



Early-season Weed Control in Roundup Ready 2 Xtend[®] Soybean

Trial Objective

- Starting weed-free at planting is important for season-long weed control and maximum yield potential.
- Most kochia emerges in early spring with subsequent smaller flushes throughout the growing season, while Palmer amaranth emerges later in the year for an extended period of time.
- When environmental conditions are challenging for weed control prior to planting, failure of burndown control of kochia can occur, which could result in kochia present at planting time.
- The objective of this study was to determine the best strategy for managing kochia that escaped a burndown herbicide treatment in soybean with planting-time and early post-emergence applications.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Soybean Product	Seeding Rate (seeds/acre)	Herbicide Application Date
Gothenburg, NE	Clay loam	Corn	Conventional	5/8/18	2.4 MG	140K	5/9 (PRE) 6/5 (POST)

- The trial was arranged in a randomized complete block design with three replications.
- Kochia was treated with a blanket application of 4 fl oz of XtendiMax[®] herbicide with VaporGrip[®] Technology (approximately 1/5 the labelled application rate) two weeks prior to planting to simulate a lack of control scenario.
- Kochia was approximately 3-6 inches in height at the pre-application timing (PRE).
- Early post-emergence applications (POST) were applied at the V2 growth stage. At this time, kochia was approximately 9-12 inches in height and Palmer amaranth was approximately 4 inches in height.
- Rainfall one day after the POST application (Table 1) resulted in a new flush of Palmer amaranth.
- Some volunteer corn was present in the trial (Figure 5, 7, and 8).

Table 1. Rainfall amounts.

Date	Rainfall (inches)	Date	Rainfall (inches)
5/10/2018	0.68	5/27/2018	2.0
5/13/2018	0.7	6/06/2018	0.68
5/18/2018	2.5	6/19/2018	1.4
5/19/2018	2.0	6/20/2018	1.8



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Table 2. Herbicide treatments.

Treatment	Herbicide (rate/acre)	Adjuvant (rate/acre)	Application Timing
1	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	At planting (PRE to soybeans)
2	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz) Valor [®] SX (2 oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	At planting (PRE to soybeans)
3	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz) Valor [®] SX (2 oz) Tricor [®] 4F (8 oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	At planting (PRE to soybeans)
4	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz) Warrant [®] Herbicide (48 fl oz) Tricor [®] 4F (8 fl oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	At planting (PRE to soybeans)
5	Paraquat (48 fl oz) Tricor [®] 4F (8 fl oz)	Fire-Zone [®] (1%)	At planting (PRE to soybeans)
6	Paraquat (48 fl oz)	Fire-Zone [®] (1%)	At planting (PRE to soybeans)
7	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	Early post (V2 soybeans)
8	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz) Warrant [®] Herbicide (48 fl oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	Early post (V2 soybeans)
9	XtendiMax [®] herbicide with VaporGrip [®] Technology (22 fl oz) Roundup PowerMAX [®] herbicide (32 fl oz) Warrant [®] Ultra Herbicide (48 fl oz)	Class Act [®] Ridion™ (1 %) INTACT™ (0.5 %)	Early post (V2 soybeans)

Understanding the Results

- At 21 days after the PRE treatment, kochia and Palmer amaranth control was significantly greater in plots that received a treatment with XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide + a residual herbicide (Treatments 2, 3, and 4) compared to XtendiMax[®] with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide alone, indicating that Tricor[®] 4F and Valor[®] SX contributed to better control of kochia (Figure 1).
- Kochia control was significantly greater when using XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide compared to paraquat or paraquat + metribuzin (Treatments 5 and 6) at 48 days after the PRE treatment (Figure 2).
- The highest level of Palmer amaranth control at 48 days after the PRE treatment resulted from XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide + either Valor[®] SX or Warrant[®] Herbicide + Tricor[®] 4F (Treatments 2 and 4) (Figure 2).
- Including Warrant[®] Herbicide or Warrant[®] Ultra Herbicide with XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide in the POST treatment (Treatments 8 and 9) resulted in a significant increase in Palmer amaranth control 21 days after the POST application (Figure 2).



