

TURFGRASS TRENDS

POA CONTROL WITH PGRs

Poa Annua Suppression With Velocity Plus PGRs Requires Review of Weed Population

By Steve McDonald

Superintendents use a variety of chemicals to maintain fairways at the desired quality level. Some of these chemicals include plant growth regulators (PGRs) and herbicides (pre-emergent and postemergent). Two separate field trials were conducted during a two-year period to evaluate the impact of bispyribac-sodium (Velocity) herbicide treatments as impacted by pre-emergent herbicide and commonly used PGRs.

Velocity was released for sale in the autumn of 2004 and labeled for the control of *Poa annua* and *Poa trivialis* in creeping bentgrass (*Agrostis stolonifera*) and perennial ryegrass (*Lolium perenne*) fairway turf. Research shows that Velocity has the potential for *Poa annua* and *Poa trivialis* management, and the optimal application timing might be when average ambient air temperatures are 65° Fahrenheit. Golf

course superintendents frequently apply other herbicides and plant growth regulators prior to and following this time frame. Information regarding possible interactions of these chemicals with Velocity is warranted.

The purpose of Study 1 was to evaluate the effects of pre-treatments of a commonly used grassy weed herbicide and two plant growth regulators for their impacts on *Poa annua* control.

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PHOTO 1
One of the main challenges with using Velocity during the playing season for Poa control is the subsequent voids creating by killing grassy weeds.

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One of the main issues with using Velocity to control *Poa annua* and *Poa trivialis* is the voids created by removing the grassy weeds during the golf playing season (Photo 1, p. 55). Therefore, the purpose of Study 2 was to evaluate the effects of season-long PGR programs for the ability of Velocity to control *Poa annua* and the impact on the resulting voids from the declining *Poa annua*. Other factors evaluated in each trial also included: dollar spot severity, overall turfgrass quality and *Poa annua* establishment following the applications and creeping bentgrass safety.

Both studies were completed on fairways at Brookside Country Club, located in Pottstown, Pa., during the 2006 and 2007 seasons. All treatments were applied in a 1-gallon per 1,000-square-foot carrier volume. Velocity 17.6 WDG was applied twice in both studies at 30 grams active ingredient per acre (ai/A) approximately on a 14-day interval. In both trials, percent of plot area covered by healthy green *Poa annua* was rated visually on a 0 to 100 scale with 0 indicating no green, live *Poa annua* and 100 equalling entire plot area covered by *Poa annua* that was completely green and healthy. Percent bareground was rated on a 0 to 100 scale with 0 equaling no bareground and 100 indicating entire plot bareground with visible soil.

Study 1: herbicide PGR pretreatment

This site was comprised of about 92 percent to 96 percent creeping bentgrass and 4 percent to 8 percent *Poa annua*. Treatments included post-emergent applications of Velocity in combination with pretreatments of Primo MAXX and Trimmit 2SC and the pre-emergent herbicide Dimension Ultra 40WP. Pretreatments of PGRs and Dimension were also applied without subsequent Velocity applications.

Summary: No differences were observed between treatments with a PGR or herbicide pretreatment and Velocity alone for their level of *Poa annua* control and injury, and creeping bentgrass injury. Previous research has reported that Velocity has an ability to cause a "yellowing" of creeping bentgrass. In this trial, no signif-

icant yellowing was observed following either application of Velocity. Plots treated with Dimension, Primo MAXX or Trimmit 2SC alone had similar populations of *Poa annua* at the end of the trial. However, in all Velocity-treated plots, there was a significant reduction in *Poa annua* (less than 1 percent plot area) by mid-August (Table 1). Velocity-treated plots consistently had less dollar spot blighting (data not shown). The PGR pretreatments slightly increased the level of dollar spot control when compared to Velocity applied alone.

These data indicate there were no negative effects from pre-treating a mixed stand of creeping bentgrass and *Poa annua* with Dimension, Primo MAXX or Trimmit when followed by Velocity. All Velocity treatments effectively controlled *Poa annua* in a mixed stand with less than 10 percent *Poa annua* and little bentgrass injury was observed.

Study 2: PGR/Velocity combinations

This site was comprised of approximately 80 percent to 85 percent creeping bentgrass and 15 percent to 20 percent *Poa annua*. Treatments included two June applications of Velocity alone or in combination with season-long (April-September) applications of Cutless 50W, Primo MAXX and Trimmit 2SC.

