

# Why the Nitrogen Race?

by ALEXANDER M. RADKO, Eastern Director, USGA Green Section

**G**reens comprise but a small portion of the total course but there is no question of their importance to golf. Half the total strokes of a perfect par round are played on the putting surface and approximately 25% of the total maintenance budget is allotted to the care of greens.

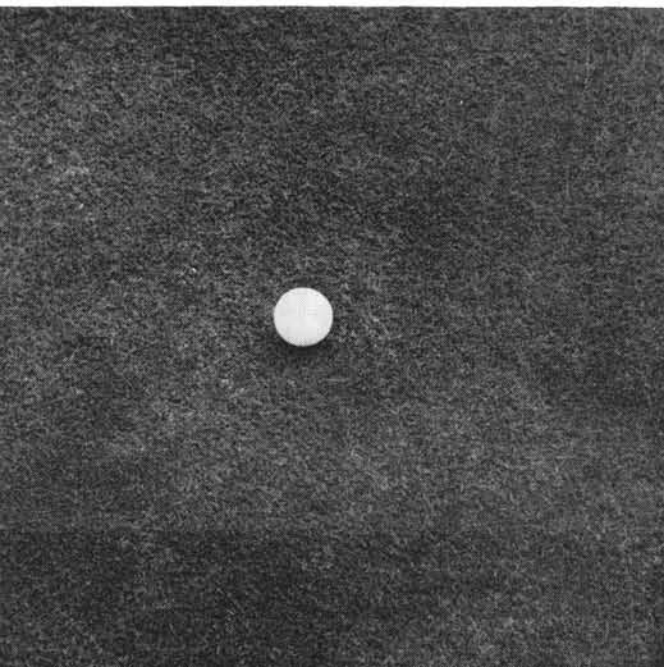
Isn't this the crux of the matter? They receive the most play, and so wise superintendents know that they must gear their maintenance practices so that greens excel. When greens are right, players glow and all is well in Golfsville!

In reality then, shouldn't greens be in championship condition for most of the season?

What makes a championship green? Let's compare notes. It must:

1. *Be firm but resilient so that it will hold a shot played from a reasonable distance when that shot is properly executed.*
2. *Be fast enough so that the ball will roll freely when properly struck with a putter.*
3. *Be free of excess grain and heavy leaf growth.*
4. *Be of such density that the ball will roll smooth and true.*

*Better managed creeping bentgrass—a thin-bladed growth—a desirable putting surface.*



5. *Be uniform in texture so that the ball will roll the same from any direction on like terrain.*

This is a big order for a small plant, and indeed each putting green is established from thousands of small plants which mature to make up the total green. By nature, all bentgrasses are not similarly fine-bladed grasses. Management also can alter the appearance and performance of any plant. Putting green grasses are no exception.

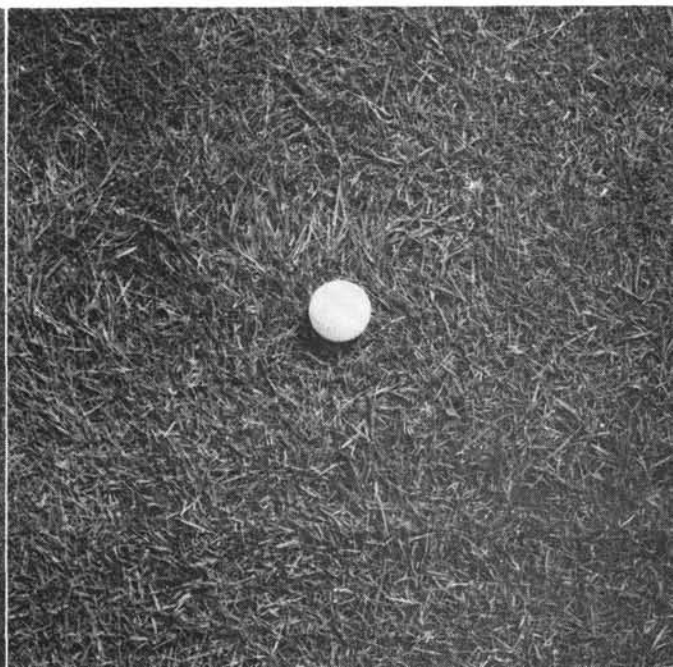
This article will briefly discuss one of the most important factors—the role of NITROGEN management. There is no question but that correct nitrogen feeding is an important phase of every putting green management program.

It has been said that nitrogen is the key element in good turf production, and this is true. Unfortunately, too many interpret this to mean that if nitrogen is so all-fired important, and if a little is good, a lot is a lot better. This, of course, is untrue. There is no substitute for experience and observation when it comes to correct nitrogen applications.

What, then, is the role of nitrogen in putting green management?

