SUMMARY
Annual ryegrass and intermediate ryegrass transitioned faster than most perennial ryegrass varieties.

DATA
2000-2001 and 2001-2002 from 10 southern and western sites. Sponsored by USGA, NTEP and GCSAA.

SOURCE
Kevin N. Morris, Executive Director of the National Turfgrass Evaluation Program.

MORE INFORMATION
www.netp.org/onsite/ost./htm or kmorris@ntep.org.

On-site testing of grasses for overseeding bermuda

Overseeding bermudagrass fairways is a common practice throughout the southern half of the United States. This project evaluated new cultivars on bermudagrass fairways at ten (10) golf courses in the Southern and Western U.S.

The evaluation trials were jointly sponsored by the Golf Course Superintendents Association of America (GCSAA), the United States Golf Association (USGA) Green Section and the National Turfgrass Evaluation Program (NTEP). Trials were positioned strategically in the following areas: southern California; Arizona; Houston, Texas; Dallas, Texas; Mississippi; central Florida; Myrtle Beach, S.C.; Virginia; Atlanta, Ga.; and St. Louis, Mo.

The trials were located on active play sites where golfers hit fairway golf shots and/or drive golf carts. The forty-two (42) entries were established in fall 1999 and then again, in exactly the same physical location, in fall 2000. Grass species entered included perennial ryegrass, intermediate ryegrass, annual ryegrass, *Poa trivialis* and blends and mixtures of these species.

Data from 1999-2000 and 2000-2001 was compiled and published via hard copy, and posted on the NTEP web site (www.ntep.org/onsite/ost.htm). Variety performance varied from location to location, however, a number of trends emerged:

Perennial ryegrass entries, in general, provided the highest quality turf averaged over the entire season.

Poa trivialis entries and perennial ryegrass/*Poa trivialis* mixtures were slower to establish, reducing their quality ratings at most locations. However, at three locations, due to other factors, the *Poa trivialis* entries finished on top, complicating the ability to predict where *Poa trivialis* may be used effectively.

Annual ryegrass and intermediate ryegrass entries transitioned faster than most perennial ryegrass entries.

At some sites, the entries that contain *Poa trivialis* transitioned back to bermuda faster than perennial ryegrass, while at other sites, the opposite was true. This leads us to believe that the transition phenomenon is highly weather and management-related.

SUMMARY
Update on second year of low cut trials for Kentucky bluegrass cultivars.

DATA
2000-2002 National Kentucky Bluegrass Test. Sites in Colorado, Maryland, Michigan, Nebraska, New Jersey, New York and Wisconsin (study to continue through 2005).

SOURCE
Kevin N. Morris, Executive Director of the National Turfgrass Evaluation Program.

MORE INFORMATION
www.netp.org/onsite/ost./htm, or kmorris@netp.org.

Low cut trials of Kentucky bluegrass

There is increased interest again in the use of Kentucky bluegrass for fairways and tees. To address this need, several locations of the 2000 National Kentucky Bluegrass Test are being maintained with a low height of cut. Seeded in fall 2000, these trials are mowed at 1 inch or less (most are maintained at ½ - 3/4") with 3 - 4 lbs. of nitrogen applied per 1,000 sq. ft. per year and irrigated to prevent dormancy. Trial locations include universities in Fort Collins, Colo.; College Park, Md.; E. Lansing, Mich.; Lincoln, Neb.; New Brunswick, N.J.; Ithaca, N.Y.; Brookings, S.D. and Madison, Wis.

Turfgrass quality data collected in 2001 reflected establishment rate as well as the ability to tolerate a low height of cut. In data averaged over seven of the

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TABLE 2.

Kentucky Bluegrass Cultivars in the top statistical grouping in both 2002 and 2003 at low height of cut NTEP locations

Bedazzled
Midnight II
Impact
J-1838
Award
Princeton 105

SUMMARY:
New selective herbicide options for rough bluegrass control

DATA:
Summer 2002 and 2003 studies on several cultivars of *Poa trivialis* and creeping bentgrass in West Lafayette, Ind. Studies to be expanded in 2004.

SOURCE:
Dr. Zac Reicher, turfgrass Extension specialist, Purdue University

MORE INFORMATION:
www.agry.purdue.edu/turf (under annual research reports), or zreicher@purdue.edu

New control for *Poa trivialis*

There are two basic types of golf courses — those that already have *Poa trivialis* and those that will eventually get it. To find solutions to this significant golf course problem a number of compounds are being tested to determine control.

Poa trivialis is often confused with *Poa annua*, but the difference is important because controls for one do not always work for the other. The following are keys to differentiate the two: *Poa trivialis* is a gasoline or metallic green in color, goes dormant in the summer and has no visible seed heads. In contrast, *Poa annua* is an apple green, dies in the summer, and seed heads will be visible.

Field tests were conducted in the summers of 2002 and 2003 for control of *Poa trivialis*. The most promising compound was Battalion, a Monsanto product with the active ingredient sulfosulfuron. Over the course of the summer of 2002, Battalion gave more than 70 percent control.

