



1988 Research Project Funding Approved

The Northwest Turfgrass Association Board of Directors approved \$22,500 in 1988 research grants at its meeting January 4, 1988. After reviewing over \$46,180 in project proposals, the board approved the following:

\$10,000 WSU/WWREC – Stanley E. Brauen

Time Slip Labor (\$8,000)

- Water Use Efficiency
- National Variety Testing Program
- Biological Control of Disease and Insects with Endophytic Fungi

Aluminum Species Phosphorus and PH Effects on Survival of Bentgrass and **Poa Annua**. (\$2,000)

\$10,000 WSU – William J. Johnston

Susceptibility of Turfgrass Cultivars to Necrotic Ring Spot (\$2,500)

Turfgrass Graduate Student Support (\$6,500)

Laboratory Building Fund (\$1,000)

\$2,500 WSU – Dr. Gary Chastagner

Susceptibility of Turfgrass Cultivars to Necrotic Ring Spot (\$2,500)

This year, the board took a hard look at the overall research grant program considering such things as:

what type of research will be of assistance in the future;

what criteria should be used when considering grant requests or proposals; and

what progress or status reporting requirements should accompany approvals.

The requirements for a detailed written progress report to allow the NTA to report to research fund contributors what they are getting for their research dollars will be part of this year's grant program.

1987/88 NTA Board of Directors and Staff



Back row (left to right) Roy Goss, Director Emeritus; Thomas W. Cook, Director; Ken R. Weiderstrom, Director; William J. Johnston, Director; Norman J. Whitworth, Director; Blair Patrick, Executive Director

Front row (left to right) Randy D. Shults, Director; Bo C. Hepler, Past President; James R. Chapman, President; Mike L. Kingsley, Vice President; Richard E. McCoy, Director

1988 Northwest Turfgrass Show to be Largest Yet

This year's Northwest Turfgrass Association (NTA) **42nd Northwest Turfgrass Conference and Exposition** will be held September 19-22, 1988 with the Spokane Sheraton Hotel serving as the conference headquarters.

The adjoining Spokane Convention Center will house the largest supplier, manufacturer, and distributor show ever undertaken by the NTA. Inquiries are already being received in the NTA office about exhibit space in the forty thousand (40,000) square foot convention center exhibit hall. Exhibitors should get this exhibition on their schedule immediately!

Plans for the conference golf tournaments (men's and women's) are already taking shape. They will be held at the Spokane County Liberty Lake and new MeadowWood Golf Courses just east of downtown Spokane. In addition to the golf tournaments, many other activities are on tap for the spouses. Plan now to join your colleagues at the conference and exposition. You can't afford to miss it.

President's Corner

Winter is a busy season - or should be. True, we don't spend as much time outside, but all through the growing season we have put things aside with the thought, "That's something I'll look at/take care of this winter when I have more time."

This is the season for seminars, trade shows, planning. To take full advantage of these moments, they will disappear all too soon, we need to plan each day just as carefully as when the



James R. Chapman
President

grass is growing. Set aside an hour or two daily, preferably the same hours each day, to read. Review the magazine articles you have been accumulating. Study the *PROCEEDINGS* you just received. Go over the material again from the classes or seminars you attended recently.

Already you have started your maintenance plans, gone over the goals you wish to reach this year, and are well into renovation and repair of **all** your equipment. What about soil testing, is that out of the way? Winter is the ideal time to apply supplements shown deficient in a soil test.

There is no way anyone can accumulate all the knowledge and experience available in this rapidly advancing science of turf and grounds management. Don't forget the valuable knowledge gained from peers, as well as, attendance at educational sessions. Next time you do take in a seminar, look around and observe the faces of the others there with you. Some of us have been active in this field a long time, in my case over 30 years, and it pleases me thoroughly to see how many young men and women are showing up. (And no side comments here about how everyone is younger than me.) They are all interested in extending their recent educations and padding their experience vicariously with the experience of others.

The NTA is determined to keep up this extension of information. It is the only way we can succeed and grow. Without goals and effort focused on those goals there is no success. So spend the time carefully this winter, my friends. Just a little time each day will ease the work of the season coming and greatly increase your enjoyment of it.

Northwest Turfgrass Manager Information and Technical Assistance

Frequently turfgrass managers do not know where to turn to seek assistance on specialized problems. The land grant universities in Idaho, Oregon, and Washington, and Provincial Agricultural Agencies in Canada can be of valuable assistance to you in getting answers to your problems of soils and other problems dealing with plant management. The following resources should be kept in mind to help you in rapid diagnosis of problems or to get help in the shortest period of time.

Cooperative Extension Service (County agents)

These agents are located in essentially every county in Idaho, Oregon, Montana, and Washington. If you need publications or reference to publications or other specialized help, these agents can either help you directly or find the right people who can. Simply look in your telephone directory in the county seat and look under Cooperative Extension Service and you will find these people listed. You would be surprised at the wide spectrum of knowledge that these people have and also the manner in which they can obtain other assistance for your technical problems.

