

# Kansas Agricultural Experiment Station Research Reports

Volume 1  
Issue 5 *Southwest Research-Extension Center  
Reports*

Article 17

January 2015

## Sequential Treatments of Rimsulfuron, Mesotrione, Thifensulfuron, Balance Flexx, Cinch, Cinch ATZ, and Prowl H2O Mixtures for Weed Control in Irrigated Corn

R. Currie  
*Kansas State University*, [rscurie@ksu.edu](mailto:rscurie@ksu.edu)

P. Geier  
*Kansas State University*, [pgeier@ksu.edu](mailto:pgeier@ksu.edu)

Follow this and additional works at: <https://newprairiepress.org/kaesrr>

 Part of the [Agronomy and Crop Sciences Commons](#), and the [Weed Science Commons](#)

### Recommended Citation

Currie, R. and Geier, P. (2015) "Sequential Treatments of Rimsulfuron, Mesotrione, Thifensulfuron, Balance Flexx, Cinch, Cinch ATZ, and Prowl H2O Mixtures for Weed Control in Irrigated Corn," *Kansas Agricultural Experiment Station Research Reports*: Vol. 1: Iss. 5. <https://doi.org/10.4148/2378-5977.1083>

This report is brought to you for free and open access by New Prairie Press. It has been accepted for inclusion in Kansas Agricultural Experiment Station Research Reports by an authorized administrator of New Prairie Press. Copyright January 2015 Kansas State University Agricultural Experiment Station and Cooperative Extension Service. Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. K-State Research and Extension is an equal opportunity provider and employer.



---

## Sequential Treatments of Rimsulfuron, Mesotrione, Thifensulfuron, Balance Flexx, Cinch, Cinch ATZ, and Prowl H2O Mixtures for Weed Control in Irrigated Corn

### Abstract

No treatment with less than 1.5 lb/a atrazine provided commercially acceptable Palmer amaranth control. The best level of Palmer amaranth control was produced by treatments that had good preemergence control augmented by a postemergence application with two or more modes of action that contained 0.5 lb/a atrazine. All treatments provided excellent kochia control. The best Russian thistle treatments provided from 77 to 88% control. The best foxtail or crabgrass treatments provided from 91 to 94% control. Combinations of preemergence treatments followed by a postemergence treatment achieved excellent shattercane control.

### Keywords

weed science, weed control, rimsulfuron, thifensulfuron, Balance Flexx (isoxaflutole), Cinch (S-metolachlor), Cinch ATZ (Cinch+atrazine), Prowl H2O (microencapsulated pendimethalin), broadleaf and grass weed control in irrigated corn, glyphosate-resistant corn, shattercane, green foxtail, crabgrass, kochia, Palmer amaranth, Russian thistle, preemergence herbicide, postemergence herbicide

### Creative Commons License



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

## Sequential Treatments of Rimsulfuron, Mesotrione, Thifensulfuron, Balance Flexx, Cinch, Cinch ATZ, and Prowl H<sub>2</sub>O Mixtures for Weed Control in Irrigated Corn

*R. Currie and P. Geier*

### Summary

No treatment with less than 1.5 lb/a atrazine provided commercially acceptable Palmer amaranth control. The best level of Palmer amaranth control was produced by treatments that had good preemergence control augmented by a postemergence application with two or more modes of action that contained 0.5 lb/a atrazine. All treatments provided excellent kochia control. The best Russian thistle treatments provided from 77 to 88% control. The best foxtail or crabgrass treatments provided from 91 to 94% control. Combinations of preemergence treatments followed by a postemergence treatment achieved excellent shattercane control.

### Introduction

Rimsulfuron is a postemergence herbicide that has been used in corn for more than 25 years. It has a limited degree of preemergence activity and provides excellent postemergence control of sorghum species weeds. Although it provides good control of several other grassy weeds, control is limited if they exceed certain size limits. Because rimsulfuron is inexpensive to manufacture, it adds a great deal of value to tank mixes of other herbicides. The objective of this study was to explore tank mix partners to augment rimsulfuron's weed control.

