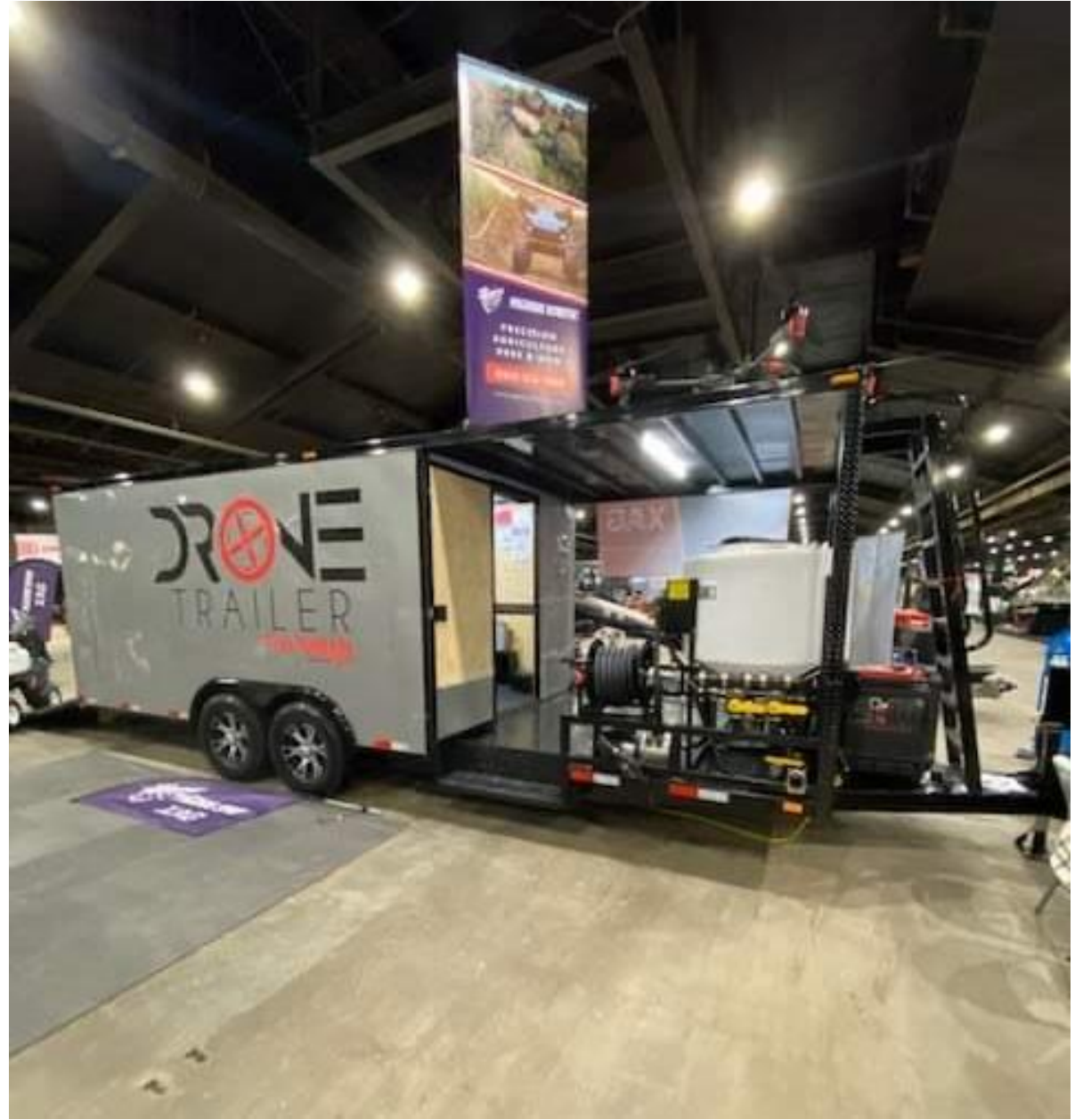


# Evaluation of Drone Application in Row Crops



**Steve Li. Extension Specialist, Associate Professor  
ACES, Auburn University**







**Untreated  
plants**





**Bellefonte, Pennsylvania**

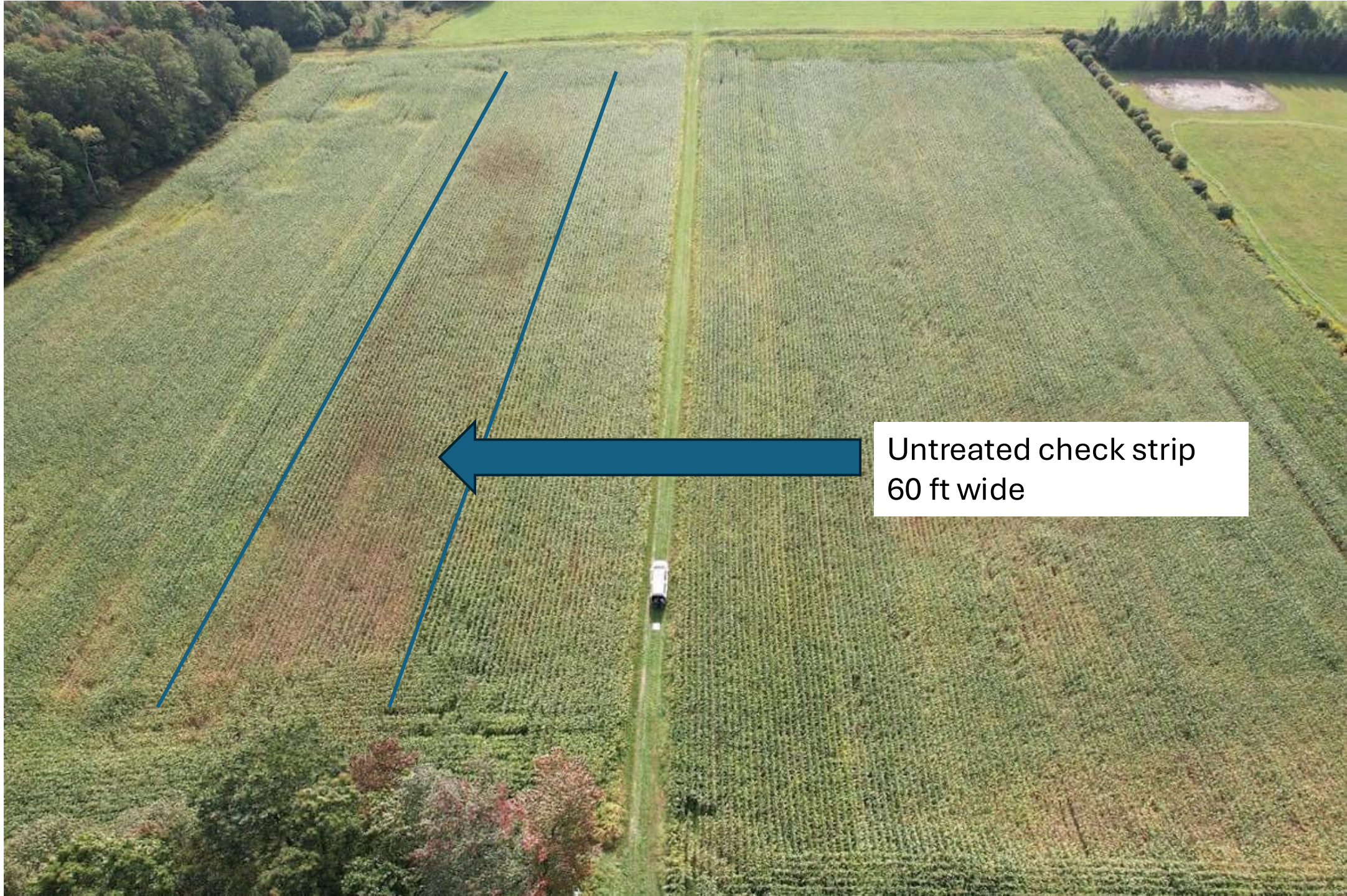
**Veltyma fungicide sprayed at 7 oz/A  
with 0.5 oz/A of Justified (drift  
reducing agent and deposition aid)**

**2 GPA with T40**

**13 ft height, 32 fps, 27-28 ft swath  
width**

Photo credit to:  
Tyler Fleck and Flecks Ag Services  
of Warriors Mark, Pennsylvania





