

**SUMMARY**

Recycling clippings vs. removing them reduces P fertilization requirements.

**DATA**

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

**SOURCE**

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**MORE INFORMATION**

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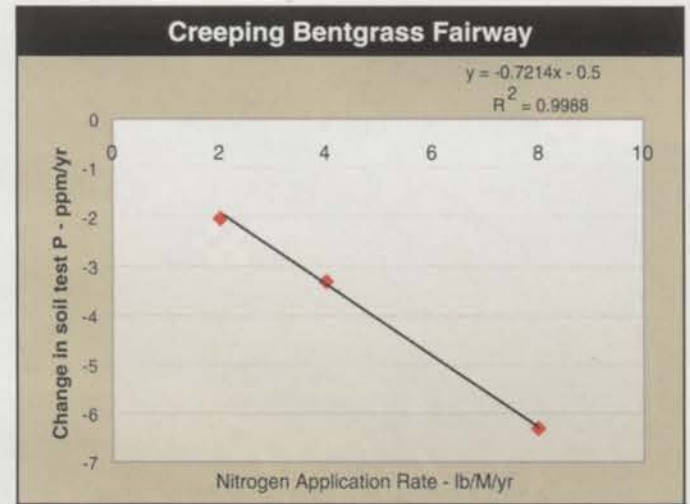
# Managing soil phosphorus

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<sub>2</sub>O<sub>5</sub>/M/yr when the



clippings were removed, but only 0.22 lb when the clippings were recycled. The difference, 0.33 lb P<sub>2</sub>O<sub>5</sub>/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<sub>2</sub>O<sub>5</sub> 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

