, and wear tolerance. Classic is recommended for use in home lawns, parks, athletic fields, institutional grounds, golf courses, and school playgrounds. It may be blended with adapted Kentucky bluegrass cultivars or mixed with improved turf-type perennial ryegrasses and strong creeping red fescues.

'Spartan' hard fescue was released in 1984 by Pickseed West, Inc. and registered with Crop Science in 1988. It is a leafy, persistant, turf-type hard fescue with excellent cold tolerance. Spartan is capable of producing an attractive, dense, low-growing, fine-textured turf with limited fertilization and irrigation. It has good shade tolerance and competes very well with tree roots. Spartan has resistance to many races of powdery mildew, anthracnose, net blotch, and red thread. It is recommended for use where fine fescues are adapted can be used in mixtures with strong creeping red fescues, Kentucky bluegrasses, and improved turf-type perennial ryegrasses.

Pickseed West, Inc. released 'Victory' Chewings fescue in 1986 and registered it in Crop Science in 1988. Victory is a moderately low-growing, turf-type Chewings fescue capable of producing an attractive, dense, fine-textured turf with bright, dark green color. It has improved resistance to powdery mildew, net blotch, rust, and dollar spot. Victory is resistant to close mowing, moderate shade, moderately acid soils, and moderately low fertility. It can be highly competitive in mixtures with other turfgrasses. Victory may be used for lawns, parks and playgrounds with light to moderate shading in areas where Chewings fescue is adapted. it may be used in mixtures with turf-type perennial ryegrasses for fall and winter overseeding of dormant warm-season turf in the southern U.S.

'SR4100' perennial ryegrass was released in 1986 by Seed Research of Oregon and registered in Crop Science in 1988. It is a leafy, turf-type perennial ryegrass capable of producing an aggressive, persistent, dense, attractive, fine-textured, and medium low-growing turf. SR4100 has a bright, dark green color, and good winter hardiness unless exposed to prolonged ice cover.

It has good mowing qualities, heat tolerance, wear tolerance, and summer performance. SR4100 has moderate resistance to the present races of crown rust, net blotch, large brown patch and stem rust. It can be used in home lawns, parks, golf courses, athletic fields, school playgrounds and industrial grounds. SR4100 should perform well under full sun or moderate shade in areas where perennial ryegrass is adapted. It is recommended for overseeding dormant warm-season turf in the southern U.S.

'Numex Sahara' bermudagrass was released in 1987 by New Mexico State University and has been approved for registration in Crop Science. Numex Sahara is a seeded bermudagras which has the good qualities of common plus improved turf quality. It has finer leaf texture, better density, lower-growing, and better color than common. Numex Sahara has shown some resistance to leaf spot and bermuda stunt mite. It has improved cold tolerance, adequate seed yield, and seedling vigor. Numex Sahara should be useful for home lawns, golf course fairways, city parks, and other large areas where seeding is the preferred method of establishment.

Source: Park/Grounds Management/July 1989

The LESCO 48-Inch Commercial Rotary

Generating profits in the mowing business depends on quality equipment. The LESCO 48-Inch Commercial Rotary, built rugged and durable, delivers this dependability.

An extra-deep cutting deck is balanced for better maneuverability and more uniform cutting, while double-V drive belts provide more surface area to reduce slippage in wet conditions. Power for day-long mowing comes from a 12.5-horsepower Kawasaki engine.

LESCO. Quality name. 48-Inch Commercial Rotary Mower. Quality Equipment.

LESCO Nationwide • (800) 321-5325
In Ohio • (800) 686-7413

LESCO Inc., 20005 Lake Road, Rocky River, OH 44116, (216) 333-9250

THE WATER MANAGEMENT TEAM...

