


## Multi-state Evaluation of Electrocutation as a Rescue Treatment on Escaped Weeds in Soybean

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## Introduction




- The increase in herbicide-resistant weeds has led to a greater interest in IWM.
- Use of weed electrocutation is currently limited in soybean, but is more commonly used and has been previously researched in specialty crops (Diprose et al. 1985).
- 20 kV has been shown to provide effective control of weeds (Korres et al. 2019).
- The Weed Zapper™ is a common, commercially-available implement currently in use primarily by organic and specialty crop growers.



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## Objectives and Hypotheses



<u>Objectives</u>	<u>Hypotheses</u>
<ol style="list-style-type: none"> <li>1) Determine the efficacy of weed electrocutation on different weed species, at different tractor speeds, and across different sites in the North Central region.</li> <li>2) Compare efficacy of weed electrocutation to other alternative rescue treatments available commercially.</li> </ol>	<ol style="list-style-type: none"> <li>1) Different species will respond differently to electrocutation.</li> <li>2) Weed electrocutation will perform comparably to other rescue treatment options.</li> </ol>



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## Materials and Methods



- Experiment with target weed species exceeding the height of the soybean canopy
- Individual plots minimum of 3 x 15 m
- Treatments were conducted in a RCB design with 4 replications
- Number of treatments varied with the resources available at each location, but always included:
  - Speed: 3 vs 5 mph
  - Comparison rescue treatment

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## Materials and Methods:

- Weed density, height, growth stage and plant moisture collected prior to electrocutation
- Visual injury ratings taken 7 and 14 days after treatment, and at end of season
- Seed collected from two 0.5-m<sup>2</sup> quadrats in each plot
- Statistical Analyses: SAS PROC GLIMMIX, means separated using Fisher's protected LSD, P<0.05

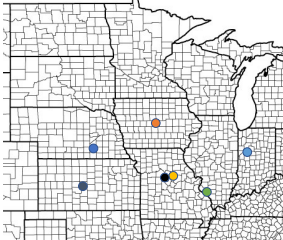




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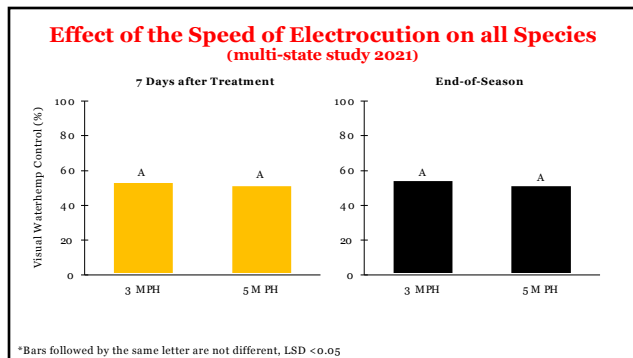
## Trial Locations

Seven sites in six states:

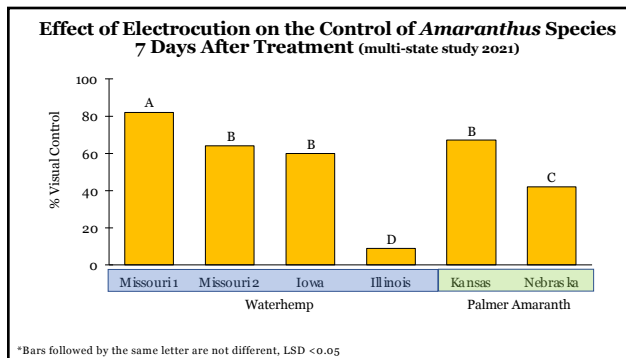
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- Boonville, Missouri
- Columbia, Missouri
- Carbondale, Illinois
- Great Bend, Kansas
- Harvard, Nebraska
- Lafayette, Indiana