University Specialists

The four Northwest land grant universities employ staffs of specialists in various disciplines dealing with plant and animal management. These specialists can relate to all phases of agriculture, including horticultural and agronomic problems as well as the associated disease and insect problems that you may encounter. If you cannot obtain the information you need from the Cooperative Extension Service in your local county, and they do not refer you to a university specialist, you may try to contact, by direct means, the following people:

IDAHO, UNIVERSITY OF
Dr. Ron Ensign, Forage Grasses and Legumes

MONTANA STATE UNIVERSITY
Dr. George Evans, Turfgrasses and Ornamentals

OREGON STATE UNIVERSITY
Tom Cook, Turfgrass and Ornamental Management
Dr. Jim Green, Ornamentals
Dr. Ray William, Weed Science
Dr. Joe Capizzi, General Entomology
Iain MacSwan, General Plant Pathology

WASHINGTON STATE UNIVERSITY
Dr. Ralph Byther, Plant Pathologist
Dr. Art Antonelli, Entomologist
Dr. Ray Malieke, Horticulturist
Dr. Robert Parker, Weed Specialist

Research Scientists

Dr. S. E. Brauen, Agronomist, WWREC, Puyallup
Dr. W. J. Johnston, Department of Agronomy, WSU,
Pullman

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Dr. Gary Chastagner, Plant Pathologist, WWREC,
Puyallup
Dr. George Evans, Montana State University, Bozeman

Soil Testing Locations

There are many other laboratories where soil testing can be done accurately and you should always ask them to please interpret their results. There are many different testing methods available for various plant nutrients and it is important to know the method used in order to make proper interpretation for soil or tissue levels.

The following is a list of some testing facilities in the region:

Oregon State University Soil Testing Laboratory, Corvallis
University of Idaho Soil Testing, Moscow
Marr Waddoups and Associates, Kennewick, WA
Yakima Testing Laboratory, Yakima, WA
Harris Laboratories, Lincoln, NE
Stemilt Testing Laboratories, Malaga, WA
Soil Testing Farm Consultants, Moses Lake, WA
Northwest Analytical Laboratory, Bellingham, WA

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1987 Golf Course Maintenance Study

If every U.S. golf course maintenance budget were added together, it would total to \$2.54 billion. Add an additional \$1 billion for capital expenditures and the U.S. golf course maintenance industry for 1986 was worth \$3.5 billion.

These are the results of the 1987 *Golf Course Maintenance Report*. The National Golf Foundation (NGF) and the Golf Course Superintendents Association of America (GCSAA) recognized the importance of providing superintendents and golf course operators with quantitative data on maintenance costs and joined forces to produce this report. Its purpose: to present the variations in maintenance costs in both public and private golf courses on a regional basis.

Copies of the study are available for \$90 (\$45 for NGF members) through the National Golf Foundation.

EPA Announces Action on Cadmium

Use of cadmium in the environment has been prohibited under a federal regulatory order announced August 10 by the Environmental Protection Agency (EPA). The sole exception to this regulatory action allows use of cadmium fungicides on golf course greens and tees under certain circumstances.

Specifically, cadmium use will be allowed on greens and tees only with a "mini-boom" sprayer, and applicators must wear protective clothing during mixing, loading and application of the product. Homeowners, turfgrass managers and other users of cadmium fungicides will be forced to seek alternative materials for the control of fungi on turfgrass. Additionally, use of cadmium on fairways and other golf course areas except greens and tees is prohibited.

The decision to exempt golf course greens and tees relies in part on information provided through the Golf Course Superintendents Association of America's Government Relations Program. In May, members of the EPA review team were given a demonstration of the "mini-boom" at the Congressional Country Club in Bethesda, Md.

Originally, EPA proposed cancellation of all pesticidal cadmium use. However, as the EPA announcement noted: "At the time of the proposed cancellation, EPA assumed that cadmium was applied on golf course greens and tee areas with hand held sprayers only. Since that time, the agency has received new information indicating that most golf course applicators use power spray equipment such as mini-boom sprayers."

Source: Oregon GCSA Newsletter

Is Your Lawn Ready For Ice and Snow?

Winter weather with a lot of ice and snow can be hard on your lawn. Snow is not as harmful as ice.

Snow cover generally protects the lawn from winter cold. Greatest snow damage comes from fungi that cause snow mold disease. These fungi are most always present in the turf and are activated when foot traffic, including use of skis, and also winter recreational vehicles, like snowmobiles, compact the snow close to the dormant or semi-dormant lawngresses. At this time, infection takes place that often results in large circular patches of dead turf. Lawns that have had a history of snow mold in years past should be protected by use of a fungicide during early winter. Look for one specific for snow mold at your local garden center.

Ice, as it melts and forms and melts, causes a rupture of plant tissue in and around the lawngress crown. This kills the grass in patches where ice forms and water is unable to drain off before freezing again. Now is the time to topdress depressions in your lawn that collect water so that ice will not form and this type of winter kill will be avoided.

Source: The Lawn Institute

Understanding Lime and Its Effects on Soil and Turfgrasses

by Roy L. Goss

Soils in the Pacific Northwest are extremely variable with respect to soil pH. Soils in western Washington, Oregon and British Columbia are highly weathered (leached) generally due to high rainfall during winter months. Through the process of weathering, calcium and magnesium which are supplied by lime are leached to deeper strata and the surface soil continues to increase in acidity. A large number of hydrogen ions are contributed from the breakdown of several nitrogenous compounds which cause this effect.