A Winning Line-up from Rain Bird

For more information contact your local Authorized Rain Bird Turf Distributor:

Evergreen Pacific Supply, Inc.
Washington

Bellevue	206/828-4554
Everett	206/353-3600
Spokane	509/467-6601
Tacoma	206/581-4018

United Pipe & Supply Co., Inc.
Oregon

Bend	503/382-9311
Eugene	503/688-6511
Medford	503/779-6721
Portland	503/288-6271
Salem	503/588-1250
Tigard	503/639-7473

RAIN BIRD®

Baseball Field Alignment

By Mike Hebrard

A baseball field is the best designed of all outdoor sports facilities. Where players stand, run, slide, dig in or push off, there is dirt that can be raked smooth again. Where the ball hits, there is a smooth, flat grass surface that permits the ball to bounce predictably and to roll quickly with minimal resistance. The majority of the field is covered with turf to prevent muddy or dusty conditions, to provide safe footing, to keep the field cool, and to give it a park-like appearance. The best all-around baseball field is one that is consistent day in and day out.

The consistency of any baseball field is based largely upon maintaining correct distances and angles. It is our job as groundskeepers to check the alignment of the foul lines, bases and mound frequently for accuracy. To do this you'll need a few tools, including four steel pipes, a transit and a pole, a nylon cord 400 feet long, nails to secure the cord, two tape measures 100 feet long and one tape measure 150 feet long.

Start at the backstop. If the backstop was installed properly, the left side panel should be 90 degrees to the right side panel. Home plate should be located in the center of the backstop. To make sure that it is in the center, a procedure called triangulating is used.

Measure the width of the center panel of the backstop, divide by two and mark the exact middle (point A) of the center panel. From the ends of the center panel, measure along each side panel the same distance and mark points B and C. Run a string from point B to point C and measure the distance between the two points. Divide by two and mark the exact center of the string (point D). A string running from the center of the backstop (point A) to point D should run down the middle of home plate. If the plate is not yet installed, drive one of the four pipes into the ground where the apex (white tip) of the plate will be. This is point E.

To shoot the center of the field, triangulate again. Position the transit so the plumb bob falls just into the pipe at Point E (the apex of home plate). Align the transit legs so they won't interfere with measuring tapes or cords. Again, starting from the ends of the center panel of the backstop, measure the same distance along the right and left panels beyond points B and C out past first base and third base. Drive nails in both locations, points F and G. Run a cord between F and G, measure and mark the mid-point which will be point H. Align the transit to point H. Shoot from home plate to the fence in center field. Drive the second pipe into the ground next to the fence to mark the center of the field.

With the center of the field set, the foul lines can be shot. By turning the transit 45 degrees to the left you can shoot the left foul line out to the fence and drive in a third pipe. Finally, turn the transit 90 degrees to the right to shoot the right foul line out to the fence and install a pipe. After you are done, recheck all angles with the transit. Be sure the pipes are flush with the ground.

Run the longest cord from the pipe at home plate to the one next to the center field fence and pull it tight. Check

(Continued on page 12)

From Tees to Fairways to Greens-

We've Got Your Cover!

Pickseed West offers a complete line of Oregon's highest quality turfgrass products. From tees to fairways to greens Pickseed's perennial ryegrasses, Kentucky bluegrasses, turf-type tall fescues, fine fescues and bentgrasses can be found on the finest playing surfaces in the Northwest.

Improved seasonal performance, disease resistance, color, and playability are just a few of the reasons superintendents like yourself are choosing Pickseed products.

For all your turfgrass needs – we've got your cover!

ED DRAPER
Northwest Turf Seed Sales

WORK (503) 926-8886
HOME (503) 926-6640

PICKSEED®
PICKSEED WEST Inc.
P.O. Box 888 • Tangent, Oregon 97389

SREF® and 2% plant-available iron combined for great turf performance

Get all the advantages of Scott's advanced sulfur-coating technology, plus readily available ferrous sulfate iron to help correct and prevent iron deficiencies, in one high-quality product—Scotts® Turf Fertilizer with Iron.

Ask your ProTurf® Tech Rep for details.

