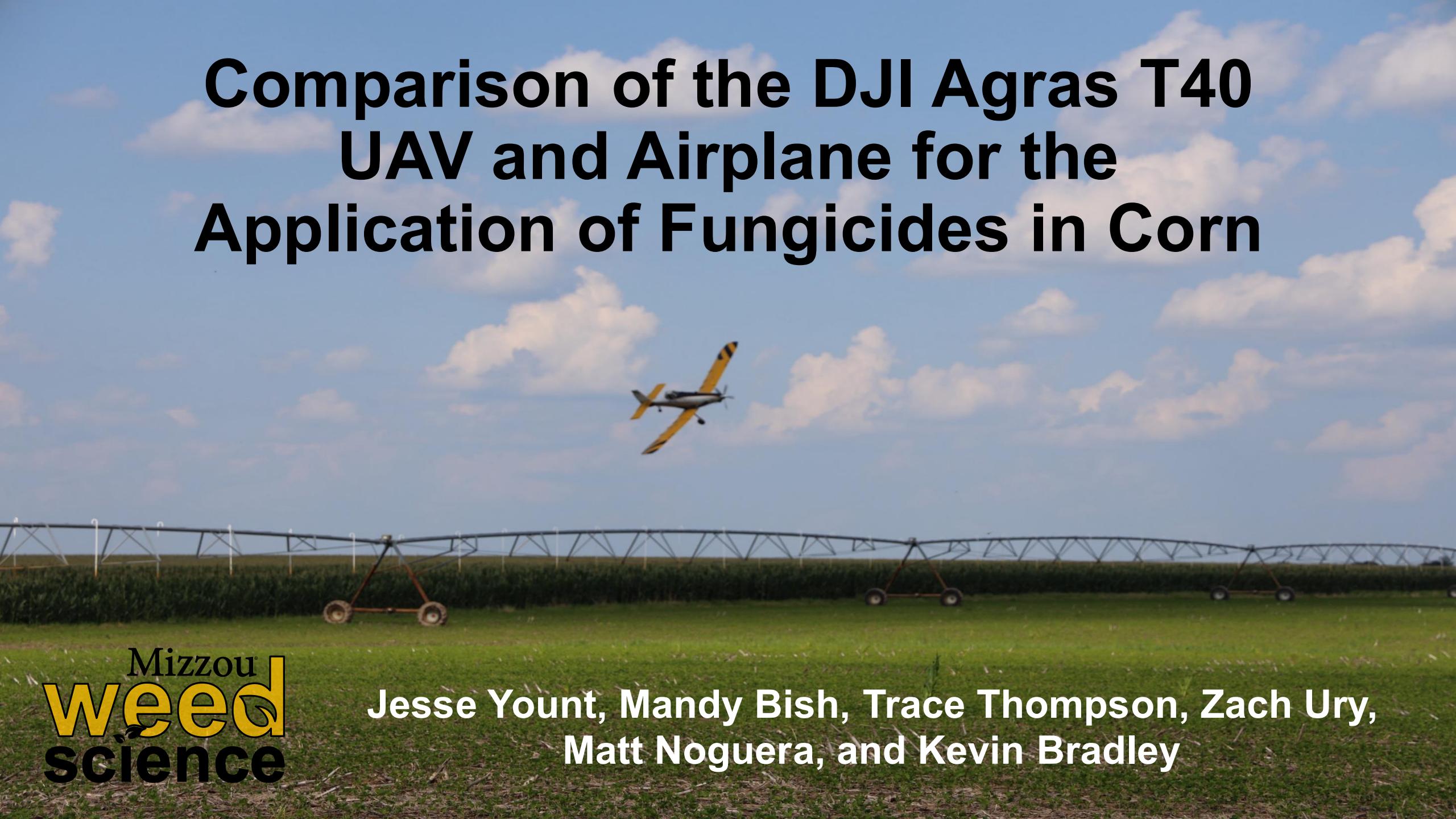


# Comparison of the DJI Agras T40 UAV and Airplane for the Application of Fungicides in Corn



Jesse Yount, Mandy Bish, Trace Thompson, Zach Ury,  
Matt Noguera, and Kevin Bradley

# Introduction

- **Fungicide applications must be timely and provide uniform coverage**
- **Unmanned aerial vehicles (UAVs) may have the potential to provide a more timely option for fungicide application**
- **Few studies have been conducted comparing airplane and UAVs for application of fungicides in a large field setting**



# Objectives

**Evaluate disease severity, spray coverage, and yield following a fungicide application from a plane vs. DJI Agras T40 UAV (@ 2 and 4 GPA)**