Summary: Over the course of the entire season, Trimmit 2SC plus Velocity and Cutless 50W plus Velocity decreased *Poa annua* populations and percent bareground, while increasing bentgrass color when compared to plots treated with Velocity alone. Beginning in late August, *Poa annua* populations increased in the Velocity-alone treated plots. This could be due to *Poa annua* germinating and re-establishing from seed in the voids left behind from the dead *Poa annua*. It is possible that the monthly applications of Cutless 50W and Trimmit 2SC reduced vigor and health of emerging *Poa annua* seedlings. Another important aspect of this trial is that both Trimmit 2SC and Cutless 50W increase the horizontal growth of creeping bentgrass when compared to Primo MAXX alone. It is possible that the *Poa annua* was controlled in the Velocity-treated plots, and the creeping bentgrass filled in the voids left behind by aggressive stolon growth and tillering.



QUICK TIP

Want a better way to regulate plant growth without using chemicals? Applying a fertilizer that gradually feeds your turf will stop the unwanted flush of growth you're accustomed to with your grandfather's favorite fertilizer. If plants could talk, they would say that they prefer a more consistent feeding schedule, similar to our typical three square meals a day. Research indicates benefits in using chemical plant growth regulators, so help your favorite PGR work smarter by applying a slow-release or controlled-release fertilizer. Spring fertilizer season is right around the corner, and Agrium Advanced Technologies is your corner supermarket, stocking all the best technology you need in fertilizers. Call us, or visit us on the Web at www.agriumat.com.

TABLE 1

Percent of plot area covered by *Poa annua* in creeping bentgrass fairway height turf as influenced by herbicide, plant growth regulator and Velocity, 2006

Treatment	Pre-treatment rate	Velocity Rate (qr ai/A)	1 June	28 June	14 July	15 August
% <i>Poa annua</i> plot ¹						
Dimension Ultra 40 WP ^v	0.38 lbs a.i./A	-	5.5 a ^z	7.0 a	4.8 ab	3.8 ab
Dimension followed by (fb) Velocity ^w	0.38 lbs a.i./A	30	5.5 a	1.3 cd	0.3 c	0.3 c
Primo MAXX ^x	5.4 oz/A	-	3.5 a	3.3 bc	3.8 b	3.5 b
Primo MAXX fb Velocity ^y	5.4 oz/A	30	5.0 a	1.3 cd	0.5 c	0.5 c
Trimmit 2SC ^x	8.0 oz/A	-	2.3 a	2.3 cd	3.5 b	3.3 b
Trimmit 2SC fb Velocity ^y	8.0 oz/A	30	5.8 a	0.0 d	0.0 c	0.0 c
Velocity (17.6 WP) -alone ^y	none	30	4.5 a	0.7 d	0.0 c	0.0 c
Untreated	-	-	5.5 a	4.7 ab	5.3 a	5.5 a
P<F	-	-	0.6413	0.0001	0.0001	0.0001

^v Dimension alone was applied on 18 April 2006.

^w Dimension alone was applied on 18 April 2006 and Velocity was applied on 26 May and 8 June 2006.

^x Primo MAXX and Trimmit 2 SC were applied on 13 May 2006.

^y Primo MAXX and Trimmit 2 SC were applied on 13 May 2006 and Velocity was applied on 26 May and 8 June 2006.

^z Percent of plot area covered by healthy green *Poa annua* was rated visually on a 0 to 100 scale with 0 = no green, live *Poa annua* and 100 = entire plot area covered by *Poa annua* that was completely green and healthy.

Conclusions

Superintendents must have an accurate estimation of *Poa annua* and *Poa trivialis* populations prior to applying Velocity. In numerous research projects throughout the country, Velocity has provided a high level of grassy weed control. These two studies were conducted on fairway height stands that did not contain a majority of *Poa annua* (less than 20 percent in all plots). Turfgrass quality was reduced due to the collapse and death of weeds. Data from Study 1 indicate there are no adverse effects of pre-treating fairway height bentgrass with Dimension, Primo MAXX or Trimmit 2SC. Data from Study 2 indicate that season-long programs of Trimmit 2SC and Cutless 50W in combination with Velocity applications may provide a high level of *Poa annua* control while maintaining quality levels by increasing fill-in. In circumstances where greater than 20 percent of *Poa annua* or *Poa trivialis* are present, it would be best to consider aggressive PGR programs or other cultural methods to reduce the population prior to any herbicide applications targeting removal.

Future research will be conducted to

examine the effects of seeding into Velocity-treated turf mid-summer, and the impacts of various pre-emergent herbicides applied prior to and following the Velocity applications.

Acknowledgements: Turfgrass Disease Solutions LLC wishes to thank SePRO, Syngenta Crop Protection and Valent for supplying support and product for these trials, as well as Jeff Fanok.

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