Evaluation of Electrocution for Weed Management in Tall Fescue Pastures

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Objectives

To compare the weed control and forage injury following electrocution and wiping treatments to that achieved with standard pasture herbicide treatments.

Materials & Methods

- A common set of electrocution, wiping, and herbicide treatments for the control of a variety of common annual and perennial broadleaf weeds were evaluated in six pastures (★)
- A second experiment with slightly different electrocution, wiping, and herbicide treatments was conducted in a pasture densely infested of johnsongrass repeated two years(*)



How the Weed ZapperTM Works:

Loader-mounted copper boom that electrocutes any plant it contacts.

• PTO-driven generator attached to back of tractor

• Up to 15,000 volts translocating through plants contacted

Smucker Weed Wiper[™]:

- Herbicide-soaked, pump-fed sponges wipe a herbicide solution onto any weeds that are contacted.
- All weed wiper treatments were applied with a 50% v/v glyphosate solution.

Herbicide Treatments Evaluated in the Experiments

Active Ingredient(s)	Rate (Ib ai/ac)	Trade Name	Rate (product/A)	Broadleaf Weed Experiment	Johnsongrass Experiment
Picloram + 2,4-D	0.21 + 0.83	Grazon P+D	32 fl ozs	\checkmark	
Aminopyralid + 2,4-D	0.12 + 0.62	GrazonNext HL	24 fl ozs	\checkmark	
Picloram + 2,4-D	0.13 + 0.52	GrazonPD3	20 fl ozs	>	
Picloram + 2,4-D	0.21 + 0.83	GrazonPD3	32 fl ozs	\checkmark	
Aminopyralid + florpyrauxifen	0.07 + 0.005	Duracor	12 fl ozs	\checkmark	
2,4-D + florpyrauxifen	0.53 + 0.007	NovaGraz	24 fl ozs	\checkmark	
Saflufenacil	0.036	Sharpen	2 fl ozs	\checkmark	
Quinclorac	0.37	Facet	32 fl ozs	\checkmark	
Imazapic	0.06	Plateau	4 fl ozs	\checkmark	
Imazapic	0.12	Plateau	8 fl ozs		\checkmark
Imazapic	0.18	Plateau	12 fl ozs		\checkmark
Sulfosulfuron	0.036	Outrider	0.75 oz		\checkmark
Sulfosulfuron	0.045	Outrider	1 oz		\checkmark

*All treatments applied with recommended adjuvants.



Results







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Control (%)



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Control (%)





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Control (%)





Conclusions: Forage Injury

- Less than 10% tall fescue injury from any wiping or electrocution treatment
- 0 1% legume injury from all wiping and electrocution treatments (lower than all herbicide treatments except NovaGraz, Sharpen, and Plateau)



Conclusions: Weed Control

Table 1. Weed control relative to the best broadcast herbicide treatment(s) evaluated.

Alternative Treatment Type	Common Ragweed	Common Cocklebur	Bull Thistle	Ironweed Species	Buckbrush	Horsenettle
Single pass electr	\checkmark	\rightarrow	=	=	=	\checkmark
Two-pass electr same day	=	=	=	=	\uparrow	$\mathbf{+}$
Two-pass electr 14-d apart	=	=	=	=	\uparrow	\checkmark
Single pass weed wiper	\mathbf{h}	=	=	=	\uparrow	\leftarrow
Two-pass weed wiper	\checkmark	=	=	=	\uparrow	\checkmark

 \uparrow , \downarrow , and = indicates higher, lower, and similar control than the best broadcast herbicide treatments, respectively

Johnsongrass Control 45 Days After Treatment

(Moniteau County, Missouri 2023 and 2024)



Conclusions: Johnsongrass Control

- Speed of wiping or electrocution did not influence johnsongrass control
- Two passes of electrocution on the same day provided better control than single pass
- Single passes were as effective as two passes with weed wiping
- Best electrocution and wiping treatments provided as good or better johnsongrass control than Plateau or Outrider



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