1. *It provides color—the upper safe limits provide a deeper, darker green than*

*Grainy, stemmy growth of a creeping bentgrass—thick-bladed growth—an undesirable putting surface.*



*This is the same grass (Merion bluegrass), but — heavily fertilized on the right and lightly fertilized on the left. Note the thicker blades where nitrogen levels are highest.*



*the lower rates.*

*(High nitrogen—Good)*

- 2. It encourages leaf growth—the upper limits provide more vegetative growth than the lower limits.*

*(High nitrogen—Bad)*

- 3. It discourages root growth at the upper safe limits while the lower safe rates encourage far better root growth.*

*(High nitrogen—Bad)*

- 4. It provides a soft, rank growth at the upper safe limits and a hardy, healthier growth at the lower limits.*

*(High nitrogen—Bad)*

- 5. The higher rates encourage Poa annua invasion far more than the greens fed on the low side.*

*(High nitrogen—Bad)*

- 6. The higher rates require more critical water management than moderate rates.*

*(High nitrogen—Bad)*

Except for color, then, is there any argument for keeping nitrogen levels at the highest safe point? A definite and resounding “no” is the answer!

It has been said many times that golf is not played on color, and this is especially true of the putting surface—color doesn't affect a putt one iota. What, then, is a safe rate of application? In the Northeast a number of turf people recommend application of approximately 8 to 12 pounds per 1,000 square feet yearly. This, in my judgment, is much too high as a steady yearly diet. New greens could get by safely with these higher amounts for the first four or five years only because a large per-

centage of the nitrogen applied leaches through the new soil; not all of the nitrogen finds its way into the plant. After four or five years, however, with weathering, compaction, thatch and mat buildup, and a dense turf cover, it seems reasonable to assume that more and more of the nitrogen action tends to take place in the upper fraction of the soil profile. As this occurs, it becomes ever so much more important to alter the nitrogen feeding program downward—not only in terms of the total amount applied but—equally important—in terms of how much per application.

Of course, there are exceptions to all rules but, in general, putting surfaces would fare much better and would be far better playing surfaces if they were kept on the hungry side and fertilized moderately. This is critical to the maintenance of putting green bentgrasses and to preservation of their narrow blades. Heavy amounts of fertilizer cause blades to become thick and rank, and once they exhibit lush growth characteristics, it is extremely difficult, if not impossible, to thin them down again within the same growing season. This then forces excessive use of all kinds of machines—thatcher, grain removers, and aeration tools. It becomes a continuous cycle of roughing-up the greens to keep them in the condition that they were in before they were fed so heavily with nitrogen.

Thus, moderation is the byword in nitrogen management. Greens maintained this way allow some room for safety, while greens maintained at the high nitrogen level can only deteriorate. It will happen especially quickly during conditions of adversity or stress.

Better putting surfaces are a reality when the turf is on the lean and hungry side, they putt smoother and faster, they are more nearly true, they are less likely to become severely infested with **Poa annua**, they are less subject to wilt, and they do not build up a heavy mat or thatch so rapidly. The late Prof. L. R. Dickinson, one of the prominent pioneers in the fine turf-grass field, said it in a nutshell:

"Let the little grass plant grow, don't **make** it grow!"

Putting green turfgrasses should be managed so they will retain their thin blade char-

acteristics, a retention of its dwarf characteristics; not a continuous forcing and fattening process that leads to more and more problems in maintenance. If you are troubled by your present program, cut your nitrogen feeding program in half as a start and then experiment to find your own desirable level. This refers to bentgrasses, not bermudagrasses. You will do better by applying very light applications more frequently than you will if you apply larger quantities infrequently.

Then sit back and watch the smiles as the ball rings, rolls . . . and (?) rattles.

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# Rodent Control

by DR. MARVIN H. FERGUSON, Mid-Continent Director, USGA Green Section

Old-timers speak about a slightly fraudulent mail order scheme that was practiced in the early days of newspaper advertising. The ad would offer a moneyback guarantee that the equipment for sale would absolutely kill bugs and spiders if the buyer would follow directions. The cost of such equipment with printed instructions usually was about one dollar. When the customer's bug killing kit arrived, he found it consisted of two small blocks of wood and these instructions, "Catch the bug and place him on one of these blocks. Then squash him with the other one."

Effective and positive? Yes. Practical and efficient? No.

The practice of rodent control on the golf course comes close to being at the same stage of advancement. There are easier ways to control rodents if one wishes to undertake a full scale attack on all rodent pests. Such a large undertaking usually requires such skills and precautions that most clubs would be well advised to hire a custom eradicator, or to enlist the aid of the state fish and wildlife service.

Most rodent infestations on the golf course are not serious enough to warrant an extensive control program. The usual approach is to catch and kill, or to poison the offenders one at a time.

Moles and pocket gophers are the most troublesome of the animals that inhabit golf

courses. Ground squirrels are frequently found, but they seldom cause damage on the most heavily used portion of the course. In arid regions, and exceptionally dry years, jack rabbits may come for miles to feed on lush putting greens. They have been known to eat bentgrass turf literally into the ground.

## RABBITS

Of the pests mentioned, only rabbits inflict damage by actually eating the turf. A repellent material such as thiram, which can be sprayed on the turf, can be quite effective. Moles, gophers, and ground squirrels are nuisances because of their burrowing habits.

## MOLES

Moles feed on insects such as beetle grubs and on earthworms. They tunnel through the soil in search of food and raise small "runs" and mounds in moist, soft earth. Little damage occurs unless the raised soil dries out, or unless the area is mowed and scalped before the raised area has been depressed.

The most effective way to keep moles out of the golf course is to do a good job of eliminating grubs and worms. Chlordane, used at the rate of 8 to 10 pounds of active ingredient per acre, or dieldrin used at the rate of 5 or 6 pounds active ingredient per acre will control beetle grubs and reduce the earthworm popu-