

Peanut Response to Forestry Herbicides: Imazapyr and Triclopyr

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EXTENSION

Georgia Pines

- **4,451,542 ha in pine production**
 - 1,677,539 ha in natural
 - 2,805,099 ha in planted
- **67% in loblolly/shortleaf**
- **33% in longleaf/slash**
- **Lumber, pulp, telephone poles, straw, toiletries, cleaning products**
- **35,180 ha Evergreen Forest in Mitchell County, GA**

- Source: Brandeis, Thomas J.; McCollum, Joe; Hartsell, Andy; Brandeis, Consuelo; Rose, Anita K.; Oswalt, Sonja N.; Vogt, James T. (JT); Marciano-Vega, Humfredo. 2016. Georgia's Forests, 2014. Resource Bulletin SRS-209. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 78 p.

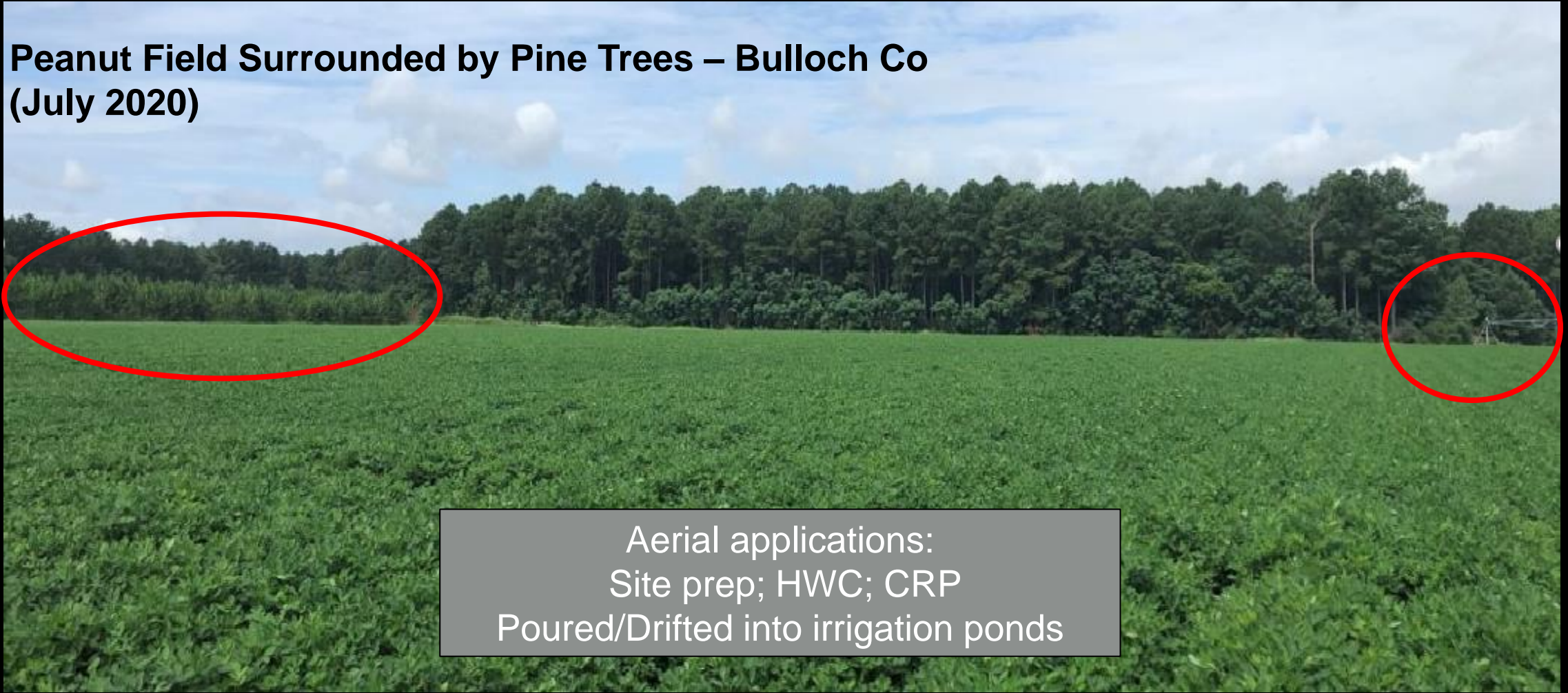
Peanuts

- **335,889 ha planted**
- **Averaged 5040 kg/ha**
- **18,871 ha peanut in Mitchell County, GA**
- **1.86 ha Evergreen Forest : 1 ha Peanut**
- Sources: NASS 2021;
<https://quickstats.nass.usda.gov/results/18D9DF74-F8EE-3E43-BF25-4B2E6F24E512>



Accidental Drift and Extension Calls

Peanut Field Surrounded by Pine Trees – Bulloch Co
(July 2020)



Aerial applications:
Site prep; HWC; CRP
Poured/Drifted into irrigation ponds

Statement of Objective

The objective of this research was to determine the effects of PRE and POST applications of imazapyr and triclopyr on peanut.

Hypothesis

Our hypothesis is that imazapyr and triclopyr will impact peanut growth and yield depending on rate and time of application (PRE or POST).



