

Utilizing Topramezone with and Without Chelated Iron for Goosegrass Control

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Abstract

Goosegrass (*Eleusine indica*) is one of the most problematic grassy weeds of manicured turfgrass. Management can be very difficult, due to the ability of goosegrass to thrive in extreme environments and the lack of herbicides available offering acceptable control. Previous research has shown that topramezone (Pylex, BASF, Research Triangle Park, NC) offers excellent control of goosegrass, but turfgrass injury is an issue. Field trials were conducted in the summer of 2015 to determine the safening effects that chelated iron (Sprint 330, BASF, Research Triangle Park, NC) has on topramezone injury of bermudagrass. Results of this previous work showed that topramezone (12.3 g a.i. ha⁻¹) used in combination with chelated iron (1.22 kg a.i. ha⁻¹) significantly reduced the bleaching effects associated with topramezone on bermudagrass. In order to determine whether the addition of chelated iron to the mixture affected herbicide efficacy of goosegrass, greenhouse trials were conducted. Two rates of topramezone (6.15 and 12.3 g a.i. ha⁻¹), five rates of chelated iron (0.1525, 0.305, 0.610, 1.22, 2.44 kg a.i. ha⁻¹), and MSO (0.5% v/v) were applied sequentially (initial, 3 weeks after initial) to two goosegrass biotypes. The results of the trials performed showed that both rates of topramezone, with or without the addition of chelated iron, yielded complete control of both goosegrass populations for all topramezone treatments. Complete control came 45 days after initial (DAI) for trial one, and 26 DAI for trial two, respectively. These data suggest that the addition of chelated iron to combinations of topramezone and MSO may offer another herbicide option for goosegrass control in bermudagrass.

Objective:

- Determine whether the addition of chelated iron in combination with topramezone affected herbicide efficacy for goosegrass control.

Materials and Methods:

A greenhouse study was conducted to evaluate goosegrass control of topramezone when used in combination with chelated iron. Topramezone rates of 6.15 and 12.3 (g a.i. ha⁻¹) were applied in combination with methylated seed oil (0.5% v/v) and chelated iron rates of 0, 152.5, 305, 610, 1220, and 2440 (g a.i. ha⁻¹). Goosegrass control trials were initiated in mid-January and early-March. Two biotypes of goosegrass were used and were designated as Woodward and Clanton. All goosegrass plants ranged from 2 to 4 tillers at time at application. Applications were made using a hand-held CO₂ pressurized sprayer equipped with a 40 inch spray boom and 8002XR flat fan nozzles, and calibrated to deliver 280 L ha⁻¹. The experimental design used was a randomized complete block design with 3 replications. Visual percent control ratings were collected weekly using a 0-100 scale, where 0 corresponds to no control and 100 corresponds to complete control. Data were analyzed using the PROC GLM function of SAS 9.4 (SAS Institute; Cary, NC). Results were plotted using SigmaPlot 13.0 (Systat Software Inc.; San Jose, CA).