# Materials and Methods

## Three locations:

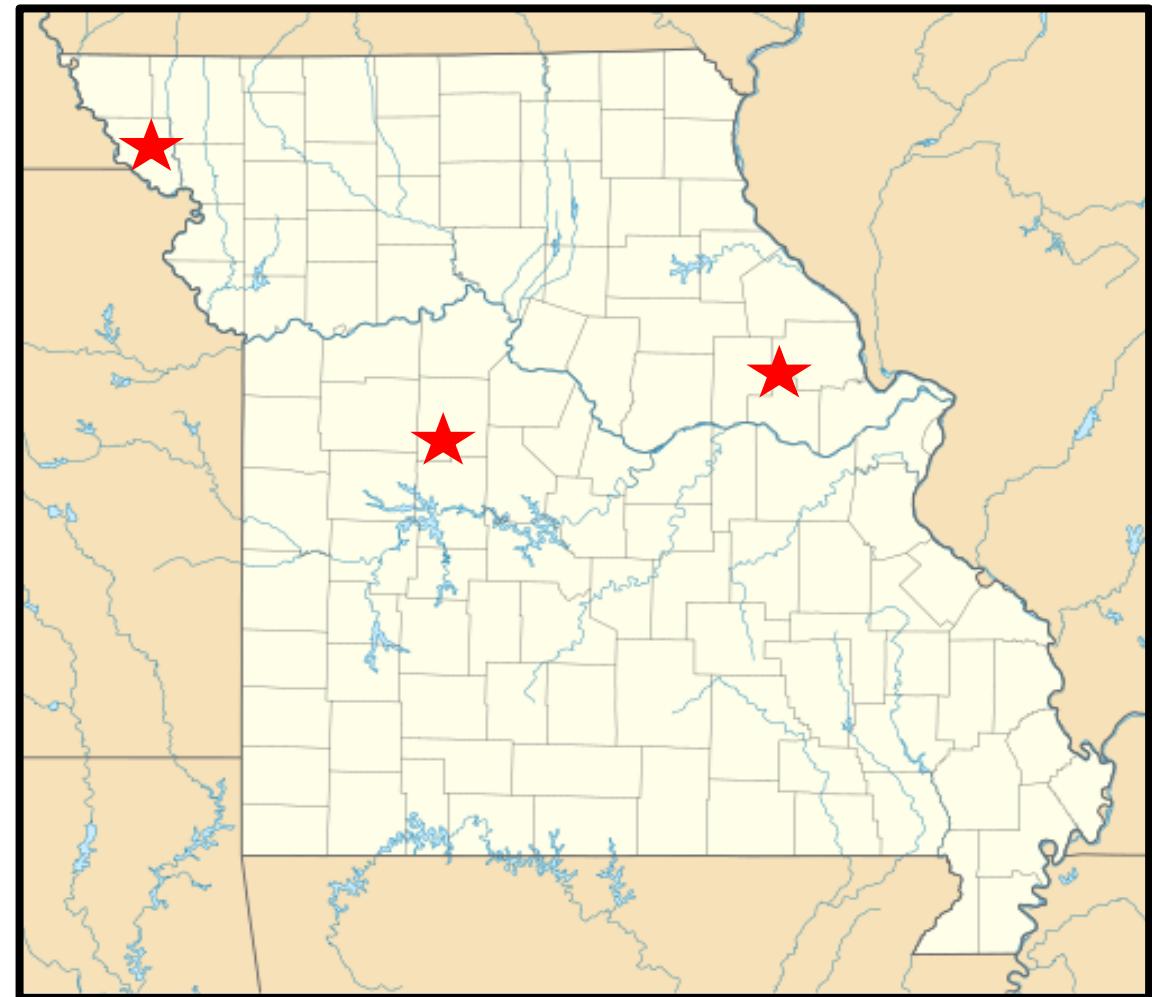
- Green Ridge
- Mound City
- Truxton

**Two years of data at each location**

## **Individual plots:**

- 60' or 90' wide
- 1,320 – 2,640 ft long

**4 replications of each treatment at each location**



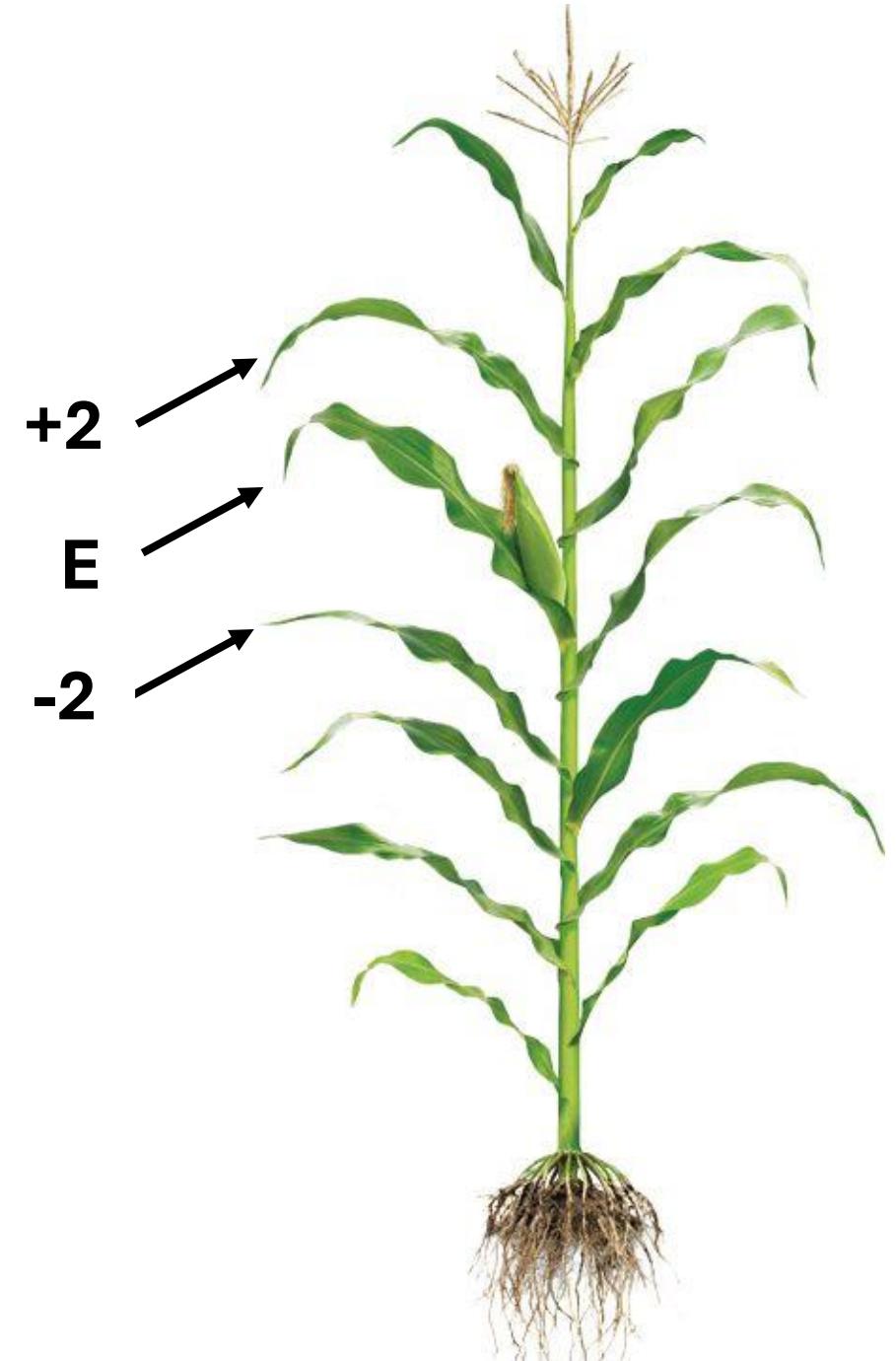
# Materials and Methods

- Cooperator selected products, rate, and timing
- The same fungicide treatment and additives were sprayed by the UAV (DJI Agras T40) and airplane at each location
- Treatments were sprayed by the UAV at 2 and 4 GPA
- Plane sprayed at 2 GPA; model varied by location