Materials and Methods

- 2020 – 2021 in Ty Ty, GA
 - Two different studies
- Treatments arranged in CRD, 4 replications
 - 3 (Time) X 4 (Rate) Factorial
- Plots planted in twin-row configuration on 1.83 m x 7.62 m beds
 - Maintained Weed-Free
- Peanut Variety:
 - GA-06G
- Herbicide Rates and Timings:
 - **PRE (1 DAP), 28 DAP, 58 DAP**
 - Imazapyr: 0, 4.2 (1/100th X), 42 (1/10th X), 420 g ai ha⁻¹ (1X)
 - *Arsenal Powerline 2AS*
 - Triclopyr: 0, 8.4 (1/100th X), 84 (1/10th X), 840 g ai ha⁻¹ (1X)
 - *Garlon 3A*
- Standard small plot application techniques

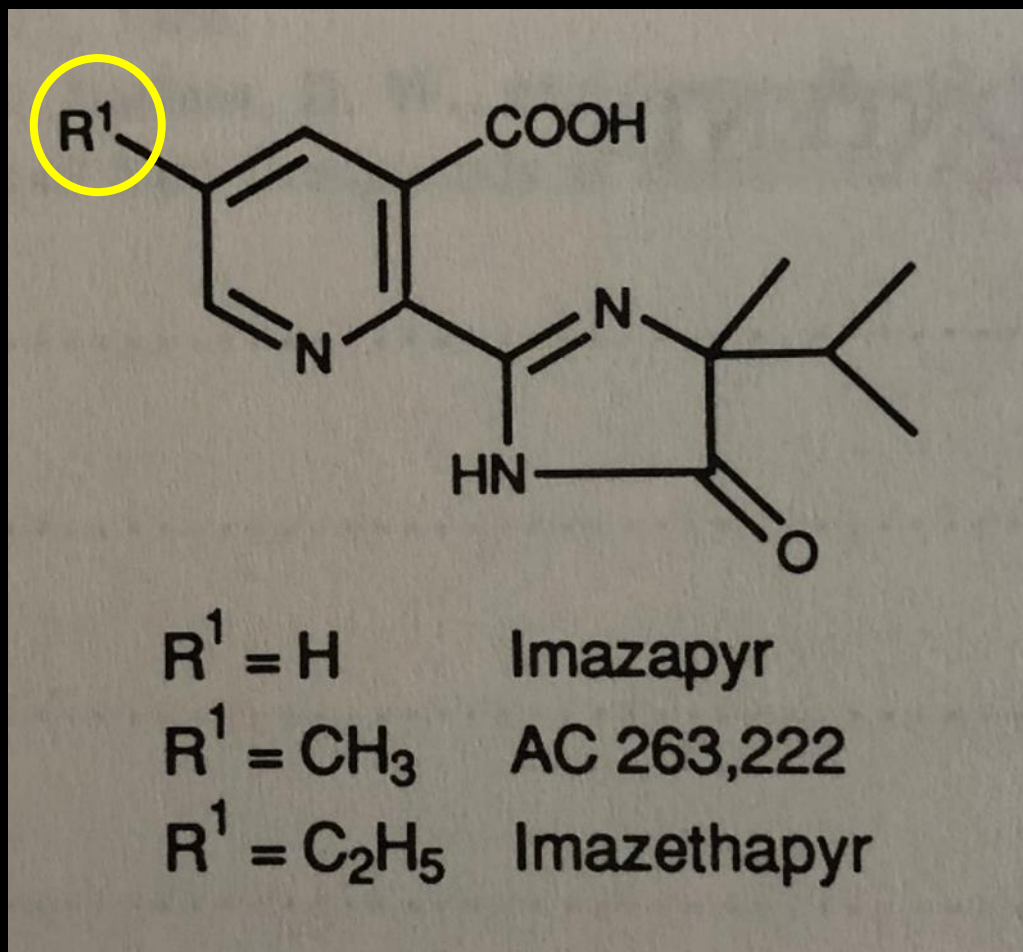


Materials and Methods

- Peanut plant density: 17 days after planting (DAP)
- Peanut stunting/chlorosis: 61-63 DAP
- Plant height and widths: 64 DAP
- Yield and percent yield loss
- Data subjected to ANOVA using PROC GLIMMIX, SAS 9.4; means separated using Tukey-Kramer HSD ($P=0.05$)
 - No interaction between years
 - Imazapyr: No Rate * Timing: Main Effect of Rate; Timing NS
 - Triclopyr: Rate * Timing



Cadre (imazapic/AC-263,222) vs. Pursuit (imazethapyr) vs. Arsenal (imazapyr). Structurally not that different but.....