The next two most positive controls in 2002 tests were TranXit, by Griffin, with the active ingredient, rimsulfuron, which gave 65 percent control; and a single application of Roundup Pro which gave 60 percent control.

Results in 2003 were disappointing due to record rainfall and very cool weather. In these tests Battalion still gave the most effective control, but the control level was only half the 2002 control level, and that was achieved only after using a 2X rate from the year before. Another factor being investigated is the possible effect of the grass cultivars.

While Battalion is already a registered and labeled product, the manufacturer is delaying commercial sales until further field tests have been done regarding rates, timing and evaluation of a number of other grassy weeds. This summer field tests with Battalion will be done at more than 50 cooperating golf courses. In addition to control of *Poa trivialis*, the evaluations will include control of yellow nutsedge, tall fescue, quack grass and several other grassy weeds. Battalion has not been shown to be effective on established *Poa annua*.

Field tests to date indicate the following program has been the most effective for Battalion: Four-plus applications at 0.02/LB per AI applied at two-week intervals. Three-week intervals could be used if there is concern about turf safety for bentgrasses. There is slight phytotoxicity that must be tolerated, and the reduction of *Poa trivialis* will be gradual. Timing of applications could begin in late April or early May and continue through mid-June.

The active ingredient is also very active on creeping bentgrass in cool weather, such as applications done in mid-October.

Overseeding with creeping bentgrass can begin three weeks after final application, which would enable seeding to begin in August.

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above locations, twenty-nine entries finished in the top statistical grouping (see www.ntep.org/data/kb00/kb00_02-1/kb0002t01.txt). This first year of data showed some trends and some cultivars to watch, but is not enough information to make an informed cultivar decision.

Data from 2002 showed more cultivar separation as all entries were well-established and mature turf stands. Only eleven entries fell into the top statistical grouping in 2002 turfgrass quality data with the commercial cultivar 'Bedazzled' and the experimental entry 'PP H 6366' tied at the top (rating = 6.2) averaged over eight locations (see www.ntep.org/data/kb00/kb00_03-2/kb0003t01.txt).

The top statistical group also included 'Impact', 'Princeton 105', 'Award', J-1838', 'Langara', 'Midnight II', 'North Star', 'Nu Destiny' and 'Serene' (see Table 1). Only six entries finished in the top statistical group for turfgrass quality averaged over both years of the low-cut trial locations (see Table 2). This trial will continue through 2005, and 2003 data will be released this spring. Consider at least three years of data before making cultivar decisions.

TABLE 1.

Mean turfgrass quality ratings of Kentucky Bluegrass cultivars grown at eight locations in the U.S.

(Low Height of Cut - Top Statistical Group Only)

Cultivar Name	Turf Quality Data Mean of 2002 (1-9 Scale; 9=Ideal Turf)
Bedazzled	6.2
PP H 6366	6.2
Impact	6.1
Princeton 105	6.1
Award	6.1
J-1838	6.1
Langara	6.0
Midnight II	6.0
North Star	6.0
Nu Destiny	6.0
Serene	6.0
LSD Value	0.2

SUMMARY
Recycling clippings vs. removing them reduces P fertilization requirements.

DATA
Tracking soil P over four years on stands of Kentucky bluegrass.

SOURCE
Dr. Wayne R. Kussow, Professor of Soil Science at the University of Wisconsin – Madison.

MORE INFORMATION
wrkussow@factstaff.wisc.edu.