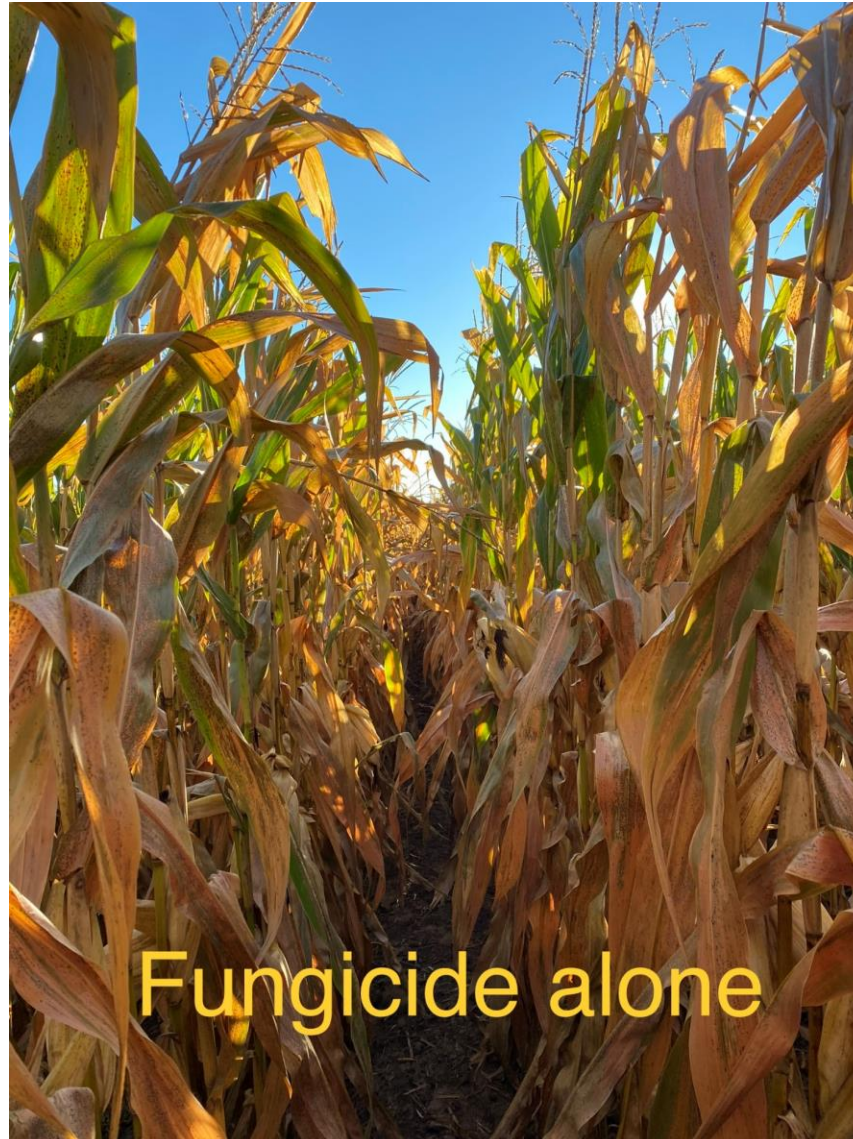
Untreated check strip  
60 ft wide





Untreated

Testing plots from SW Wisconsin sprayed by Agras T40



Fungicide alone



Fungicide + ReaX Boron

Photo credit to Andrew Tucker, Nutrien Ag Solutions



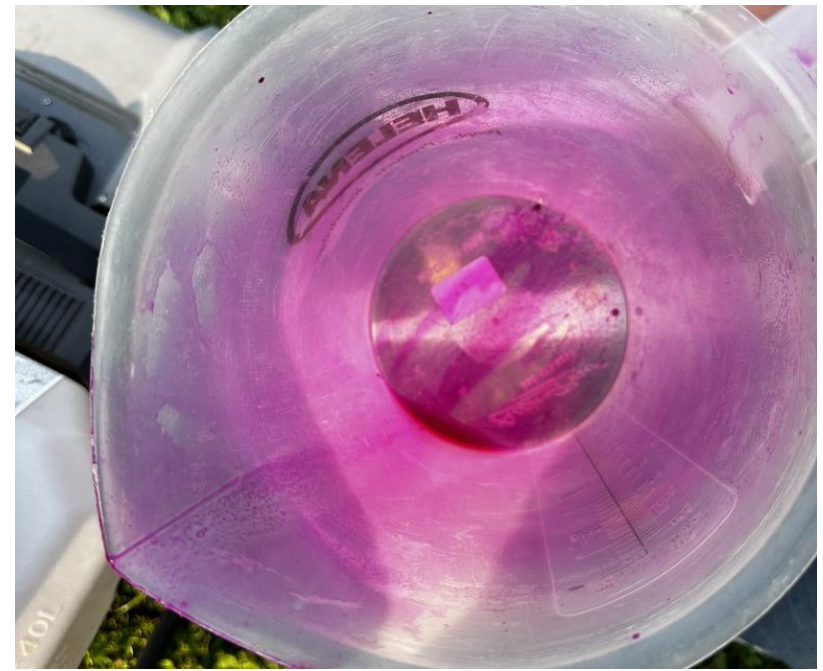


**Early county GA  
site**

**Slight tinner  
canopy**

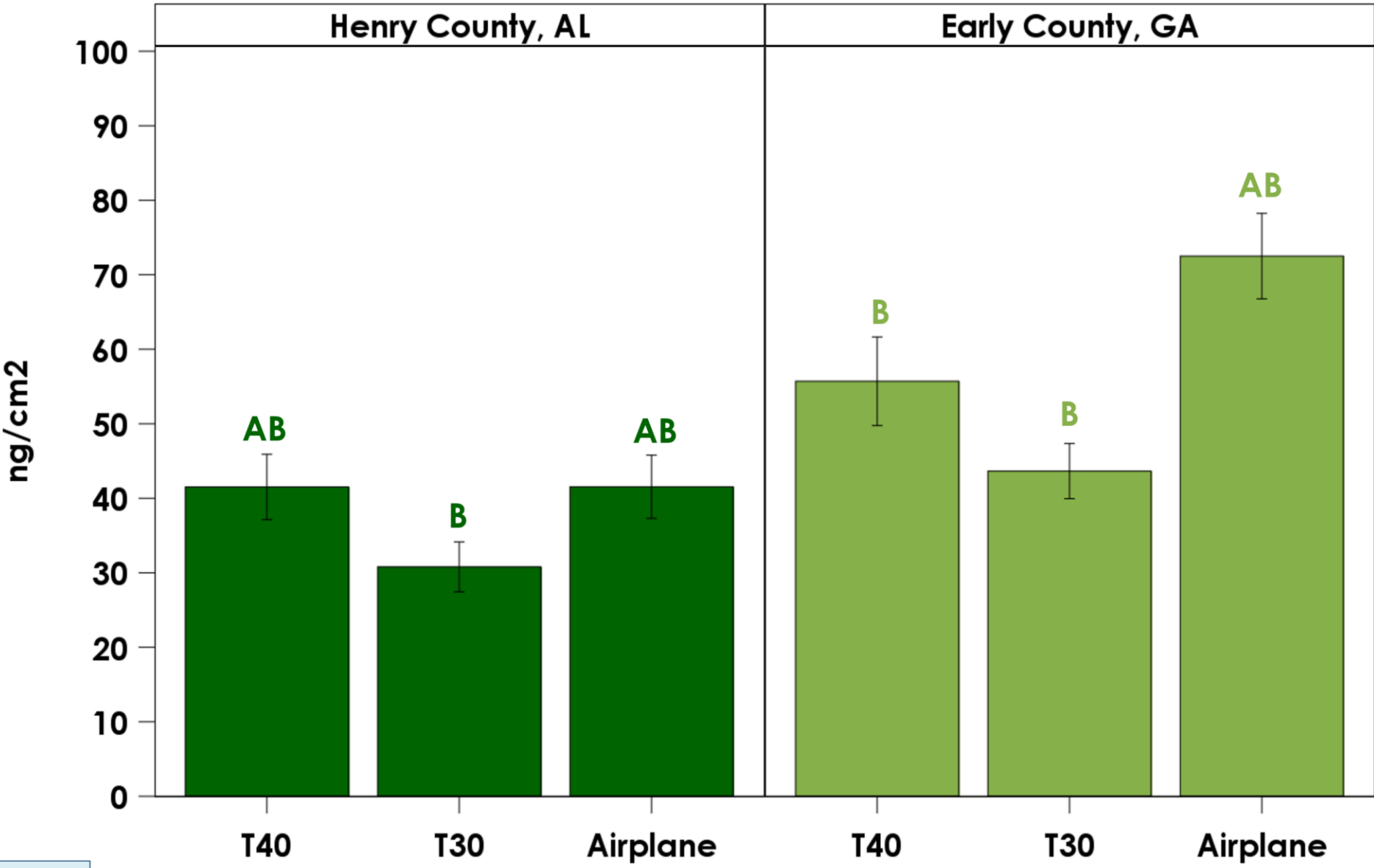
**250+ bushel  
field  
irrigated**







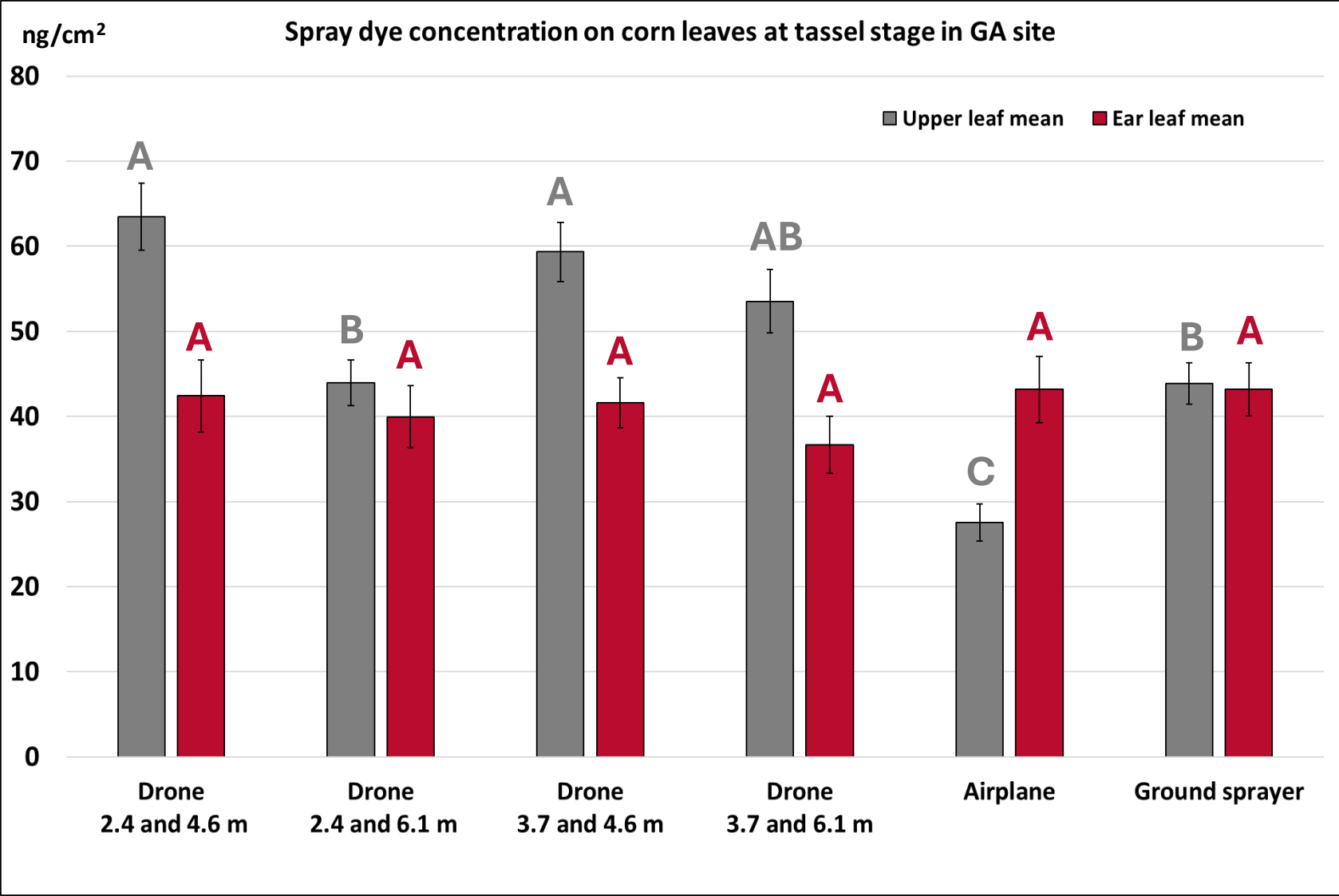
P value site\* trt < 0.0001  
P value trt < 0.0001



**Dye  
deposition on  
corn ear  
leaves**

**EAR  
LEAF**

# Results - Dye concentration, Blakely GA



**T30 and airplane  
2 GPA**

**Ground sprayer  
15 GPA**

**36 inch row  
spacing corn**

Means followed by the same letter in same color are not significantly different ( $\alpha=0.05$ ); Letters of different colors cannot be compared to each other.