1X Rate: 28 DAP

June – 26; 60 DAP

Peanut Response to Imazapyr – Applied 28 DAP



0



1/100th X



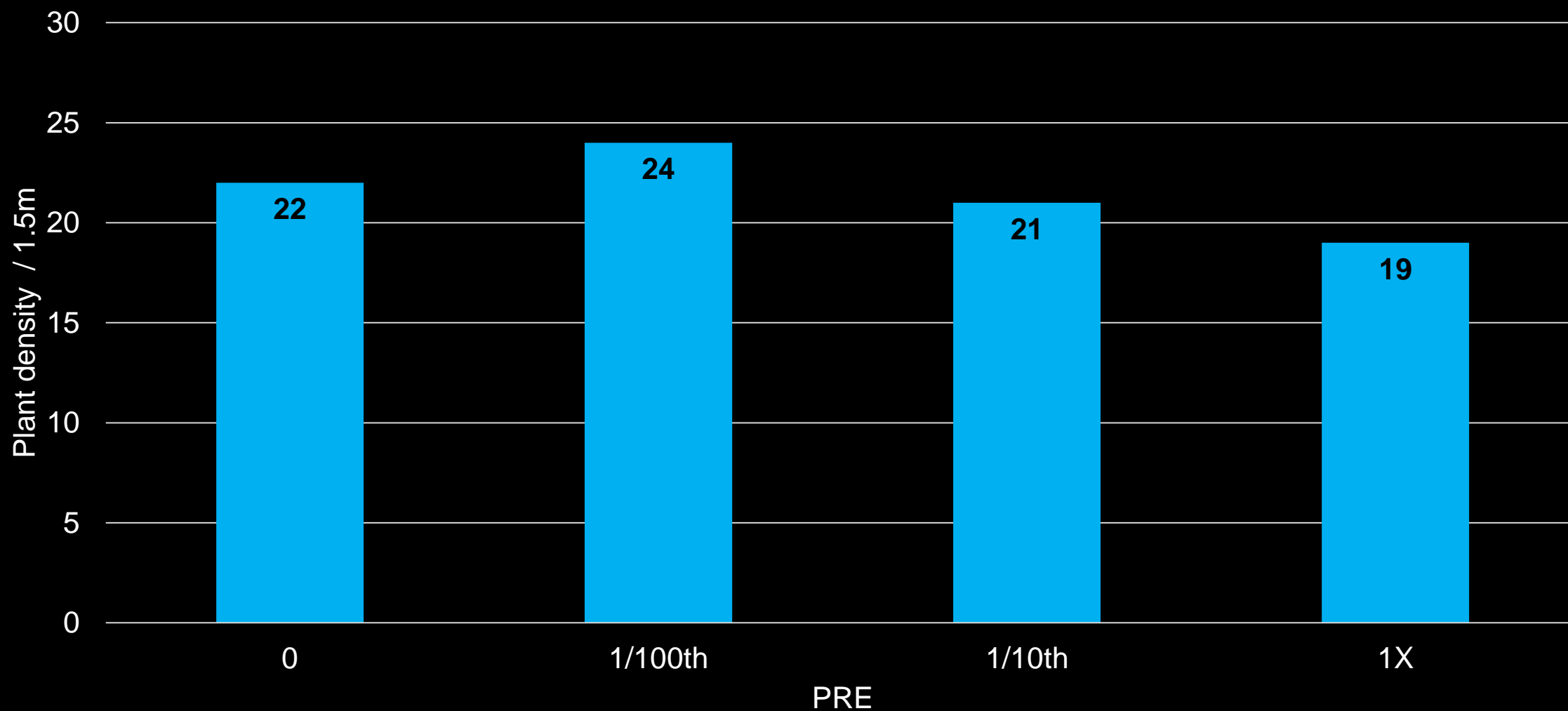
1/10th X



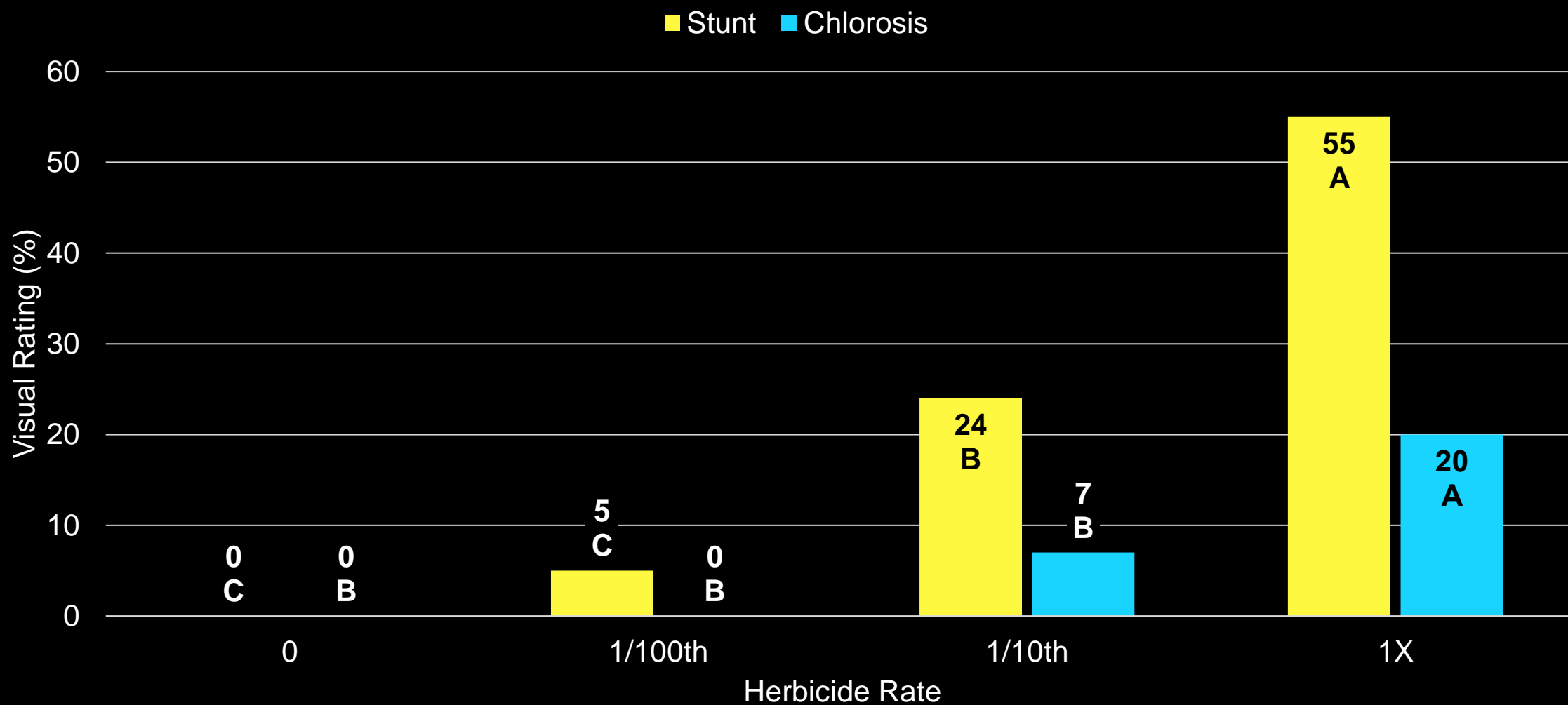
1 X



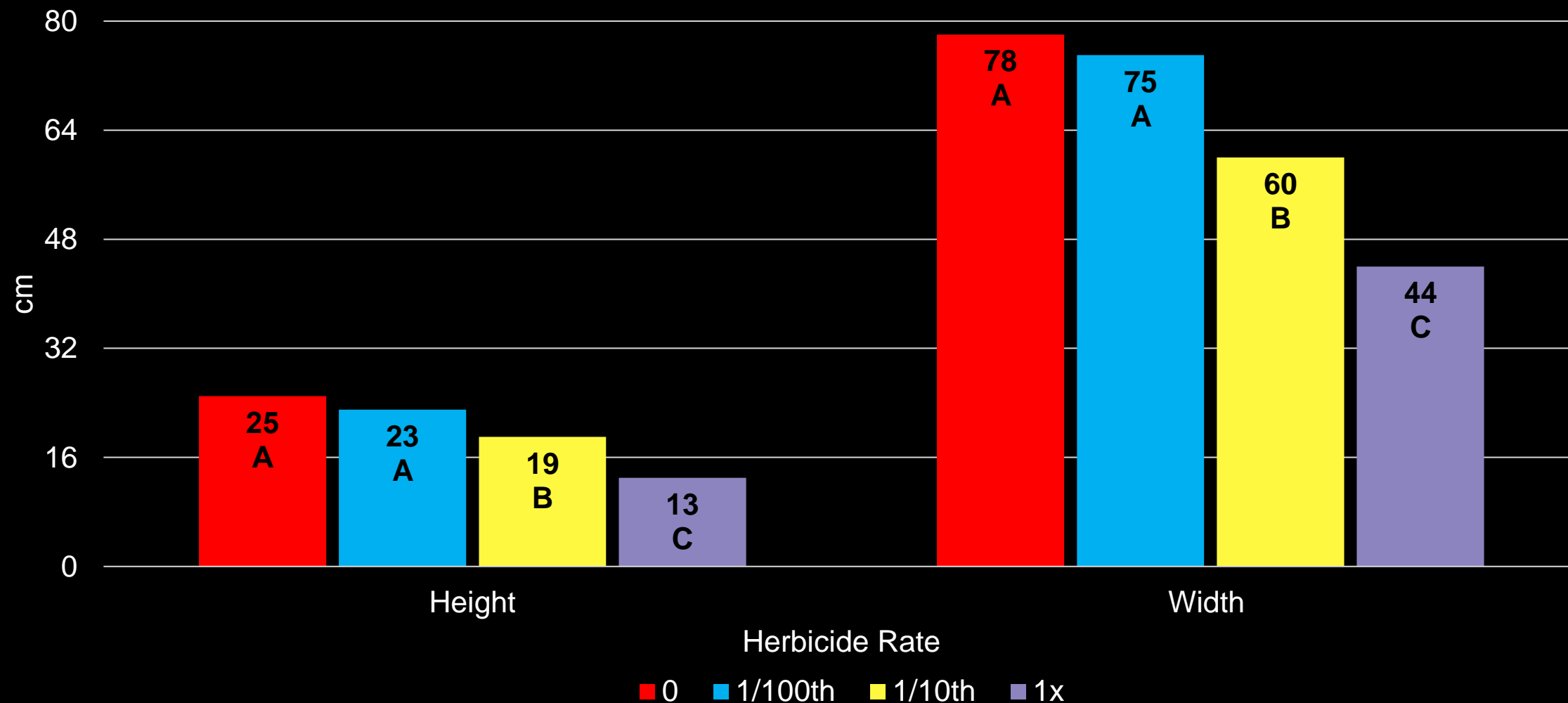
Imazapyr Plant Density: 17 DAP