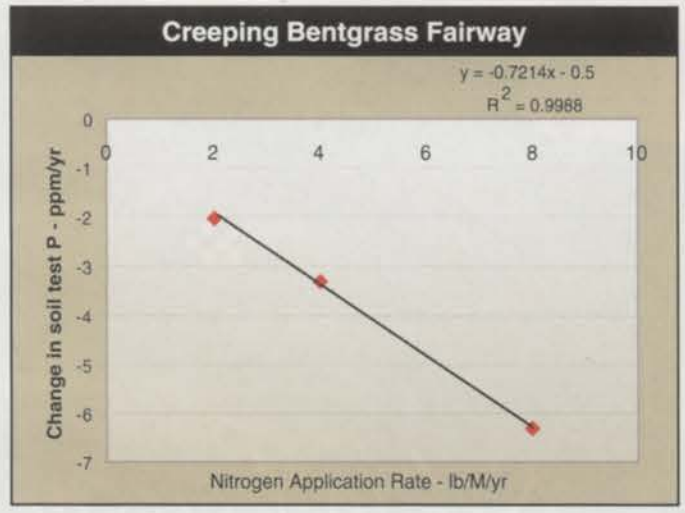
Managing soil phosphorus

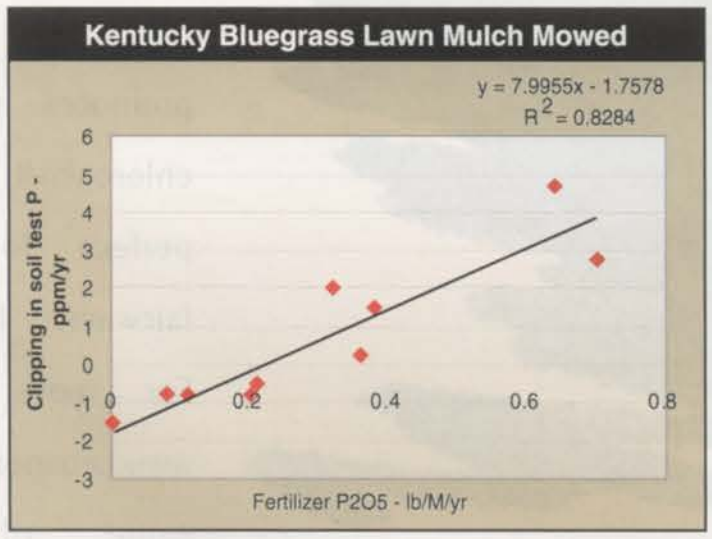
The floodgates are open. Regulation of P fertilizer use on golf courses is no longer a matter of if, but rather when. When this happens, you'll want to be in the position of being able to demonstrate that you're managing soil P wisely.

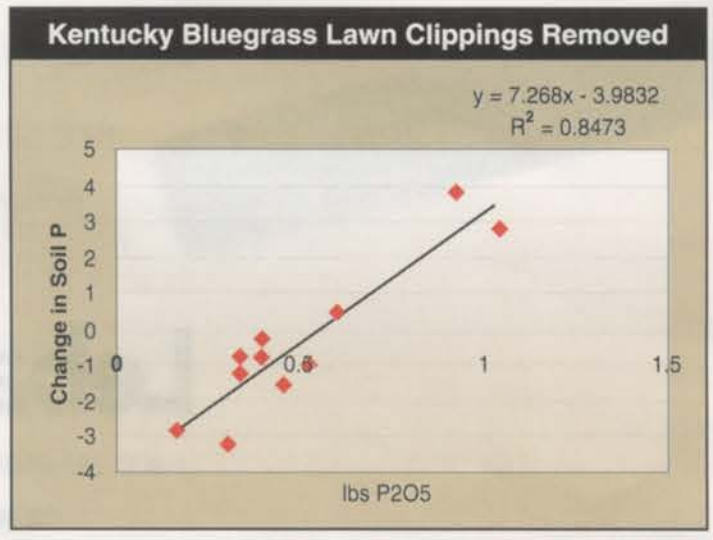
The key to managing soil P is in knowing how fertilizer P rates influence soil test levels of the nutrient. We don't have this type of information yet for all the conditions one might encounter on a golf course, but I do have some data that should get you started in the right direction.

The first piece of information comes from a stand of Kentucky bluegrass. I tracked changes in soil test P over four years when different quantities of fertilizer P were applied. The relationships I observed between fertilizer P rate and change in soil test are shown in the figures below. Note that in one case clippings were removed and in the other the clippings were recycled.

The key thing to note in these figures is the annual fertilizer P rate that resulted in no change in soil test. This represents the maintenance rate of P — that required to keep soil test P near its current level. As shown, the maintenance rates of fertilizer P were found to be 0.55 lb. P_2O_5/M/yr when the clippings were removed, but only 0.22 lb when the clippings were recycled. The difference, 0.33 lb P_2O_5/M/yr represents how much the clippings contributed to soil test on an annual basis.







Knowing the maintenance rate of fertilizer P allows you to make adjustments in your soil test P. Exceed this rate and soil test P can be expected to increase. If your soil test P is excessive, you may elect not to apply any fertilizer P for a while. How long you can go without applying fertilizer P depends how far your soil test P is above the optimum level. You can gauge this by using the equations in the figures. Plug in "zero" fertilizer P_2O_5 for "X" and you get the expected annual reduction in soil test P. It's essentially a reduction of 4 lb soil test P per year when clippings are removed and 1.8 lb. when they're not removed.

Turfgrass uptake of soil P is regulated by clipping production. The more clippings produced, the more soil P the grass removes. During the growing season we typically encounter periods of heat or moisture stress that curtail turfgrass shoot growth. But over an entire growing season, the controlling factor is your annual fertilizer N rate. This is vividly reflected in the diagram below, where annual reductions in soil test P in a bentgrass fairway were strongly dependent on the annual N rate. This, then, is something you need to factor in when trying to gauge what might be a maintenance rate of fertilizer P for your turf. According to this figure, at an annual N rate of 2 lb/M, where the clippings were removed and no fertilizer P applied, soil test P decreased about 2 PPM. For every additional pound of N applied, soil test P declined another 0.72 PPM.

These numbers give you some idea of how to arrive at ballpark estimates of what may be happening to your soil test P and how you can responsibly use fertilizer P in your management program. I do need to caution you that the numbers given here are for the Bray #1 test for soil phosphorus and for turfgrass grown on a silt loam soil. Applying these numbers to soil P extracted by a different method or to soils of very different texture is not advised. GCN