

Minimizing Annual Bluegrass Encroachment with Trimmit: A Growing Degree Day Approach

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During our work developing a growing degree day (GDD) re-application schedule for Primo, we added some treatments with Trimmit (paclobutrazol) based on questions from superintendents. Like Primo, Trimmit is a growth regulator that affects gibberellic acid synthesis, but does so in a different manner. The label for Trimmit recommends 6 to 16 oz/acre of product (0.1-0.25 lbs a.i) for creeping bentgrass putting greens. The label also mentions that annual bluegrass control is possible at the high rate (16 oz/acre). While the label is ambiguous about the amount and length of growth reductions for bentgrass, it seems to imply that 6-8 weeks of 50% growth reduction can be achieved.

Using the same rigorous methods used in the Primo research, we collected clippings several times each week from plots treated with Trimmit at 16 oz/acre and compared the daily clipping growth to non-treated plots. The overall pattern of a period of growth regulation followed by a period of growth enhancement (or rebound phase) was similar to the Primo study. However, unlike the results from the Primo work, we found that the label statements for 50% growth reduction were fairly accurate (Figure 1); although this reduction rarely lasted for more than three weeks (never six to eight, as on the label). After coming out of regulation, the Trimmit treated bentgrass grew 10-25% more than the non-treated control for a pe-

riod of about two to three weeks.

Applying what we learned from the Primo studies to the Trimmit data, we should see maximum bentgrass regulation if we re-applied Trimmit every 300 growing degree days (base temperature 0°C). Perhaps the main reason superintendents choose Trimmit over Primo is to minimize annual bluegrass encroachment. So in addition to testing Trimmit on bentgrass, we also applied it using the label directions and every 300 GDD to an annual bluegrass putting green. The putting green was established from seed in 2008 and was obviously dominated by “annual-types”. Despite our best efforts, we were unable to keep 100% cover on the putting green all year. We battled with huge seed-head flushes in the spring (which caused a die off immediately after), and had major trouble (as did many) keeping the annual bluegrass alive during the intense summer of 2010. So please excuse the relatively ugly looking control plots shown in Figure 2, and focus on the much uglier looking plots of the 300 GDD treatments.

In summary, we confirmed that following a 300 GDD re-application schedule on bentgrass-dominated putting greens can maximize the regulation of bentgrass growth, while putting enormous pressure on annual bluegrass populations.