Ask your ProTurf® Tech Rep for details.

Don Clemans
(206) 254-8748

Mark Jones
(509) 255-6033

Cooperative Extension Resources

By Dana L. Spoor

Sometimes, finding the lawn care information you need is as simple as reading a trade publication or industry newsletter, looking it up in the reference section of your local library, or calling an industry expert. When it comes to researching a topic, whether it be a turf pest, pesticide safety or information for a training program, one source is often overlooked—the cooperative extension service.

The cooperative extension service, founded in 1913, is the Department of Agriculture's primary educational unit. It is the education arm of the land grant university reaching out to the local clientele. The cooperative extension service is based out of each state's land grant college, which is designated for research. Branch county offices work through the state office.

The purpose of the extension is to develop ways to apply research-based knowledge in agriculture, natural resources, family and consumer concerns, community resource development and 4-H youth programs. These programs can help the lawn care operator by educating him, his employees or his customers.

Cooperative extension services have access to extensive resource libraries, and they are backed by a diverse support staff made up of university experts.

However, the cooperative extension offices do more than supply information. Most offices offer a variety of services, including soil testing, plant disease diagnosis, plant identification and direct consultation.

Printed information on hundreds of topics, including turf pests, safety procedures, equipment operation and more is available. Some extension offices offer classes on topics ranging from mowing to weed control to gardening. In addition, many offices will offer training sessions on the business site, as well as at their own grounds maintenance workshops.

"I am of the opinion that our homeowner clinics make for a potentially better-educated customer," says Larry Stouse, extension director for Johnson County, Kan. "On a day-to-day basis, we supply diagnostic help for plant problems, tree and shrub problems, whatever someone needs. We are a source of information."

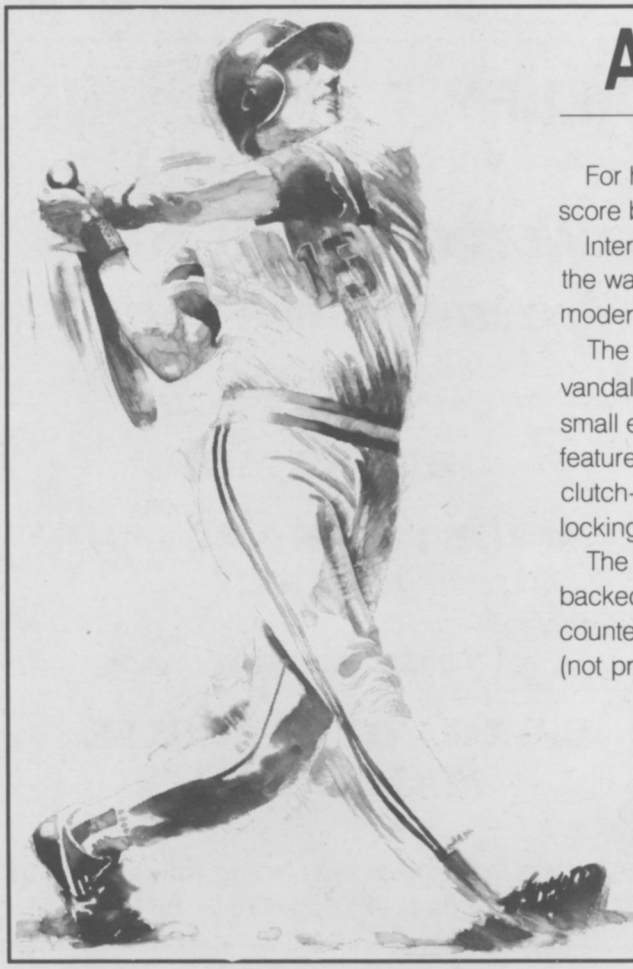
According to Ken Scott, extension horticulturist at the University of Arkansas, people rely on the extension service because it is not out to make a profit and it can provide unbiased information.

