Influence of Deer Repellent and Herbicide Combinations on Weed Control and Deer Browsing in Soybean

Grady Rogers, Grant Coe, Trace Thompson, Haylee Barlow, Matheus Noguera, Josh Bradley, and Kevin Bradley



# Introduction

- Deer browsing can decrease soybean yields, leading to millions of dollars in annual losses for farmers.
- Although a variety of deer repellent products are available, there is limited research on their effectiveness in preventing deer from feeding or on their impact on weed control when used alongside standard post-emergence (POST) herbicide treatments.



Browsing Experiment

- Experiment conducted in two soybean fields near Columbia, Missouri in areas with heavy deer traffic.
- Five commercial wildlife repellent products (Liquid Fence, Bobbex, Hinder, PlantSkydd+, and Penergetic bWV) were applied either once, twice, or three times sequentially in tank mixtures with pre-plant burndown, early-POST, and late-POST treatment.
- Deer exclusion cages constructed in control plots for browsing and yield comparisons.
- Deer browsing recorded at weekly intervals after planting (WAP) by counting the number of browsed soybean plants within the same two, 1-meter sections of row each week.



#### Evaluation of 1-, 2-, and 3-Passes of Liquid Fence on Deer Browsing



#### Evaluation of 1-, 2-, and 3-Passes of Bobbex on Deer Browsing



#### Evaluation of 1-, 2-, and 3-Passes of Hinder on Deer Browsing



#### Evaluation of 1-, 2-, and 3-Passes of Plantskydd+ on Deer Browsing



#### Evaluation of 1-, 2-, and 3-Passes of Penergetic on Deer Browsing

### Influence of 1-, 2-, and 3-Passes of Deer Repellents on Soybean Yield





## Materials and Methods: Weed Control Experiment

- Treatments consisted of 5 deer repellents (Liquid Fence, Bobbex, Hinder, PlantSkydd+, and Penergetic bWV) each applied at V4 in combination with 7 herbicide treatments:
  - Liberty
    Liberty + Roundup PM3
    Liberty + SelectMax
    Liberty + Zidua
    Liberty + Anthem Maxx
    Liberty + FirstRate
    Liberty + Warrant Ultra
- All herbicide treatments were applied without deer repellents for comparison.
- Control of common cocklebur, morningglory species, waterhemp species, and foxtail species was evaluated at regular intervals after treatment.

## **Weed Control Results**



Non-Treated Control

Penergetic + Liberty + SelectMax

Liberty + SelectMax

• The addition of Plantskyyd+ to Liberty + Firstrate was the only treatment that resulted in reduced control of common cocklebur compared to the herbicide treatment alone 7 and 56 days after treatment.



Non-Treated Control

Bobbex + Liberty + FirstRate

Liberty + FirstRate



## Conclusions

- Browsing data—some products reduced browsing at certain time intervals but no clear trends.
- No deer repellent reduced deer browsing enough to increase soybean yield compared to controls.
- Deer browsing reduced soybean yield by 27% to 37% compared to the exclusion control.
- Weed Control Addition of one specific repellent reduced control of cocklebur.

