

Golf collars rapidly over-regulated by PGRs

June 22, 2017

I really believe that PGR applications are the principal source of golf course collar decline. Affected turf generally has a more red color, reduced density, slow growth, increased disease susceptibility, etc. Typically, managers and extension specialist frequently blame excessive traffic from maintenance and golf as the cause of collar decline. But recovery from traffic requires growth. This poses a bit of a ‘What came first, the chicken or the egg’ question. Is collar decline the result of too much traffic or too much growth suppression?

We know from past research that commonly applied PGRs are more efficacious on taller mowed turf. The clipping yield suppression also lasts longer. This presents a challenge for golf course collars maintained between 0.25” to 0.75” while putting green turf is less than 0.140”. Golf course superintendents apply PGRs based on the needs of the greens and not the collars. This results in too frequent PGR applications and an intensification of clipping yield suppression on collars.



Figure 1. PGRs applied on putting green intervals can lead to reduced quality and collar decline. It's most obvious when next to the non-treated controls.

This spring, we initiated a new study to test my initial statement/hypothesis. The creeping bentgrass research fairway is mowed at 0.5” two to three times and week and were irrigated to 80% of pET. The fairway has been treated with either Primo Maxx (trinexapac-ethyl) at 5.5 fl oz/acre or Trimmit 2SC (paclobutrazol) at 8.0 fl oz/acre since May 10. The two PGRs are re-applied based on putting green intervals of 200 GDD for Primo Maxx and 260 GDD (base 0C) for the Trimmit 2SC. Plots are 5’ x 50’ and each treatment is replicated three times. Clippings are collected to calculate growth suppression relative to plots that are not treated with PGRs. The plots are not trafficked. That way, any collar decline from PGRs can be clearly observed. Since the start of the study, each PGR has been applied four times.

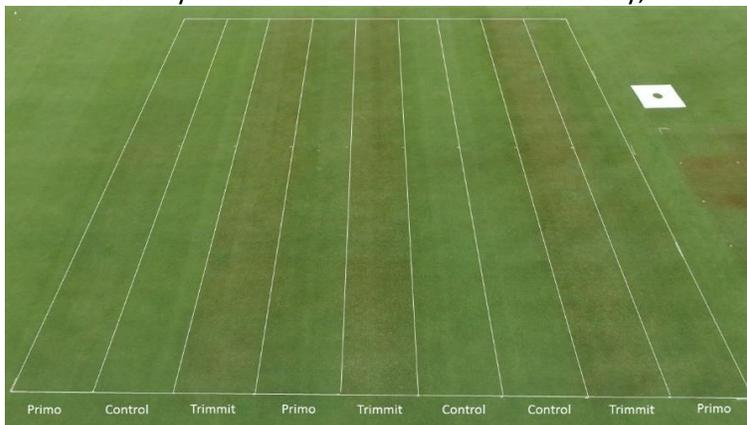
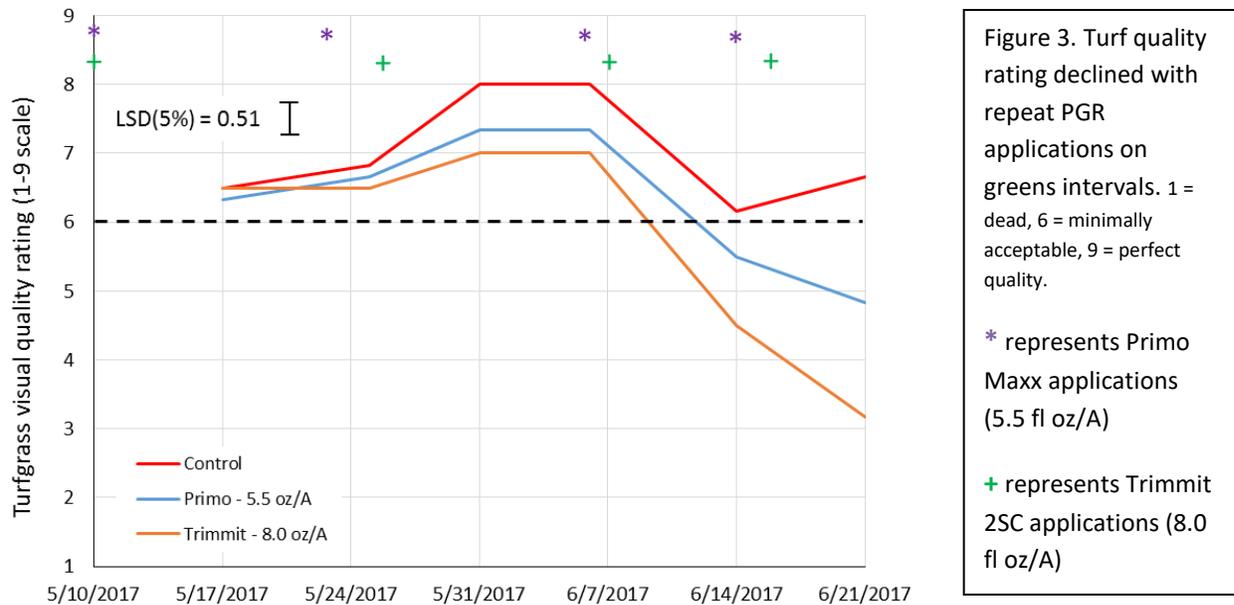