Cooperative extension service survey results

The cooperative extension service is part of the land grant university in each state, and offices are located throughout the states. The average state extension has 61 offices.The smallest cooperative extension has three offices and the largest has 150.

Cooperative extension offices publish materials that are available to anyone who asks. Some materials are free; others are available for a minimal cost to cover printing expenses. These materials can be useful for training employees, educating customers and diagnosing problems.

(Continued on page 13)



A Natural On The Diamond

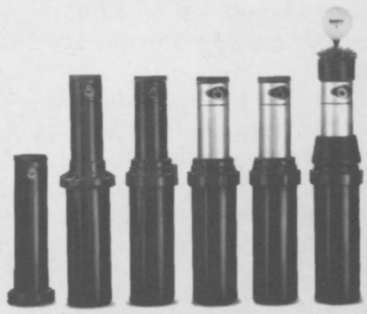
The Institutional Series

For high performance and versatility, Hunter Institutional Series sprinklers score big on sports fields.

Interchangeable nozzles make it easy for turf managers to water exactly the way they want. They can match other sprinklers in a system, or use modern low-precipitation rates for water and energy savings.

The Institutional Series also comes out on top in player safety and vandal resistance. All sprinklers have safety-cushioned rubber covers and small exposed surface areas. They feature break-resistant arc stops, clutch-protected drive systems and locking caps.

The Hunter Institutional Series – backed with a five-year, over-the-counter exchange warranty (not prorated).



The Hunter Line-up *(left to right)*
I-10, I-20, I-25, I-40, I-42, I-44 Sod Cup

Hunter®

Member

Hunter Industries ☐ The Irrigation Innovators
1940 Diamond St. ☐ San Marcos, CA 92069 ☐ 619 / 744-5240
Telex: 910-3335694 Ans. HUNTER IND SM ☐ FAX: 619 / 744-7461

Field Alignment *(Continued from page 10)*

for straightness with the transit. Measure along the cord the appropriate distance from the apex of home plate to the front edge of the pitching rubber and from the apex of home plate to the second base anchor. The cord should intersect both in the center. Make allowances (lengthen) the measurement for second base if the mound is in place. For a regulation baseball field the distance between home plate and the pitching rubber is 60 feet, 6 inches. The distance from home to second (with allowance for the mound) is 127 feet, 3 3/8 inches. The mound should be ten inches high at the rubber.

Measure from the apex of the plate along the foul lines for first and third base. The back of both bases should be exactly at that distance. A quick way to check base alignment without a transit is by measuring two sides of the diamond together. The distance from home plate to second base along the base line should be 180 feet. It should be the same distance along the base line from first to third or from second to home. If it's not, the field is not properly aligned.

USGA Recommendations Regarding Hole Locations

The USGA frequently receives requests for guidelines with respect to selection of hole locations on the putting greens, **particularly during competitions.**

The USGA believes that many factors affect selection of hole locations. The first and most important is good judgment in deciding what will give fair results. Do not be tricky in locating holes.

Following are specific points:

(1) Study the design of the hole as the architect intended it to be played. Know the length of the shot to the green and how it may be affected by the probable conditions for the day — that is, wind and other weather elements, condition of the turf from which the shot will be played, and holding quality of the green.

(2) There must be enough putting green surface between the hole and the front and the sides of the green to accommodate the required shot. For example, if the hole requires a long iron or wood shot to the green, the hole should be located deeper in the green and further from its sides than should be the case if the hole requires a short pitch shot.

Consideration should be given to fair opportunity for recovery after a reasonably good shot that just misses the green.

(3) An area two to three feet in radius around the hole should be as nearly level as possible and of uniform grade. In no case should holes be located in tricky places, or on sharp slopes where a ball can gather speed. A player above the hole should be able to stop the ball at the hole.

(4) Consider the condition of nearby turf, especially taking care to avoid old hole plugs which have not completely healed.

