

Site-Specific Weed Management with Precision Application Technology

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Overview of Project Objectives

Current herbicide practices focus on broadcast applications that deliver a constant distribution rate across an entire field. However, weed populations have great spatial variability influenced by several factors. With recent improvements of sensors and sprayer technologies, the ability to detect and treat weeds on a real-time, site-specific basis is feasible. The long-term goal of this project is to optimize herbicide applications with a smart sprayer system to stimulate the adoption of precision agriculture tools for more sustainable weed management.

Key Results

Field research was conducted in Kansas, Nebraska, and Wisconsin. Small plot trials were conducted in Wisconsin evaluating different nozzle configurations and boom heights.

Trials with small-plot smart sprayers evaluating the effectiveness of spot spraying was conducted in Kansas. Results showed that treatments with residuals provided greatest weed control. The spot spray was possible to obtain weed control nearly the same as broadcast sprays and at a fraction of the cost.

Large field-scale trials were conducted in Nebraska using a commercial-sized smart sprayer to evaluate effectiveness of application timing at different growth stages. The difference between spot spraying and spike was greatest at V3 stage. More analysis is ongoing.

Benefit to Farmers

This project will evaluate new weed management using smart sprayer technology, which could improve control of hard-to-manage or resistant weeds. Farmers will gain insight into the potential return-on-investment of this new technology.

Links

[Site-Specific Weed Management with Precision Application Technology](#)

USB National Soybean Checkoff Research Database