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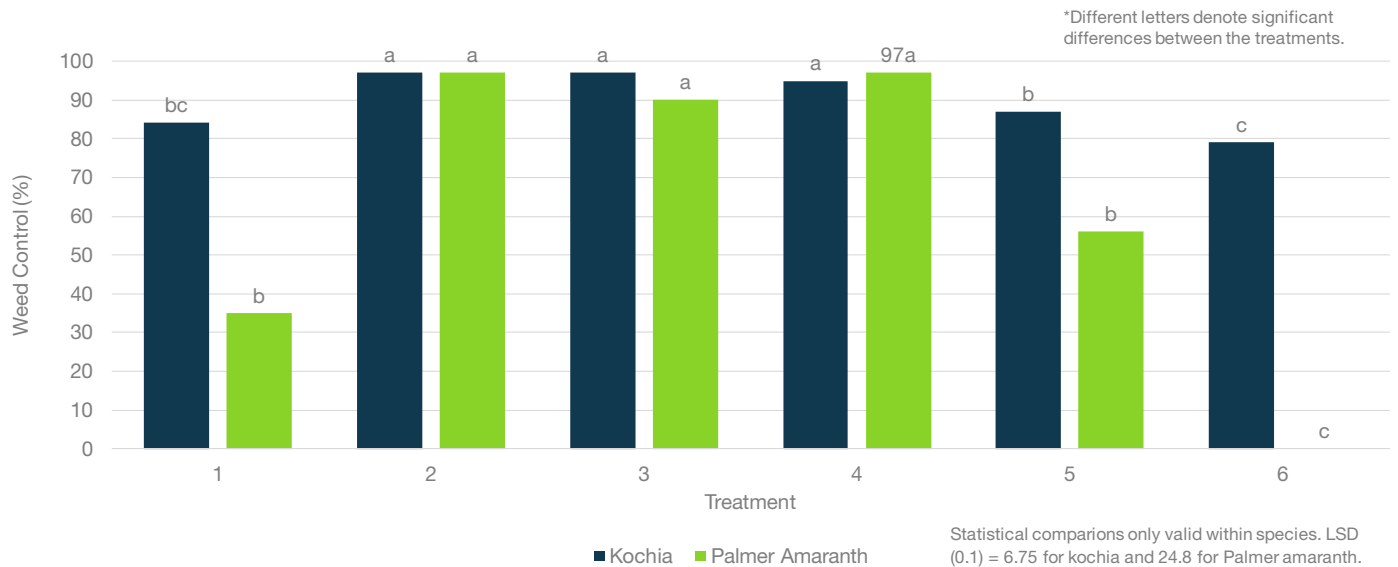


Figure 1. Weed control on May 30th (21 days after the PRE application).