What Does Lime Do For Your Soil and Plants

Many plants have a rather specific pH value for optimum growth, development and yield; however, turfgrasses can generally tolerate a rather wide pH range.

1. Lime is a source of calcium and/or magnesium to be used as plant nutrients.

2. Lime raises the soil pH.

3. Lime reduces the excess amounts of aluminum and/or manganese. Both of these elements increase in concentration as soil pH lowers, particularly on many medium to heavy textured soils.

4. Lime increases the availability of phosphorus. Aluminum and manganese levels can become high at low pH values. Under these conditions, aluminum is chemically very active and may combine with phosphorus rendering it insoluble and unavailable.

5. Lime reduces potassium leaching. At low pH values, aluminum can replace potassium on the soil colloids and allow potassium to leach below the root zone. This is particularly important on sandy soils.

6. The most economical source of magnesium. Dolomitic limestone will supply magnesium very inexpensively. This source of liming material will supply both calcium carbonate and magnesium carbonate. Due to a slow release of the magnesium from this liming material, it is less subject to leaching than many other magnesium sources.

7. Lime increases available molybdenum by raising the soil pH. Although molybdenum is a micronutrient, it is still required by grasses even though in small quantities. Most of the micronutrients are more soluble and available at lower pH values than that required for molybdenum.

8. Lime improves soil aggregation; hence, an increase in air porosity. Calcium derived from the calcium carbonate in lime is the active agent in causing soil aggregation. Gypsum is frequently used for improvement in soil aggregation or soil structure. If an increase in soil pH (lowering of soil acidity) is required, then agricultural limestone or dolomitic limestone may be a better and more economical choice than gypsum. If, on the other hand, no soil pH increase is desired, then gypsum will supply calcium for the purposes of aggregation without raising the pH level.

9. Excesses of lime can raise the pH of soils and this can result in reduced availability of phosphorus, iron and most of the micronutrients.

Soils in the interior of Washington, Oregon and British Columbia and eastward are generally well supplied with

calcium and magnesium since these soils are not highly weathered as a result of low precipitation. It should be pointed out, however, that under irrigation and high use of nitrogenous fertilizers, calcium and/or magnesium can be leached from these soils and they can become quite acid.

What Determines the Rate of Reaction of Lime in the Soil?

The rate of reaction of liming materials in the soil and its subsequent effect on soil pH is directly related to the lime particle size. Finely ground liming materials (100 mesh or finer) react very rapidly and will significantly raise pH. Coarse materials from 8 to 20 mesh are of little value and have essentially no effect on soil pH over a long period of time. Liming materials ground as fine as 100 mesh produce responses in pH change more nearly equal to that expected from the application of calcium oxide (burned lime) or calcium hydroxide (slaked or hydrated lime).

Since the neutralizing efficiency of lime is related entirely to the fineness of grind, this should not be confused with neutralizing power. The neutralizing power of pure calcium carbonate is accepted as the standard and is arbitrarily set at 100%. The neutralizing power of most products used consistently for correcting soil acidity ranges between 75 and 105; hence, they will neutralize from 75 to 100% as much acid, as an equal amount of pure calcium carbonate. Values of 100 or over are usually obtained with limestones containing substantial quantities of magnesium carbonate. Inert materials in lime will account for neutralizing power of less than 100. Inert materials can include clay, sand, silt and organic matter and other foreign materials.

Types of Lime Available

High grade calcium carbonate can be referred to as calcite or calcitic limestone. This material contains essentially no magnesium. A mixture of crystalline calcium/magnesium carbonate is called dolomite when the calcium carbonate and magnesium carbonate occur in equal proportions. In other proportions they are said to be dolomitic limestone (those containing less magnesium).

Forms of Lime

1. Agricultural limestone. This is the most widely used liming agent and, in a finely divided state, is one of the most useful liming materials. To be sold as agricultural limestone in the Pacific Northwest, there must be a minimum guarantee of calcium carbonate equivalent and must meet minimum screen sizes specified by state departments of agriculture.

2. Granular lime. The terms "granular" or "pelleted" lime are used interchangeably. When very small particles of agricultural limestone are combined with a binder to produce larger granules, they are easier to spread, dust-free, and generally are of uniform size. These granules disintegrate with moisture and react the same as other liming agents. Most of these pelleted materials are very fine and may actually release quicker than standard agricultural limestone when surface-applied. We should not, however, confuse the rate of reaction with the neutralizing power. Some users believe that pelleted

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limestone will neutralize more acidity than the same amount of ordinary agricultural limestone. This may be true if the agricultural limestone is between 8 and 20 mesh. It has already been pointed out that lime particles between 60 and 100 mesh have essentially an efficiency rating of 100%.

3. Liquid liming agents. There is a relatively new process whereby standard agricultural lime is suspended with the use of kaolinitic clay to make a fluid material that can be uniformly spread on the soil surface. The advantages of this material is that relatively small quantities can be applied per unit area and all dust is eliminated. Some sales representatives claim that these materials change the pH very rapidly. This is so only because the particles that are suspended have been finely ground. Approximately one-half of the product's weight is water. Therefore, for example, 1000 lb of the suspension may only contain approximately 500 lb of liming material. Liquids or lime suspensions must be evaluated upon their calcium carbonate equivalent content to determine their neutralizing power.