**Grasshopper control on soybean, sprayed by drone**





**Treated vs untreated**





**Before and after herbicide burndown  
Roundup PM 32 oz + Sharpen 1 oz/A + MSO 1% v/v**



**T40, 33 ft swath, 32.8 ft/s, 10 ft, 2 GPA,  
average wind speed < 4 MPH**











**Poor burndown results and green streaks**

March 2023. Baldwin county, AL





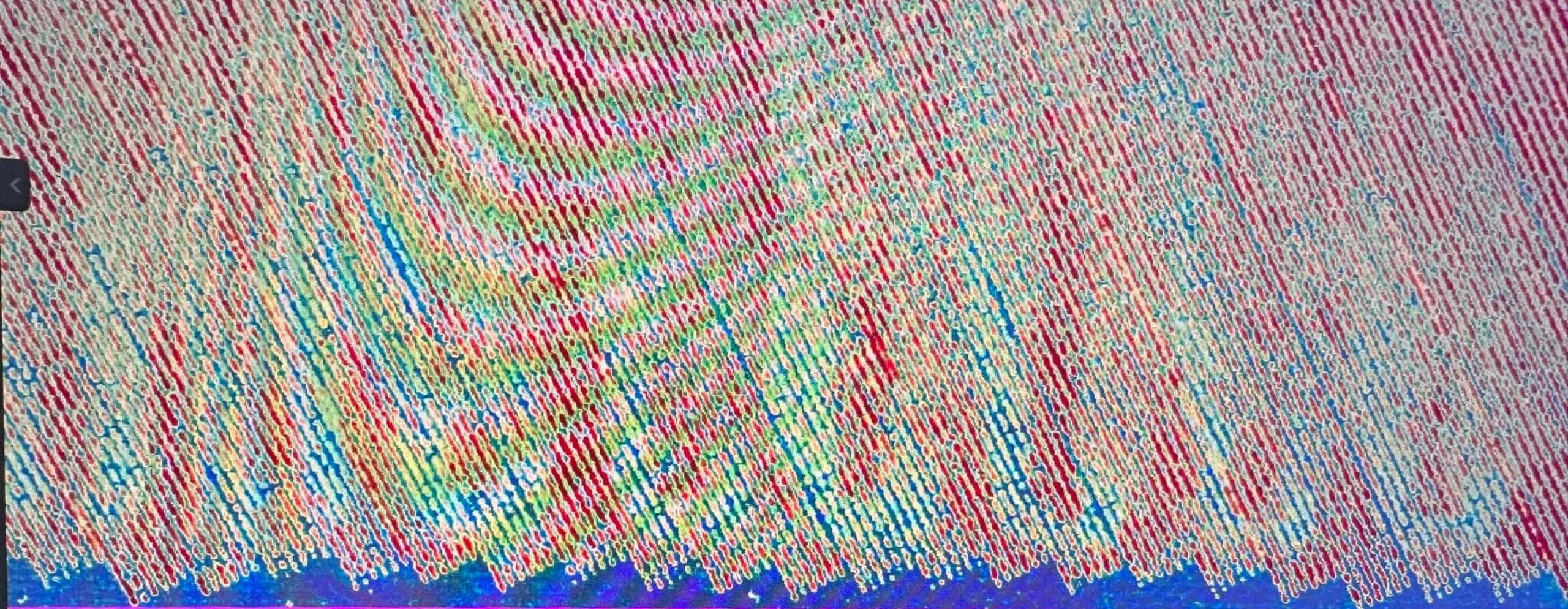
Left: ground  
sprayer 15 GPA

Right: T40 3 GPA

Gramoxone 10 oz  
+ Storm 1.5 pt/A  
+ Zidua SC 3 oz/A



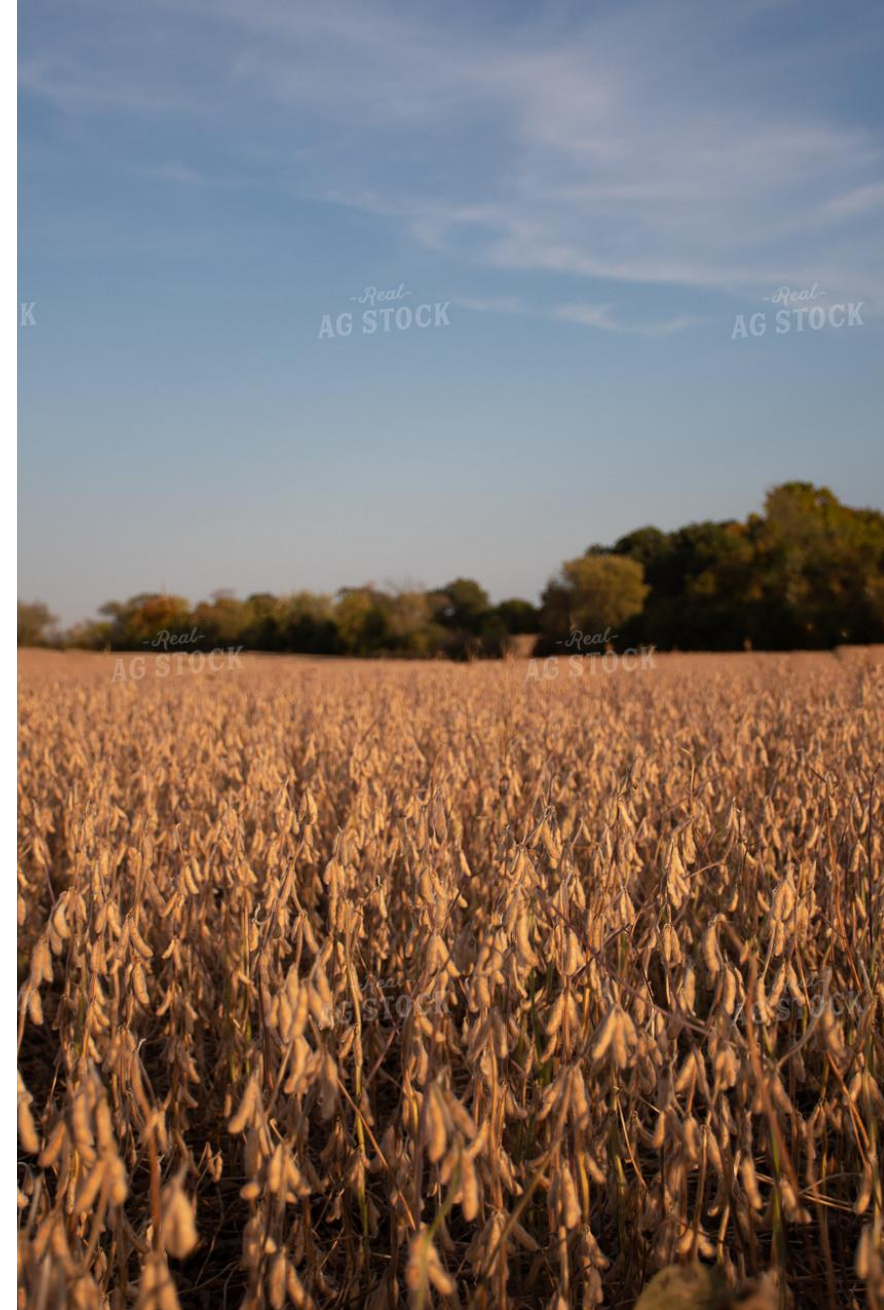






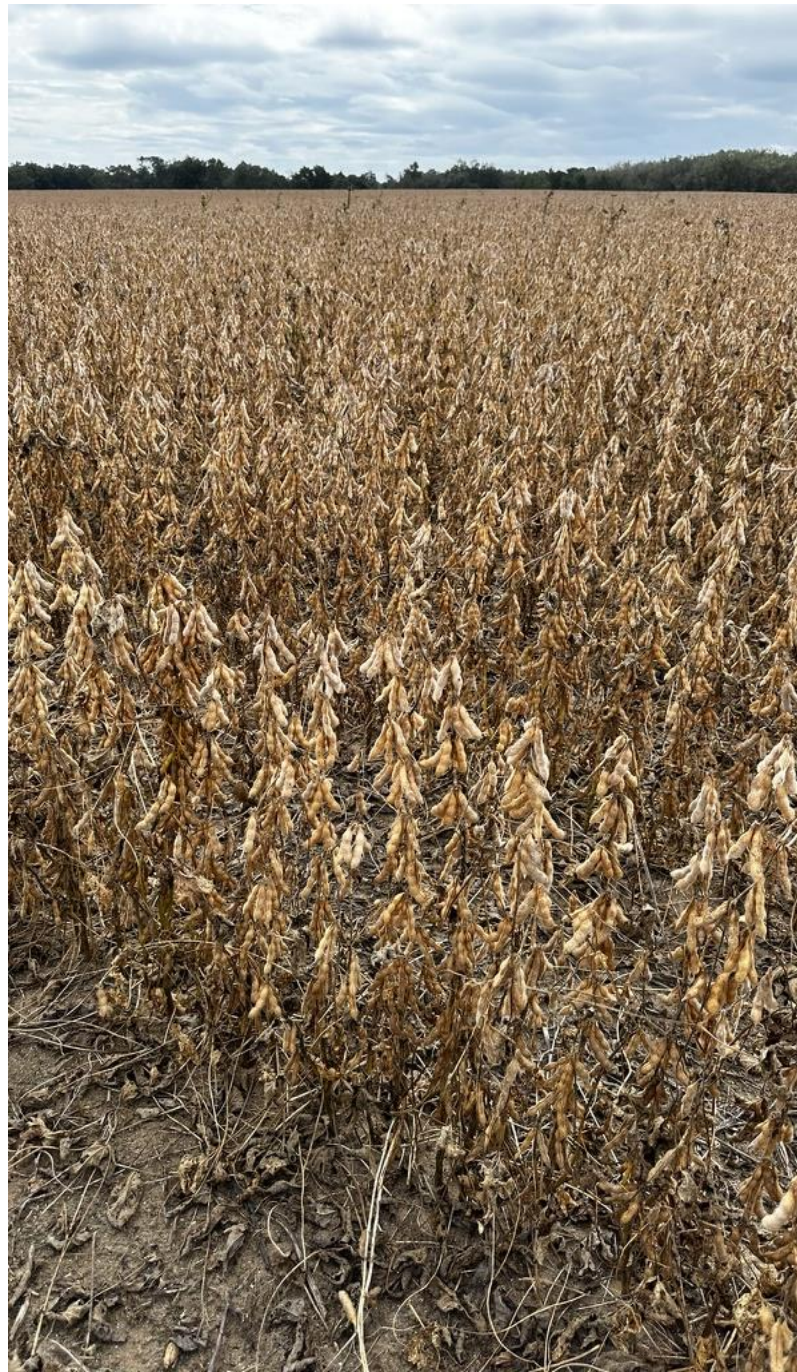
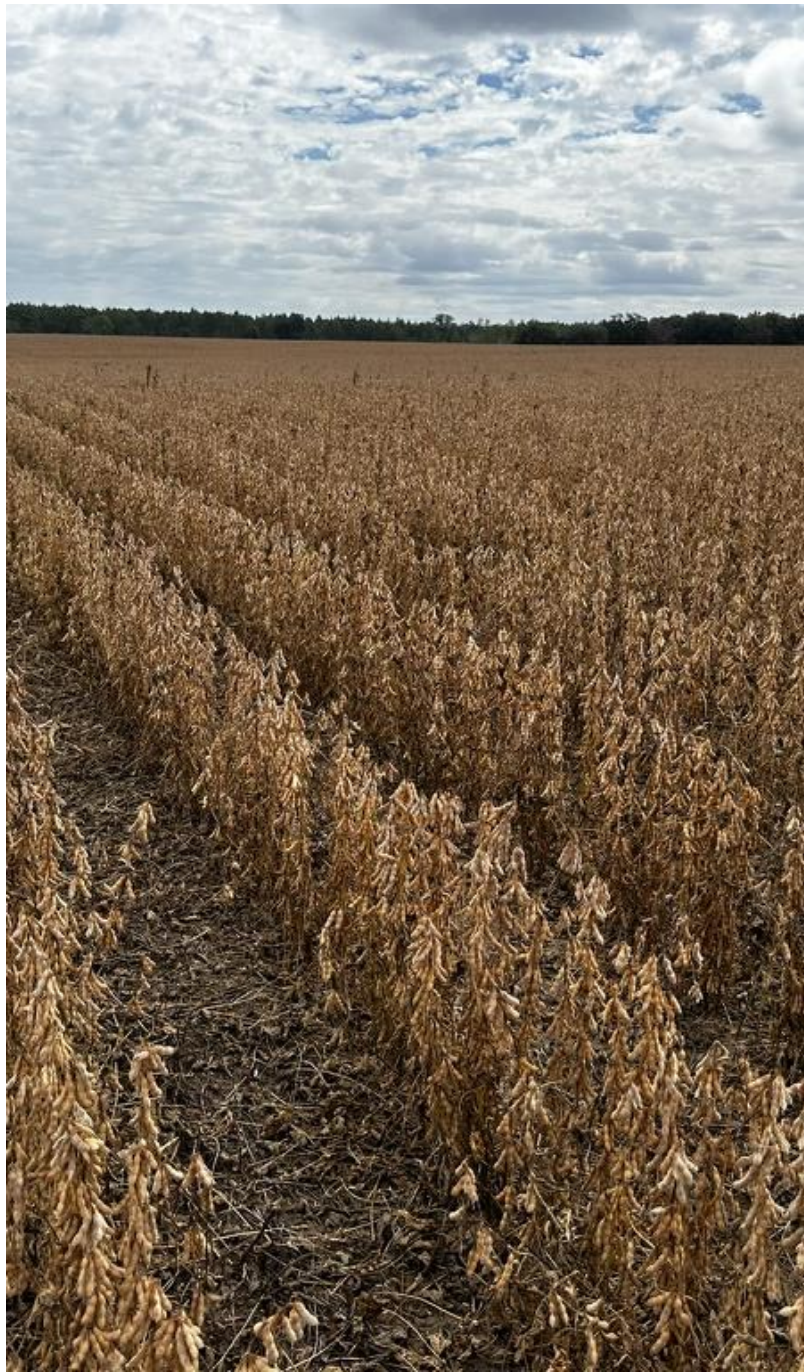






