



**Ross Sousa, 2021 Integrated Plant Systems – Undergraduate Research Experience¹, Eva
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Abstract: Field pennycress (*Thlaspi arvense* L.) is a promising new cash cover crop that may diversify Midwestern agricultural systems. Achieving germination and establishment in the fall is critical for a cover crop to succeed. Gibberellic acid (GA) treatments are known to improve seed germination and stand establishment to improve the yield of other crops. Using gibberellic acid (GA₃), ARV2032 (wild type) and tt8-t/ARV 1 (golden) seeds were treated for 0 hours, 0.5 hour, 1 hour, or 12 hours and planted in Macomb and Normal, Illinois, USA. GA treatments significantly decreased the number of days to emergence for both varieties in the 12 hour treatment. ARV2032 had cotyledon emergence at 18 days, while tt8-t/ARV1 emerged at 13.5 days. Uniformity in maturity was seen among all treatments for tt8-t/ARV1, but was variable for ARV2032 with the greatest delay in maturity at 0 hours. ARV2032 displayed increases in seed yield from 1151.54 lbs/acre (0 hours) to 1585.36 lbs/acre (12 hours) and oil content from 34.19% (0 hours) to 37.01% (12 hours), while tt8-t/ARV1 had no increase in yield or oil content. No significant differences were found in first pod height, plant height, floral area, tillering, or lodging across all treatments. All GA treatments were found to be beneficial for establishing wild type varieties which will help researchers and breeders establish wild type plots. Further research will determine if any GA treatment is required for the golden seed varieties soon to be commercialized.