

Integrated Weed Management (Signature)

Situation

With more than 21 million acres of harvested cropland in Kansas, weeds cause tremendous economic loss in cropland each year. These losses are due to reduced crop yields because of weed competition, cost of control methods, harvest related issues, and lower values of the harvested crop. Weed control has become increasingly challenging because of the development of herbicide resistant weeds. In Kansas, twenty-eight weed biotypes have been identified as herbicide resistant. In recent years, the most common weed species to develop herbicide resistance are Palmer amaranth (*Amaranthus palmerii*) and kochia (*Kochia scoparia*). In 2015, a species of Palmer amaranth was identified with multiple resistance to five herbicide sites of action. Therefore, integrated weed management methods are important for controlling weeds and minimizing environmental impact.

Public Value

Integrated weed management will provide effective weed control tools that will increase farmer's productivity and profitability. This profitability will be reflected in the increased economic activity of local rural businesses and communities. In addition, integrated weed management will help provide sustainable and safe food sources, while minimizing the environmental impact.

Outcomes

Short-Term (Knowledge)

- Participants gain awareness of the benefits and effectiveness of an integrated weed management program.
- Participants will increase skills in identifying common weeds.
- Participants will learn to utilize the K-State Chemical Weed Control Guide.
- Participants will gain awareness of common herbicide resistant weeds.

Indicators

At the conclusion of each of the weed management educational programs, an evaluation will be distributed. The evaluation will allow participants to indicate their level of understanding before and after the program.

- Participants will be able to identify chemical control, cultural control and mechanical control methods.
- Participants will be able to identify common weeds.

Medium-Term (Behavior)

- Participants will develop an integrated weed management plan for a field.
- Participants will implement an integrated weed management plan.

Indicators

- There will be an increase in the number of questions on cultural and mechanical weed control methods.
- There will be an observable increase of effective weed control.

Long-Term (Change in Condition)

- Participants will have improved weed management on their farm.
- Participants will have efficient, sustainable and competitive cropping systems.

Indicators

- Distribute a 24- to 36-month follow-up evaluation to all participants to determine what changes participants have made in their weed management tactics.

Outputs

1. Revise the Chemical Weed Control Guide on an annual basis and distribute to county/district extension offices, farmers, crop advisors, and agricultural industry.
2. Conduct a series of winter meetings, webinars and presentations at field days focused on integrated weed management and current weed science issues.
3. Provide information to farmers and agronomy professionals on integrated weed management through traditional media, electronic and social media, publications, newsletters and the K-State Extension Agronomy eUpdate.