



Perennial ryegrass or bentgrass is seeded into poa-infested areas with a slit seeder.

bentgrass at 20 pounds per acre with each application.

"We had a 4X8 check area on the 178 yard marker," explained Otto. "We had two Cutless applications; in May we applied 1.6 pounds per acre and in August, one pound per acre. The results were dramatic, especially after the spring application."

Otto reports little or no growth of poa for three to six weeks after application. "The bent had good color and there were some stolons in the poa." Otto also reports a 20% reduction of clippings.

Otto thinks he's found an excellent management tool to improve turfgrass hardiness. "This can be accomplished by either letting the existing bent spread or incorporating desirable grass species by overseeding," says Otto.

Otto says he plans to continue his program and use it on other fairways. "Reducing clippings will be a big advantage on fairways where clippings

Otto thinks he has found an excellent management tool to improve turfgrass hardiness.

are collected."

Grundman, a turf specialist and regional agronomist for Northrup King based in Illinois, told WT&T the need to

The Poa-busters, Dr. Gale Work (kneeling), Bob Musbach (hands on hips), and Dick Baade (bending over), evaluate results of overseeding/growth regulator treatment.



find aggressive type turfgrasses is paramount since more golfers are playing more rounds. "The daily fee and semi-private courses are receiving more play and need turf to withstand that play," says Grundman. "Private courses are looking for more disease resistance."

Grundman is very much in favor of working with Mother Nature and using grasses in a natural selection process. "Knowing what grasses to grow where for the situation that exists is the key," Grundman explains.

Grundman says there is some concern that Rubigan will shorten the root system of other plants. Grundman says he has seen another product, Prograss, kill poa and perennial bluegrass species, but leave rye alone.

WT&T

(See related story next page.)

Competitiveness of Ryegrasses with Annual Bluegrass

by R.W. Daniels

Reality is that until *Poa annua* can be eradicated, turfgrass growers must try to manage the existing invasion of this turf species.

Research performed at the Nova Scotia Agricultural College during 1983 was directed to:

A reduce the invasion of annual bluegrass in a turfgrass stand and,
B reduce the decline of this species in turfgrass where it presently exists.

All experiments have been conducted both in growth chambers and field plots.

Long term (three years) effects of competitive factors will be evaluated.

Test results

Annual bluegrass (*poa annua* L) and five perennial ryegrass cultivars, Citation, Derby, Linn, Loretta and Manhattan, grown in

monoculture and in competition with annual bluegrass were compared in a controlled environment pot culture.

Ryegrass cultivars grown in monoculture showed a wide variation in their competitive ability as evaluated by number of tillers, leaves and total leaf area.

These same factors made them competitive with annual bluegrass. The ryegrass cultivar Citation was the most competitive against annual bluegrass. All other tested cultivars were about equal in competitive ability. Little difference between cultivars was evident in terms of fresh weight and dry weights of tops and roots of the plants.

To reduce the decline of annual bluegrass and evaluate the performance of ryegrass cultivars as competitors in established turfgrass stands, various

forms of nitrogen were used.

All cultivars of perennial ryegrass Citation, Linn and Manhattan and annual bluegrass were fertilized with NH_4 (ammonia form of nitrogen) and NO_3 (nitrate form of nitrogen). Ratios of $NH_4:NO_3$ used were 100:0; 75:25; 50:50; 25:75 and 0:100. The ratio of $NH_4:NO_3$ of 25:75 produced the most superior turfgrass plants in terms of competitiveness (number of tillers, leaves and total leaf area.)

In fact, all plants evaluated responded best to this fertilizer ratio. The second best ratio of $NH_4:NO_3$ was 50:50. The poorest plant growth was from plants fertilized with $NH_4:NO_3$ ratio of 100:0. □

Daniels is a professor at the Nova Scotia Agricultural College. Reprinted from December, 1984, *Greenmaster*.

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PROBLEM SOLVERS

By Balakrishna Rao, Ph.D

Silent killer

Problem: Three years ago we bought a house on a lovely treed site. Of course we paid more because of the beautiful trees. Now nearly all of the trees within sight of the house are dying or dead. I've had several tree companies tell me it's "construction damage." What do they mean and what can we do to save the few trees that haven't died? (Wisconsin)

Solution: Your situation, unfortunately, is not uncommon. Construction damage occurs primarily because of site development practices, which are expedient but also are death to trees. Most of the tree problems boil down to root loss and wounding. Trees and tree roots need water, nutrients, and air (oxygen) to live and grow. When the grade is lowered, roots are severed, wounded, and otherwise destroyed.

When the grade is raised, as by fill, the root system is buried and the roots do not get enough oxygen. The soil on building sites is usually compacted by heavy equipment run over and building materials piled on top of it. Compacted soil contains smaller openings (pores) than undisturbed soils. Rainfall runs off rather than into the soil.