Soybean desiccation: **Gramoxone**, Sharpen, sodium chlorate, and Aim











Area 1

Plot 1

Plot 2

Plot 3

Plot 4

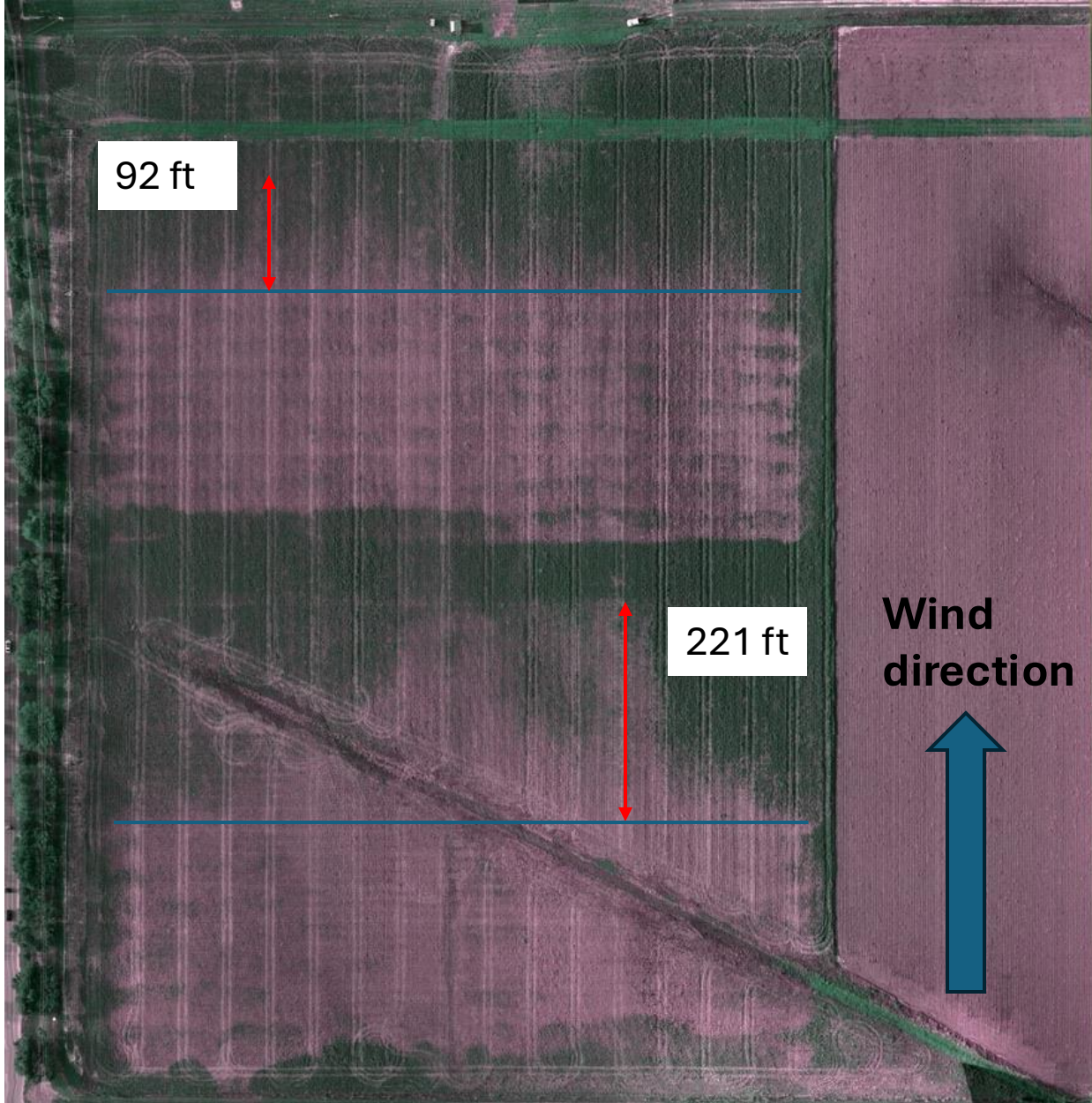
Plot 5

Plot 6

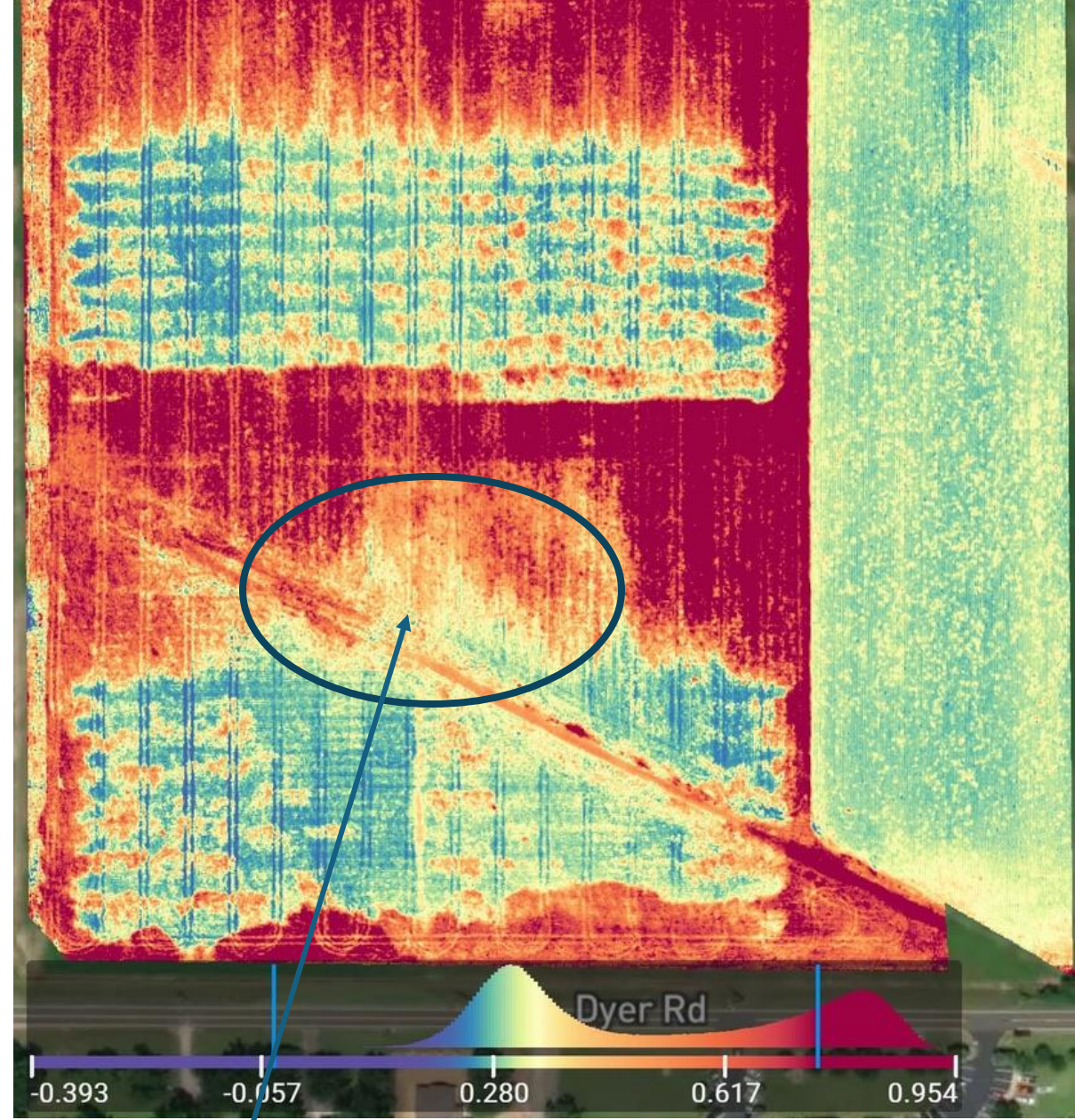
Fill in Area 2







Injury distance was reduced more than 50%



Why did this happen? Why here?





**Sprayed with T30, 22 ft wide swath, 2 GPA, 15.5 MPH, 10 ft altitude, AM 11001**



**Before application**

**Monroe county, AL**









**After application. Monroe county, AL  
AM11001, 2 GPA, 22 ft swath, 10 ft height, 15.5 MPH**





**After application**  
**Monroe county, AL**





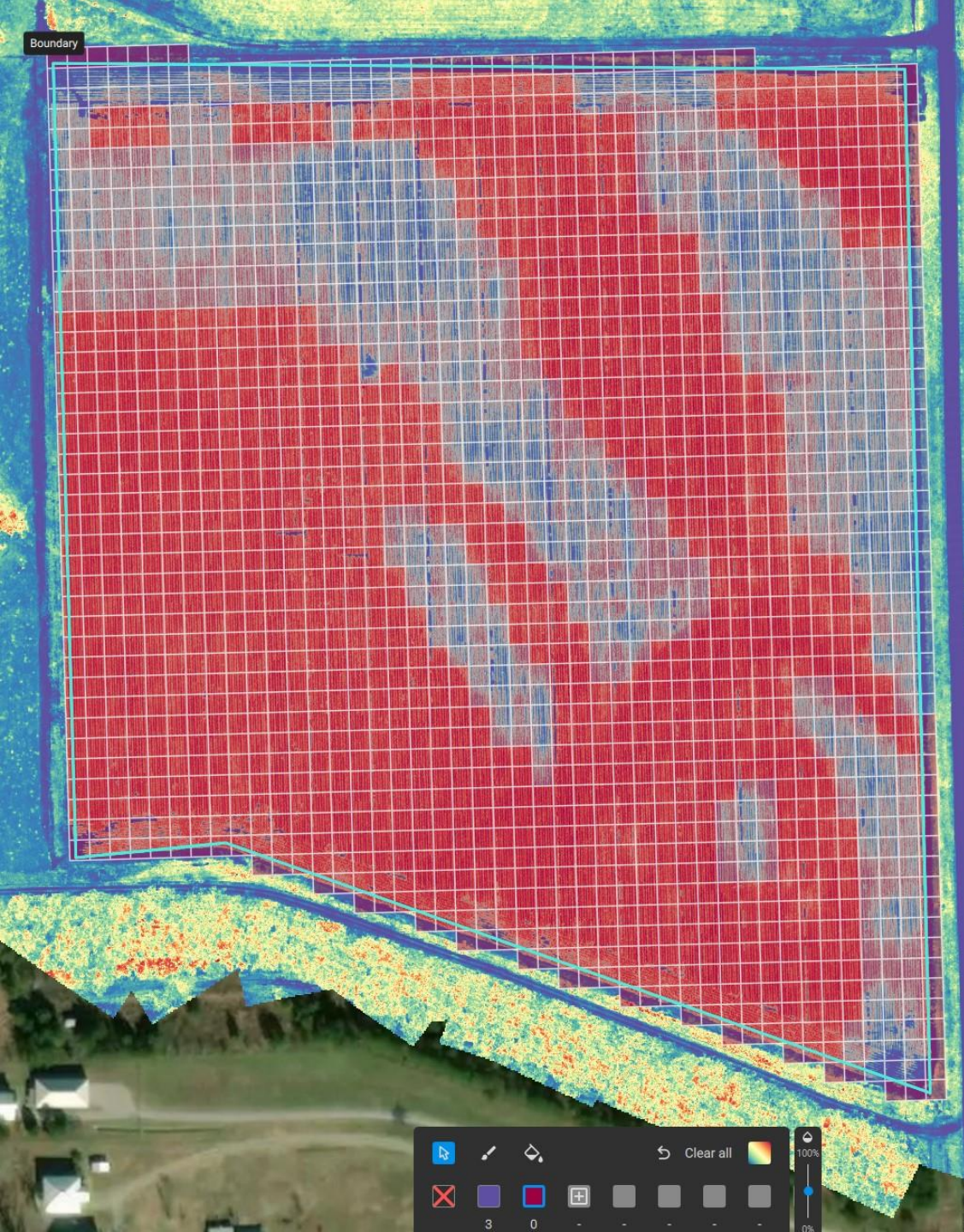
Weed control or Desiccation???





