

Field Evaluation of Genisys Mobility Product: Project Summary

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Postemergence Weed Control:

Turfgrass, specifically lawns, is a quality-oriented business. This means grass must look good and perform to meet clientele expectations. One aspect of quality characteristics includes uniformity or being weed free. Winter annual weeds not only disrupt lawn uniformity but compete with existing species for light, water, space, and nutrients. Therefore, weed control is an important aspect to turfgrass management. To increase the effectiveness of pesticides, adjuvants which have no pesticidal activity are sometimes added to spray mixtures. Because adjuvants effect factors such as the surface tension of water, spray particle size, spray pattern, and drift, these materials aid in increasing pesticide activity which through improved control can reduce environmental exposure. Recent nano-particle technology is being considered for adjuvants. Nano-particle adjuvants may permit effective pest control at lower application rates.

Summary:

Based upon the completed test we have concluded that you can get commercially acceptable results while using up to 40% less than label specifications of TRIMEC herbicide.

Objective:

Determine if the addition of a nano-particle adjuvant (i.e. Genisys Mobility) to a standard broadleaf weed herbicide mixture applied at lower than maximum label rates can achieve commercially acceptable postemergence weed control.

Materials and Methods:

Two bermudagrass areas on the UGA Griffin Campus with heavy broadleaf weed pressure were treated. Site 1 had more uniform weed pressure than site 2. Both sites were treated similar (e.g. treatment application protocol, cultivation practices, etc.). This report will primarily reference (i.e. data, images, etc.) site 1. Treatments (see treatment list below) were initially applied (i.e. treatment application "A") on March 5, 2021 with a CO₂ backpack sprayer set to deliver a spray volume of 45 gpa. Plots were 5 feet by 15 with 4 replications – plots in site 2 were smaller with 3 replications – arranged in a randomized complete block design. Repeat applications (i.e. treatment application "B") were applied to the same plot on April 5, 2021.

Prior to herbicide application, plots were mowed within 48 hours of treatment and remained un-mowed for 21 days to aid in broadleaf weed evaluation. Visual ratings of overall broadleaf weed control were taken at 4, 7, 11, 14, 22, and 27 days after the "A" application (DA-A). Similarly, evaluations following the "B" application occurred at 3, 8, 16, 24, 32, 46, and 60 (DA-B). Using Agriculture Research Manager (ARM Revision 8.2.0 – Gylling Data Management, Brookings, SD) data were analyzed by analysis of variance (ANOVA) with means separated by least significant difference (LSD) at a p-value of 0.05.

Treatments:

1. Nontreated
2. BWH without (-) NIS
3. BWH with (+) NIS
4. BWH (x / 100% maximum label rate) + Genisys Mobility (1 quart / acre)
5. BWH (x / 100% maximum label rate) + Genisys Mobility (2 quarts / acre)
6. BWH (0.8x / 80% maximum label rate) + Genisys Mobility (1 quart / acre)
7. BWH (0.8x / 80% maximum label rate) + Genisys Mobility (2 quarts / acre)
8. BWH (0.6x / 60% maximum label rate) + Genisys Mobility (1 quart / acre)
9. BWH (0.6x / 60% maximum label rate) + Genisys Mobility (2 quarts / acre)
10. BWH (0.4x / 40% maximum label rate) + Genisys Mobility (1 quart / acre)
11. BWH (0.4x / 40% maximum label rate) + Genisys Mobility (2 quarts / acre)
 - Broadleaf Weed Herbicide (BWH): e.g. Trimec

Results and Discussion:

Genisys Mobility was mixed with each rate of BWH at two rates, 1 and 2 quarts / acre. In general, there was no difference between the two rates of the nano-particle adjuvant when applied at the same BWH rate. Two incidences occurred with a difference between the rates of Genisys Mobility. Both occurred on site 2 and broadleaf weed control was greater at the 1 quart / acre rate than the 2 quarts / acre rate (data not presented). For the rest of this report, results and discussion will pertain to Genisys Mobility at the 1 quart / acre rate.

As expected, the industry standard broadleaf weed herbicide (Trimec Classic) applied at 100% maximum label rate provided commercially acceptable weed control (i.e. greater than 80%) 14 DA-A and improved to greater than 90% control at the 16 DA-B rating (data not presented). At no rating was there a difference between the 100% rate of Trimec with and without an adjuvant, including Genisys Mobility (data not presented).

