

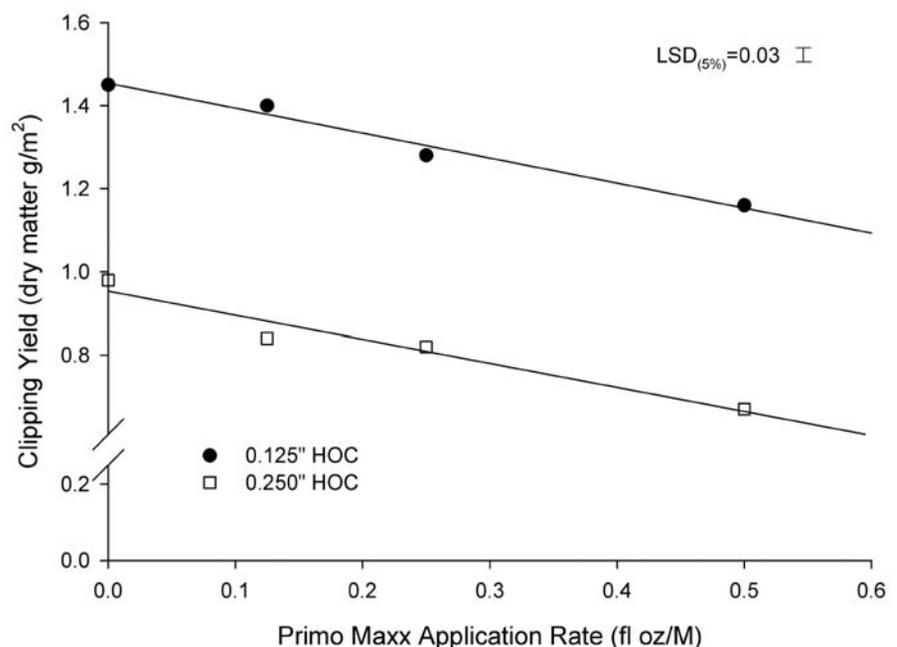


# Some Thoughts on the Importance of Putting Green Growth Rate

By Dr. Doug Soldat, Associate Professor, Department of Soil Science, University of Wisconsin-Madison

I often need to remind my non-turf scientist colleagues at the university that we don't manage turf for yield when discussing how turfgrass management differs from that of agricultural crops where yield (or economic yield) is the primary indicator of the success or failure of a particular product of management strategy. The non-turf scientists often need this reminder because yield is relatively unimportant in comparison to aspects like ball roll distance, color, quality, and recuperative potential of a turfgrass stand. Wayne Kusow demonstrated repeatedly that turfgrass managers typically fertilize to achieve only 10-33% of maximum yield, resulting in turf that exists in a state of perpetual nitrogen deficiency. This makes studying and managing turfgrass fundamentally different from agricultural crops. However, I believe turfgrass scientists and managers have been neglecting the importance of growth rate for too long. While turf managers aren't concerned with maximizing growth rate, it is still a very good indicator of the overall health of a stand of turf, and growth rate is a primary determinant of how much nutrients or water a plant will use. For example, most of the benefits of fine fescue (low nutrient requirements, low water use) can be explained by its growth rate relative to grasses like Kentucky bluegrass. Yet, we rarely think of it in these terms.

This summer, graduate student Bill Kreuser will be putting the final touches on a series of studies looking at the effect of Primo Maxx on growth of bentgrass and



**Figure 1. Difference in clipping yield in grams per square meter per day for creeping bentgrass mown at 0.125" or 0.250". The lower mowing height had 50% greater daily growth than the higher height of cut. Primo Maxx decreased growth, but even at four times the label rate the grass mowed at 0.125" was still growing much faster than the untreated grass cut at 0.250". Faster growing grass leads to lower carbohydrates and higher nutrient requirements over a growing season.**

*Poa annua*. Over the past three years, we've studied the effect of different application rates and application frequencies of Primo Maxx on putting green growth. We've even studied the effectiveness of Primo Maxx on different heights of cut. An interesting nugget came out of this last study that is worth discussing. We found that creeping bentgrass mown at 0.125" grows 50% faster than the same grass mown at 0.250". The reason for this is evolutionary; the grass "wants" to have enough leaf area to maximize photosynthetic efficiency. When grass is continually cut at a low mowing height, it tries to rapidly increase leaf area

to replace the mowed tissue. At higher heights of cut, this response is much less dramatic which leads to naturally slower growing grass. In fact, applying four times the labeled rate of Primo Maxx does not even come close to slowing the growth of a 0.125" green to the growth rate of an untreated green at 0.250" (Figure 1). Obviously, no manager would think about bumping up the mowing height to 0.250" this year, but just being aware of this physiological difference may help you make a better decision when stressful conditions arrive.

A 50% increase in growth over a

season has tremendous implications, especially for energy budgets and fertilizer requirements. Howieson and Christians (2008) recently showed that fructan content (the major carbohydrate in bentgrass) of mowed greens was roughly half compared to rolled or non-mowed greens. This occurred because the mowed grass used the fructan to re-generate new leaves. Also, the faster growing grass will have more clippings removed. Over a single season, you might remove 3 lbs N per thousand square feet from a 0.125" putting green, but only 2 lbs from an area mown at 0.250".

In conclusion, I encourage you to think about ways to decrease putting green growth rate to conserve the plants energy reserves this season. Mow less, roll more. Use plant growth regulators on a regular and frequent basis (our growing degree system can help greatly). Raise the mowing height as high as possible. Do you have a standard to keep track of how fast your greens are growing? One bucket? Two buckets? This might be a good way to gauge how a management practice is affecting the growth of the greens, or keep track of the fluctuations over the season. Based on the numbers shown in Fig. 1, raising your mowing height from 0.120" to 0.140" will lead to a decrease in clippings of almost 0.1 g/m<sup>2</sup>, similar to the effect of an application of Primo Maxx at the labeled rate -- food for thought. Good luck this season, and I hope to see you at Field Day on July 27!

**Reference:**

Howieson, M.J. And N.E. Christians. 2008. Carbohydrate metabolism and efficiency of photosystem II in mown creeping bentgrass (*Agrostis stolonifera* L.) HortScience. 43:525-528. 🌱

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WHEN SPRING FEEDING**

Spring fertilization varies greatly on a number of factors. Cultural practices performed, soil amendments made, irrigation and drainage upgrades, fertilizers applied, and what happened last fall plays a significant role with this season's success. However, having a sound fertility program will provide you with your best chance of success for the upcoming season.

Typically, spring applications are applied after the early flush of shoot growth has occurred, but predicting spring weather can be a challenge when it comes to soil and air temperature, and precipitation. That's why choosing a fertilizer that performs in cool climates is so vital.



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Although fine-tuning a spring fertilization program varies on many factors, its importance will be felt all summer long and even into the fall. The benefit of using an all-weather, long-lasting performer such as UMAXX provides immediate benefits, as well as a positive long-term impact. UMAXX gives the freedom to apply as a nitrogen component in a blend or part of a soluble fertilizer program. UMAXX offers consistent performance regardless of temperature or application type.

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