4. Calcium oxide. This product is known by several names including unslaked lime, burned lime or quick lime. It is a white powder that is extremely caustic and will corrode machinery. It is manufactured by roasting calcitic limestone in an oven or furnace, eliminating carbon dioxide and leaving calcium oxide. Its purity is determined by the purity of the raw material. Calcium oxide, in its pure form, has a neutralizing value or calcium carbonate equivalent of 179%.

5. Calcium hydroxide. This material is frequently referred to as slaked or hydrated lime. It is quite similar to calcium oxide since it is a white, powdery substance that is both difficult and unpleasant to handle. Soil acidity is rapidly neutralized calcium hydroxide. Slaked lime is prepared by adding water to calcium oxide. A great deal of heat is generated when water is added and when the reaction is complete, the material is dried and bagged for shipment. The chemically pure compound has a neutralizing value of 136 and is second to calcium oxide as a neutralizing agent.

A number of other materials may be found available on the market from time to time which would include lime sludge, which is a byproduct from the paper manufacturing process. Some of these materials can have a calcium carbonate equivalent of 95%. Kiln dust is a byproduct of cement manufacturing. Kiln dust may have a calcium carbonate equivalent value of 80 to 85% and carries a good level of potassium as well. Fly ash is a fine product trapped by electrostatic precipitators when pulverized coal is burned in electric power generating stations. It is extremely variable in its calcium carbonate equivalent. There are several different slags that may be locally available. Blast furnace slags vary from 75 to 90% in calcium carbonate equivalent and can contain appreciable amounts of magnesium. Basic slag contains calcium silicate with approximately 60 to 70% calcium carbonate equivalent and is also a reasonable source of phosphorus. Electric furnace slags may have a small amount of phosphorus and have a neutralizing value of up to 80% of calcium carbonate.

Lime Requirements for Establishing Turfgrasses

To determine if your soil needs lime, check both the pH and the calcium level with your soil test report. Use the table below in the following manner: In the left hand column find the pH range corresponding to your soil. Across the top of the table find the calcium range for your soil. Go down this column until it intersects the line covering the pH range into which your soil falls. The number at the point of intersection is the number of pounds of lime to apply for each 1000 ft². For example, if your soil has a pH value of 5.8 and a calcium value of 4 meq/100 gm of soil, the amount to apply is 125 lb per 1000 ft².

Just remember that for neutralizing efficiency, the fineness of grind will influence the rate of acid neutralization. In general, lime that is ground fine enough that 90% passes through a U.S. Standard No. 8 sieve and at least 20% through a U.S. Standard No. 100 mesh sieve is satisfactory. Liming materials, then, should be worked into the upper 4-6 inches of soil well in advance of fertilizing and planting.

For liming established lawns, no more than 50 lb of agricultural limestone or dolomitic limestone should be applied per 1000 ft² per application. In general, it is much more desirable to apply 30-35 lb per 1000 ft² and repeat once or twice annually until the desired pH and/or calcium content has been achieved.

The table is taken from Washington State University's FG-41, Fertilizer Guide for Home Lawns, Playfields and Other Turf, and may vary somewhat from other state's but will, no doubt, correlate very closely.

In conclusion, just remember that liming materials are based upon their calcium carbonate equivalent and regardless of whether they are powders, granules, suspensions or sludges, they all work the same way except fineness of grind will influence the rate of reaction.

Lime for new lawns

pH Value	If Washington State University soil test for calcium (Ca) in terms of meq/100 g soil is:			
	Below 2.0	2.1-3.5	3.6-5.5	above 5.5
	(lb of lime/1000 ft ² to apply)			
4.0 - 5.0	100	150	200	200*
5.1 - 5.5	100	125	150	200*
5.6 - 6.0	75	100	125	0
6.1 - 6.5	50	50	0	0
above 6.5	0	0	0	0

* Lime rates over 200 lb/1000 ft² are not needed. The undesirable chemical condition is adequately corrected for grass by this rate, even if there isn't a major increase in pH.

Controlling Moss in General Turf

by Tom Cook and John Whisler

Lawn mosses are common throughout Western Oregon and Western Washington. Moss growth normally starts with fall rains and reaches a peak in early spring. Because grasses grow poorly in winter, mosses are able to invade and often dominate lawns in only a few months. Moss growth declines in summer as conditions become drier and turfgrass growth increases. Under shady irrigated conditions moss may grow through summer. Moss can tolerate long periods of drought in a dehydrated condition and rehydrate and grow with the onset of fall rains. The persistent and recurring nature of lawn mosses is largely due to our mild temperatures and the wet-dry nature of our climate.

Even though it has long been a significant lawn pest, surprisingly little is known about the types of moss found in turf. Worldwide only about a dozen species have been identified. In Oregon, *Rhytidiadelphus sp.* and *Brachythecium albicans* have been identified as frequent components of mossy lawns.

Cultural Control

While moss does occur in well maintained lawns, severe invasion generally occurs in neglected lawns where poor cultural conditions enable mosses to out-compete turf. Moss encroachment is generally associated with thin turf, low fertility, highly acidic soils, shade, wet soils, and turf injury from insects, diseases, chemicals, or cultural practices. Long term moss control in these situations is impossible unless cultural conditions are corrected.