Figure 2. An aerial view of the phytotoxicity from the PGR applications. The initial applications were made on May 10. Each PGR is then applied at putting green rates and intervals. Four applications had been made when this picture was taken.

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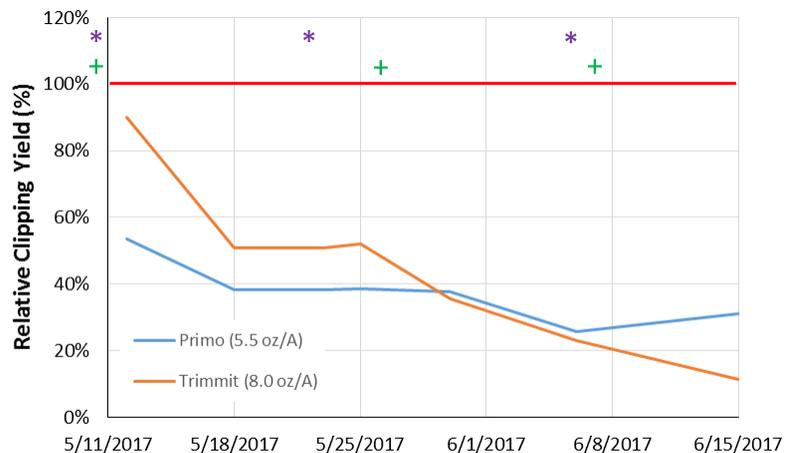
The results have been dramatic. Plots treated with either PGR have obvious phytotoxicity and reduced turfgrass visual quality rating (Figs. 1 & 2). Differences in quality were not observed until May 31. Then the visual turfgrass quality of the Primo and Trimmit treated plots slowly declined (Fig. 3). By mid-June, both PGR treatments led to unacceptable turfgrass quality ratings (less than 6).



Clipping yield suppression has also intensified over the past six weeks. One week after the first application, relative clipping yields fell to roughly 50% of the non-treated control. Over time, however, Primo Maxx treatments had 69% less growth and Trimmit 2SC had 89% less growth than the control (Fig. 4). Absolute clipping yields, or the dry weight of the clippings in the mower bucket, are also quite telling. On June 15 the non-treated control had 1.25 grams of dry clippings per square meter. The Primo Maxx treated turf averaged 0.39 grams and Trimmit treated turf averaged 0.14 grams per square meter. Those treatments are barely growing while the non-treated plots are growing at a rate that would support typical golf course traffic. It's easy to see why those mowers, rollers, and golf bags cause such headaches on collars this time of year.

Figure 4. Relative clipping yield of a creeping bentgrass research fairway treated with two PGRs at putting green rates and intervals.

- * represents Primo Maxx applications (5.5 fl oz/A)
- + represents Trimmit 2SC applications (8.0 fl oz/A)



I'm not trying to pick on either one of these PGRs. This same result will occur with all the PGRs applied on intervals appropriate for putting greens. The underlying problem is that the PGRs are being applied faster than they are being removed (by mowing or normal metabolism). We are trying to work on this problem with variable rate PGR applications and precision GPS sprayer technology. We are also testing applications of fertilizer, hormones, iron and even lowered mowing heights on these over-regulated plots. The goal is to offer golf course superintendents options to manage this issue. In the meantime, consider going off your putting green PGR program if collar decline is reaching unacceptable levels.

See all of this research for yourself at our Summer Research Field Day on East Campus. Registration and the trade show open at 8 am and the tours go from 9am until noon on July 12. Hope to see you there.

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