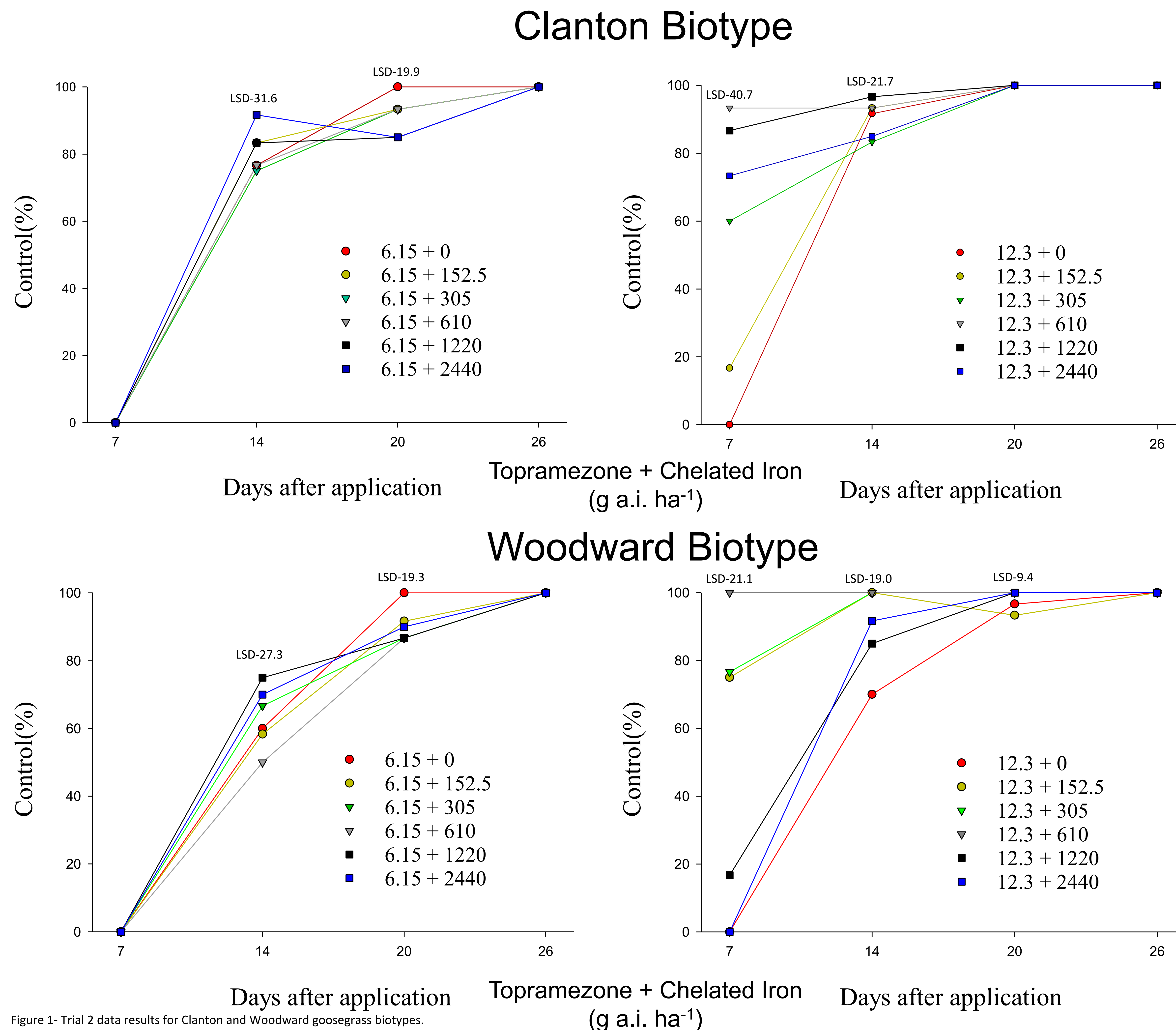


Figure 1- Trial 2 data results for Clanton and Woodward goosegrass biotypes.

Results and Discussion:

All of the treatment combinations of topramezone and chelated iron (Figure 1, Figure 2), as well as the topramezone alone resulted in complete control of the goosegrass. The amount of time required to completely control the populations were similar across all treatments. The addition of chelated iron to the mixture did not affect or show any reduction in herbicide efficacy at any of the rates.