In many cases turf is thin due to lack of fertilizer. Properly timed nitrogen fertilizer applications will increase turf density, vigor, and competitiveness. Late fall and spring are important times to fertilize to minimize moss encroachment. Liming soil to raise the pH to 6.0 - 6.5 will benefit some grasses in the long run but will have not direct effect on moss.

Grasses grow poorly in dense shade due to lack of light and increased disease activity. Shady lawns generally have greater moss problems than lawns in full sun. Thinning out trees by selective pruning or removing trees completely may reduce more encroachment. In some cases, it is easier to redesign the area and eliminate turf than it is to improve lighting. When planting new lawns in shady sites, be careful to select shade tolerant species. In relatively dry shade, the fine fescues will perform well. In wet shady sites, roughstalk bluegrass will persist better than other grasses.

Wet soils provide a perfect environment for germination and growth of moss spores or plant fragments. Wet soils may be due to poor drainage or excessive irrigation. Poor drainage can sometimes be improved by improving water infiltration via core cultivation, slicing, or thatch removal. These practices also improve turfgrass vigor and competitiveness. In some cases drainage can only be improved by changing grading or installing subsurface drain tubing to lower the water table. Often wet soils are due to excess irrigation. Avoid this by irrigating thoroughly and as infrequently as possible. Avoid nightly watering particularly in fall or early spring when moss growth is vigorous.

Thin turf due to injury is a common cause of moss encroachment. Unirrigated lawns turn brown and thin out during summer. When fall rains come, these lawns may not recover fast enough to compete with moss. Lawns injured by chinch bugs in summer are often slow to recover in fall and are subject to moss encroachment. Severe dethatching in fall may also predispose the lawn to moss because turf is thin when fall rains come. Proper culture which encourages healthy dense turf during the moss season will reduce moss encroachment in most situations.

Mechanical Control

Moss can be physically removed by dethatching in early spring. Optimum timing is mid-March through April when moss is still healthy and vigorous. With a flail type dethatcher (available at rental agencies) as much as 75% of the moss can be removed physically. Dethatching should be followed by nitrogen fertilization to stimulate turf growth and increase density. Where moss is severe, chemical sprays applied after the dethatching operation will enhance control further.

Chemical Control

Many chemical materials are effective for killing moss in lawns. Most commercially available formulations contain metals such as iron (Fe), copper (Cu), or zinc (Zn) as the active ingredient. Cryptocidal soaps are also available. All of these materials can kill moss but some are more effective than others.

Cu and Zn are good moss killers on roofs and walks and will not stain structures. Unfortunately Cu and Zn compounds act slowly as moss killers and in lawns may injure desirable turf grasses.

Iron compounds are highly effective moss killers in turf. Moss kill is rapid and Fe also stimulates a "green-up" of turf. Complete fertilizers with iron often give good moss kill and stimulate grass growth which improves turf appearance. Iron stains concrete and many other surfaces, so it must be applied carefully. Salts and chelated iron products applied as liquids are generally effective on moss at 0.5 - 1.0 lb. Fe/1000 sq. ft. Dry formulations or fertilizer plus iron products are generally effective at rates of 0.8 - 1.5 lb. Fe/1000 sq. ft. The key to effective control with iron compounds is thorough coverage of moss foliage. Liquid materials and dusty fertilizer plus iron products are very effective in providing thorough coverage and control of moss.

Cryptocidal soaps are relatively new chemicals for moss control. Soaps act as contact killers and tend to bleach out the moss to a whitish-yellow color. This is in contrast to the dark brown color of moss treated with iron. Soaps are safe on sidewalks and other structures. Typical

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application rates for cryptocidal soaps are 2.5 qts product/1000 sq. ft. Limited testing at OSU indicates these rates are quite effective.

In older literature, ammonium sulfate is often included as a moss control material. Extensive test at OSU indicate it has little impact on moss but does stimulate turf growth which often masks the appearance of moss.

“Lazy” Grass

Just over one year ago, in the October 1986, Vol. 76 Turf Line News, an article was reprinted from the Edmonton Journal, August 25, 1986. It outlined Dr. Jan Weijer's (Professor of Genetics at the University of Alberta) program for producing new grass varieties from selections of wild grasses grown in the Rocky Mountains. World wide media coverage has made such claims as “beautiful green grass needing mowing once per year, drought resistant, needs no fertilizer and is self weeding.” He has been on Front Page Challenge, Good Morning America as well as interviewed by People Magazine.

On January 6, 1987, The Province newspaper ran the following article:

\$7.7 Million for No-Mow Grass

News Services

DMONTON – It's a product with limited future growth. But that's why a grass seed company is paying a couple of University of Alberta botanists millions for their work on a lawn that has to be mowed only once a year.

Texbeau Industries Inc. of Edmonton has paid \$7.7 million to genetics professor Jan Weijer, technician Barry Hill and the university for 19 varieties of their miracle, slow-growing grass.

Dr. Weijer will also get an incentive bonus of one million shares, making him the largest single shareholder in Texbeau.

The grass, which will be sold for 30 per cent more than most grass seed, should be ready for marketing in about four years.

A study by the university suggests the company could capture 20 per cent of the market, since most varieties of grass today were developed about 40 years ago and have become susceptible to disease.