An important function of roots that requires air is movement of soil-borne nutrients into the tree. Frequently the upper layer of soil (topsoil) is stripped away leaving behind the heavier subsoil. Topsoil is the soil layer (horizon) of highest organic content. Bacteria, fungi, and other organisms living in the topsoil convert mineral nutrients to forms the tree can use. Subsoil retards plant growth because it is heavier (denser) than topsoil, has less organic matter and because it lacks or contains fewer beneficial microorganisms, i.e., mycorrhizae. The tree, because its root system has been impaired, is not getting enough water and nutrients to sustain itself much less increase in size. In many cases the construction damaged tree is barely alive. It is well known to tree experts (arborists) that stressed trees are more likely to become diseased or attacked by insects. Because the trees resistance is down, they often succumb to secondary agents such as borers and decay fungi.

It can take as long as three to seven years after construction before the damage is obvious above ground. Dead and dying trees are the end result. Less obvious are the following dieback and decline symptoms which precede death and indicate that the tree is in trouble. Individual branches die from the ends back toward the trunk (tip dieback). The entire tree dies progressively from the outside inward and/or from the top down. The leaves are off-color, often yellow (chlorotic), and undersized (stunted). Leaf margins and areas between the veins may turn brown (scorch). Other features indicative of construction damage, particularly a change in grade, are trunks with no flare or taper.

Trees do not enter the soil like telephone poles. Tree trunks are normally wider near the soil line. Some trees have buttress roots which flare out from the trunk. Wounds provide openings for decay fungi.

The presence of conchs, bracks, and mushrooms on the trunk and branches or arising from roots are signs that decay organisms are present. What can be done for the tree once these signs and symptoms are present? Basically three things:

- 1 fertilize
- 2 aerate, and
- 3 water

Fertilizer will stimulate root and shoot growth. Fertilizer invigorates the tree, making it more resistant to pests. Aeration permits air to reach the roots and increases oxygen levels within the root zone. Root growth is improved, and more roots can move more nutrients and water into the tree. Trees with damaged root systems cannot tolerate droughts and must be watered during rainless periods.

Supplemental watering, usually the homeowners responsibility, must not be overlooked.

Pesticides are needed to protect the trees from additional stresses. Even with proper remedial treatment full recovery or 100 percent survival rarely, if ever, occurs. A better approach is to change site development practices. If at all possible,

- 1 Don't strip or permit removal of the topsoil.
- 2 Don't disturb or change grades within the root zone.
- 3 Don't pile anything on top of the existing soil around a tree.
- 4 Keep construction equipment, trucks, and other machines away from the trees.

In other words, do not do anything which would adversely affect the roots. Sad experiences such as yours affirm that it is better to treat the trees properly before the damage occurs than to try to save them after the damage has been done.

Tall fescue is stubborn

Problem: Is there any chemical which can be used on Kentucky bluegrass lawns to selectively remove tall fescues? (Michigan)

Solution: At the present time there are no chemicals on the market registered for selective removal of tall fescues from Kentucky bluegrass lawns or other turfgrass lawns. However, reports from South Dakota suggest that Hoelon, a herbicide manufactured by American Hoechst Corporation, is showing good results in controlling tall fescues in Kentucky bluegrass lawns.

Hopefully, we will see this product labelled for turf use in the near future.

WT&T



Balakrishna Rao is Director of Lawn Care Technical Resources for Davey Tree Expert Co., Kent, OH.

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Insect control top priority for Fla. courses

by Shelly Sorkin

The cost of an unchecked insect infestation is no secret to golf course superintendents, especially those in Collier County, FL, where there are more than 30 executive and regulation golf courses for 90,000 residents.

"Maintaining the county's courses to professional standards without destruction from insects and weeds is vital to the county's economic stability," notes Charlie Lowery, Collier County extension agent.

The importance of golf as a business in Collier County is indicative of Florida as a whole. There are approximately 730 golf courses in the state serving local residents and millions of tourists each year.

In southern Florida, sod webworm is particularly damaging to St. Augustine, bermudagrass and bahiagrass from April through December.

"The effects of uncontrolled sod

webworm infestation are devastating," says Dr. Jim Reinert, entomologist who just moved to Texas A&M University from the University of Florida. "Without any control measures, a golf course can be stripped to bare stolons!"

While at the University of Florida, Reinert conducted several studies to evaluate the effectiveness of a variety of insecticide programs. One such test compared about 15 turf insecticides for sod webworm, including the newly-registered Orthene for turf.

"The test plots showed an average population count of 38 to 39 sod webworms and other insect species per four square feet," says Reinert. "All the products offered control, but within four days of applying 1-1/3 to 2-3/4 pounds per acre of Orthene, the population was reduced to zero."

In addition to bermudagrass, bahiagrass, and St. Augustine,

Orthene can be safely applied to dichondra, bluegrass, fescue and bentgrass.

Broad spectrum insect control is the main concern at Royal Poinciana Golf Club in Naples. Caterpillars, aphids, thrips and host of other tree, ornamental, and turf insects on 440 acres were the responsibility of superintendent Clint Smallridge, C.G.C.S., until recently.

"Many of our plants are sensitive to chemicals," Smallridge pointed out. For example, malathion and diazinon will defoliate hibiscus. Orthene, on the other hand, won't hurt the existing plants and offers the needed insect control without the worry of plant replacement."

Smallridge accepted a position with LESCO last November to develop a series of wholesale stores in Florida.

