

Research Topic:

Poa annua and White Clover Control and Bentgrass Safety with Velocity® plus Foliar Fertilizers Including Iron (Fe) (2008), S. McDonald, Turfgrass Disease Solutions, LLC

Bispyribac-sodium (Velocity®) is labeled for control of annual bluegrass (*Poa annua* L.), rough bluegrass (*Poa trivialis* L.), and white clover (*Trifolium repens* L.) in creeping bentgrass (*Agrostis stolonifera* L.) and perennial ryegrass (*Lolium perenne* L.) fairway turf. Previous research has documented that Velocity may elicit some objectionable yellowing to desirable turfgrass species and that tank-mixing Velocity with iron (Fe) may mask some of the turf discoloration, however additional work is needed using other products and to determine if the addition other foliar nutrients might impact herbicidal activity and subsequent bentgrass competitiveness. This study was conducted on a golf course fairway located at Bellewood Golf Club in Pottstown, PA, and a follow-up to a similar study at Brookside Country Club in 2007 (www.griggbos.com). The site was comprised of approximately 68-76% creeping bentgrass, 12 to 14% *Poa annua*, and 12-18% white clover. Visual ratings included creeping bentgrass, *Poa annua*, and white clover injury (0-5 scale with 0= no injury, 2.5= to thinning and yellowing and 5=severe injury), and percent bareground (0 to 100 scale with 0 = no live turf/white clover, and 100 = entire plot area covered by green and healthy turf/white clover). All fertilizers supplied 0.011 lbs Fe/M, however, differed in their amounts of nitrogen (N) and micronutrients. All Velocity treatments were applied at 6 oz./A [30 g active ingredient (ai)/A]. **The objective of this study was to determine how Fe containing foliar and liquid fertilizer treatments applied in combination with Velocity affects herbicide activity, creeping bentgrass safety, and species competition within the sward.**

Herbicide efficacy was largely unaffected by foliar fertilizer treatments. Only on the June 26 rating date was *Poa annua* injury significantly greater for the Velocity alone treatment compared to Velocity plus foliar fertilizer treatments (Figure 1), however the percent (%) of plot area with *Poa annua* was unaffected by foliar fertilizer applied in combination with Velocity (data not shown). White clover control with Velocity was unaffected by the addition of foliar or liquid fertilizers (data not shown). Importantly, the level of phytotoxicity to creeping bentgrass observed in this trial was not as high as previous years, including 2007, which limits observed treatment differences. The percent *Poa annua* in plots was similar for all treatments and significantly different than untreated plots (Figure 2). On July 3, turf plots treated with Velocity alone and Velocity plus fertilizer exhibited the same % bareground which was significantly different from the untreated control (Figure 2). One week later, on July 11, the % bareground was significantly lower for turf plots treated with Velocity plus *Iron Combo* or *Ultraplex* compared to Velocity applied alone, however these treatments never reached a level of % bareground similar to the untreated control, like they did in 2007. On July 11, the use of *Iron Combo* and *Ultraplex* combined with Velocity produced turf plots with less % bareground compared to turf treated with Velocity + liquid (Lesco® Fe Chelate) fertilizer and Velocity alone (Figure 3). This difference might be attributed to fertilizer formulation, including a difference in nutrient absorption efficiency.

It appears that the addition of N was not advantageous for increasing the competitive advantage of the creeping bentgrass, unlike 2007. The results from this study indicate that the use of foliar and liquid fertilizers containing 0.011 lbs Fe/M is sufficient to limit phytotoxicity and ultimately increase creeping bentgrass competitiveness, particularly the use of *Iron Combo* and *Ultraplex*, which contain higher percentages of manganese (Mn) and zinc (Zn). Results from 2008 differed from 2007 with respect to the level of phytotoxicity produced by Velocity applied alone and the effect of N the competitiveness of creeping bentgrass. Additional research is needed to further elucidate these differences.