**Cotton variation caused by soil type change**

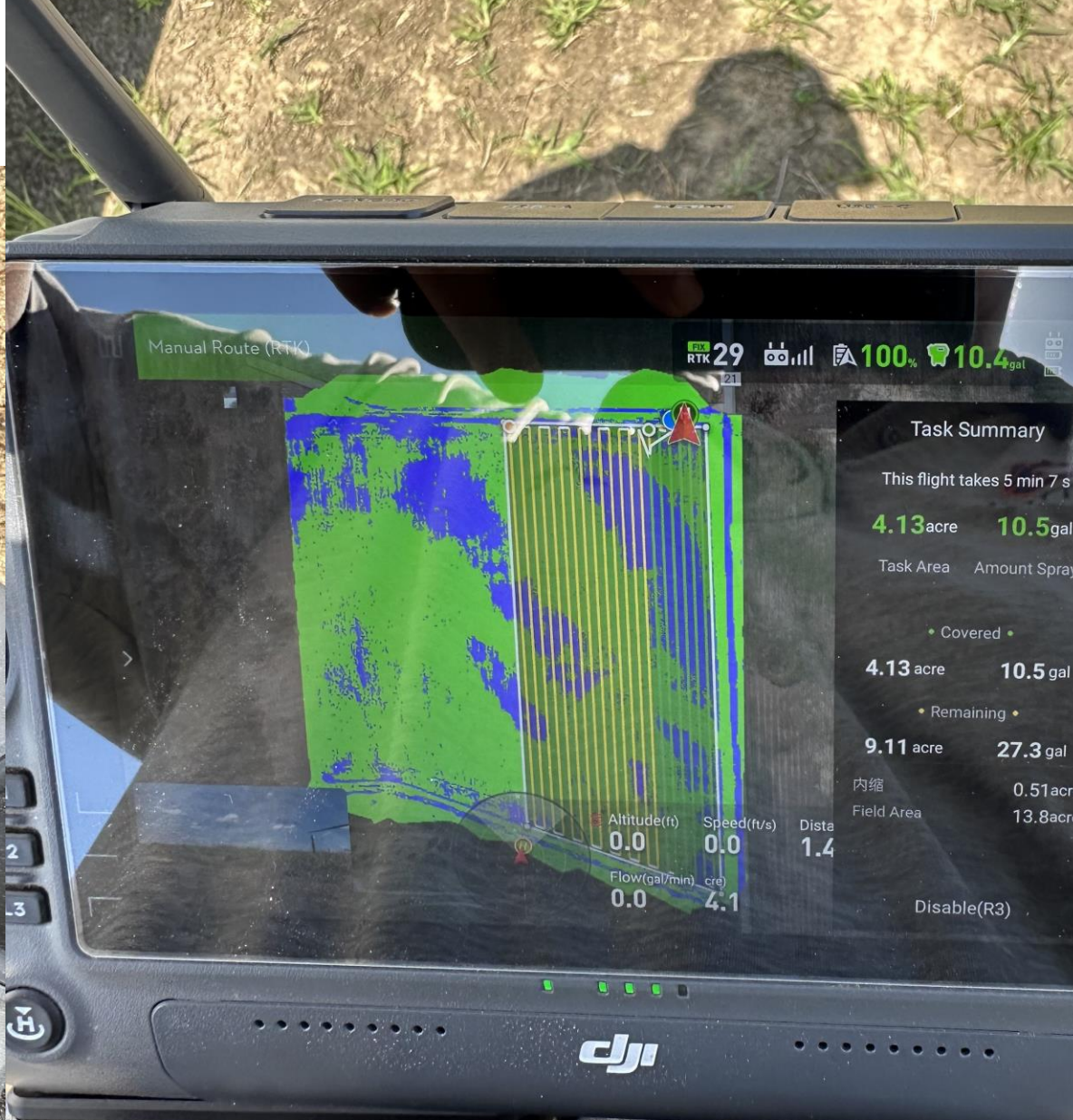




## Variable rate application prescription













**Left column**

**2.5 GPA, water only**

**1.94% coverage on  
WSP**



**Right column**

**1.7 GPA, water only**

**1.30% coverage on  
WSP**





July 3<sup>rd</sup> 2024



July 30<sup>th</sup> 2024



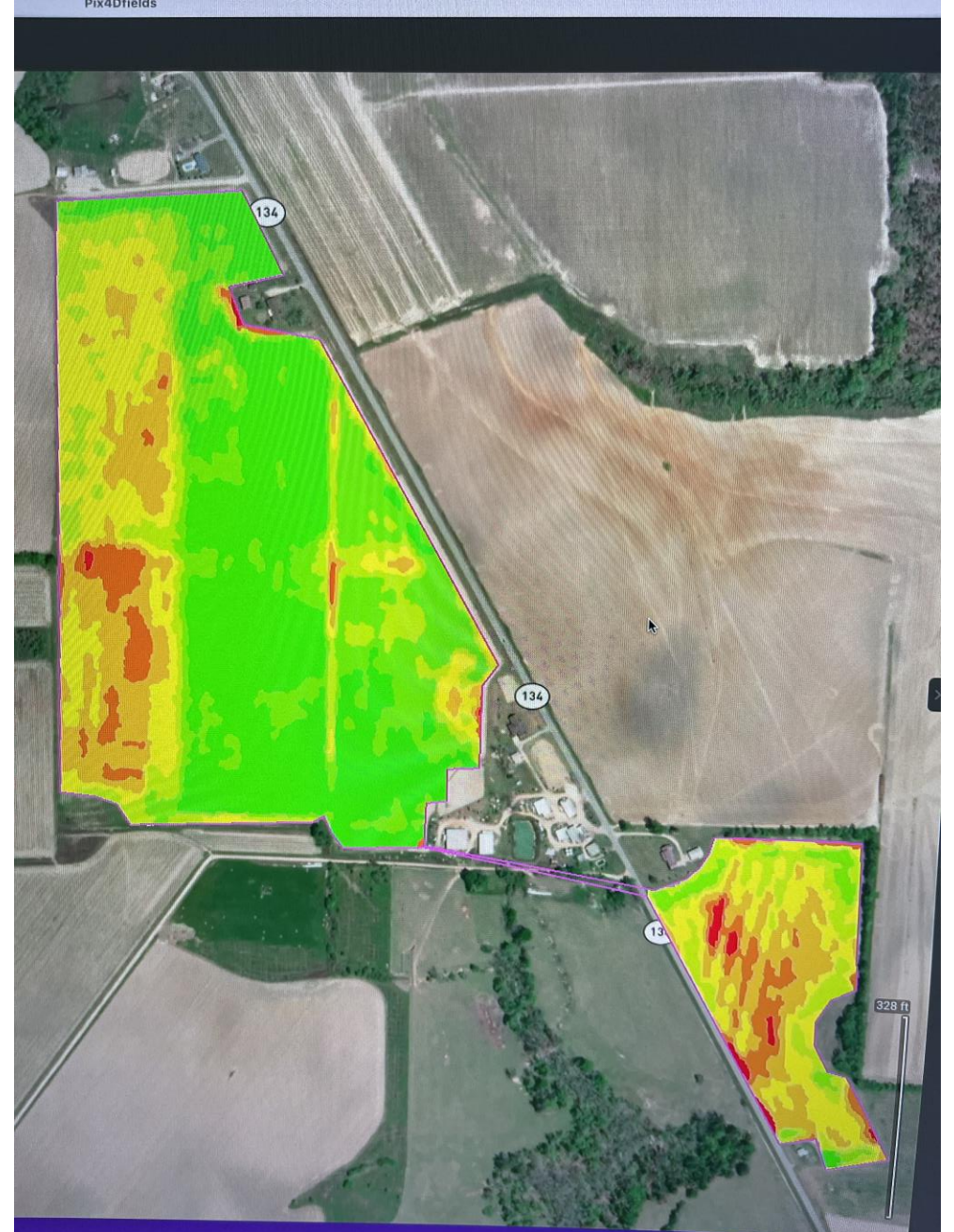
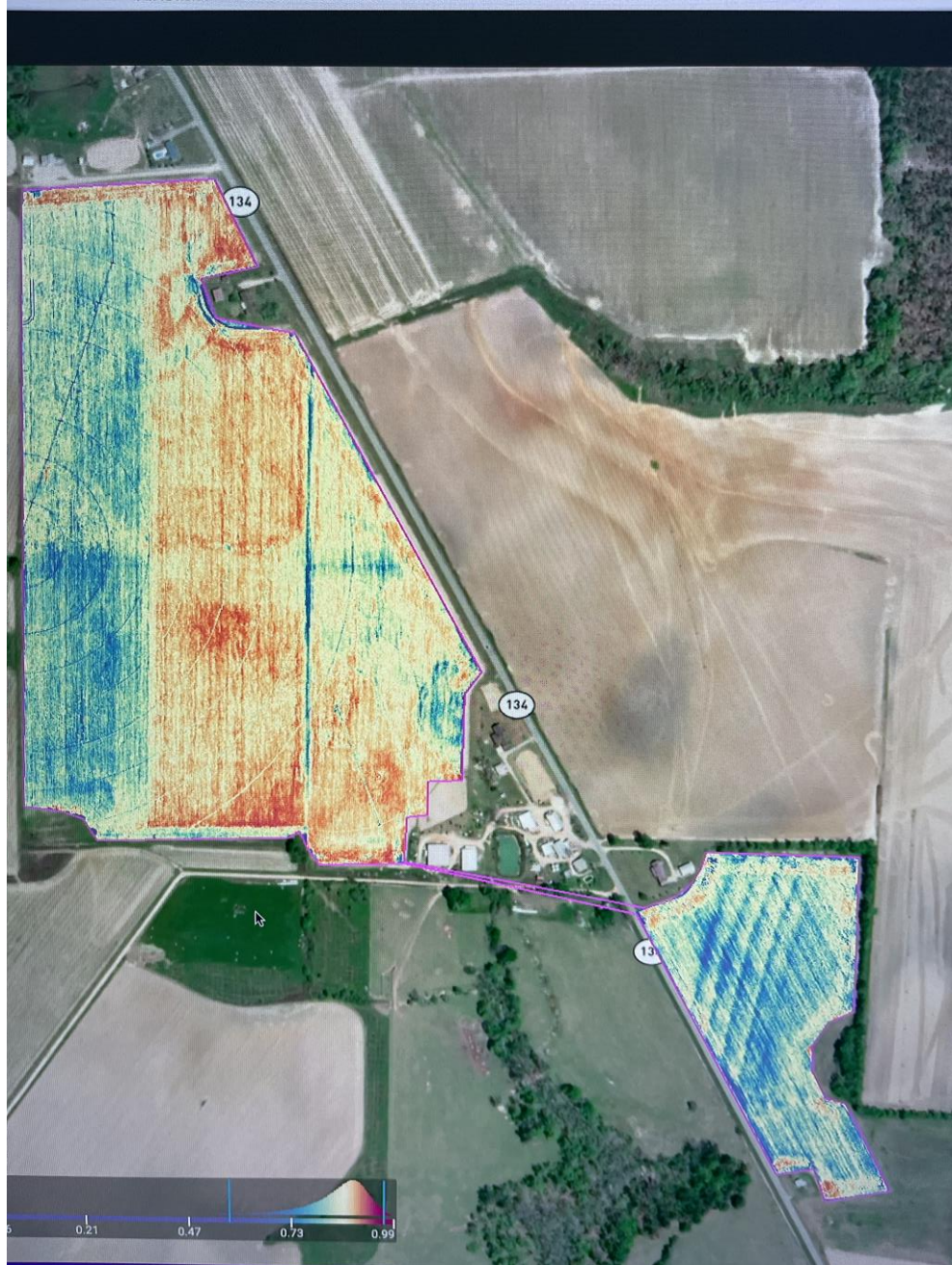