(5) Holes should be cut as nearly on the vertical as possible, not plumb with the contour of the green.

(6) There should be a balanced selection of hole locations for the entire course with respect to left, right, central, front and back positions. For example, avoid too many left positions with resulting premium or drawn or hooked shots.

(7) For a competition played over several days, the course should be kept in balance daily as to degree of difficulty. In a stroke competition, the first hole of the first round is as important as the last hole of the last round, and so the course should not be set up appreciably more difficult for any round – balanced treatment is the aim. An old concept of making the course progressively harder round after round is fallacious. One form of balanced daily treatment is to select six quite difficult hole locations, six which are moderately difficult, and six which are relatively easy.

(8) During practice days before a competition, locate holes in areas not to be used during the competition and which will not result in areas to be used being impaired by foot traffic.

(9) Anticipate the players' traffic patterns. Locate holes for early rounds so that good hole locations for later round will not be spoiled by players leaving the green.

(10) In match play, a hole location may, if necessary, be changed during a round provided the players in each match play with the hole in the same location.

In stroke play, rule 33-2b requires that all competitors in a single round play with each hole cut in the same position, but see Exception to that Rule.

When 36 holes are played in one day, it is not customary for hole locations to be changed between rounds, but there is no Rule to prohibit changing them. If they are changed, all players should be informed.

(11) The greenkeeper who cuts the holes should make sure that the Rules of Golf are observed, especially the requirements that the hole-liner not exceed 4¼ inches in outer diameter and that it be sunk at least one inch below the putting green surface.

Source: The Bullsheet/July 1988

VALLEY TOPSOIL, INC.

"You can dig our dirt"

QUALITY TOPSOIL MIXES

TOPDRESSING SAND

DIVOT MIX

GREENS MIX

COMPOSTED HARDWOOD BARK

"vita-mulch"

USING YOUR ON-SITE MATERIALS

35019 West Valley Highway • Algona, WA 98001
Office Phones (206) 839-5384 939-0886

Co-op Extension *(Continued from page 11)*

The following are some of the resources available at many cooperative extension services:

- Turf insects, diseases and weed fact sheets.
- Gardening tips fact sheets.
- Newsletters.
- Miscellaneous lawn care fact sheets.
- Television or radio programs on lawn care.
- Video cassettes or audio tapes on lawn care or tree care.
- Turf equipment selection, maintenance or safety brochures.
- Computer-based information on turfgrass research and management.

In addition to providing published materials, cooperative extension workers are trained to perform a variety of services, such as the following:

- Diagnosing turf diseases.
- Diagnosing tree diseases.
- Providing direct consultation with lawn service professionals and homeowners about turf or tree care problems.
- Providing soil testing.
- Sponsoring educational workshops.
- Sponsoring chemical applicator training classes.

Golf course superintendents, lawn care operators, homeowners, students, farmers, and many other people call their local cooperative extension office for advice and service. Surveyed offices reported an abundance of calls during the spring and summer months, with very few calls during the winter months.

Individual cooperative extension offices inform the public about upcoming events, newly published materials or other information in several ways, such as promoting their services through newspaper columns, television, radio public service announcements, radio talk shows, and university newsletters to alumni.

Cooperative extension personnel offer the following suggestions on how to better use the service.

- Request to be on their mailing list.
- Attend educational functions.
- Relate research needs to county advisers.
- Get acquainted with extension specialists in your area of work or interest.
- Request assistance at the first signs of a problem, rather than after total damage occurs.
- Obtain and study cooperative extension circulars and newsletters.

Source: Lawn Servicing/February 1989

1989/90 Membership Directory Ready

The **1989/90 NTA Directory** has been printed and will be distributed shortly to NTA members. A "Who's Who" of the northwest turfgrass industry. The directory contains a listing of the NTA members, leaders, turfgrass research contributors, turfgrass technical assistance information and much, much more. This handy reference book is used in offices regionwide for member-to-member contact, merchandising and for a variety of other informational purposes.