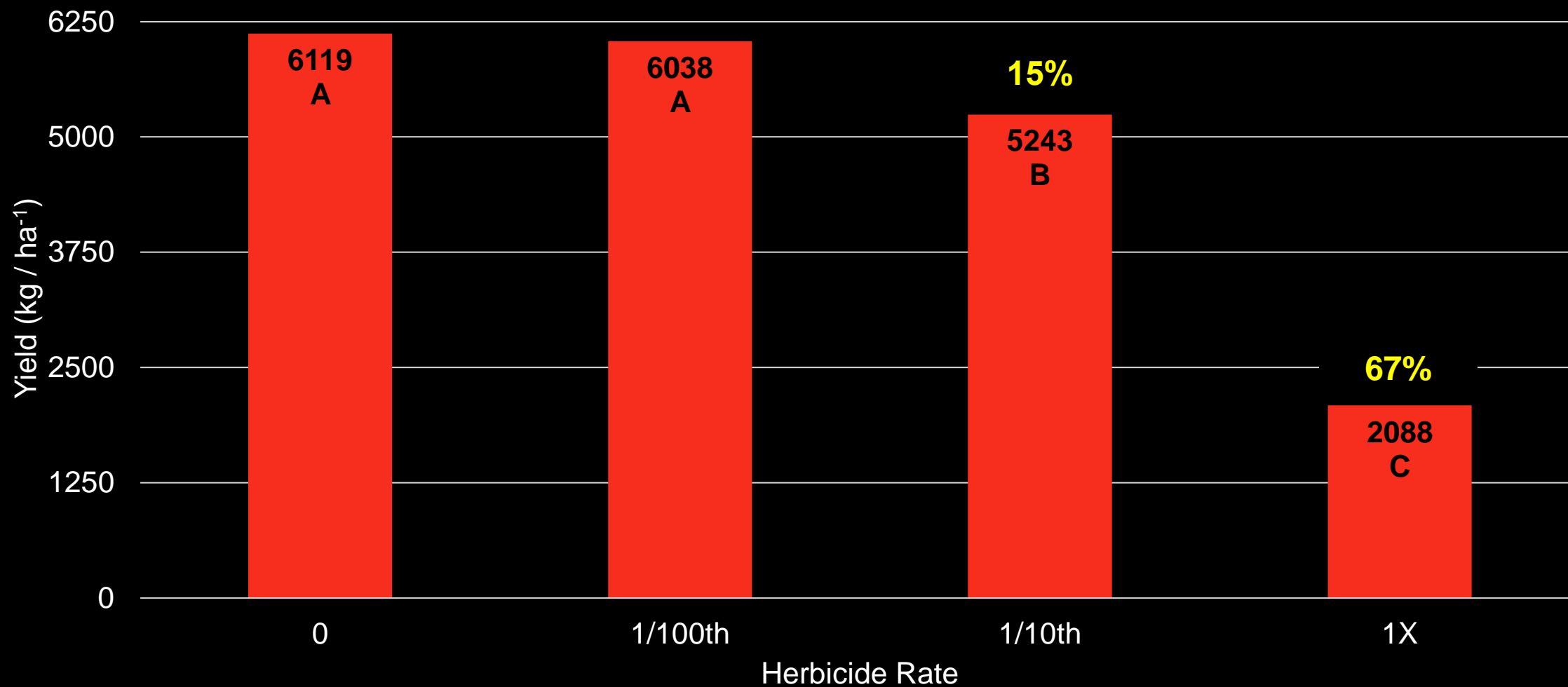
Imazapyr Stunting and Chlorosis: 61 DAP



Imazapyr Plant Measurements: 64 DAP



Imazapyr Yield



Imazapyr Summary

- Plant density was not impacted by any rate
- 1/10th and 1X rate regardless of timing caused:
 - Significant stunting and chlorosis (1X rate)
 - Significant reductions in plant canopy
 - Significant Yield loss
- Drift Rates $\leq 1/100^{\text{th}}$ X should not cause significant yield loss
- Half-life various: 25 -142 days in soil, 2 – 3 days in shallow ponds