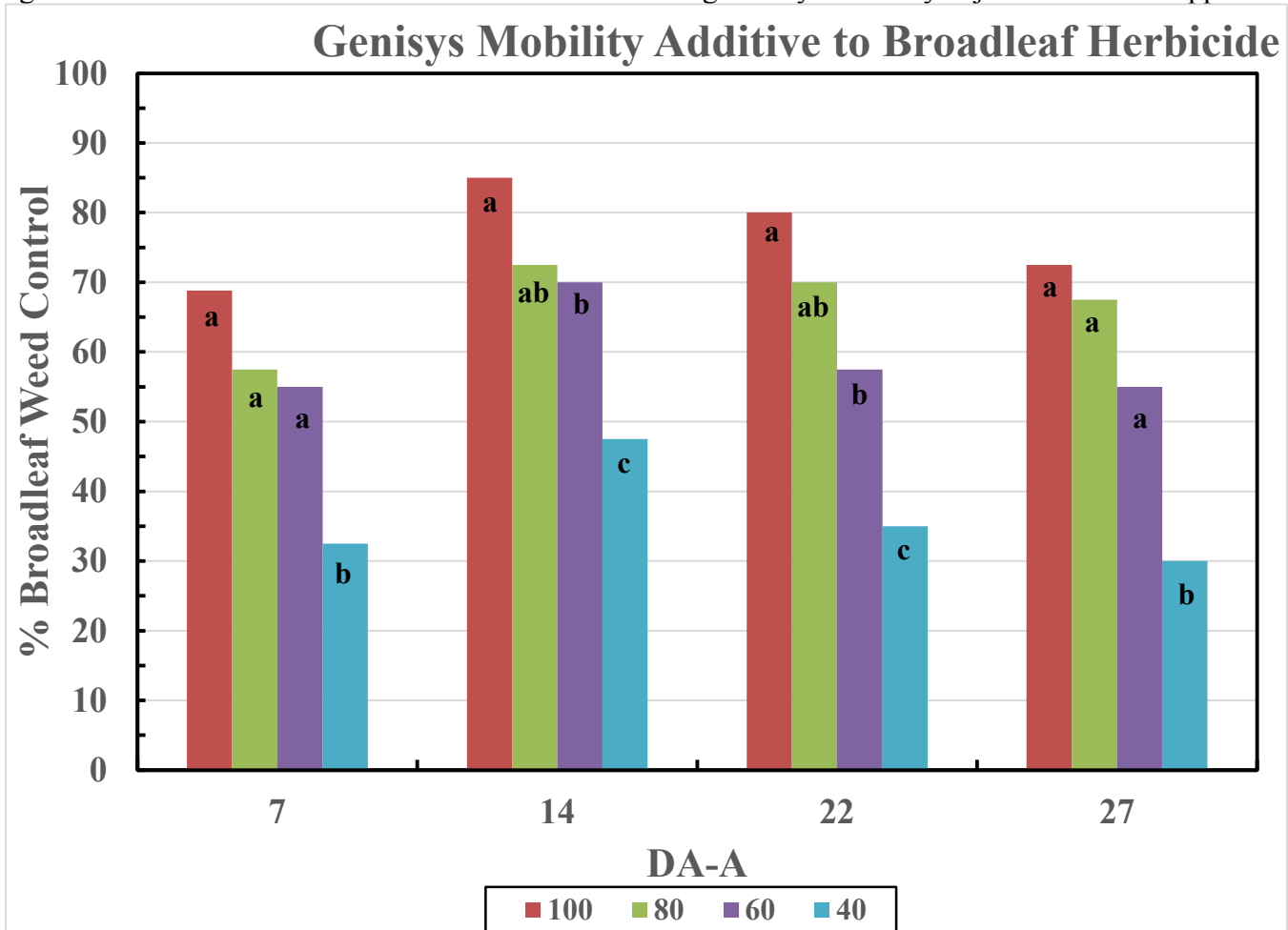
For 28 days following the initial application of Trimec with 1 quart / acre Genisys Mobility, there was a stepwise digression of weed control as the rate decreased from 100% to 40% of the maximum label rate (Figure 1). For all rating dates, 40% of the label rate of the herbicide was less than the other rates tested and at no rating date did this reduced rate exceed 50% broadleaf weed control. At 14 DA-A, the 60% Trimec rate had 70% broadleaf weed control but declined to less than 60% control by the 22 and 27 DA-A ratings. The 80% of label rate had the same broadleaf weed control as the 100% rate for all rating dates.

When a second application was made 28 days after the initial, similar weed control trends were observed (Figure 2). However, overall broadleaf weed control improved relative to analogous dates. Although the 40% of the label rate of the herbicide provided greater than 70% broadleaf weed control at 24 DA-B, it was less than other rates on that rating date. For the 24 DA-B rating, the 60%, 80%, and 100% rates were

greater than 90% weed control. At 32 DA-B the 60% rate had greater than 70% broadleaf weed control while the 80% and 100% rates exceeded 80% control.