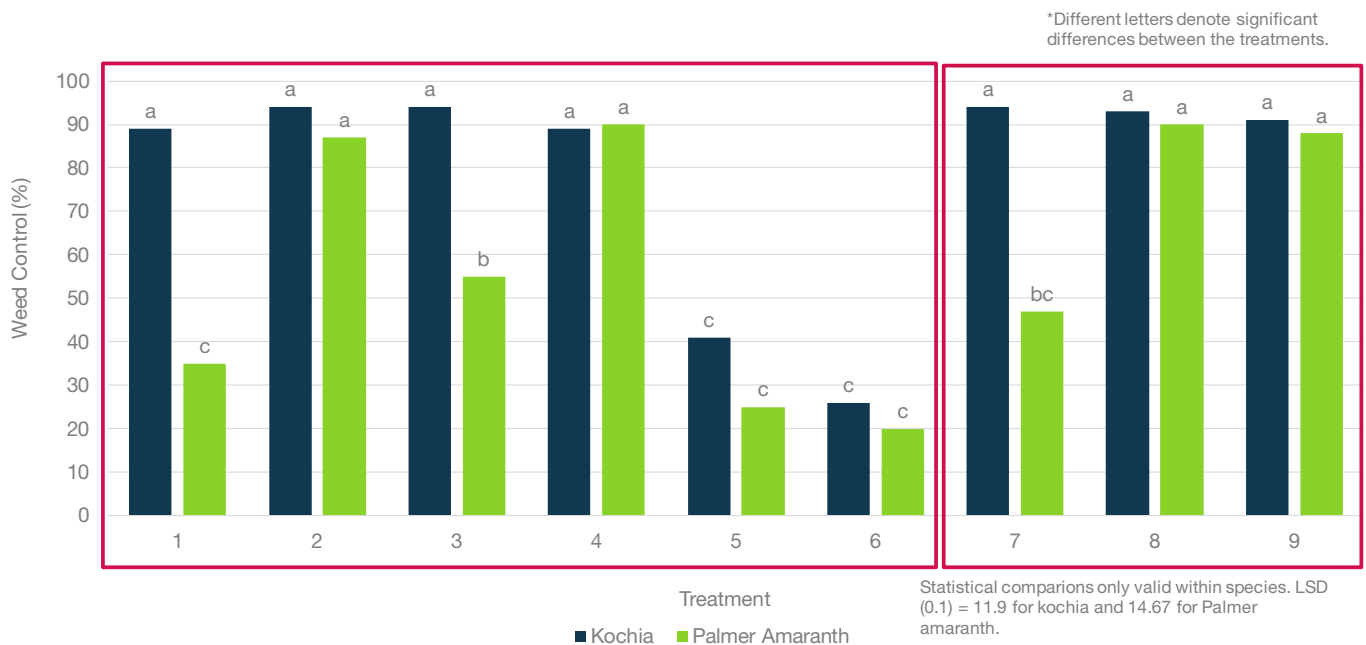


Figure 2. Weed control on June 26th (48 days after the PRE application (left box) and 21 days after the POST application (right box)).



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Figure 3. Non-treated plot 23 days after planting.



Figure 4. Plot 21 days after the PRE treatment with XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide (Treatment 1).



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Figure 5. Plot 21 days after the PRE treatment with paraquat (Treatment 6).



Figure 6. Plot 21 days after the PRE treatment with XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide + Valor[®] SX (Treatment 2).



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Figure 7. Plot 21 days after the PRE treatment with XtendiMax[®] herbicide with VaporGrip[®] Technology + Roundup PowerMAX[®] herbicide + Warrant[®] Herbicide + Tricor[®] 4F (Treatment 4).



Figure 8. Plot 21 days after the PRE treatment with paraquat + Tricor[®] 4F (Treatment 5).

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What Does This Mean for Your Farm?

- Starting clean with an effective burndown herbicide and including a residual herbicide at planting resulted in the best control of kochia and Palmer amaranth.
- Including a residual herbicide in post-emergence applications significantly improved Palmer amaranth control.
- Delaying the herbicide application until the V2 growth stage resulted in applications to large kochia plants and a dense canopy of Palmer amaranth plants, which reduces the effectiveness of post-emergence herbicides.

Legal Statements

The information discussed in this report is from a single site, replicated demonstration. This information piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

XtendiMax[®] herbicide with VaporGrip[®] Technology is part of the Roundup Ready[®] Xtend Crop System and is a restricted use pesticide. ALWAYS READ AND FOLLOW DIRECTIONS FOR USE ON PESTICIDE LABELING. It is a violation of federal and state law to use any pesticide product other than in accordance with its labeling. XtendiMax[®] herbicide with VaporGrip[®] Technology and products with XtendFlex[®] Technology may not be approved in all states and may be subject to use restrictions in some states. Check with your local product dealer or representative or U.S. EPA and your state pesticide regulatory agency for the product registration status and additional restrictions in your state. For approved tank-mix products and nozzles visit XtendiMaxApplicationRequirements.com

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ALWAYS READ AND FOLLOW DIRECTIONS FOR USE ON PESTICIDE LABELING. IT IS A VIOLATION OF FEDERAL AND STATE LAW to use any pesticide product other than in accordance with its labeling. NOT ALL formulations of dicamba or glyphosate are approved for in-crop use with Roundup Ready 2 Xtend[®] soybeans. ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED FOR SUCH USES AND APPROVED FOR SUCH USE IN THE STATE OF APPLICATION. Contact the U.S. EPA and your state pesticide regulatory agency with any questions about the approval status of dicamba herbicide products for in-crop use with Roundup Ready 2 Xtend[®] soybeans.

Roundup Ready 2 Xtend[®] soybeans contains genes that confer tolerance to glyphosate and dicamba.

Glyphosate will kill crops that are not tolerant to glyphosate. **Dicamba** will kill crops that are not tolerant to dicamba. **Glufosinate** will kill crops that are not tolerant to glufosinate. Contact your seed brand dealer or refer to the Technology Use Guide for recommended weed control programs.

Roundup Technology[®] includes glyphosate-based herbicide technologies.

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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