

**WIU CENTENNIAL HONORS COLLEGE**  
**Thomas E. Helm Undergraduate Research Day 2023**

**Abstract**

Poster

Major: Agriculture

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**Potential antagonism of fluzifop or glyphosate on grass control by tank-mix herbicides**

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Widespread resistance to herbicides has led farmers to apply multiple herbicide tank-mixtures to achieve satisfactory weed control. Sometimes these mixtures reduce the herbicidal efficacy when applied postemergence and weeds survive the application. For example, fluzifop control of grasses can be reduced when tank-mixed with dicamba or 2,4-D, and glyphosate control of grasses can be reduced when tank-mixed with glufosinate or dicamba + acetochlor. Our hypothesis was that fluzifop or glyphosate applied alone would result in greater control of grass weeds than when tank-mixed with broadleaf (2,4-D or dicamba) or residual (acetochlor and S-metolachlor) herbicides. Seeds of corn, rye, giant foxtail, large crabgrass and shattercane were planted into a commercial mix in 6.25 cm<sup>2</sup> deep pots in 50 cell trays and grown in the WIU School of Agriculture greenhouse. Two weeks later plants were thinned to one corn or two rye plants per pot. Weed emergence was poor so thinning was not required. Herbicide treatments were applied in a single-tip spray chamber six weeks after planting. Fluzifop was applied alone or tank-mixed with dicamba or 2,4-D, with and without acetochlor or S-metolachlor. Glyphosate was applied alone or tank-mixed with glufosinate, glufosinate+acetochlor, acetochlor or acetochlor+dicamba. Two weeks after herbicide application plant heights and injury were measured. Glufosinate, glufosinate+acetochlor and dicamba+acetochlor antagonized glyphosate activity on rye and annual grasses. 2,4-D, 2,4-D+acetochlor, or dicamba antagonized fluzifop control of corn. On fields with dense infestations of grassy weeds or volunteer corn, farmers should be cautious in tank-mixing herbicides.