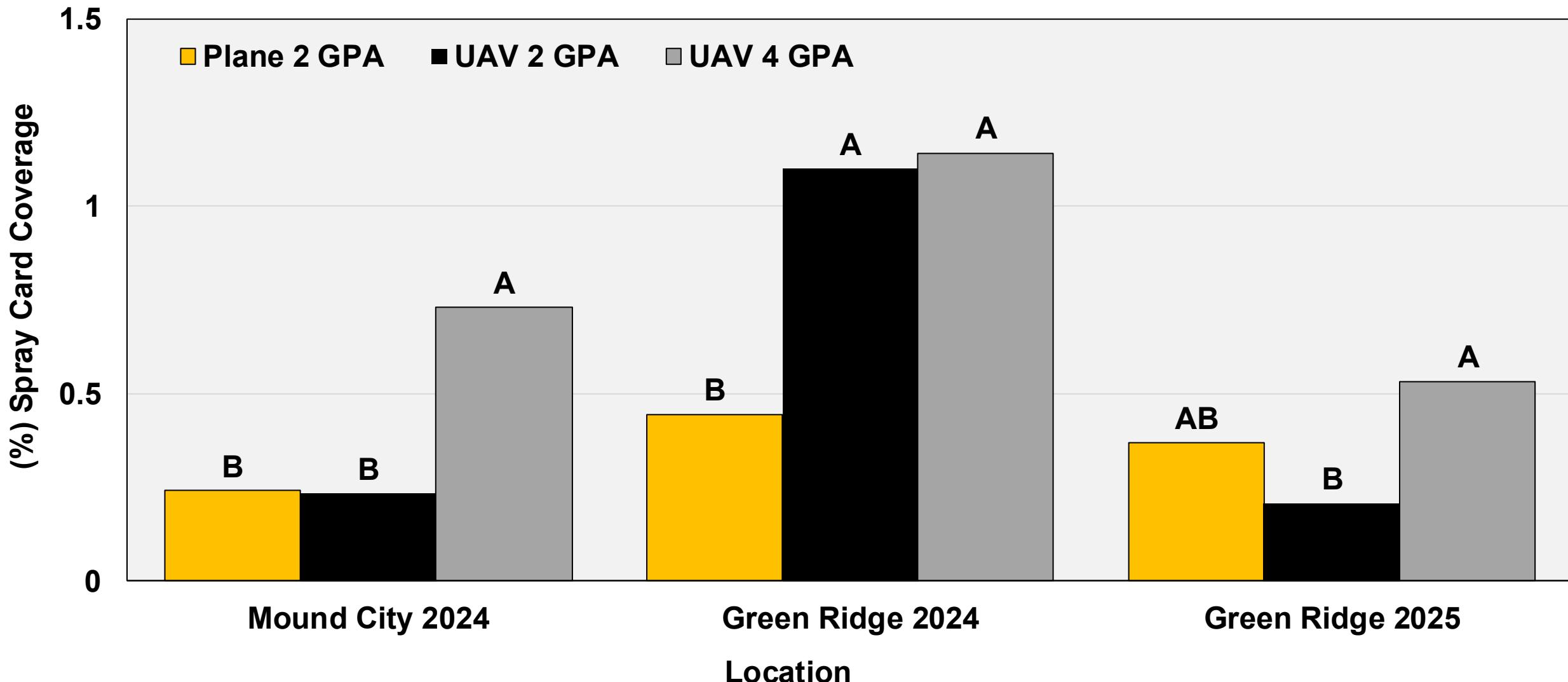


# Materials and Methods

- Water sensitive cards placed on top and bottom of ear leaf (E), two leaves above the ear leaf (+2), and two leaves below the ear leaf (-2) at application
- Image J software used to determine percent coverage and droplet size
- Disease severity was evaluated at application, R3, and R6