Peanut Response to Triclopyr Applied @ 28 DAP – 1 DAT



1/100thX



1/10thX



1X

Peanut Response to Triclopyr – Applied 28 DAP



0



1/100th X



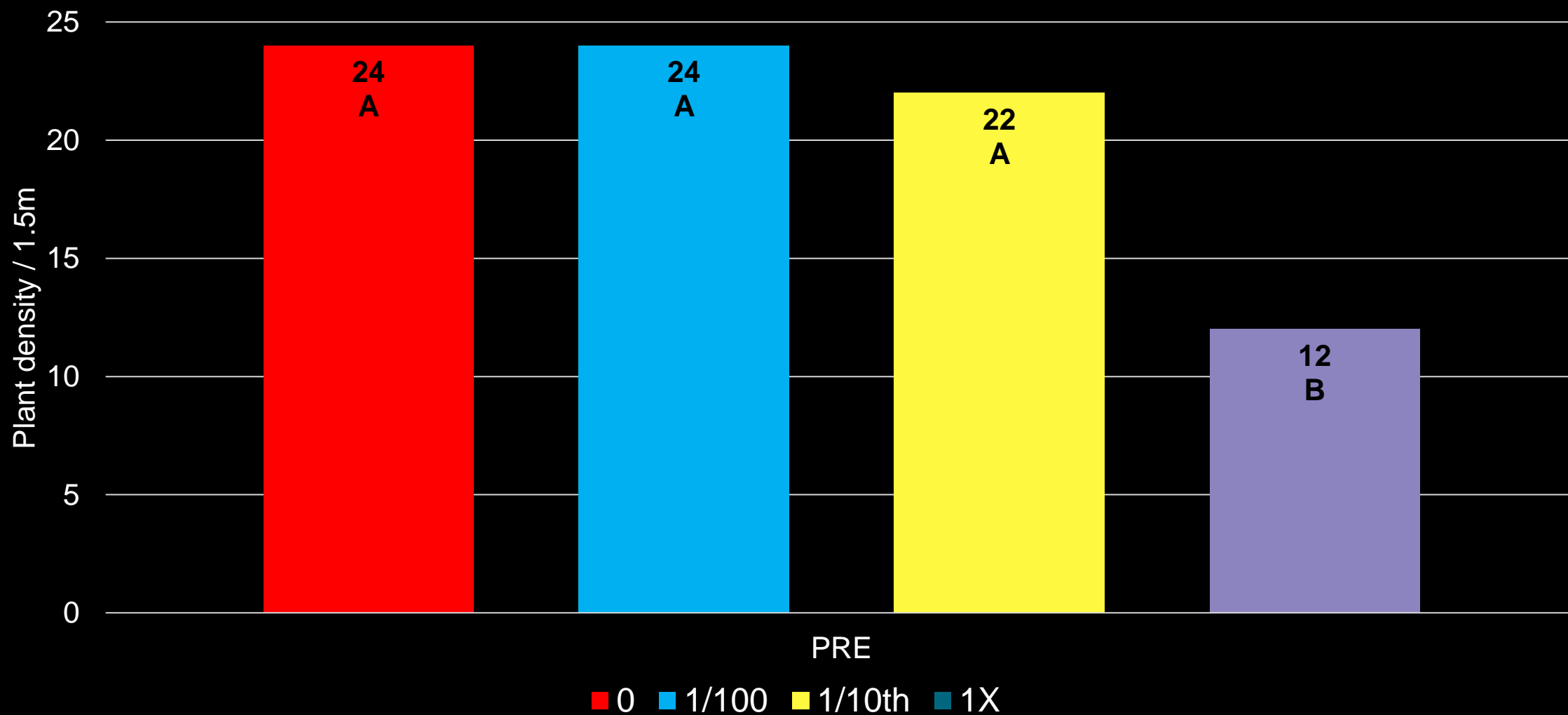
1/10th X



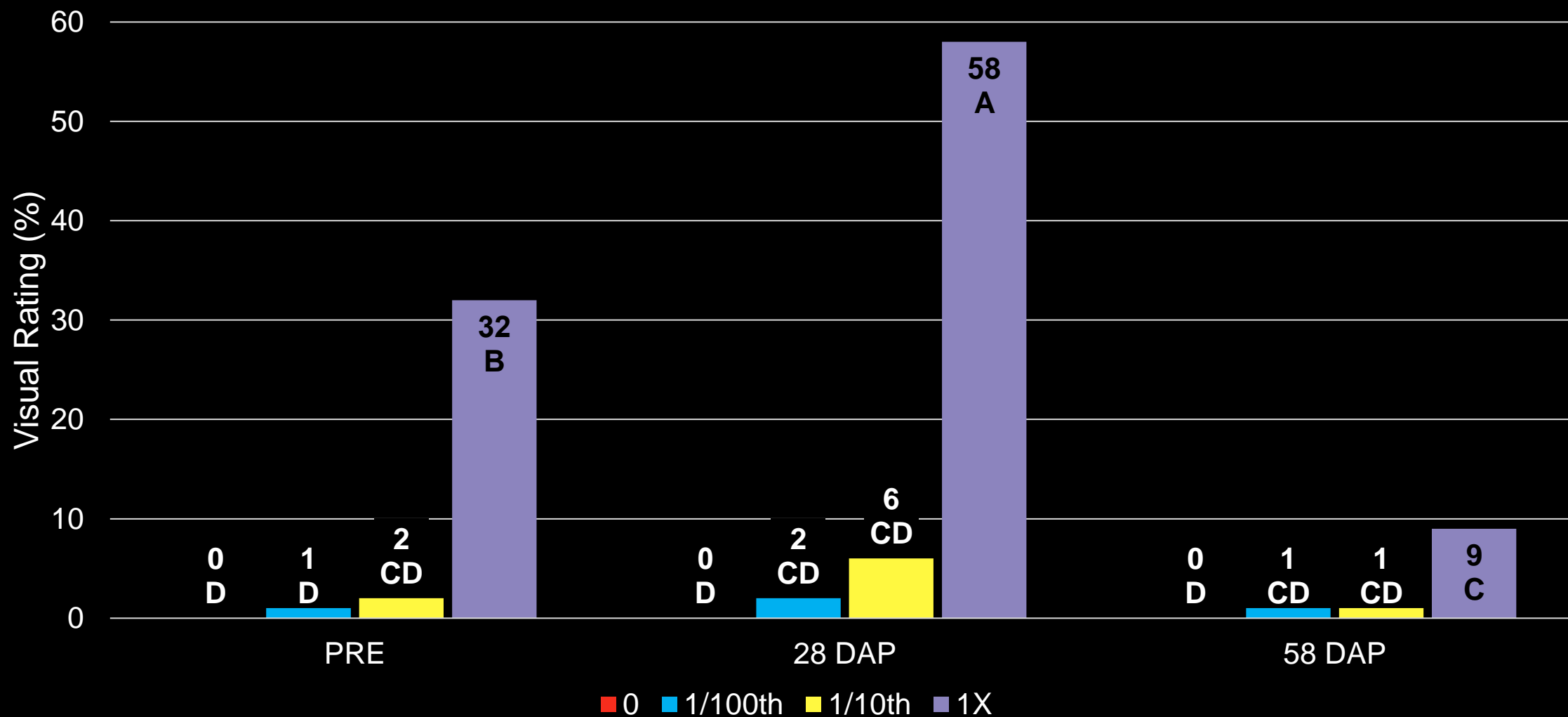
1 X



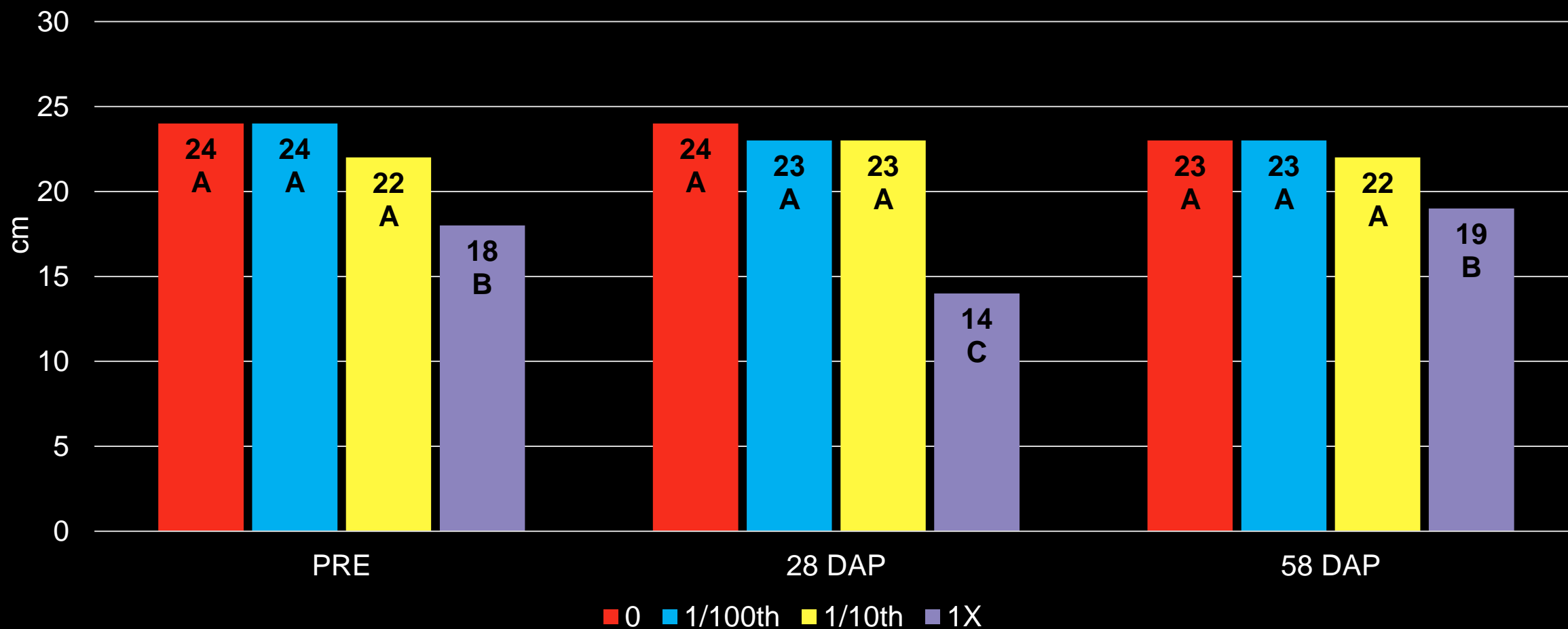
Triclopyr Plant Density: 17 DAP



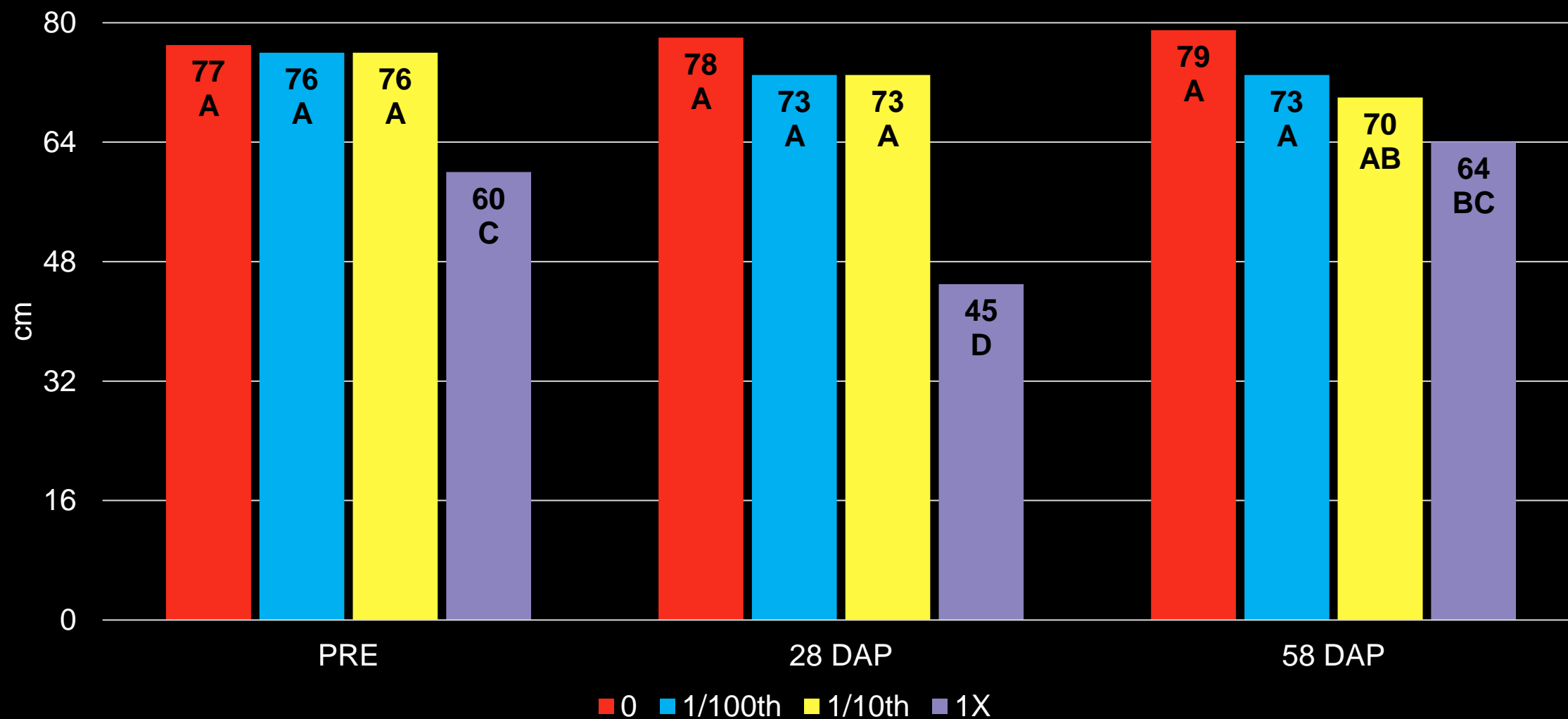
Triclopyr Plant Stunting: 63 DAP



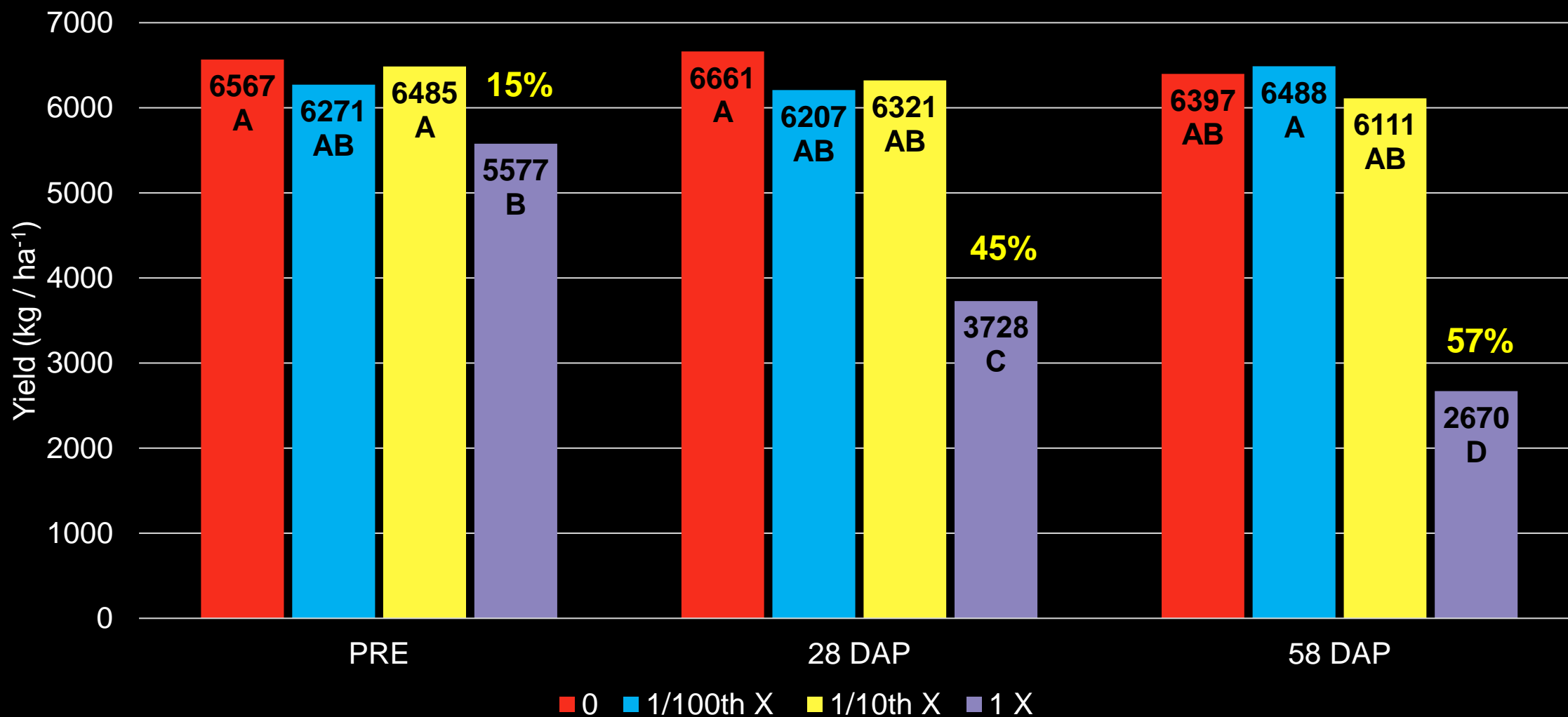
Triclopyr Plant Heights: 64 DAP



Triclopyr Plant Widths: 64 DAP



Triclopyr Yield



Triclopyr Summary

- 1X rate = Yield loss 15 – 57% depending on timing
- 1X rate at 28 DAP = greatest injury to plant canopy
- 1X rate at 58 DAP = greatest yield loss
- Drift rates $\leq 1/10^{\text{th}}$ X should not cause significant yield loss
- Less injurious than Imazapyr
- Half-life various: 10 - 46 days in soil, ~10 hours in shallow ponds @ 25 °C



Hypothesis

Our hypothesis is that imazapyr and triclopyr will impact peanut growth and yield depending on rate and time from PRE or POST applications.

- Fail to Reject

Other Relevant Research

- Carter, O. W., Prostko, E. P. 2020. The Effect of Picloram Plus 2,4-Dichlorophenoxyacetic Acid on Peanut Growth and Yield. Peanut Science. 47:111-114
“Peanut fields unintentionally exposed to picloram + 2,4-D rates $\leq 1/100^{\text{th}}$ X can exhibit typical injury symptoms but most likely will not experience yield losses.

Future Research

- Continue research in 2022
- Implement a $1/5^{\text{th}}$ X Rate for regression analysis (2021 and 2022)





**Thank You!
Questions?**

