Plant Warfare: Investigating the Mechanisms of Plant Allelopathy on Agriculture Crops

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The purpose of our investigation was to test allelopathic dilutions from Kentucky BlueGrass and Brohm seed on germination of common crops: wheat, barley, and oats. We hypothesized that oats would germinate the quickest, 60% -100% solution would have the most harmful effects on the seeds, and that Kentucky Blue Grass would have the most harmful effects on germination. This experiment involved 198 petri dishes: 3 petri dishes for each dilution measured in increments of 10%, starting from 0% up to 100%. Five seeds of wheat, barley or oats were put in their perspective dishes with a total of 15 seeds for each percentage of solution giving 33 petri dishes for each type of seed. The seeds were examined for 7 days. The experiment was conducted twice to test the effect of a more potent dilution. The data collected supported our hypothesis with the Kentucky BlueGrass seed in that the higher solution did have a negative impact on germination. The Brohm seed had the opposite effect. Wheat seed grew the quickest and had the healthiest germination growth. Kentucky grass seed had the most potent allelopathic effect overall on germination growth. These findings led us to believe that more studies need to be conducted using Kentucky Bluegrass seed as a natural herbicide or fertilizer. This would be a cheap method to naturally kill out weeds in crops. Plant allelopathy is a friendly way to use herbicides without causing serious environmental problems or posing a threat to human health.

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