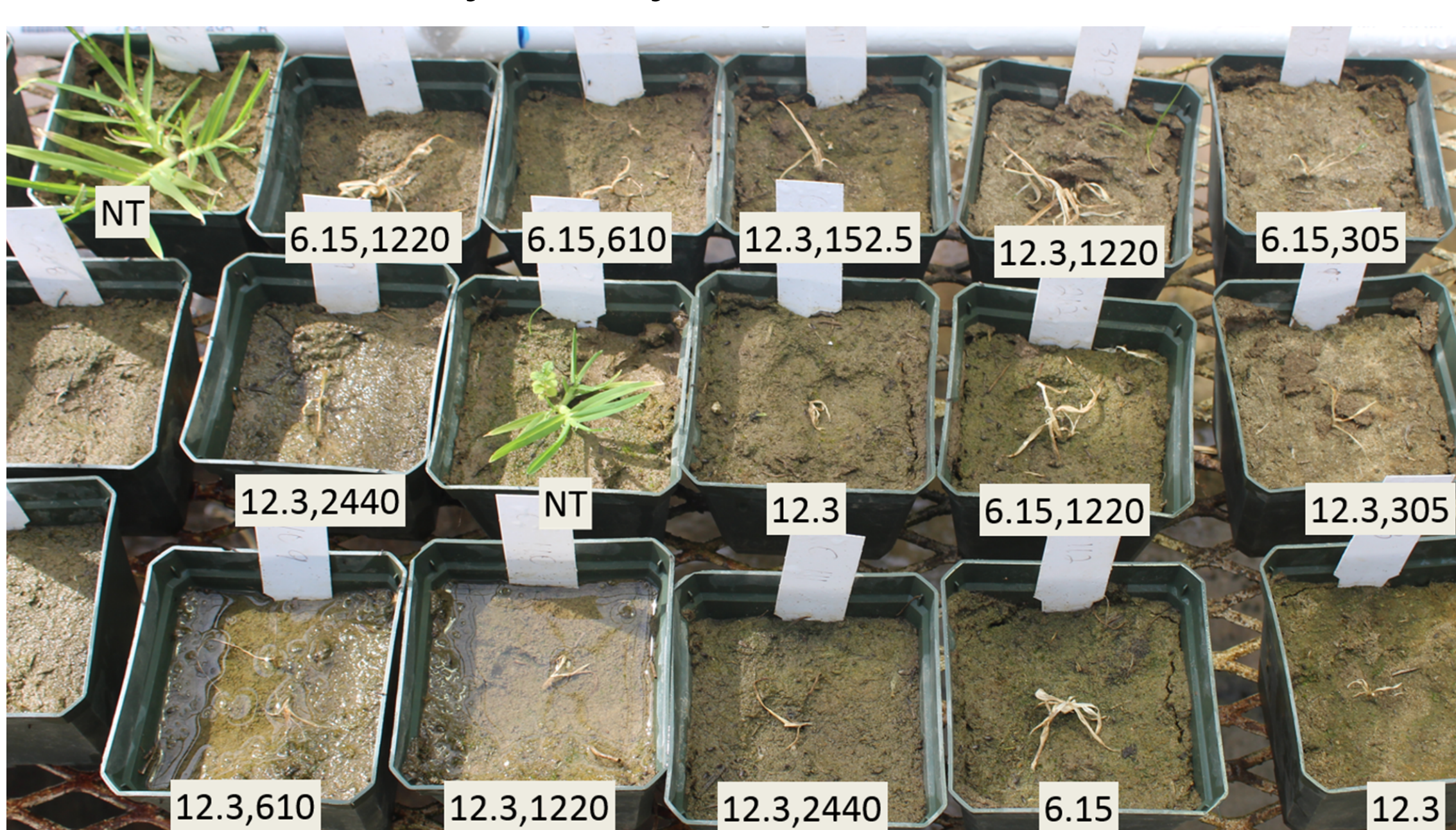


Figure 2- Examples of Clanton biotypes at 26DAT. Rates are listed as Topramezone rate, Chelated iron rate (g a.i. ha⁻¹)



Figure 3- Example of topramezone bleaching injury on bermudagrass.

Conclusions:

Overall, complete control of goosegrass was obtained using both rates of topramezone in combination with any of the chelated iron rates.

Future Research:

- Evaluate combinations of topramezone and chelated iron for control of other weed species.
- Evaluate timing of application for goosegrass control at varying plant stages.

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