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It has now been confirmed that Dr. Weijer has agreed to give an address regarding these grasses at the Western Canada Turfgrass Association Convention to be held February 28th to March 2nd, 1988 at The Empress in Victoria, B.C., Canada.

Add Color to Your Golf Course

Golf course superintendents have historically worn green-colored glasses. In most cases, this has not been a handicap; players were perfectly content with green grass, some trees for shade and a few shrubs. This doesn't mean that golf courses are devoid of color – trees, shrubs and ground covers do offer some color – but it is often secondary to the plant's functional use for shade, screening and erosion control.

Using Color Effectively

Although the most eye-catching displays can be large beds, small beds strategically placed can be equally effective. When conditions limit or prevent the use of ground beds, use large pots, planters or hanging baskets. Portable containers offer the flexibility of bringing color into or out of an area as plants peak or fade, thereby avoiding the usual downtime between bed changeovers.

If you are new at using color, you may want to contract landscape color design, installation and maintenance. If you go it alone, design with height, spread, color, texture, bloom time, background, exposure and soil conditions in mind. Experiment with annual and perennial combinations. Stagger bloom times so you'll have an ongoing display of color.

Don't plant more than you can maintain. A small, well-manicured planting is much more attractive than a large, poorly kept one. Not all annuals and perennials are high maintenance. In fact, many will compete with weeds and may naturalize. Consult the chart for suggestions.

Planting in a poorly prepared bed is a waste of time. As you break the soil, incorporate amendments, like humus, sand or fertilizer, depending on your soil's needs. In containers, use an artificial soilless mix. Adequate moisture, maintenance, fertilization and weed control are essential. Container plantings require more frequent watering than those in beds.

Source: *Grounds Maintenance*, November 1987



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Regular or Temporary Greens

The answer to the question of whether or not to allow play on regular greens through the winter is very difficult to answer precisely because so many variables are involved. These variables include the soil – its physical makeup, its physical properties and its moisture retention qualities; the grass plant – whether it is *Poa annua*, bentgrass or a combination of the two; play – the amount and duration; and finally the weather – its extremes and fluctuations.

The difficulty of answering this question is that any one of these variables can change. In the case of the weather, this change could easily be daily or even hourly. Play at one time may cause no problems, but play even an hour or so later when conditions become unfavorable could cause serious problems to the soil and grass.

The following reasons simply and basically outline the agronomics of it:

(1) If the grass plant is hurt or even worn from wear and tear, at these times there is little or no regenerative growth to replace the injured tissue that has been insulating the plant's critical growing point or crown. The crown is then much more susceptible to desiccation, diseases and direct low temperature.

(2) In late fall or early winter when the frost first enters the ground, the grass blades become frozen and brittle. Traffic at these times will break and crack the stiff and frozen blades, causing a rupturing of the cell walls and a disruption of the protoplasm in the cell. This type of injury is sometimes referred to as "winter burn."

(3) Soil, the medium that determines the performance, success and failure of the green can be severely, perhaps irreversibly, harmed. Traffic on moist soil during these times of the year will result in detrimental soil compaction. Compacted soil brings on many problems.

(4) Play on greens when there is standing water or slush can cause severe problems. Traffic forces this water or slush into more intimate contact with the crown of the grass that is already waterlogged or hydrated. This then makes the grass plate much more susceptible to ice damage (from freezing) and low temperature kill.

(5) Some of the most serious types of injury occur to the grass plant and soil when the frost is just going into the ground (in the fall) and when it is just coming out of the ground (in the spring). When this is occurring, traffic on greens will tend to shear off the grass roots underfoot between the soft upper inch or two that thaws out first and the continued frozen soil further down. Besides shearing off the grass roots near the surface, soil compaction can also be accelerated.

(6) With any type of winter injury, whether from snow mold, ball marks, soil compaction, desiccation or foot traffic, there is a stronger possibility that *Poa annua* will fill in the damaged areas. With more *Poa annua* in greens there is more potential for summer turf problems.

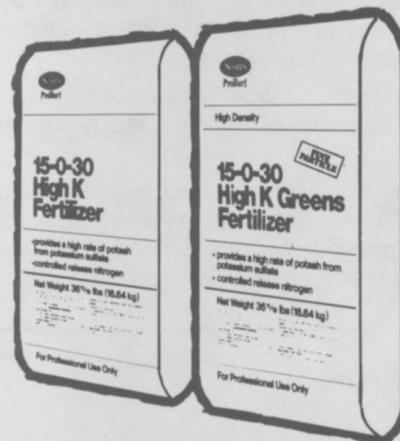
(7) When you have extensive winter play on greens there is usually more spring and fall maintenance work that must be performed to bring greens up to their highest playing potential. Winter play is certainly reflected in the increased maintenance work involved in aerations, top-dressings, spikings and overseedings.

We realize that golf more than ever is a year-round recreational activity. When putting greens are properly constructed and maintained, and when weather conditions are right, winter play on greens can cause few problems other than a browning of the turf (winter burn.) However, when conditions are not favorable, especially when the frost is just going into the ground in the fall and just coming out of the ground in the spring, major problems occur. If play is allowed on regular greens, the days must be carefully chosen. Someone must make these day-to-day decisions with the future condition of the course in mind. It should not be kept open or closed simply because a nearby course is open or closed. Each course is an individual problem.

