

Herbicide Resistance on Palmer Amaranth (*Amaranthus palmeri*)

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INTRODUCTION

- Palmer amaranth (*Amaranthus palmeri*) is a problematic annual broadleaf weed that is native to southwest United States (USDA 2017).
- In 2006 the Weeds Science Society of America rated Palmer amaranth as the major weed pest based on how difficult it is for producers to control (Ward, Sarah M., et al. 2017).
- This weed continues to compete with crops such as corn (*Zea mays* L.), cotton (*Gossypium hirsutum*), and soybean (*Glycine max*) (Jha 2008).
- Therefore, the purpose of this research is to evaluate untreated, low and high rate treatments of glyphosate in two trials for fourteen days after the treatment has been applied.

OBJECTIVES

The objective of this study was to determine if the Palmer amaranth seeds collected from residual gin material (“gin trash”) were resistant to glyphosate herbicide.

MATERIALS & METHODS

The study was conducted at the Texas A&M University- Kingsville Research Greenhouse (27°31'50.4"N 97°53'13.8"W) on June and July of 2020.

Biotype of palmer amaranth:

- Gin Trash Population (GTP)

Types of treatments:

- Untreated Control (UTC)
- Low (GlyStar Plus, 28 oz/A)
- High (GlyStar Plus, 32 oz/A)

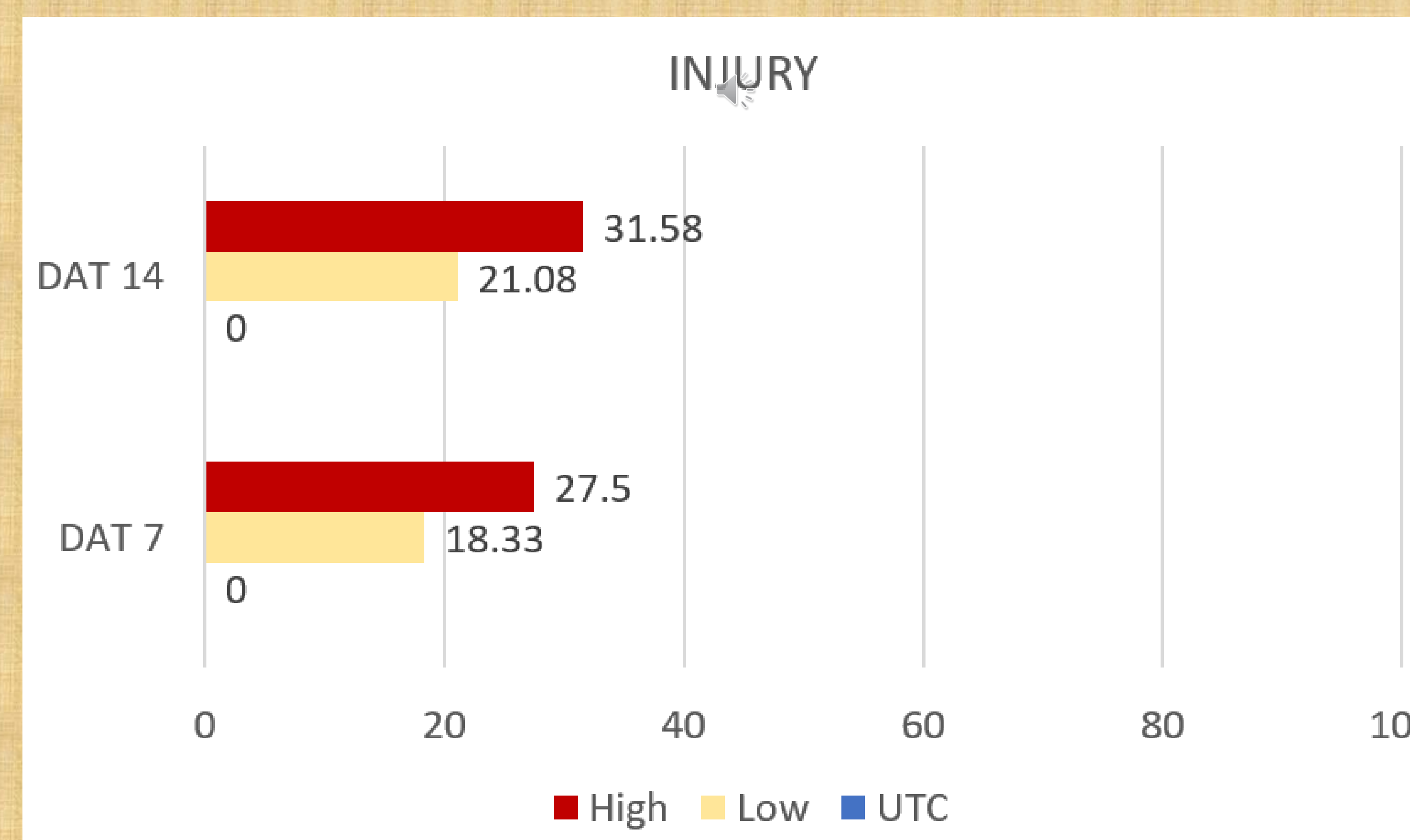
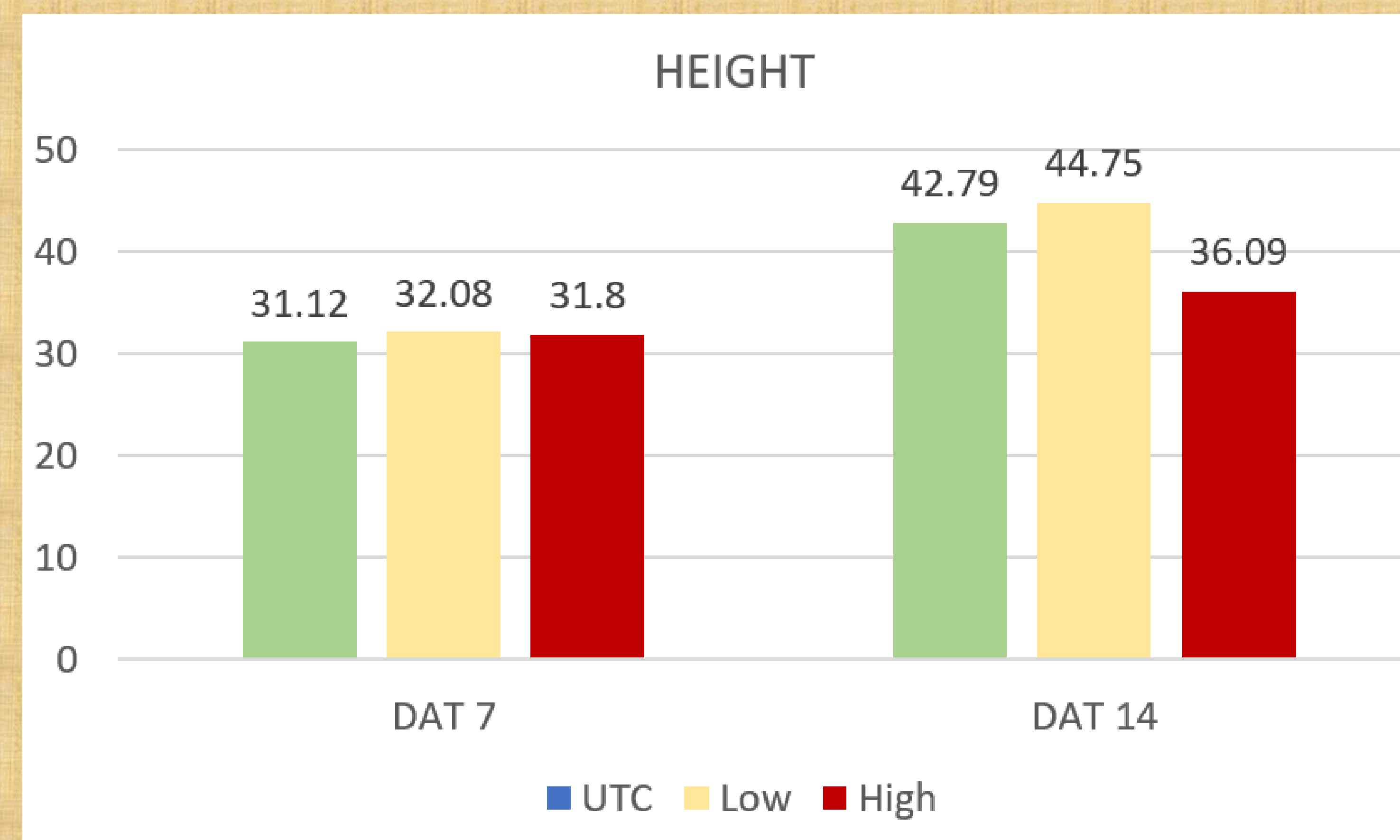
Types of software used to determine statistical analysis:

- SAS version 9.4

Methods:

- Gin trash population seeds were scarified by a sulfuric acid bath and dried for 24 hours to eliminate the thick seed coat
- Seeds were planted and once cotyledons emerged, plant were transplanted into 500ML styrofoam cups filled with Berger BM6 all purpose potting mix.
- Plants were watered daily to maintain soil moisture and a complete fertilizer (15-30-15 MiracleGro, Marysville, OH) was applied to the plants once a week.
- Treatments were sprayed with the Low and High rates of glyphosate.
- Data was collected at 1, 3, 7, and 14 days after treatment (DAT) on injury percentage and plant growth
- Plants were harvested at 14 DAT

RESULTS



CONCLUSIONS

- Overall, height was not affected by the glyphosate treatments
- The high rate showed to have a greater control on Palmer amaranth compared to UTC but we expected to see greater control at a high rate.
- It is suspected that this biotype may have developed resistance but more tests should be completed. Consequently, we report that the glyphosate does not control this biotype.
- Future trials should extend to 21 DAT to see if the herbicide treatment continued to grow after glyphosate treatment.



REFERENCES

- United States Department of Agriculture (2017) Palmer Amaranth. https://www.fsa.usda.gov/Assets/USDAFSAPublic/usdafiles/FactSheets/archived-factsheets/palmer_amaranth_nrcs_national_factsheet.pdf. Accessed August 4, 2020.
- Ward, Sarah M., et al. “Palmer Amaranth (*Amaranthus Palmeri*): A Review: Weed Technology.” Cambridge Core, Cambridge University Press, 20 Jan. 2017, www.cambridge.org/core/journals/weed-technology/article/palmer-amaranth-amaranthus-palmeri-a-review/0C4CEC57D8318A5BBB85F88DDD0BB29C. Accessed 4 Aug. 2020.

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