



Does Fertilizer Inhibit Germination? And Does GA Increase Germination?

Raymond Wilmes, 2021 Integrated Plant Systems – Undergraduate Research Experience Internship: CoverCress, Inc.

Abstract: In CoverCress' attempt to commercialize pennycress, knowing how to minimize cost while maximizing output is essential. Understanding the effects of fertilizers and gibberellic acid (GA) on germination is essential for cost reduction. All seed used was ARV1:TT8 EDIT (an edited pennycress line) from Mt. Pulaski, IL and treated with GA 4+7 using the "tumble" method. All fertilizer trials were soaked in fertilizer for four hours before being planted in a 200 well tray filled with ProMix. Germination was counted based on the presence of both cotyledons. Between both GA and non-GA trials, the control had the highest germination with an average of 76% (GA) and 73% (non-GA). The following two were urea (46% Nitrogen [N]) and ammonium sulfate (21% N, 18% Sulfur [S]) with germinations of 72% (GA), 74% (non-GA), 66% (GA), and 68% (non-GA). The fertilizer with the lowest germination rate was milorganite (6% N, 4% Potassium [P]) at 63% (GA and non-GA). GA did not affect germination. Understanding the effects of different fertilizers on germination is vital for the determination of seeding rate to promote strong field stands. To keep costs down, it is also beneficial for farmers because they do not have to make multiple runs over their fields and use more diesel/other expenses.