

WIU CENTENNIAL HONORS COLLEGE
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Abstract

Poster

Major Ag Science

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Effect of Nitrogen and Phosphorus Fertilizer Applications on Field Pennycress

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Field Pennycress, *Thlaspi arvense*, is a new oilseed cover crop being investigated as a source of biofuel in the United States. The purpose of this study was to determine the effect of nitrogen and phosphorus fertilizer application on both wild-type pennycress and gene-edited golden pennycress varieties.

Understanding how pennycress responds to fertilizer applications is vital for finding optimal rates to minimize production costs and environmental impact.

The experiment began in the spring of 2021 with five varieties being selected: There were nine total treatments with four replications of six plants for a total of 1,080 plants. Treatments on a per acre rate consisted of combinations of 25 lbs of nitrogen, 50lbs of nitrogen, 25lbs of phosphorus, and 50lbs of phosphorus and a control that had no additional nitrogen or phosphorus added. Fertilizer applications occurred prior to flowering.

Plants were harvested and analyzed for seed yield, seed size, plant height, and floral area. Phosphorus applications showed no significant impact on seed yield of any variety, whereas nitrogen showed significant improvement in the yield of wild-type varieties and a slight improvement in golden pennycress. The most significant difference was found between the control and 50 lbs of nitrogen. Phosphorus applications were statistically identical to the control for nearly every measurement taken. The experiment is being repeated for a second year in order to confirm data and conclusions.