Greens fertility focus

Tennessee superintendents want control of how much nitrogen their greens get and when they get it.

By RON HALL/ Managing Editor

Superintendents must manage fertility to provide healthy bentgrass greens to their golfers. Even so, fertility's importance shouldn't be over-emphasized at the expense of other vital factors.

"It's easy to zoom in on one thing," said Lynn Ray, CGCS. "But, anytime you talk about bentgrass greens, I think it's critically important to remember that our successes or failures are based on a multiple series of factors. That list is pretty lengthy."

It includes a green's exposure to sunlight, air movement, drainage, the amount of traffic it receives and many many others, said Ray.

Even so, a panel of turfgrass professionals, including several veteran superintendents, "zoomed in on" on fertility for bentgrass greens at the Tennessee Turfgrass Conference in Nashville earlier this year.

Lynn Ray, CGCS, says the greens on each course require a fertility program just for them.

"In general, our fertility inputs are based on soil and tissue testing," said Ray of the Golf Management Group which cares for the turf at three central Tennessee golf facilities. Ray described soil and tissue tests as "tools and not saviors."

Soil tests reveal "the store house:" of materials available in the soil, he said. Tissue tests provide a "snapshot" of how much of the essential nutrients, nitrogen included, are in the bentgrass.

Data from these tests are matched against turfgrass performance over a period of time to provide "a chart of history," said Ray. This allows managers at each facility to more accurately gauge the fertility needs of their greens. This is important because the greens of one course—because of different varieties of turf, soils, traffic or other factors—may require differing amounts of nutrients from the greens on a neighboring course.

For instance, the Penncross bentgrass greens on one of the three courses managed by Golf Management Group gets 2¼ lbs. of N, ½ lb. P, 6 lbs of K and 28 lbs. of gypsum per 1,000 sq. ft. each season. SR 1020 greens at another course get 2 7/10 lbs. N, ½ lb. P, 8 ½ lbs. K, and 25 lbs. of gypsum, while the third gets 2 lbs. N, 1/10 lb. P, 6 9/10 lbs. K, and 15 lbs. of gypsum.

At least in central Tennessee, Ray likes to apply ⅔ of the N to the greens from September through January, which mirrors the bentgrass growth curve. His goal is to grow bentgrass roots. "The shoots will take care of themselves," he said. Generally, the N is ap-

Proper soil pH vital for fertility

Maintaining a soil pH between 6 and 7 on bentgrass greens allows the turfgrass to take up and use the greatest percentage of applied nitrogen, said Dr. Richard Large, A & L Analytical Laboratory, Memphis, Tenn. Theoretically, it should approach 100 percent, but some nitrogen is lost to factors like volatilization and leaching.

When the soil pH drops to 5.5 the nitrogen uptake drops to about 53 percent efficiency, and at 5 it's just 35 percent, said Large at the Tennessee Turfgrass Conference.

"You've got to keep that soil pH in the proper range. If it's not, you're fighting a losing battle from the start," said Large. "Of course, you can always put on more N, and you'll get some improvement, but not the improvement that you're expecting."

Large also cautioned against approaching the summer with too much nitrogen on bentgrass greens. "You're getting that plant susceptible to other stresses. Insect stresses. Disease stresses. Possibly even heat stress," said Large.

Large said that when his laboratory averaged the percent of nitrogen in plant tissues from golf courses in several states, it discovered that samples from Tennessee and Kentucky ran 4 3/4 percent nitrogen in plant tissues, while those from Missouri averaged 2 1/2 percent.

"We feel it (amount of nitrogen) should be between two and three percent going into the summer," said Large who also advised turfgrass managers that "you do need to experiment with different sources and see which sources work well for you."

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plied in small doses, either weekly or bi-weekly. "We can always put down more," he said.

Jeff Rumph, CGCS, follows a similar philosophy of "spoon-feeding nitrogen as needed, when needed" at the Gatlinburg Golf Club, Gatlinburg, Tenn. He said he wants "complete control" of the nitrogen on his greens.

Jeff Rumph, superintendent at Gatlinburg Golf Club, wants complete control of the nitrogen he applies to his greens.

"If I tried to use some sort of slow-release material I would not be comfortable as to when the nitrogen is releasing and when it's not releasing," said Rumph. The 4-year-old Pennlinks greens at his public course (about 35,000 rounds annually) got 4 lbs. N, 1½ lbs. P, 6 lbs. K in 1997.

Everett B. Holzapfel, III, superintendent at Jackson Country Club, Jackson, Tenn., said he learned a lot from a GCSAA's 2-day Plant Nutrition and Fertility Seminar.

Everett B. Holzapfel, III, keeps N down to 1/10 lb. every 7-10 days when summer's heat arrives.

He said he has built his greens fertility program on four keys:

1) Knowledge of the needs of the grass plants.

2) Knowledge of the soil fertility, chemistry and soil test results.

3) Knowledge of fertilizer and the fertilizer carrier.

4) Amount of experience as a turfgrass manager.

From November through February, he uses an IDBU fertilizer on his greens. From March through mid May he will use some granular applications of Nutralene products which usually provide a 4-to-6-week feed.

Holzapfel said that once summer arrives, he will spray 1/10 lb. N about every 7-10 days, depending on conditions.

He said he constantly checks the clippings his crew brings back in. "It lets me know on a weekly basis what I need to do and how I need to change my program," said Holzapfel.

Dr. Tom Samples, associate professor Turfgrass Management Extension, University of Tennessee, said that turfgrass plants take up nitrogen in both the nitrate and the ammonium form.

"Let's keep bentgrass healthy and fertilized based on the nutrient requirements of bentgrass," Dr. Tom Samples.

Microorganisms convert ammonium in the soil to nitrate in a process known as nitrification. This process is dependent on the warmth of the soil and the amount of biological activity in the soil. "I have some questions in terms of how quickly the ammonium is converted to nitrate in the soil," he said.

Regardless, Dr. Sample said that nitrogen is taken up very quickly by plant tissue compared to the uptake of phosphorus.

Responding to a question from a superintendent in the audience wondering whether it's possible to control *Poa annua* with applications of nitrogen, Dr. Sample responded, "Let's keep the bentgrass healthy and fertilized based on the nutrient requirements of the bentgrass, and not jeopardize the performance of the bentgrass based on trying to control *Poa annua*."

He also urged superintendents "to keep an eye" on secondary nutrients, particularly if the nitrogen is high in their turfgrass tissue samples.

"I think that magnifies the need to monitor what's going on with calcium and magnesium," he said. □