How I Would Manage Potassium on Cool-Season Turf: Part II

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In Part I (last issue), I outlined the reasons (and science of) why I feel potassium is not a good choice as a winterizer, but instead makes more sense as a late spring, early summer treatment when soil test levels are low. In this article, I will just present my potassium management strategy if I were managing a golf course. I'll start with fairways.

Fairways

I'd apply potassium only according to soil test levels. I'd use modern interpretations of optimum (i.e. 50-100 ppm, depending on soil test) instead of the more common values of 200-400 ppm still used by most soil testing labs. I expect even the 50-100 ppm levels will be adjusted downward as more soil test calibration studies are conducted, but for now 50-100 is fine.

If/when potassium dips below that soil test threshold, I'd make a 1 lb/M application in May. I'd re-test the soil in fall to determine if another application is warranted the following spring. Why May? The evidence for potassium improving drought tolerance is much more convincing that the evidence that potassium increases winter hardiness (although, I believe the opposite is true for warm season grasses). Also, Dave Moody and Frank Rossi's work at Cornell University has clearly linked increased potassium in the leaf to increased severity of gray snow mold. Similarly, researchers at UMass (Webster and Ebdon, 2005) reported more severe gray snow mold at higher K application rates on ryegrass. In summary: there is only weak evidence that K increases cold tolerance for cool season-grasses, strong evidence that it increases snow mold, decent evidence that it improves drought tolerance.

If my fairways were something other than sand, I'd apply muriate of potash (0-0-60), if they were sandy, I'd consider using a polymer coated K source or spoon feeding in 0.25 lb/M increments if practical.

Late season potassium applications have been shown to increase gray snow mold infections.

Most non-sand soils have a high enough cation exchange capacity to retain a 1 lb/M application of potassium. Sandy soils may need some help provided by the polymer coating or spoon feeding approach.

Greens:

Assuming most greens are sand-based, either from construction or years of topdressing, I'd spoon feed potassium along with nitrogen in the ratio of 2 parts nitrogen to 1 part potassium beginning in May and ending in August (but continuing with N after that). I like to fertilize my research greens about every other week with 0.2 lbs N/M as urea, so that'd put me at 0.1 lbs K2O/M per application or about 1.0 lbs/M for the season. I feel this is a very conservative approach which replaces the potassium removed by clippings. But as the research continues to unfold, I can imagine that my management philosophy for greens may evolve to look more like my fairway program. That said, if I were a superintendent, I'd leave the research to the researchers and use this conservative but research-based approach.

Why stop in August? Same philosophy as above, the benefits of potassium as a drought stress nutrient are much more convincing that the cold tolerance argument and we have seen that high tissue K increases snow mold pressure. Also, research by Woods et al. (2006 – New York) and Johnson et al. (2003 - Utah) has shown clearly that high soil potassium levels in sand based greens are always substantially reduced by spring, presumably by the snow melt leaching the potassium out of the root zone. Therefore, a large application to a sand root zone in fall will do two things: increase your susceptibility to gray snow mold, and 2) leach out of the root zone, becoming unavailable in spring resulting in a complete waste of time and resources.

So that's my strategy in a nutshell. But, terms and conditions subject to change without notice based on a new long-term study of potassium requirements of putting greens at the O.J. Noer Turfgrass Research and Education Facility. It is my hope that we can develop a huge range of potassium levels in the plants and the soil. At the low end, we hope to see potassium deficiency symptoms and at the high end, maybe increased gray snow mold damage. This study will hopefully improve our soil test recommendations, and give you more confidence about your potassium program.

References:

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