With 14.3 million golfers playing more than 15 rounds per year, and 3.5 million occasional golfers, a great deal is on the line. As Lowery says, "Golf course maintenance is more than just maintaining a golf course...It's also marketing and public relations. It's made a little easier with the help of effective chemical control measures." **WT&T**



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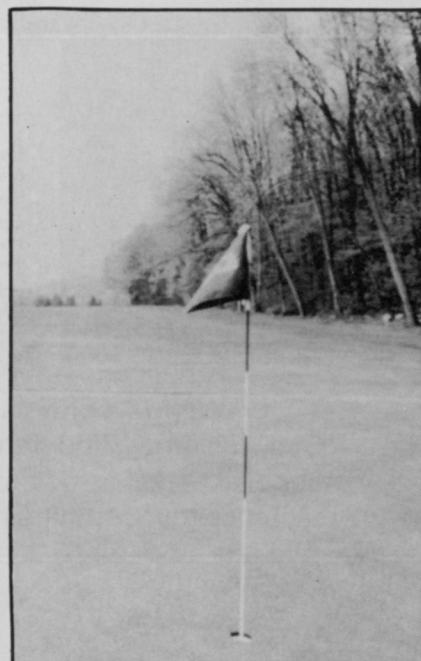
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In southern Florida, university and extension testing compared 15 turfgrass insecticides for control of sod webworm infestations.

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Target Chemical Company's Pest Management Seminars, Feb. 12, 14-15, 19, 21-23. Fresno, CA, San Jose, CA, Phoenix, AZ, Industry, CA, respectively. Contact Carol Vera, 17710 Studebaker Road, Cerritos, CA 90701. (213) 865-9541.

International Erosion Control Association Conference, Feb. 23-24. Fisherman's Wharf, San Francisco. Contact the IECA, P.O. Box 807, Freedom, CA 95019.

Nassau/Suffolk Professional Turf and Plant Conference, Feb. 25. Colonie Hill, Hauppauge, Long Island. Contact NSLGA, 59 Orinoco Drive, Brightwaters, NY 11718. (516) 665-2250.

South Carolina Turfgrass Association Ground Maintenance Short Course, Feb. 27. Holiday Inn-Northeast, Columbia, SC. Contact Paul Ellis, III, City of Greenville Parks and Recreation Department, P.O. Box 2207, Greenville, SC 29602. (803) 233-8158.

Midwestern Chapter International Society of Arboriculture joint meeting with Nebraska Arborists Association, Feb. 27-March 1. New Tower Inn, Omaha, NB. Contact James Rocca, Conservation Department, P.O. Box 180, Jefferson City, MO 65102. (314) 751-4115.

North Dakota Turfgrass Workshop, Feb. 28-March 1. Town House Motor Hotel, Fargo, ND. Contact Cynthia Ash, Box 5012, North Dakota State University, Fargo, ND 58105. (701) 237-7854.

MARCH

Canadian Turfgrass Conference, March 3-6. Winnipeg Convention Centre, Winnipeg, Manitoba. Contact Mary Gurney, 698 Weston Road, Toronto, Ontario M6N 3R3. (416) 767-2550.

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the overseeding process. Multiply that times the number of courses in the area, and water woes are justified.

Says Caranci, "The day is coming when that drop of water will be just like the food you put on the greens to keep them green. Water will be critical."

Labor

Skilled labor is plentiful in the region. Most crews are unionized, well-paid and so secure in their jobs that turnover

is minimal. An average tenure of 15 to 25 years is not uncommon. The average superintendent holds his position for about five years before moving on.

Salaries vary according to the wealth of the club and the background skills the individual possesses. Terry Lortz observes, "When a superintendent is a working superintendent and must be a jack-of-all-trades, they are underpaid."

Bud Lombard adds, "Here it is a 12 month job. In general, superintendents are paid a little more than in other areas, but, in most cases, it is probably not enough considering the hours they have to put in and the perfection that is expected."

Mongiello contends superintendents are a unique bunch of people, "they are highly critical and very creative. Everyone has different standards for reimbursement. Some want to be rewarded with tangible rewards like money. Vacationers pay high dollars to come here. I work here, in a Garden of Eden. Part of my reward is that when I drive out of here and I can look back and say 'isn't that something beautiful I've created.' Most successful superintendents are rewarded in many ways for their efforts."

The area is also fostering a new breed of superintendent; one as well-versed in budgets and management as he is in agronomics.

Mongiello of Eldorado typifies the best of both worlds. He holds a university degree and maintains a private research station at the course where he runs test plots and is capable of diagnosing and prescribing when disease and insect problems arise.

The Hi-Low Desert Golf Course Superintendents Association is a good example of the changes that have taken place over the last 10 to 15 years among golf course superintendents.

No longer principally a social organization, the members pride themselves on the quality of their educational programs and the camaraderie of the association's membership. Approximately 60 percent of the area's superintendents belong.

The association provides a monthly forum for sharing concerns and solving mutual problems. They are eager to help newcomers with the backlog of their experience. The success of any one of them reflects on them all.

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Hartley Bennett is a freelance writer living in Riverside, CA.