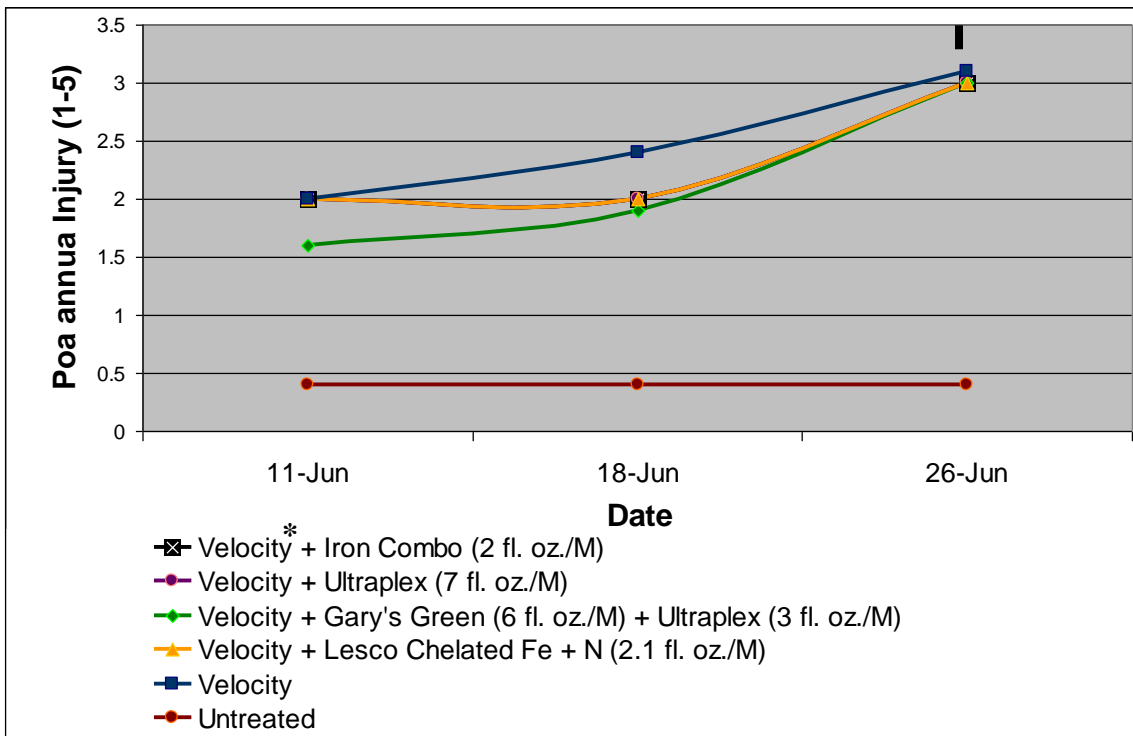


Figure 1. Annual bluegrass (*Poa annua*) injury after treatment with Bispyribac (Velocity) alone and a combination of Velocity plus foliar and liquid fertilizers.

* All Velocity treatments were applied at 6 oz./A (30 grams active ingredient/A)