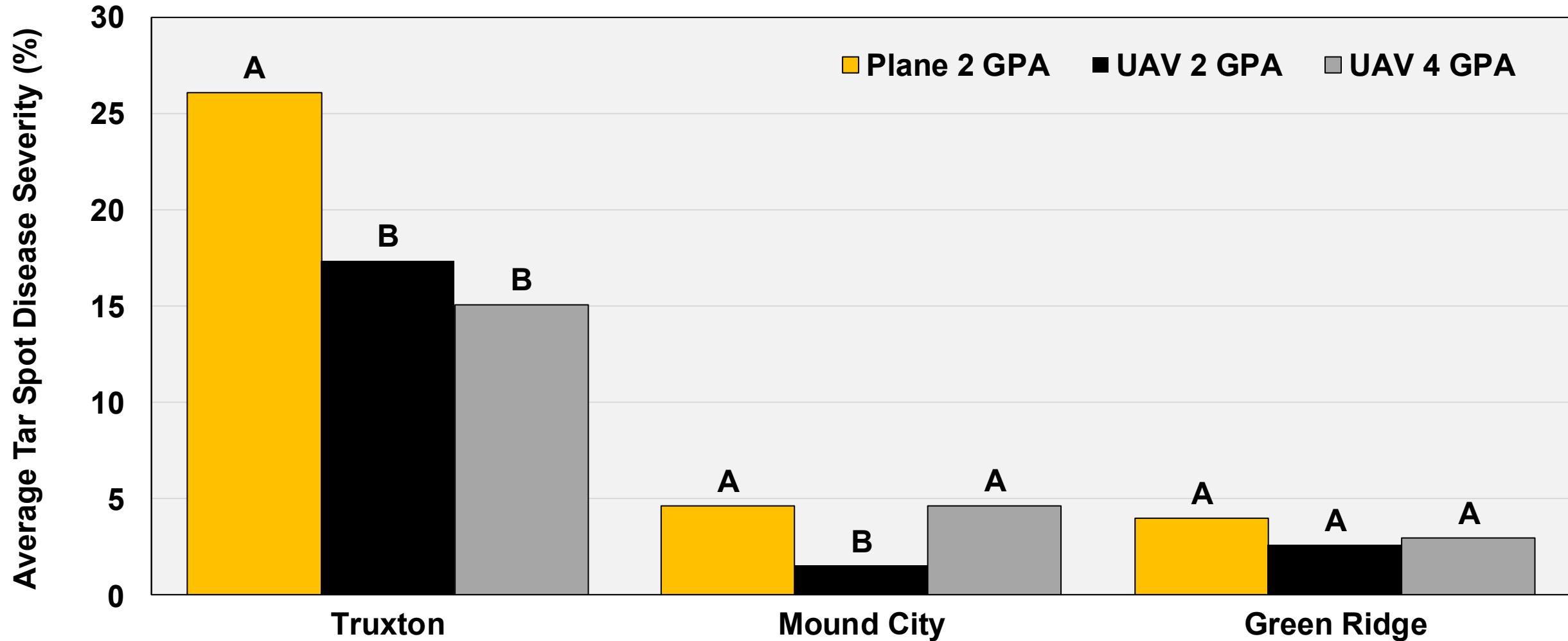


# Average Fungicide Spray Coverage Across Top Cards



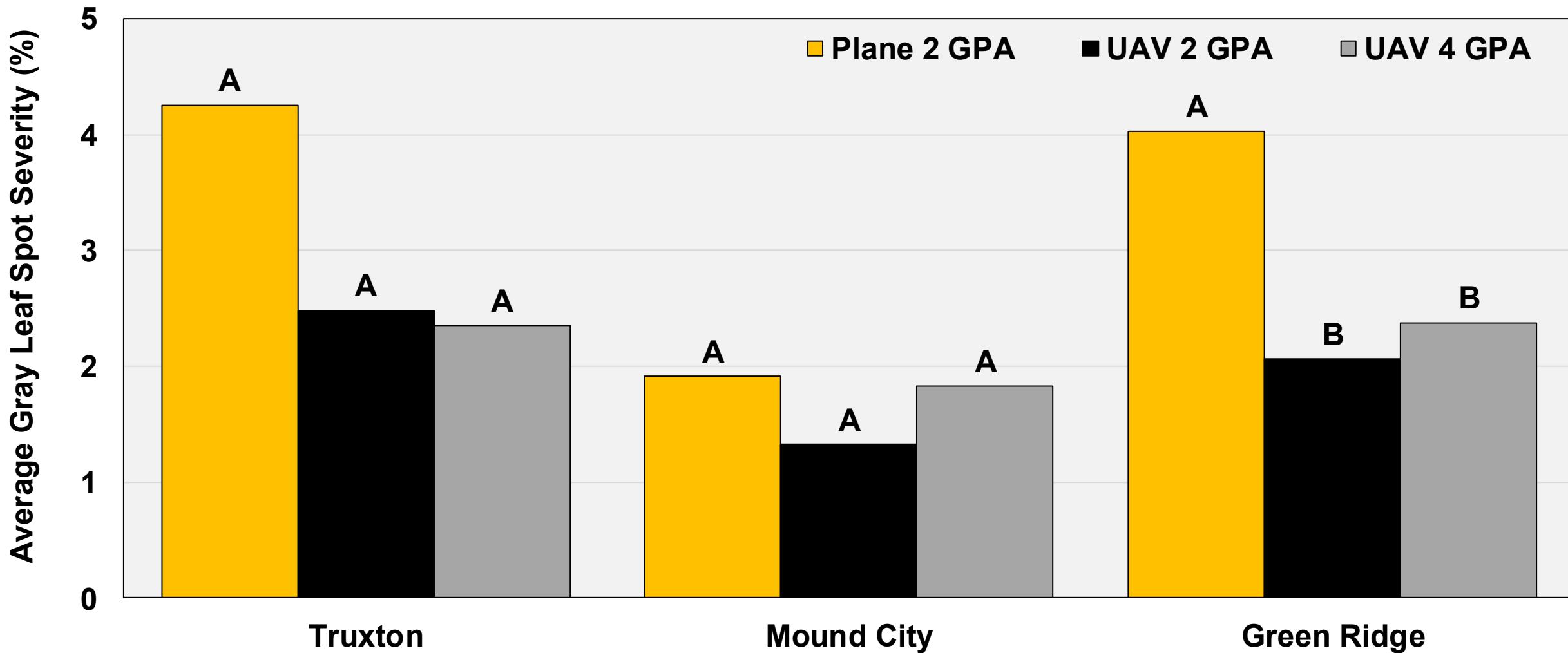
\*Bars within a location followed by the same letters are not different, LSD=0.05.