July 3<sup>rd</sup> 2024



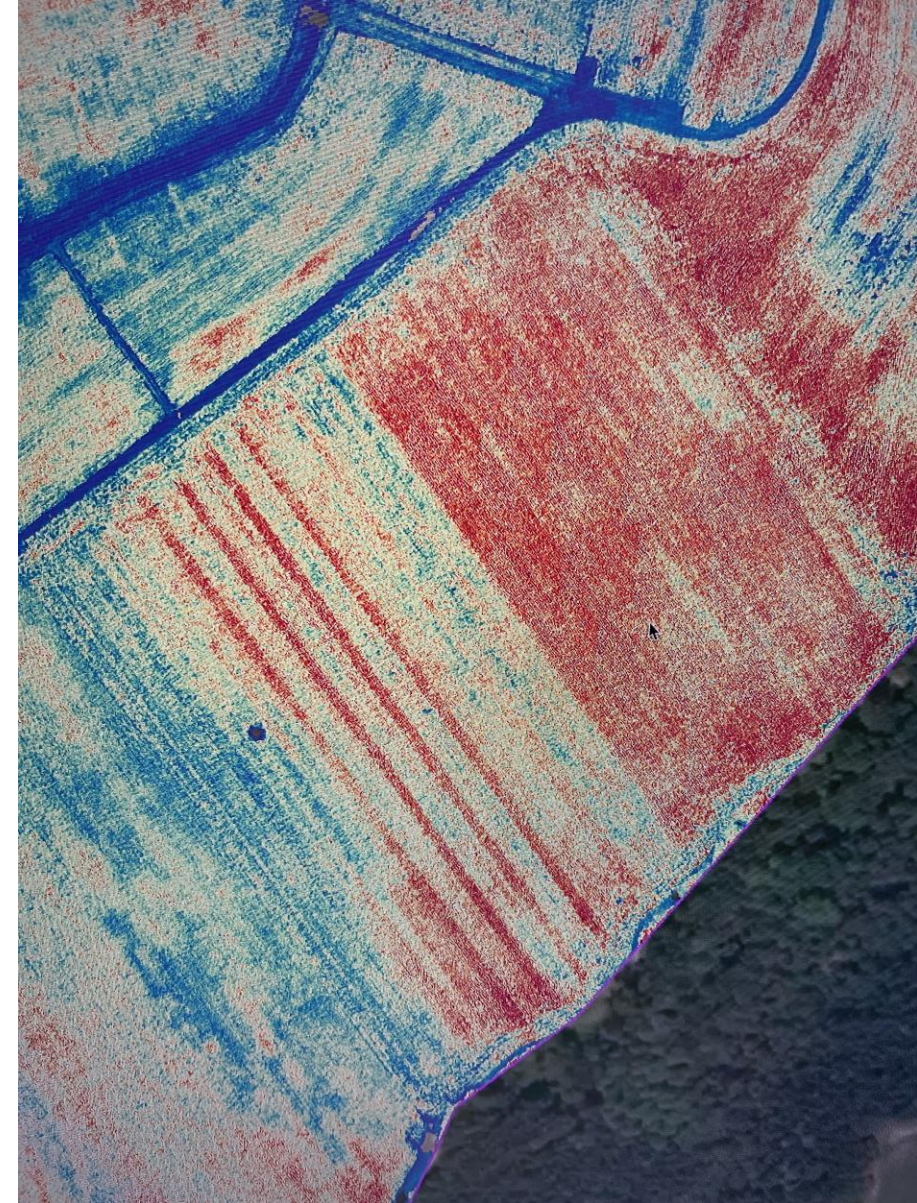
July 30<sup>th</sup> 2024





Before cotton defoliation, Houston county AL





Before cotton defoliation, Cherokee county AL, 650 acres





**Airplane at 3 GPA, 2022 field trial**





**T30, Airmix 11001, 2 GPA, 15 ft height/25 ft swath, 15.6 MPH, 2022 field trial**

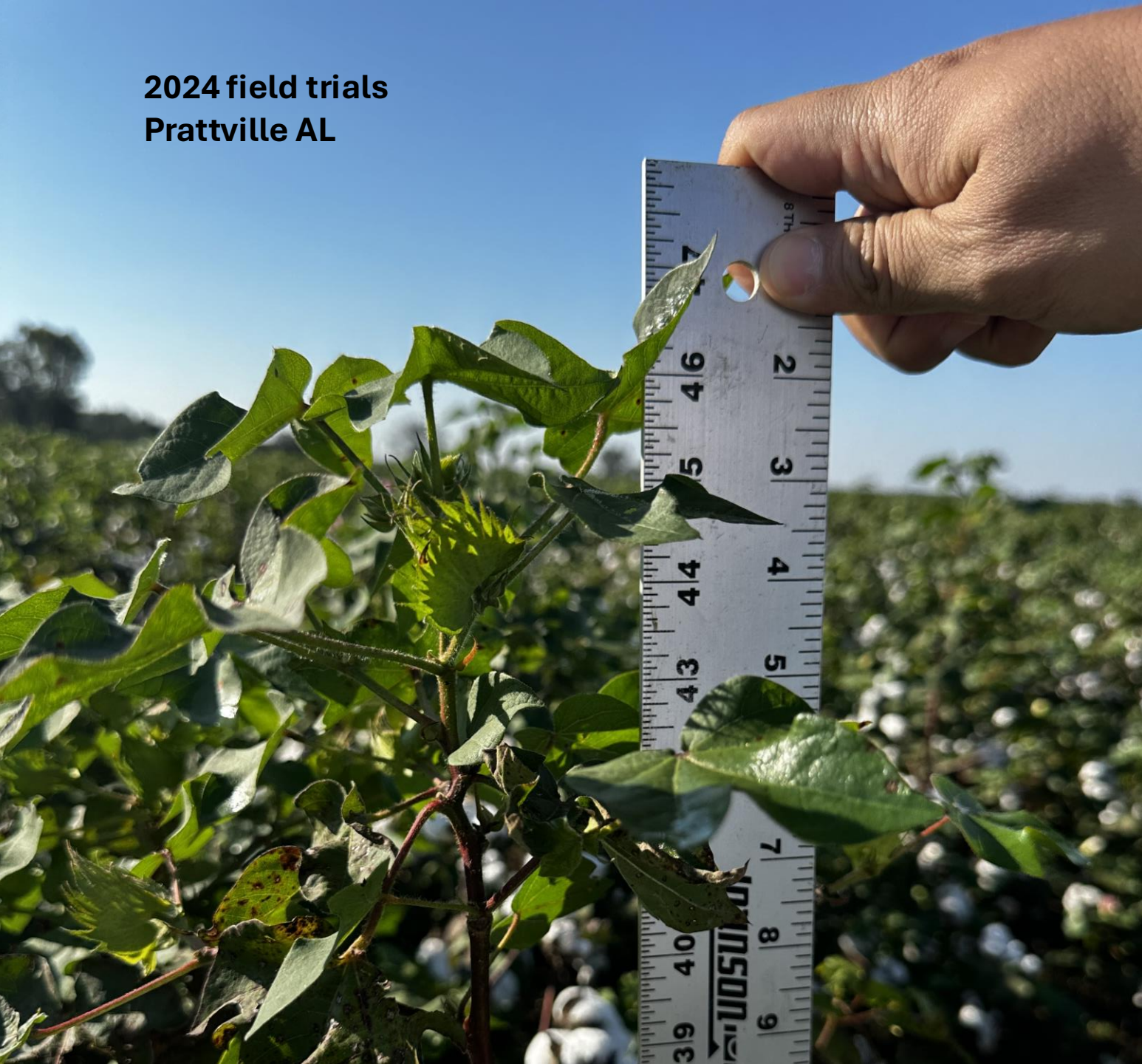




**Spots missed by plane because too close to obstacles and homes**



2024 field trials  
Prattville AL











**Airplane 3 GPA**



**Ground Sprayer 15 GPA**

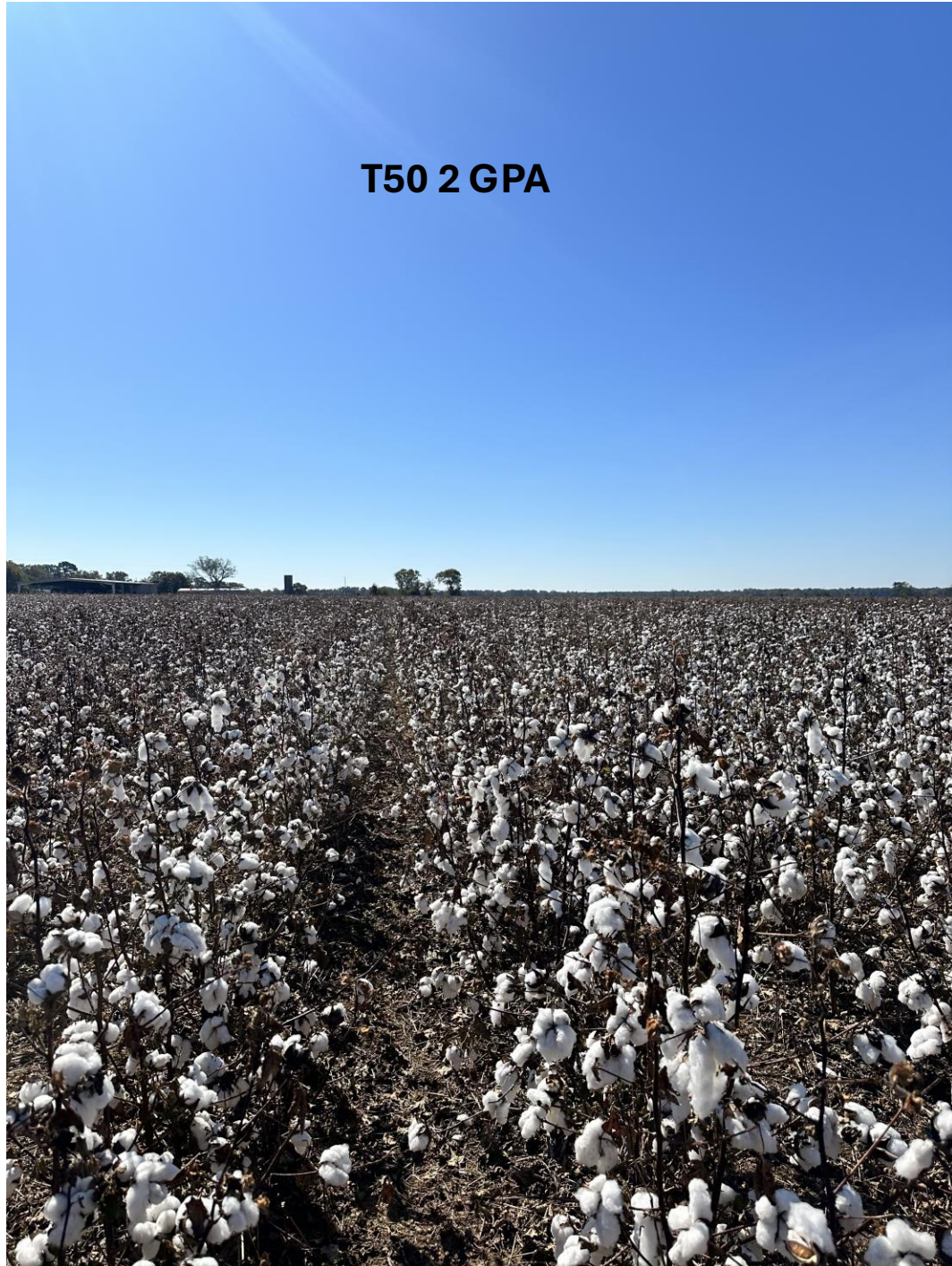
**2024 field trials  
Prattville AL**



**T50 5 GPA**



**T50 2 GPA**



**2024 field trials  
Prattville AL**

Either 1) Aim 0.5  
oz/A or 2) Folex  
10 oz/A, with  
Dropp 4 oz/A  
(thidiazuron) +  
Prep 48/A oz  
(ethephon)