One way to insure against possible problems is to have and to use winter, or alternate greens. These greens should be used the entire winter season or when the conditions for playing the regular greens are unfavorable and injury to them could occur.

Source: Massachusetts Golf Association Newsletter, Fall 1987

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The Art of Finding, Training and Keeping Seasonal Workers

by Richard Bussert

Most golf course superintendents rely upon seasonal and part-time employees. While many of us are fortunate to have assistants, foremen, and mechanics, who work year-round, the bulk of routine maintenance operations are performed by employees who might work only three to five months a season. Thus, finding, hiring, training, and keeping these employees is crucial to our success, for an efficient crew is the heart of a well-run operation.

Peak man-hour requirements on the course usually occur when there is not enough help. The busiest period falls between early April and mid-June, and after slowing somewhat, picks up in late August and September. In the spring, the rains and warmer temperatures increase mowing and grooming responsibilities, pre-emergent controls are applied, the irrigation system is brought out of hibernation and must be fine-tuned, flowerbeds must be designed and planted, fertilizing, trimming, and spraying must be accomplished in these hectic weeks. The list of jobs usually exceeds the number of people to perform them.

Judging from the numerous newspaper advertisements earlier this year, many golf course managers have difficulty in finding personnel to help with these tasks. When placing ads, it seems wise to omit the telephone number from the job description, and rather, encourage potential employees to take the initiative to apply in person. By listing a phone number, one is deluged with callers whose first question is, "How much ya' payin' there, anyway?"

The screening and selection process can be eased by enlisting the help of state and federal agencies. This season, **Job Service**, a state employment agency, was contacted and informed of our need for golf course laborers and machine operators, as well as a mechanic. When a person sought one of these positions, the agency would pre-screen the potential employee, then phone the golf maintenance office with information on that person. This worked great! Not only have we hired competent groundsmen and operators, but also an excellent golf course mechanic, who read the job description at the agency, and possesses the skills for this specialized job.

High school students can complement any staff, and provide the employer with the possibility of returning back to the job for several seasons. While students cannot work full-time until school is dismissed, they can be taught skills while working part-time on weekends early in the season, a "Spring Training," if you will. While it might be a bit awkward to show someone the intricacies of mowing greens on a busy Saturday morning in mid-May, these employees can help conserve labor dollars by performing weekend work on straight-time. Before assigning any tasks to employees under 18, check with the State Department of Labor for restrictions which might apply to machine operation and hours of employment, and secure the proper working papers from the workers.

Other sources include college students and semi-retired persons. The latter often seek employment for 15-20 hours a week, and can be utilized in many ways; golf cart attendants, machine operators, and gardeners, to mention a few. Older employees are conscientious, show

respect for machinery, and possess the patience to perform some of the more routinized tasks. While many college students return to school in mid-August, just as the work load again picks up, students at local high schools often seek hours in the fall to help with school expenses. Finally, give everybody at least a day off per week. Workers cannot be expected to give up their social life in order to mow at 5:00 a.m.

Nothing makes your job easier than being backed by a spirited, motivated crew. Utilizing both younger and older employees for specific tasks can relieve the superintendent of just another headache, and trained employees who return for several consecutive seasons can help to lessen the changing work load on the links.

Source: *Our Collaborator (NEGCSA)*

Terms You Should Understand

PERRENIAL: Any plant which, had it lived, would have bloomed year after year. See **ANNUAL**.

ANNUAL: Any plant that dies before blooming.

HOSE: Crude, but effective and totally safe type of scythe towed through gardens to flatten flower beds and level vegetable plantings.

FREESIA: Where the excess vegetables are put.

SPRING: The difference between the first day of spring and the first spring day is sometimes a month.

Source: *Turf Talk, Wy-Mont GCSA*

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Northwest Developments

Don Clemans is the new O.M. Scott & Sons representative for the Northwest area. He comes with a long background as a golf course superintendent. His address is 1519 N.E. 102nd Ave., Vancouver, WA 98686. (206) 254-8543.

The **Chas. H. Lilly Co.**, Portland, Oregon has expanded its Seattle facilities by adding a new 50,000 sq. ft. distribution center.

"Several years of double digit sales growth requires Lilly/Miller to expand its manufacturing and distribution capabilities," said company president Fred Trullinger.

The new facility, 6000 E. Marginal Way, Seattle, opened November 1. It houses consumer and commercial product inventories for distribution through Washington, Idaho, Montana, Alaska, and Hawaii. Sales order staff and commercial products sales staff will both be housed at the facility.

It will also be used to package Lilly/Miller seed products.

The existing facility, 5200 Denver Ave., Seattle, will be used to produce turf and garden fertilizer products, plus house consumer product sales staff and manufacturing.

Notification Risk Bill Passes

The U.S. House of Representatives recently passed the High Risk Notification Bill (HR 162). It now goes to the U.S. Senate. This bill would establish a new system that would have employers pay for continued medical monitoring and testing of present and former workers in occupations identified by the federal government as having a high risk of producing work-related diseases.

The House defeated a bill that would have had government rely more on the new OSHA Hazard Communication program.