# 2024 Average Tar Spot Disease Severity at R6

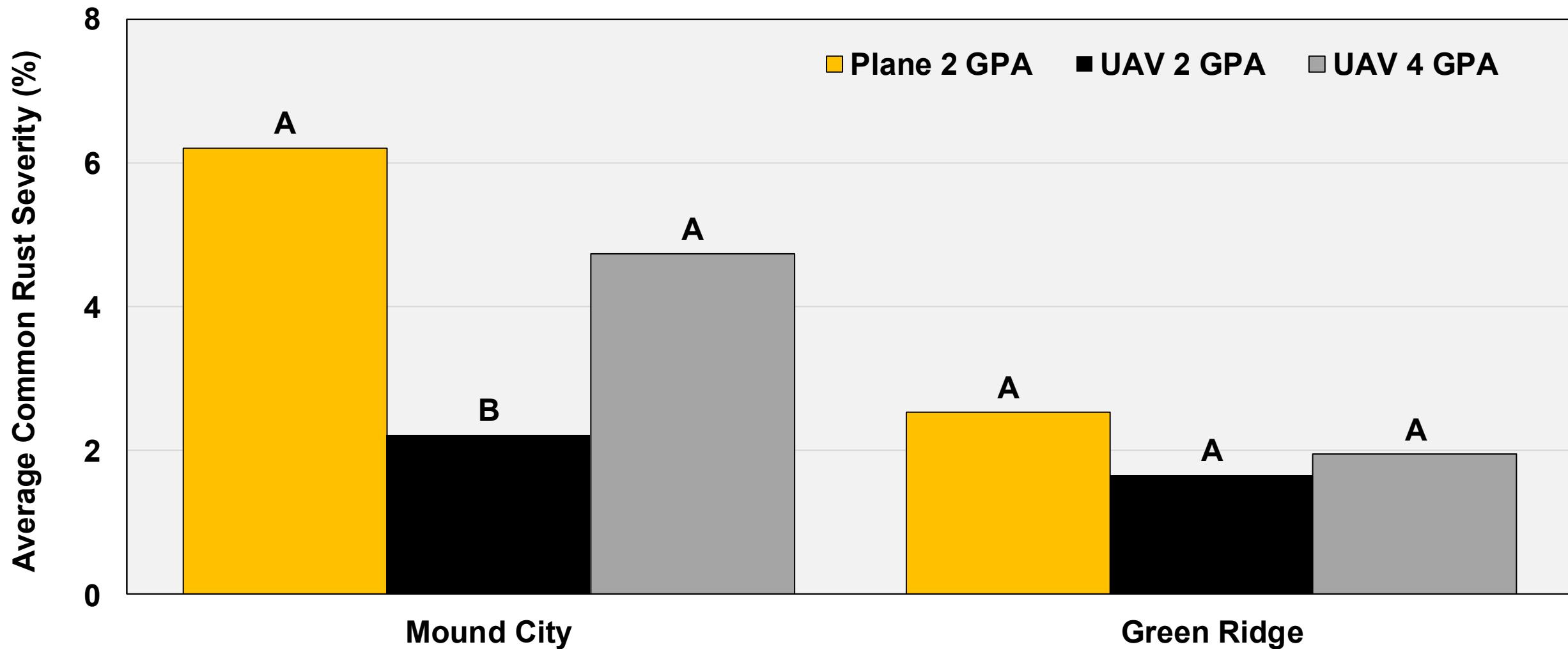


\*Bars within a location followed by the same letters are not different, LSD=0.05.