NTA members will receive one copy of the directory as a member service. For members wanting additional copies or for others wanting copies of the directory, it sells for $10.00 and may be purchased by sending a check or money order, payable (in U.S. funds) to NTA, to NTA • P.O. Box 1367 • Olympia, WA 98507.

GCSAA Donates To Turfgrass Research

The Golf Course Superintendents Association of America recently contributed $25,000 to the USGA/GCSAA Turfgrass Research Committee to support ongoing scientific work on new turfgrass varieties that would require less water and be more disease resistant. GCSAA President Dennis D. Lyon, CGCS, made the presentation June 14 at the annual USGA/Golf Writers Association of America banquet during the U.S. Open in Rochester, N.Y.

More than $2.8 million has been distributed by the committee since 1983, according to William H. Bengeyfield, national director of the USGA Green Section. The committee currently supports 25 research projects, he said.

"We do thank GCSAA for the research funding they provide, and we also appreciate the time people like (GCSAA Vice President) Jerry Faubel, Dennis Lyon and (GCSAA Executive Director) John Schilling contribute to the committee," Bengeyfield said. "And $25,000 is absolutely fantastic."

Lyon said: "GCSAA sincerely supports the USGA turfgrass research project. We look forward to working together with the USGA on other projects in the future."

1989 Membership Certificates

Membership certificates for 1989 were mailed recently to all **regular, student** and **honorary members** of the Northwest Turfgrass Association (NTA). If you're a member and have not received one, contact the NTA office and we'll get yours to you immediately.

Membership certificates are intended to recognize your involvement in and support of the turfgrass industry in the Northwest, as well as, thank you for your continued support of the objectives and purposes of the Northwest Turfgrass Association.

QUALITY
AT ITS

BEST®

J. R. SIMPLOT COMPANY

BEST®
FERTILIZER

(206) 822-3895

Identification Of Soil Types

The United States Department of Agriculture defines soil separates as having the following diameters in millimeters: very coarse sand 2 to 1; coarse sand 1 to 0.50; medium sand 0.50 to 0.25; fine sand 0.25 to 0.10; very fine sand 0.10 to .05; silt .05 to .002; and clay below .002 millimeter.

SAND:

Sand is loose and single grained. The individual grains can be seen or felt. Squeezed in the hand when dry, it will fall apart when pressure is released. Squeezed when moist, it still form a cast, but will crumble.

SANDY LOAM:

A sandy loam is a soil containing mostly sand but which has enough silt and clay to make it somewhat coherent. Squeezed when dry, it will form a cast which will fall apart; but if squeezed when moist, a cast can be formed that will bear careful handling without crumbling.

LOAM:

A loam is a soil having a mixture of the different grades of sand, silt, and clay in such proportion that the characteristics of no one predominate. Squeezed when dry, it will form a cast that will bear careful handling, while the cast formed by squeezing the moist soil can be handled quite freely without crumbling.

SILT LOAM:

A silt loam is a soil having a moderate amount of the fine grades of sand and only a small amount of clay over half of the particles being of the size called "silt". When dry, it may appear quite cloddy, but the lumps can be readily broken; and when pulverized, it feels smooth, soft, and floury. When wet, the soil readily runs together. Either dry or moist, it will form casts that can be freely handled without breaking.

CLAY LOAM:

A clay loam is fine-textured which usually breaks into clods or lumps that are hard when dry. When the moist soil is pinched between the thumb and finger, it will form a thin ribbon" which will break barely sustaining its own weight. The moist soil is elastic and will form a cast that will bear much handling. When kneaded in the hand, it does not crumble easily.

CLAY:

A clay is a fine-textured soil that usually forms very hard lumps or clods when dry and is quite elastic and usually sticky when wet. When the moist soil is pinched out between the thumb and finger, it will form a long, flexible "ribbon".

