interval ownership apartment. When we came home, our son also bought one, although he'd never seen it."

Member courses receive free publicity through their listing in the course directory in *The Golf Traveler* magazine, through possible editorial coverage in the magazine, or through mention in The Golf Card's occasional advertising in national magazines such as *Golf Digest.*

Additional exposure can come from cardholders bringing nonmembers to play your course and from word-of-mouth advertising from golfers who visit your course and tell others about it.

It is possible, too, for a course or a designated person (such as your pro or general manager) to receive commissions on card memberships sold through your pro shop.

Goals for The Golf Card in the future, according to Ben Lampert, "evolve around being able to provide more and more benefits for participating courses. These potential services would include group casualty and liability insurance, tournaments, a centralized purchasing division, and management training."

For now, however, probably the best testimony to the effectiveness of The Golf Card would be the words of a current member course owner. Ed Membery, owner/operator of Golf/Ski Haven Country Club in Ontario, recently wrote to the Canadian division of The Golf Card:

"Golf/Ski Haven has been a member of The Golf Card group in Canada for only 3 months, and we are already reaping the benefits. It has been especially beneficial in boosting our weekday play. It is not restricted to weekdays only, but we find that most users of the card are tourists and they prefer to play during the Monday-to-Friday periods to avoid the weekend crowds.

"My purpose in writing this testimonial is to convince other Canadian golf clubs to join The Golf Card group as the more we have listed, the better we can attract our American visitors."

That, really, is how The Golf Card can help an operator build his business: by attracting more golfers to his course. □

Nitrogen fertilization of bentgrass greens

by Charles H. Darrah

Few turf surfaces today receive the care and attention of a golf course putting green. The overall performance of the green is highly dependent on its nutritional status, mowing, irrigation and syringing programs, and topdressing and aerification schemes. In addition verticutting, slicing, and spiking practices, as well as pesticide applications are important in maintaining the proper surface for the game of golf. However, none of these practices is more talked about than nitrogen fertility.

Nitrogen fertilization practices may be the key to the successful management of putting greens or the ax of their destruction. It is rare to find two superintendents who follow the same nitrogen program, and rightly so. Nitrogen fertilization must be tailored to the climatic conditions of the course, the bentgrass variety in use, and the soil used in the green. These conditions will vary from course to course and quite often from green to green on the same course. In addition the availability of other plant nutrients, mowing, watering, cultivation, and other management practices will influence the nitrogen needs of a putting green.

With all of these factors influencing the nitrogen requirement and interacting with the amount of nitrogen used, nitrogen fertilization of bentgrass putting greens becomes more of an art than a science. Still there are scientific principles to be kept in mind, and research data on which to base the design of a nitrogen program.

Creeping bentgrass has a nitrogen fertility requirement which varies from 0.8 to 1.4 pounds per 1,000 square feet per growing month on greens and 0.5 to 1.0 pound on higher cut turfs. (J.M. Duich and H.B. Musser, 1960) If we assume an 8-month growing period, such as in Maryland, from mid-March to mid-November, the yearly nitrogen requirement on a bentgrass green would be from 6 to 11 pounds of actual nitrogen per 1,000 square feet annually. Certainly one would not consider applying this amount in equal increments over the entire growing season. Instead, research has shown that one-half to three-quarters of the total nitrogen should be applied during the fall and early winter. (A.J. Powell, 1967; A.J. Powell, R.E. Blaser, and R.E. Schmidt, 1967)

In experiments conducted in Virginia, root growth rate of bentgrass maintained at ¼ inch was greatest from October to December, increased only slightly from late December through February, and then increased at a moderate rate until June. This response was found under nitrogen rates ranging from 0 to 8 per 1,000 square feet over the fall and early winter. It is interesting to note that this root growth response occurred even where no nitrogen was applied. In fact, it was found that applications of nitrogen in the fall and early winter reduced the immediate root growth but enhanced the future root production in the early spring. Another important finding was that the amount applied — 1 or 2 pounds per 1,000 square feet — made little difference in spring root production, however lower root weights were measured for monthly rather than bimonthly additions of nitrogen.

These studies emphasize the importance of providing nitrogen to bentgrasses in the fall. Once temperatures have begun to decline in late September or early October, bentgrass greens should receive 1 to 1½ pounds of nitrogen per 1,000 square feet. One to two additional bimonthly applications of similar amounts of nitrogen should then be applied to promote the best total root growth in the spring. Using less nitrogen in the fall and early winter will result in poor color and a lower photosynthesis rate, which results in less carbohydrates being available for foot growth. (A.J. Powell, R.E. Blaser, and R.E. Schmidt, 1967)

Nitrogen fertilization in the late spring and early summer must be tailored on an individual basis. Although it is important to maintain a green, actively growing surface on a putting green during the summer,

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Charles H. Darrah is a turf specialist with the Cooperative Extension Service, University of Maryland.