### Procedures

Tank mixes of rimsulfuron, thifensulfuron, Balance Flexx (isoxaflutole), Cinch (S-metolachlor), Cinch ATZ (Cinch+atrazine) and Prowl H<sub>2</sub>O (microencapsulated pendimethalin) were evaluated for broadleaf and grass weed control in irrigated corn at the Kansas State University Southwest Research-Extension Center in Garden City, Kansas. Glyphosate-resistant corn was planted on April 24, 2014, with preemergence herbicides applied the following day. Air temperature, soil temperature, wind speed, relative humidity, and soil moisture conditions were 79°F, 48°F, 5 mph, 17%, and good, respectively, at the time of preemergence applications. Soil was a Ulysses silt loam with 1.4% organic matter, pH of 8.0, and cation exchange capacity of 18.4. The entire experimental area was overseeded with a mixture of shattercane (rox orange), green foxtail, and crabgrass seed. The kochia, Palmer amaranth, and Russian thistle populations were

natural infestations. Preemergence herbicides were applied with a tractor-mounted, CO<sub>2</sub>-pressurized sprayer calibrated to deliver 20 gpa at 30 psi and 4.1 mph. Plots were 10 by 35 feet arranged in a randomized complete block with four replications. Postemergence herbicides were applied June 6, 2014, using a CO<sub>2</sub>-pressurized backpack sprayer delivering 20 gpa at 27 psi and 3.0 mph. Air temperature, soil temperature, wind speed, relative humidity, and soil moisture conditions were 77°F, 60°F, 10 mph, 46%, and good, respectively, at the time of postemergence applications. Weed control was visually estimated 101 days after planting (100 days after preemergence applications and 57 days after postemergence treatments). Yields were determined October 27, 2014, by harvesting the center two rows of each plot and adjusting the grain to 15.5% moisture.

## Results and Discussion

Weed pressure was intense and uniform across the treatment area. Excellent populations of Palmer amaranth, green foxtail, Russian thistle, crabgrass, and shattercane were achieved. No treatment with less than 1.5 lb/a atrazine provided commercially acceptable Palmer amaranth control. This supports observations and experiments conducted at this location for the past 24 years. The best level of Palmer amaranth control was produced by treatments that had good preemergence control augmented by a postemergence application with two or more modes of action that contained 0.5 lb/a atrazine. Although kochia weed pressure was not intense, all treatments provided excellent control. The best Russian thistle treatments provided from 77 to 88% control. The best foxtail or crabgrass treatments provided from 91 to 94% control. Excellent shattercane control was achieved by combinations of preemergence treatments followed by a postemergence treatment.

**Table 1. Weed control in irrigated glyphosate-resistant corn with tank mixtures of rimsulfuron, mesotrione, thifensulfuron, Atrazine, Balance Flexx, Cinch, Cinch ATZ, and Prowl H<sub>2</sub>O.**

| Trt. | Herbicide      | Rate    | Timing | % Control               |                    |                    |                    |                    |                    | Yield |
|------|----------------|---------|--------|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------|
|      |                |         |        | 101 Days after planting |                    |                    |                    |                    |                    |       |
|      |                |         |        | AMAPA <sup>1</sup>      | KCHSC <sup>2</sup> | SASKR <sup>3</sup> | SETVI <sup>4</sup> | DIGSS <sup>5</sup> | SORVU <sup>6</sup> |       |
| 1    | Untreated      |         |        | 0                       | 0                  | 0                  | 0                  | 0                  | 0                  | 55.4  |
| 2    | Rimsulfuron    | 1 oz    | A      | 98                      | 98                 | 70                 | 91                 | 89                 | 96                 | 113.6 |
|      | Mesotrione     | 5 oz    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Cinch          | 1 pt    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|      | Atrazine       | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 3    | Rimsulfuron    | 1 oz    | A      | 100                     | 99                 | 75                 | 90                 | 91                 | 93                 | 106.1 |
|      | Mesotrione     | 5 oz    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Cinch          | 1 pt    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|      | Rimsulfuron    | 1.2 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Mesotrione     | 2.5 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Isoxadifen     | 0.3 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Atrazine       | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 4    | Rimsulfuron    | 1 oz    | A      | 98                      | 100                | 78                 | 95                 | 93                 | 100                | 101.4 |
|      | Mesotrione     | 5 oz    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Cinch          | 1 pt    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|      | Rimsulfuron    | 0.92 oz | B      |                         |                    |                    |                    |                    |                    |       |
|      | Thifensulfuron | 0.1 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Isoxadifen     | 0.23 oz | B      |                         |                    |                    |                    |                    |                    |       |
|      | Atrazine       | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 5    | Rimsulfuron    | 1 oz    | A      | 92                      | 100                | 78                 | 89                 | 91                 | 100                | 113.4 |
|      | Mesotrione     | 5 oz    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Cinch ATZ      | 1.5 pt  | A      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|      | Atrazine       | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 6    | Rimsulfuron    | 1 oz    | A      | 94                      | 100                | 80                 | 95                 | 94                 | 100                | 108.0 |
|      | Mesotrione     | 5 oz    | A      |                         |                    |                    |                    |                    |                    |       |
|      | Cinch ATZ      | 1.5 pt  | A      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|      | Rimsulfuron    | 1.2 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Mesotrione     | 2.5 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Isoxadifen     | 0.3 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Atrazine       | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|      | Glyphosate+AMS | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |

*continued*

**Table 1. Weed control in irrigated glyphosate-resistant corn with tank mixtures of rimsulfuron, mesotrione, thifensulfuron, Atrazine, Balance Flexx, Cinch, Cinch ATZ, and Prowl H<sub>2</sub>O.**

| Trt.       | Herbicide              | Rate    | Timing | % Control               |                    |                    |                    |                    |                    | Yield |
|------------|------------------------|---------|--------|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------|
|            |                        |         |        | 101 Days after planting |                    |                    |                    |                    |                    |       |
|            |                        |         |        | AMAPA <sup>1</sup>      | KCHSC <sup>2</sup> | SASKR <sup>3</sup> | SETVI <sup>4</sup> | DIGSS <sup>5</sup> | SORVU <sup>6</sup> |       |
| 7          | Rimsulfuron            | 1 oz    | A      | 91                      | 100                | 84                 | 86                 | 91                 | 100                | 109.6 |
|            | Mesotrione             | 5 oz    | A      |                         |                    |                    |                    |                    |                    |       |
|            | Cinch ATZ              | 1.5 pt  | A      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|            | Rimsulfuron            | 0.92 oz | B      |                         |                    |                    |                    |                    |                    |       |
|            | Thifensulfuron         | 0.1 oz  | B      |                         |                    |                    |                    |                    |                    |       |
|            | Isoxadifen             | 0.23 oz | B      |                         |                    |                    |                    |                    |                    |       |
|            | Atrazine               | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 8          | Lumax                  | 3 qt    | A      | 98                      | 100                | 86                 | 91                 | 94                 | 100                | 120.1 |
|            | Glyphosate+AMS         | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|            | Atrazine               | 1.5 qt  | B      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 9          | Balance Flexx          | 1 oz    | A      | 85                      | 100                | 68                 | 58                 | 70                 | 58                 | 72.9  |
|            | Atrazine               | 1 qt    | A      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
| 10         | Balance Flexx          | 1 oz    | A      | 86                      | 100                | 88                 | 88                 | 75                 | 94                 | 111.1 |
|            | Atrazine               | 1 qt    | A      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|            | Dual II Magnum         | 2 pt    | B      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| 11         | Balance Flexx          | 1 oz    | A      | 85                      | 100                | 78                 | 80                 | 73                 | 88                 | 104.4 |
|            | Atrazine               | 1 qt    | A      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | A      |                         |                    |                    |                    |                    |                    |       |
|            | Prowl H <sub>2</sub> O | 2 pt    | B      |                         |                    |                    |                    |                    |                    |       |
|            | Glyphosate+AMS         | 32 oz   | B      |                         |                    |                    |                    |                    |                    |       |
| LSD @ 5% = |                        |         |        | 7                       | 3                  | 11                 | 6                  | 4                  | 5                  | 11.7  |

<sup>1</sup> Palmer amaranth.<sup>2</sup> Kochia.<sup>3</sup> Russian thistle.<sup>4</sup> Green foxtail.<sup>5</sup> Crabgrass.<sup>6</sup> Shattercane.