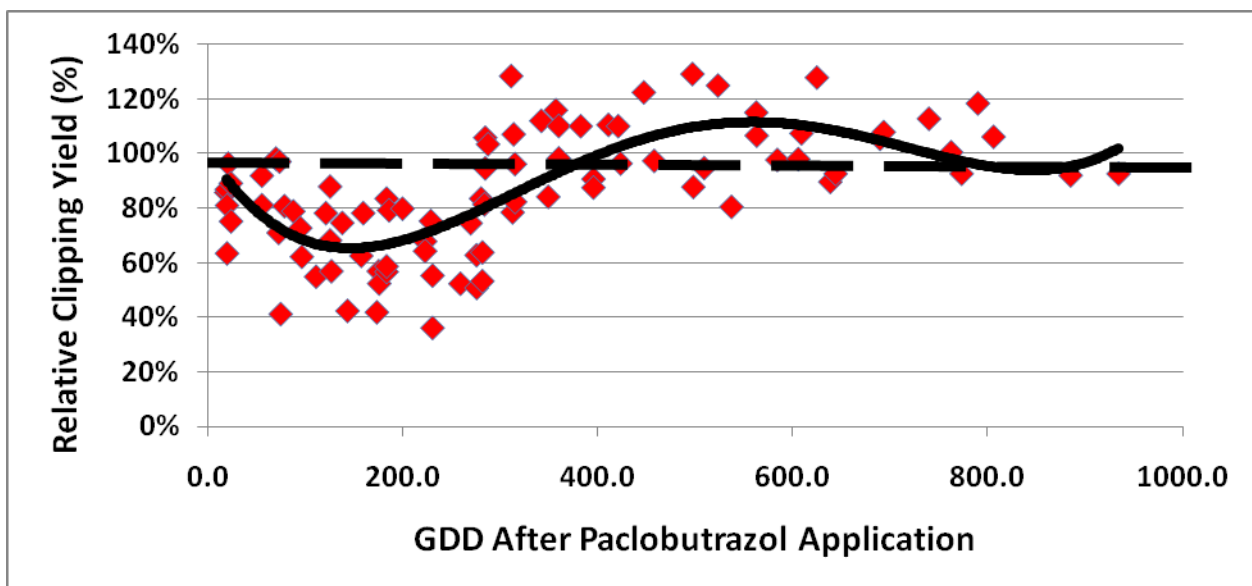


Figure 1. Relative clipping yield for creeping bentgrass treated with Trimmit compared to the non-treated control plots (dashed line representing 100% relative yield). Maximum growth regulation was achieved between 100 and 250 growing degree days (base 0°C) and rebound phase began at 350 – 400 growing degree days. In May, 100 growing degree days represents about one week, while in a typical July 100 growing degree days might take only 4 days

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Trimmit is known to give bentgrass a temporary bluish (almost sickly) hue that is somewhat undesirable, but in reality probably only noticed superintendents. Anecdotally, we did not observe this coloration to be any more or less severe with the 300 GDD re-applications than compared to the labeled re-applications (7 weeks).

It is likely that growing degree day-based applications make sense for much more than just growth regulators. Most pesticides are also metabolized by the plant and the rate of that metabolism is probably highly temperature dependent. In the upcoming season, we plan to work with Dr. Kerns to investigate the amount of growth regulation achieved by several DMI fungicides, which are known to have growth regulation properties. Hopefully, this work will eventually expand beyond growth regulators and lead to more precise estimates of the expected duration of disease and insect control following a pesticide application.

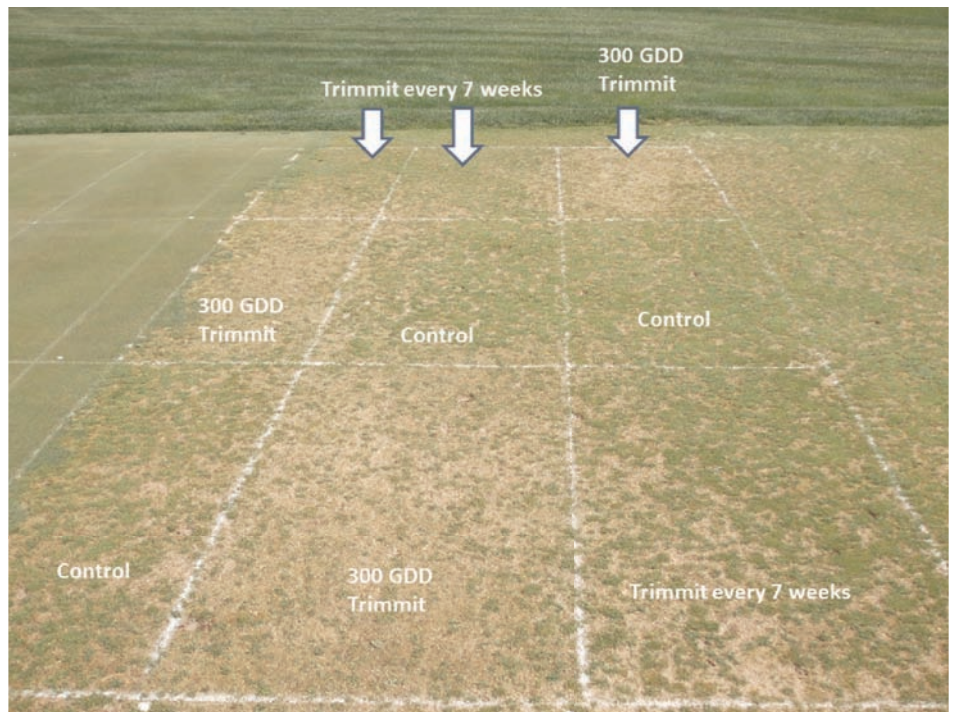


Figure 2. Mid-summer image of an annual bluegrass putting green treated with Trimmit every seven weeks, or using a 300 growing degree day (base 0°C) re-application schedule. The 300 GDD treatments resulted in substantial death of annual bluegrass compared to the labeled rate (7 weeks at 0.25 lbs ai/acre or 16 oz product/acre).

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