

WIU CENTENNIAL HONORS COLLEGE
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Abstract

Poster

Major: Agriculture

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Diflufenican injury on soybean as influenced by environmental factors

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Waterhemp (*Amaranthus tuberculatus*) is a common weed in Illinois fields that has evolved resistance to seven different herbicide modes of action. Agrichemical companies are searching for new herbicides to use in the corn and soybean cropping system. Diflufenican is a Group 12 herbicide that has been used for three decades in Europe for weed control in wheat. Diflufenican has good activity on waterhemp, but can also cause injury to soybeans such as temporary bleaching and stunting, although the environmental factors that trigger that injury are not well understood. Our first hypothesis was that soybeans treated with diflufenican and grown in a warm environment would be more injured than plants grown in a cool environment. Our second hypothesis was that overhead watering, which could splash soil particles onto leaves, would cause greater damage than plants protected from splash. Six soybean seeds were planted into a modified silt loam soil (70% soil, 15% sand, 15% perlite) in 10-cm square pots. Four herbicide treatments were applied: 1) untreated control, 2) metribuzin+flufenacet, 3) diflufenican+flufenacet+metribuzin at 859 g ai/ha, 4) diflufenican+flufenacet+metribuzin at 2170 g/ha. After soybeans emerged, half of the plants in each treatment were placed in a cool greenhouse environment, and the other half remained in a warm environment. Half of the plants in each environment were watered overhead, and the other half were watered such that the canopy was not wetted. Four weeks after emergence plants were rated for injury relative to the untreated controls. Injury from herbicides was greater in the warm environment and where overhead watering was used.