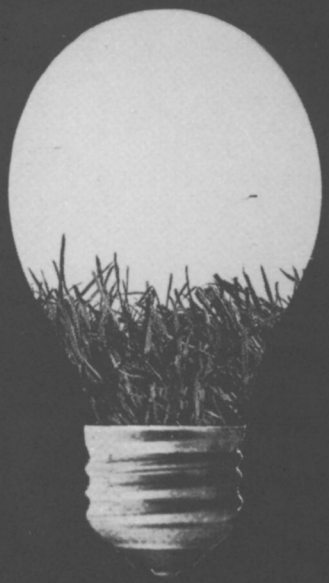
Source: Our Collaborator

Wilbur-Ellis

Ideas to grow with®

Serving the Northwest Turf Grass Industry *with*

Fertilizers
Herbicides
Fungicides
Insecticides



Billings, Montana (406) 248-1176

Caldwell, Idaho (208) 459-1631

Great Falls, Montana (406) 727-4500

Kent, Washington (206) 872-6920

Moses Lake, Washington (509) 765-9157

Pasco, Washington (509) 545-9329

Portland, Oregon (503) 227-3525

Pullman, Washington (509) 872-2231

Spanish Fork, Utah (801) 798-8643

Spokane, Washington (509) 928-4512

Twin Falls, Idaho (208) 734-1880

Umatilla, Oregon (503) 922-3278

Walla Walla, Washington (509) 529-5381

Wenatchee, Washington (509) 663-8754

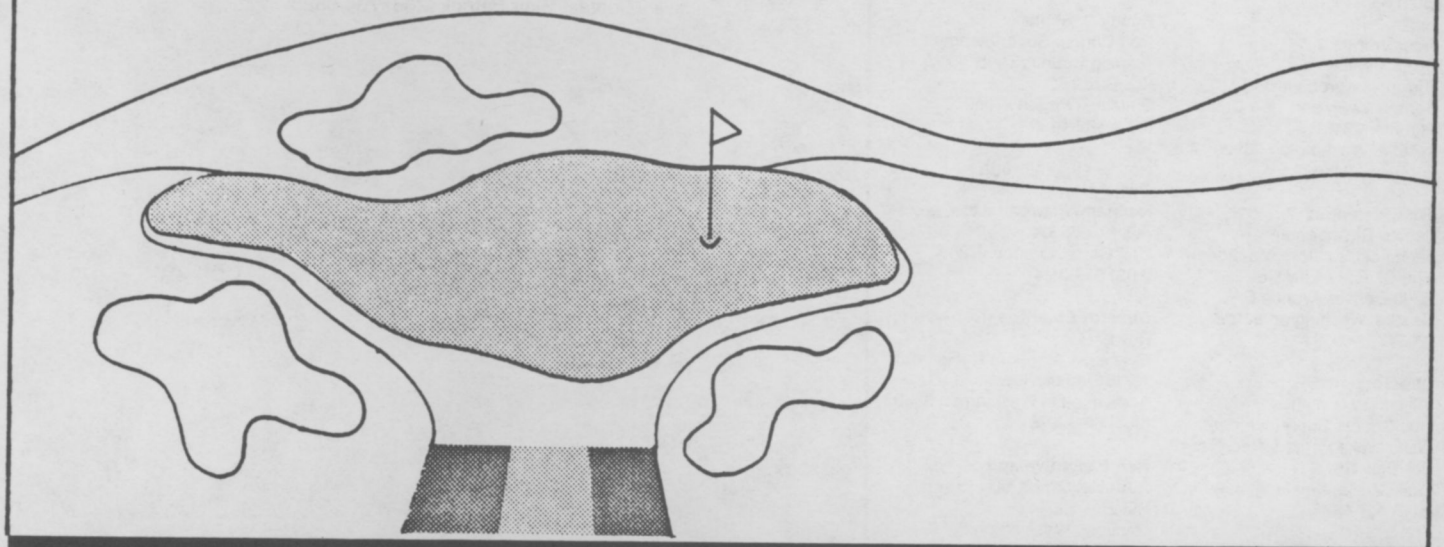
Yakima, Washington (509) 248-6171

STEINER CORP.