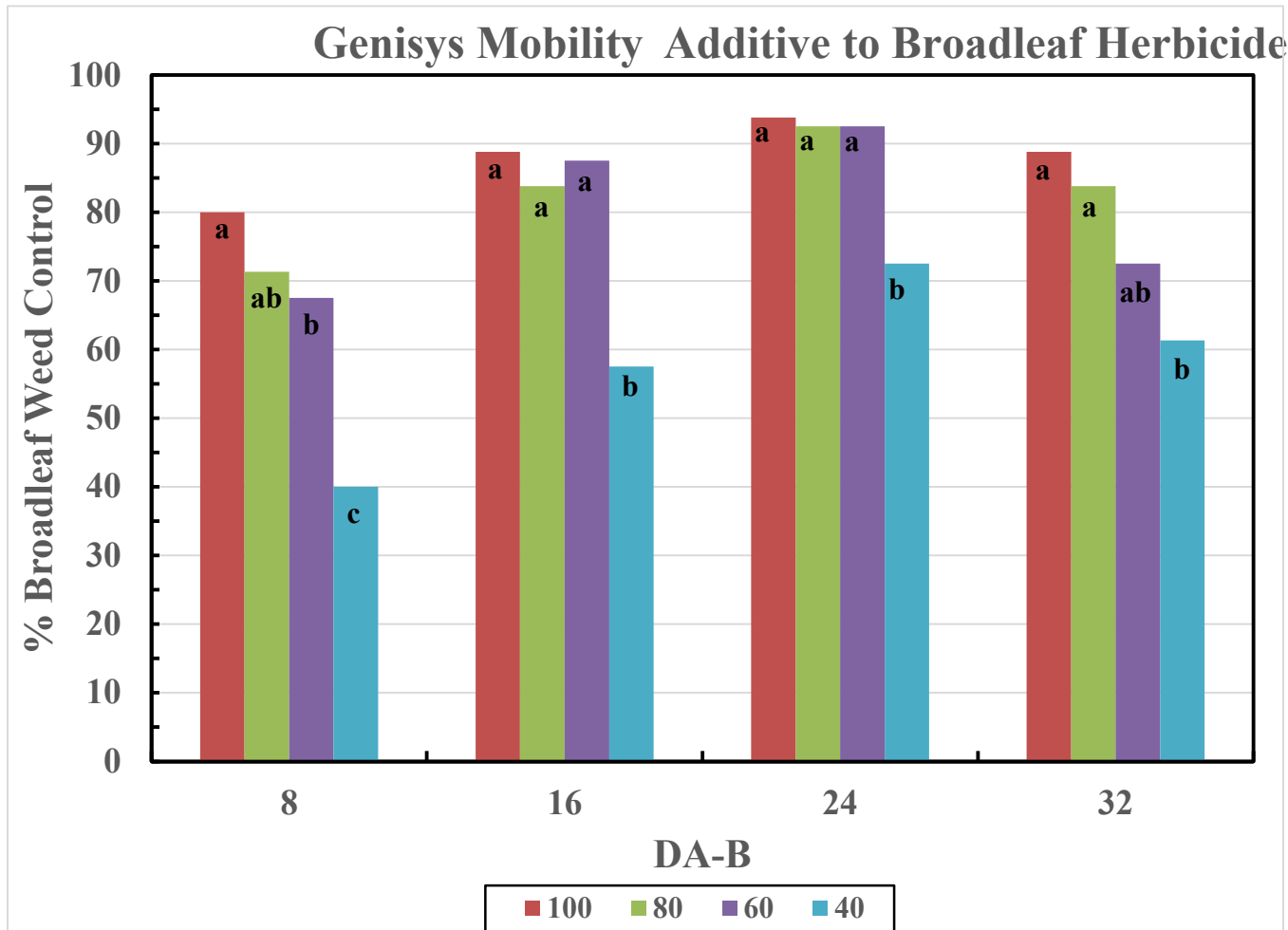
From this trial, the addition of Genisys Mobility at 1 quart / acre to Trimec Classic at 60% of maximum label rate provided as good broadleaf weed control 24 days after two applications spaced 28 days apart as the 100% labeled rate. The addition of a nano-particle adjuvant may provide acceptable weed control at lower than labeled rates for some herbicides.

Figure 1. Broadleaf weed control at reduced rate including Genisys Mobility adjuvant after one application.



- Within a rating date, columns with the same letter are not statistically different.
- Herbicide rates are represented as a percent reduction from maximum label rate.
- Initial herbicide application was March 5, 2021.
- Broadleaf weeds within the plot area included white clover, dandelion, henbit, and others.

Figure 2. Broadleaf weed control at reduced rate including Genisys Mobility adjuvant after two applications.



- Within a rating date, columns with the same letter are not statistically different.
- Herbicide rates are represented as a percent reduction from maximum label rate.
- Sequential herbicide application was April 5, 2021.
- Broadleaf weeds within the plot area included white clover, dandelion, henbit, and others.