If workers in firms, either grower, retailer, or landscaper, are exposed to pesticides, then these firms would probably be targeted by this legislation.

Fertilizer Guidelines

The feeding of plants and grass is a complicated and quite technical procedure, but the essential facts about fertilizers can be quickly mastered. Just remember the number 3-2-5. They refer to: the three basic types – messy, stinky, and messy/stinky; the two sizes they are available in – tidbit (4-ounce packet) and blammo (220-pound sack); and the five methods of application – too much, too little, too early, too late, and wrong kind.

Source: *Turf Talk*, Wy-Mont GCSA



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1987 Grounds Maintenance Salary Survey

Superintendents, presidents, directors; owners, partners, managers and supervisors are the primary respondents to the fourth annual *Grounds Maintenance (GM)* magazine salary survey.

If there were such a person as the "median" grounds care manager or supervisor he or she would:

- Supervise 9 workers or serve 97 customers.
- Maintain 147 acres.
- Have spent slightly less than 7 years in his present job and a shade more than 13 years in the grounds care industry.
- Have a median of 16 vacation days, 12 days of paid sick leave and 10 paid holidays a year.

According to the results of this year's survey, the job category that has the best combination of salary and benefits is landscape managers of office and industrial parks.

The two benefits *GM* readers don't have but want most are dental insurance (15% of the respondents want it but don't currently have it) and a vehicle for personal use (11%).

See **Grounds Maintenance** October 1987 for complete report on survey results.

GCSAA Fact Sheets Explain Golf Course Environmental Impact

GCSAA has made available a series of fact sheets on environmental issues related to golf course maintenance practices. These fact sheets – which cover subjects such as soil conservation, water use and pesticide application – are available to the public upon request through GCSAA's Office of Government Relations.

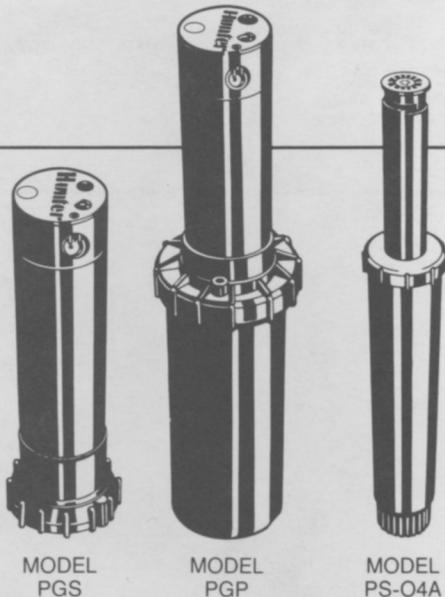
Public requests for information on the environmental effects of golf course maintenance practices have increased as land and water availability in urban areas has decreased. GCSAA's new fact sheets represent one part of the industry's effort to meet such requests.

"People are more conscious of resource use today, and we feel that golf courses contribute positively to the process of resource conservation and management," said GCSAA President Donald E. Hearn, CGCS. "Proper planning for growth and development requires that good information be made available, and that is what we are doing."

Positions Available

The City of Auburn is looking for an Apprentice Maintenance Worker I. Salary \$18,000-\$20,000. Contact Kevin Van at (206) 931-3005.

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Calendar of Events

- February 16-18** Inland Empire GCSA & WSU Inland Ornamental Seminar – Contact Toni Fitzgerald (509) 456-3942.
- February 17** Inland Empire GCSA Inland Northwest Turf and Landscape Trade Show – Contact Jones & Associates (509) 466-1486.
- February 17** WSU Flower Production Conference – Contact Curt Moulton (206) 344-3900
- February 18** Lilly/Miller Seminar on Maintenance/Renovation – Contact James Chapman (206) 762-0818
- February 19** Northwest GSSA Regular Meeting – Contact Ron Coleman (206) 825-3942
- February 22-23** United States Golf Association Regional Conference – Contact (408) 624-2011
- February 25** Pacific Agro Turf and Ornamental Seminar – Contact Stacy 1-800-722-2476
- February 28 -
March 2** Western Canada Turfgrass Association Conference – Contact Ken Warner (604) 434-5037
- March 3-4** Wy-Mont Spring Meeting – Contact Jane R. Barry (406) 586-6042
- March 8** NTA Board of Directors Meeting – Contact Blair Patrick (206) 754-0825
- March 14** Inland Empire GCSA Meeting – Contact Tom Wolf (509)
- March 17** Northwest GCSA Regular Meeting – Contact Ron Coleman (206) 825-3942
- March 18-20** Oregon Association of Nurserymen Yard, Garden and Patio Show – Contact
- April 12** Lilly/Miller Seminar on Maintenance/Renovation – Contact James Chapman (206) 762-0818
- April 21** Lilly/Miller Seminar on Maintenance/Renovation – Contact James Chapman (206) 762-0818
- June 20** NTA Board of Directors Meeting – Contact Blair Patrick (206) 754-0825
- September 18** NTA Board of Directors Meeting – Contact Blair Patrick (206) 754-0825
- September 19-22** NTA NORTHWEST TURFGRASS ASSOCIATION CONFERENCE TRADE SHOW – Contact Blair Patrick (206) 754-0825

Calendar contributions are desired and should be submitted to the NTA Office.

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