RANSOMES

BOB-CAT®

EZ-GO



TURF EQUIPMENT NORTHWEST, INC.

Quality Products & Quality Service For All Your Needs

• Fertilizers • Fungicides • Herbicides • Grass Seed
• Grass Machinery • Insecticides • Aerators

Washington
17824 N.E. 65th
Redmond, WA 98052
(206) 883-6694

Two Stocking And Full Service Locations

Oregon
19435 S.W. 90th Court
Tualatin, OR 97062
(503) 692-5268

1988-89
NTA Board of Directors Roster

President
Mike L. Kingsley
Golf Course Superintendent
Spokane County Park Dept.
MeadowWood Golf Course
N. 111 Wright
Liberty Lake, Washington 99010
(509) 255-6602

Vice President
William J. Johnston
Agronomist Turfgrass Science
Department of Agronomy & Soils
Washington State University
Pullman, Washington 99164
(509) 335-3620

Treasurer
Bo C. Hepler
Turfgrass Agronomist
Senske Lawn and Tree Care
P.O. Box 9248
Yakima, Washington 98909
(509) 452-0486

Past President
James R. Chapman
Technical Services Manager
The Chas. H. Lilly Co.
5200 Denver Avenue S.
Seattle, Washington 98108
(206) 762-0818

Directors
William B. Griffith
Golf Course Superintendent
Walla Walla Parks & Rec. Dept.
P.O. Box 478
Walla Walla, Washington 99362
(509) 527-4336

Don Hellstrom
Golf Course Superintendent
Jackson Park Golf Course
1000 N.E. 135th
Seattle, Washington 98125
(206) 684-7521

Directors (continued)
Rebecca R. Michels
President
Messmer's Landscaping Service, Inc.
24664-156th S.E.
Kent, Washington 98042
(206) 228-5779

Patrick J. Nibler
Operations Manager
PRO GRASS
8600 S.W. Salish Lane
Wilsonville, Oregon 97070
(503) 682-6076

Randy D. Shults
Golf Course Superintendent
Tualatin Country Club
P.O. Box 277
Tualatin, Oregon 97062
(503) 692-4499

Norman J. Whitworth
Owner
Norman Whitworth, Ltd.
P.O. Box 68314
Oak Grove, Oregon 97268
(503) 659-3114

Director Emeritus (Non-voting)
Roy L. Goss
Extension Agronomist (Retired)
13716 Camus Road
Anderson Is., Washington 98303
(206) 884-4978

NTA Executive and Editorial Office
P.O. Box 1367
Olympia, Washington 98507
(206) 754-0825

EXECUTIVE DIRECTOR
Blair Patrick

SECRETARY
Linda G. Tunison

ADVERTISING/EDITORIAL DEADLINE 15th OF MONTH PRECEDING PUBLICATION

Calendar of Events

August 14	**NTA Board of Directors Meeting –** Contact Blair Patrick (206) 754-0825
August 14	**BEST (J. R. Simplot) Golf Tournament** Contact Norm Whitworth (503) 659-3114/Mike Vandecoevering (503) 227-3525
August 26-27	**4th Annual Seattle Flower Show –** Contact Phil Traff (206) 863-0542
September 17	**NTA Board of Directors Meeting –** Contact Blair Patrick (206) 754-0825
September 18-21	**43rd NTA Northwest Turfgrass Confernce and Exhibition –** Contact Blair Patrick (206) 754-0825

NORTHWEST TURFGRASS ASSOCIATION

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

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

ADDRESS CORRECTION REQUESTED

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

**********3-DIGIT 973
S1 5

Cook, Thomas W.
Oregon State University
OSU-Horticulture Dept.
Corvallis OR 97331

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