Flowable fungicide

Spotrete-F is a stable flowable thiram fungicide for the control of dollar spot, brown patch, and gray and pink snow mold on turf. The fungicide particles are finely micronized and remain suspended with the help of anti-caking agent. Product of W.A. Cleary Chemical Corp., Spotrete-F is EPA approved.

Circle 205 on free information card

Undermounted rotary mower

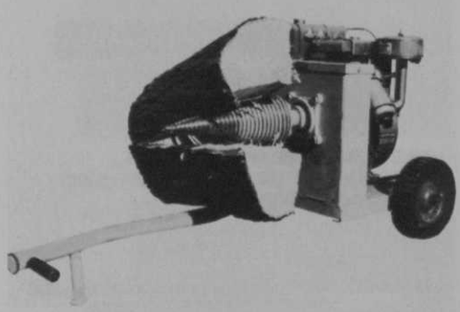
Woods Division of Hesston makes its model 348SB undermounted rotary mower to fit the Satoh Beaver tractor. Cutting a 4-foot swath, it will mow 1½ acres per hour. Three heattreated alloy spring steel blades overlap for clean cutting and are driven by a single V-belt.

Circle 206 on free information card

Ground-level markers

Flush tee markers, available from Turfgrass Products Corp., are flat and lie below the height of the grass so mowers can pass over them without removing them. And, golfers won't trip over them. They come in red, white, blue, and yellow.

Circle 211 on free information card



Power log splitter

Northwest Industries, Inc. makes three models of its Screw-Wedge power log splitter: m28 for logs up to 18 inches in diameter, M39 for logs up to 36 inches in diameter, and a PTO model for tractors. All will handle logs 14 feet long. The machines are compact and easy to operate.

Circle 213 on free information card

Information service

For free information on any of the products and services listed below, simply fill in and mail the postage-paid reader service card bound into the front of this magazine.

Three-wheel electric golf car from **AMF Harley-Davidson** boasts Master Drive: a two-circuit system that gives more rounds between charges, reduces downtime and charging costs, and increases battery life. **Circle 117 on card**

Cushman's three- or four-wheel Turf-Truckster vehicle is the heart of a complete turf care system. Equipment available includes an aerator, spikers, short box and flatbed/box, sprayer, spreader/seeder, top dresser, and Quick Aerator. **Circle 130 on card**

Model TCA551 aerator from **Dedoes Industries, Inc.** offers close to 2-inch spacing between holes, quick mounting to most any vehicle, forward and backward operation, fast and positive hydraulic up-and-down action, and hinged tine design. **Circle 120 on card**

Even though **John Deere's** model 850 and 950 tractors are smaller than many others being used on golf courses, they've proven big enough for most mowing jobs. They have 22 and 27 PTO horsepower respectively, and both have 8-speed transmissions. **Circle 109 on card**

A precision greensmower by **Hahn Turf Products** cuts a full 67 inches, even in turns. Now you can adjust the reel to the bed knife without disturbing height of cut, and the cable-driven reel provides constant reel speed independent of ground speed. **Circle 133 on card**

Pennfine perennial ryegrass, marketed by **S.P.I.C.,** is able to stand up under heavy traffic, and it also germinates rapidly, making it ideal for winter overseeding in the South. **Circle 105 on card**

New Penneagle creeping bentgrass was developed by Dr. Joseph Duich of Penn State University and is marketed by **Tee-2-Green Corp.** Use it on tees, fairways, and greens for simplified turf management. **Circle 125 on card**

Mileage Master batteries, a product of **Trojan Battery Co.,** boasts new design changes for better golf car power and longer discharge ratings. Call toll-free 800/423-6569 or **circle 140 on card**

Nitrogen fertilization of bentgrass greens

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over-stimulation of growth may lead to disease and other problems which may totally destroy the bentgrass.

Some superintendents have been made so acutely aware of the results of over-use of nitrogen during the summer that they no longer apply any summer nitrogen. As a result, color is lost, which is usually masked by the liberal use of iron, and most importantly growth and hence recuperative ability is greatly diminished. There is another group of superintendents who say that they do not apply nitrogen during the summer, but are on liberal programs of Milorganite.

In most instances there is a need for additional nitrogen through the problem growing months from May through September. Nitrogen may be supplied as very low rates (less than ½ pound per 1,000 square feet) of soluble fertilizers, as residuals from earlier applied synthetic organic fertilizers (UF, IBDU, SCU), or as natural organic fertilizer (Milorganite). The amount and timing will be highly dependent upon the weather, the particular soils in the green, and other management programs being used. The important consideration is to maintain the growth rate of the bentgrass so that actively growing leaf tissue is present and scars will heal in a reasonable length of time. In this way the bentgrass should provide the optimum surface for the golfer. □

(From The Agronomist, *Cooperative Extension Service, Agronomy Dept., University of Maryland, College Park.)*