** Treatments were applied on 29 May and 10 June 2008

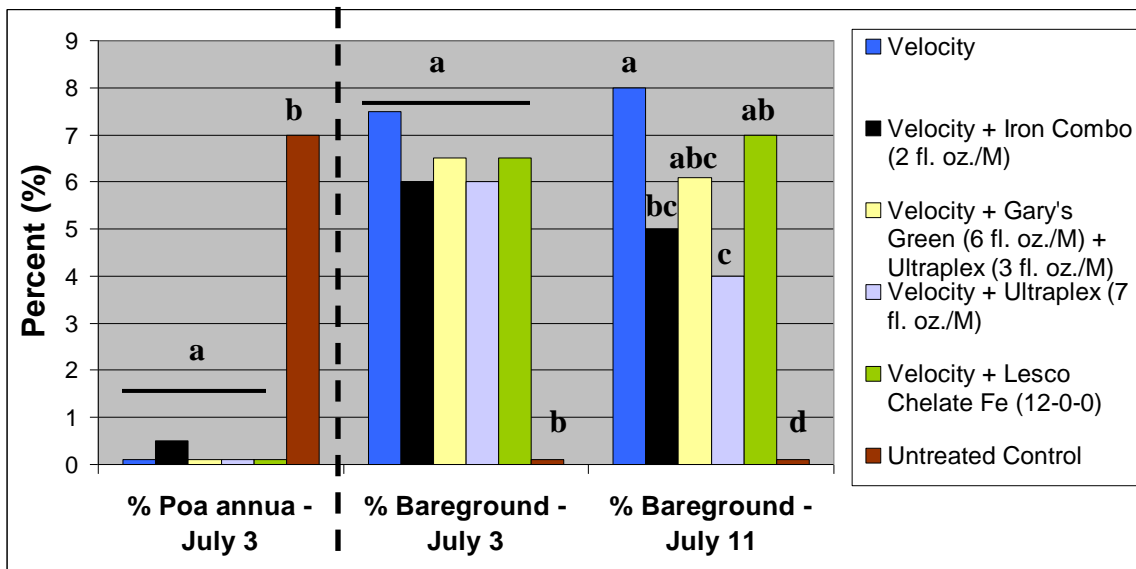


Figure 2. Percent (%) *Poa annua* and bareground after treatment with Bispyribac-sodium (Velocity) alone and a combination of Velocity plus foliar fertilizers.

* All Velocity treatments were applied at 6 oz./A (30 grams active ingredient/A)

** Treatments were applied on 29 May and 10 June 2008

*** Means followed by the same letter are not significantly different (P=0.05)

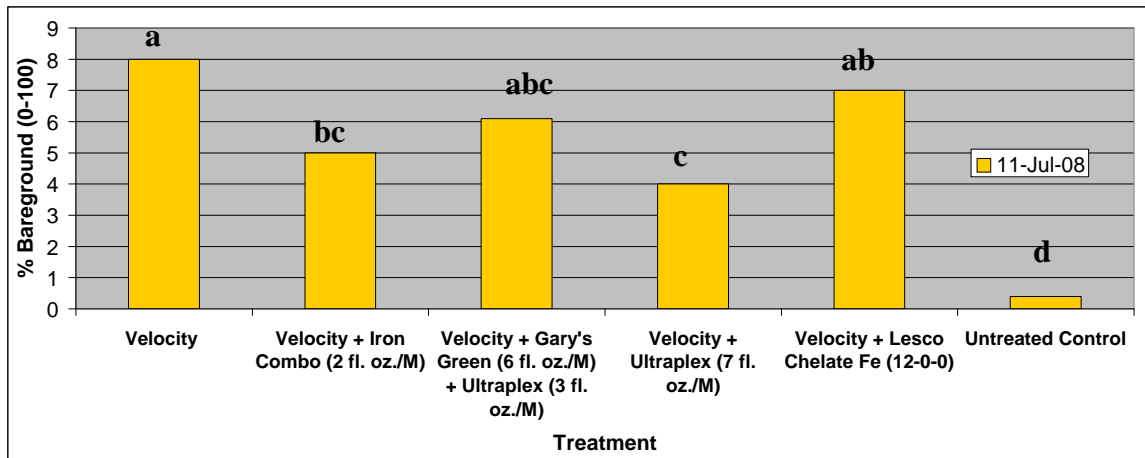


Figure 3. Percent (%) bareground after treatment with Bispyribac-sodium (Velocity) alone and a combination of Velocity plus foliar fertilizers.

* All Velocity treatments were applied at 6 oz./A (30 grams active ingredient/A)

** Treatments were applied on 29 May and 10 June 2008

*** Means followed by the same letter are not significantly different (P=0.05)

Foliar Fertilizers

Iron Combo (1-0-2, 1S, 4.5Fe, 1Mn, and 1Zn)

Ultraplex (5-0-3, 2Fe, 0.4Mn, 0.4Zn)

Gary's Green (18-3-4, 1Fe, 0.1Mn, 0.1Zn)

Liquid Fertilizer

Chelated (EDTA) Iron (Lesco) (12-0-0, 4.3Fe)