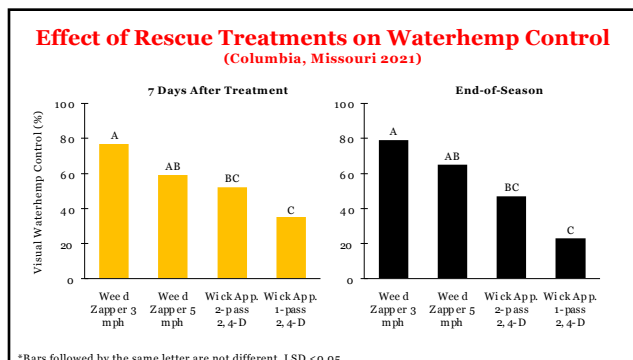
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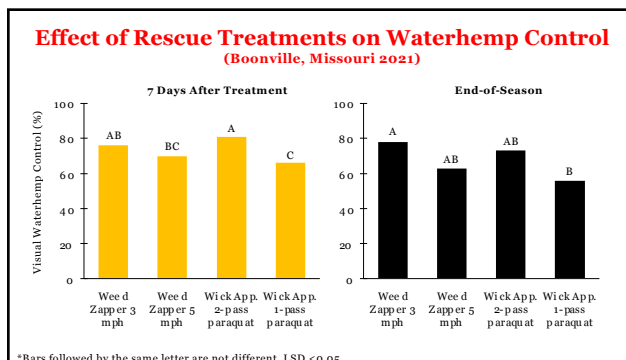
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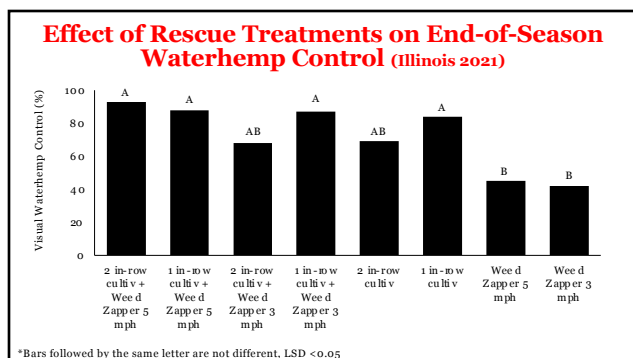
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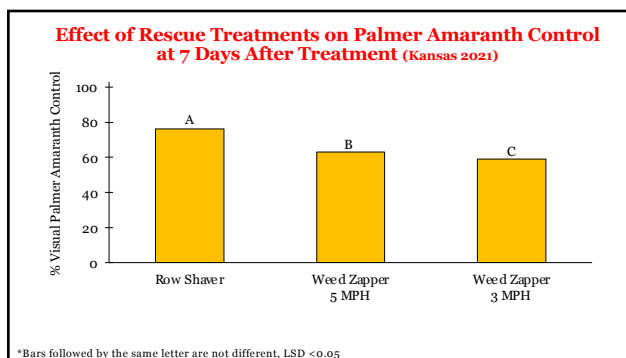
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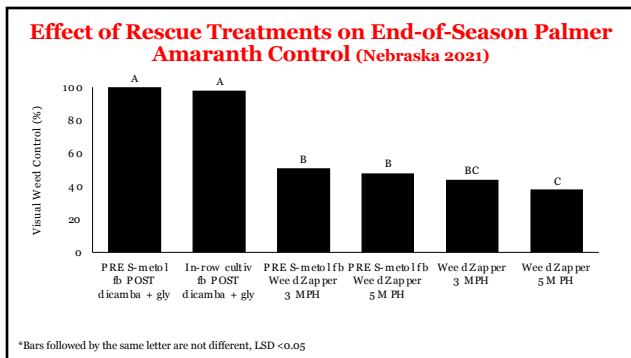
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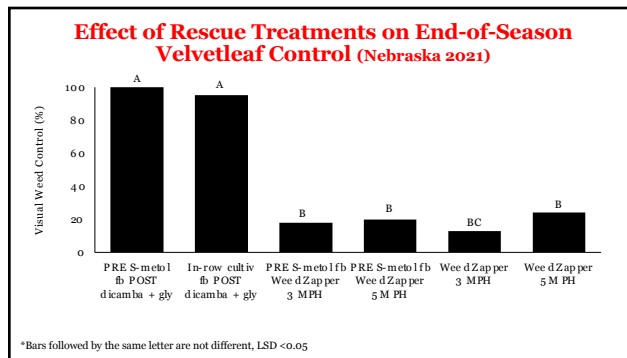
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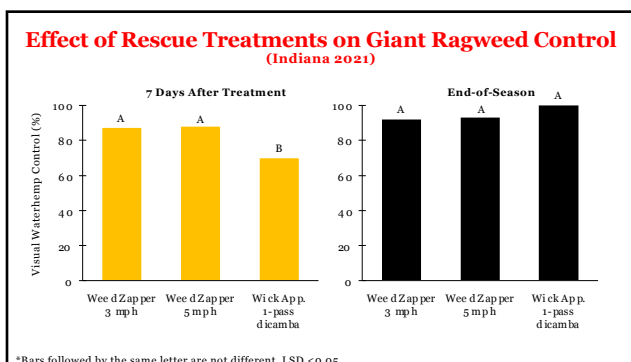
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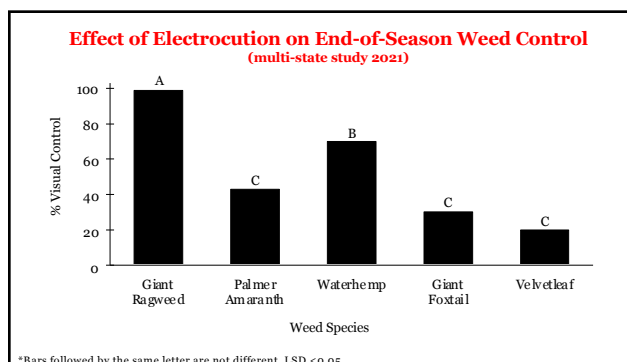
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## Conclusions

- Speed of electrocutation did not affect efficacy
- Weed electrocutation provided highest control of giant ragweed > waterhemp > Palmer amaranth = giant foxtail = velvetleaf
- Other rescue treatments (inter-row cultivation or mowing, rope wick herbicide application) generally performed similar or better than electrocutation on the weed escapes evaluated in this research

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