Two tank mixes  
were used at  
each site





**T50 2 GPA**



**T50 3 GPA**

**2024 field trials  
Prattville AL**



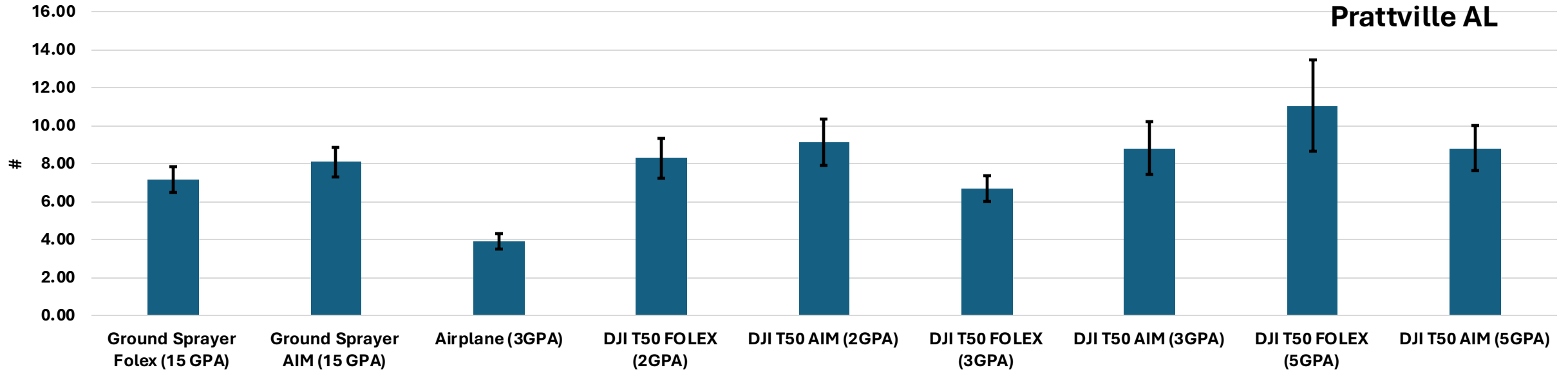


**2024 field trials  
Prattville AL**

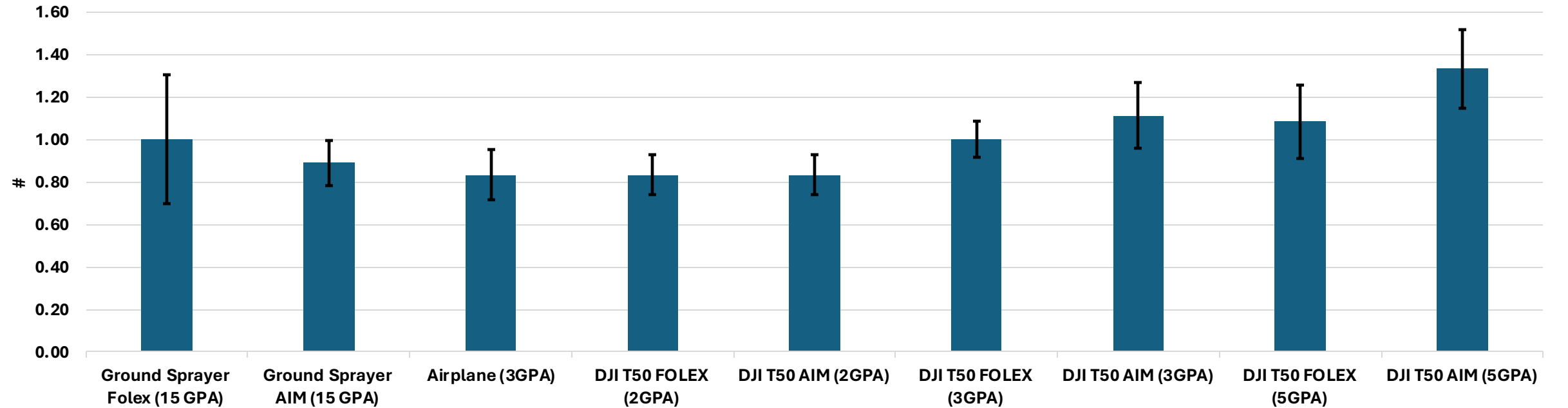


### # of stick leaves\_14 DAT

2024 field trials  
Prattville AL



### # of unopened bolls\_14 DAT







Eufaula AL













6 GPA



12 GPA



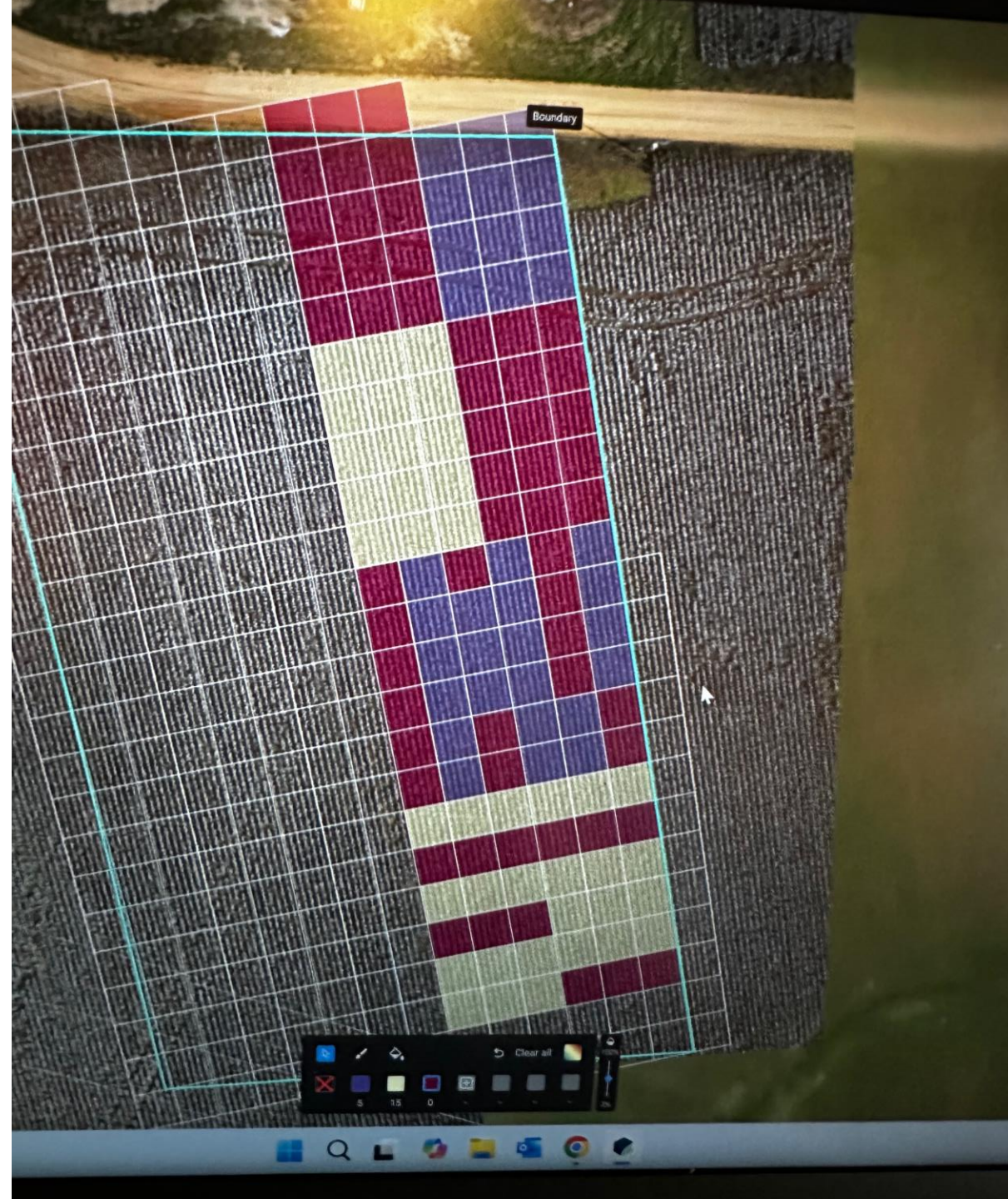
12 GPA 9 GPA 6 GPA







# Using See & Spray as VR sprayer for RX application







**Precision spot spraying with individual nozzles on JD sprayer with Exactapply**

**This sprayer does not have See & Spray**



# Where do drones fit???

- Small farms with limited cash flow
- New custom applicators with limited startup funding
- Regions with frequent wet period and terrain changes
- Tall crops (corn, sugarcane, palm, banana, trees, etc.) and rice
- Vegetation management in remote area with limited or no access
- Small, odd shape field with many obstacles and tree lines



# What are the challenges for drone operators???

- Regulations
- Wind
- Efficiency
- Hardware and software issues
- Pesticide labels
- Labor (reliable and skillful)
- Speed and Obstacles
- Mixing and refill
- Custom and supply













# Scan this QR code for registration page

- The 3rd spray drone end user conference
- Mar 23-26, 2025. Mobile Convention Center, Alabama
- In-person event with remote option
- Presentations and latest updates from FAA, EPA, AAPCO, Crop Life of America, global spray drone task force, globally renowned researchers, equipment manufactures, experienced operators, etc.
- Up to 24 breakout sessions to address nearly all aspects of drone spraying and spreading business











**Sep 25, 2024. Headland AL**



**The 3<sup>rd</sup> Spray Drone End User Conference  
March 23-26th, 2025. Mobile Convention Center**

**Special thanks to Gentry Smith, Scott Tennant, Samford farm and Williams Farm, Driskell Farm, Williams Farm, Autauga Farming Company, and ALFA for funding**

**Questions?**

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