# 2024 Average Gray Leaf Spot Disease Severity at R6

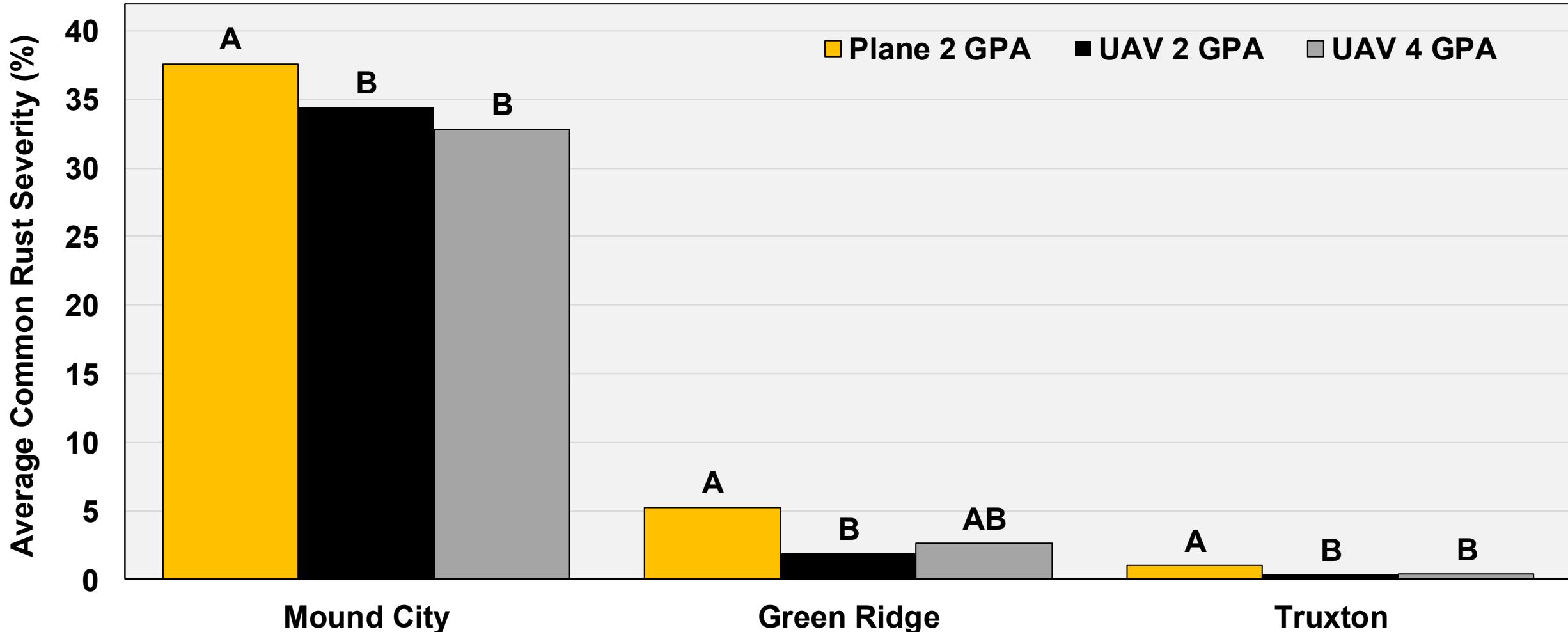


# 2024 Average Common Rust Disease Severity at R6



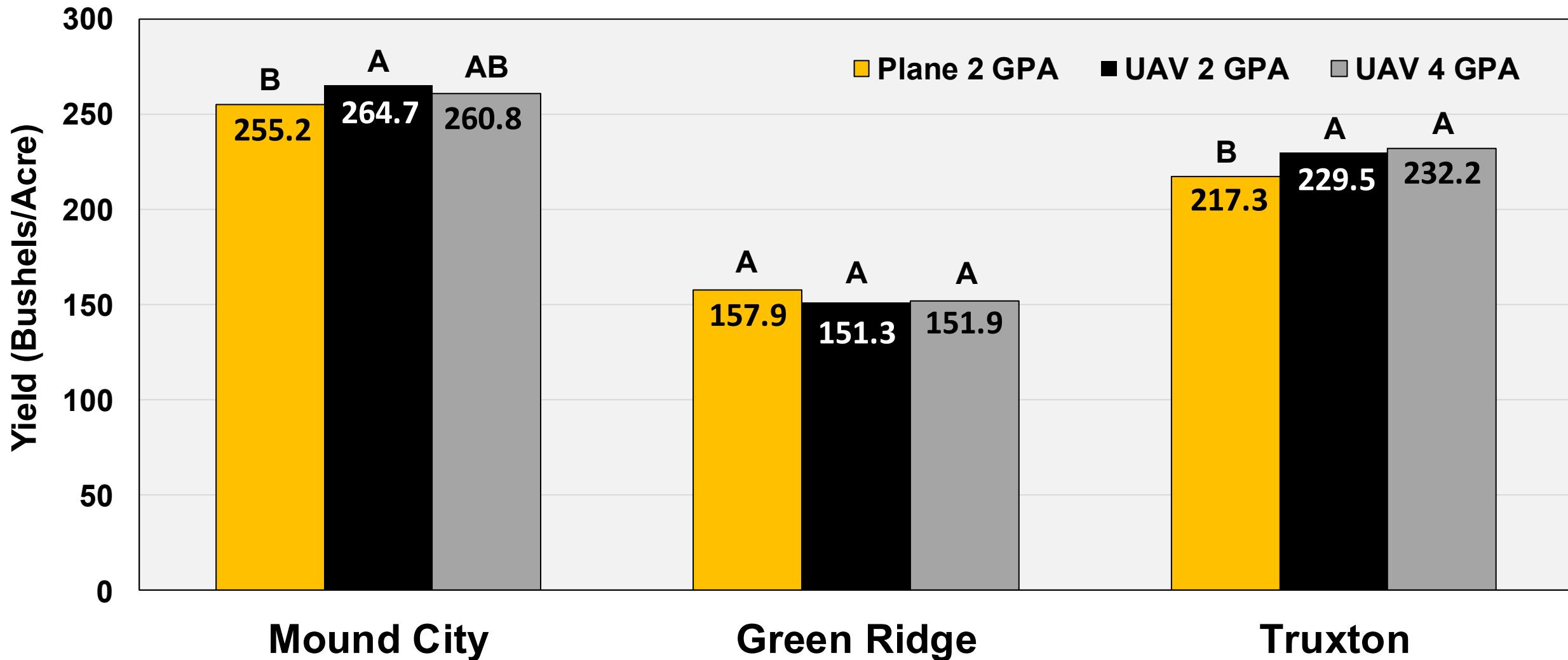
\*Bars within a location followed by the same letters are not different, LSD=0.05.

# 2025 Average Southern Rust Disease Severity at R6



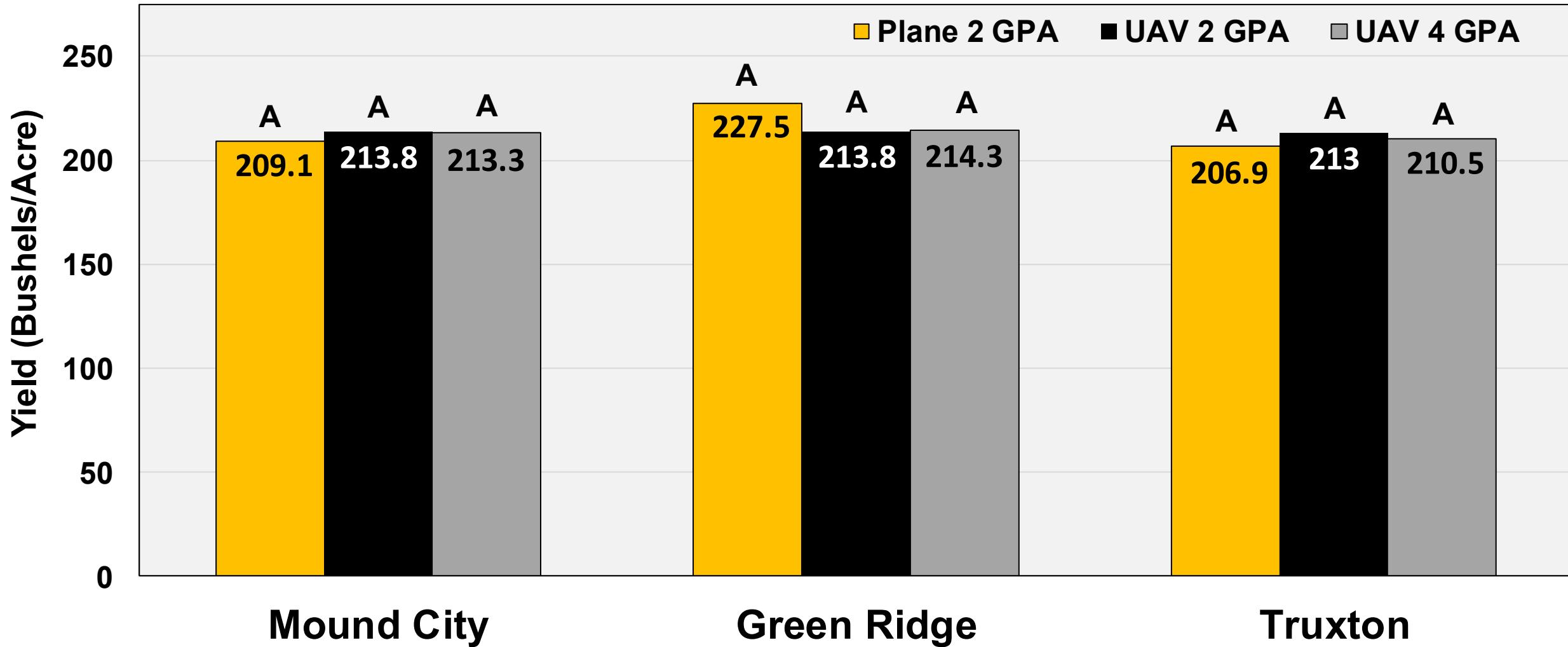
\*Bars within a location followed by the same letters are not different, LSD=0.05.

# 2024 Corn Yield Response to Treatments



\*Bars within a location followed by the same letters are not different, LSD=0.1.

# 2025 Corn Yield Response to Treatments



\*Bars within a location followed by the same letters are not different, LSD=0.1.

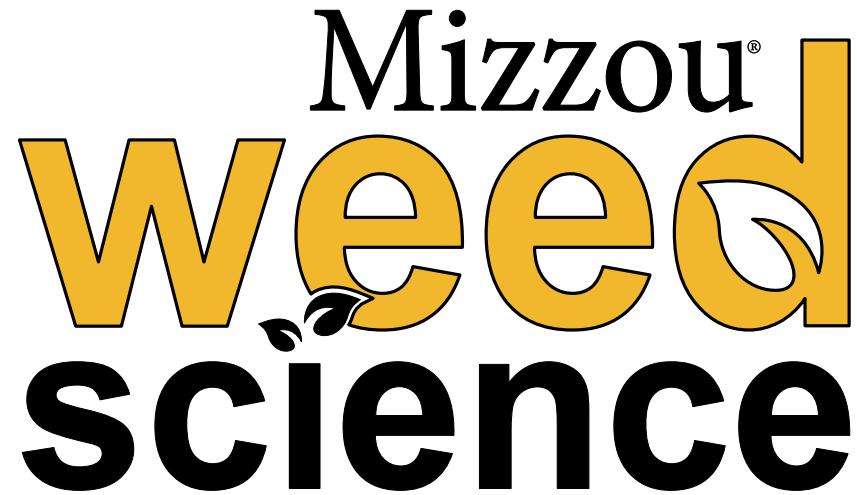
# Conclusions

- UAV applications resulted in similar or lower disease severity by R6 across all locations in both years
- Fungicide application with UAV resulted in equal or higher yields compared to plane applications across all locations in both years



# Acknowledgements

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