The Effect of Atrazine on Raphanus sativus 'Champion' Seed Germination

Sundell, Austin (School: Delavan High School)

The purpose of this research project was to study the effect of three different concentrations of atrazine (AAtrex 4L) on the germination rate of Raphanus sativus 'Champion'. The hypothesis was that the higher concentrations of atrazine, which are 0.3mL/1000mL and 3mL/1000mL, would show a significant statistical decrease in the germination rate of Raphanus sativas 'Champion'. In this study the independent variable was the concentration of atrazine used on the seeds and the dependent variable was the germination rate. To conduct this experiment a serial dilution of AAtrex 4L was performed to obtain 3 specific concentrations: 3mL/1000mL, 0.3mL/1000mL (possible high and low residual amounts left in soil after one year), and 0.000003mL/1000mL (3ppb and the concentration deemed legal in U.S. drinking water.) Three control groups were constructed by assembling 24 stacks of 3 absorbent mats each. Fifteen mL of distilled water was evenly applied to one stack of three mats and allowed to absorb. Fifty R. sativus 'Champion' seeds were then evenly distributed on that same stack. Another 15mL was applied to a different stack which then was placed on the exposed seeds. The group was then placed in a 3.78L transparent plastic bag, sealed, and placed in a dark container with a temperature of 23 degrees Centigrade. The seeds were left untouched for 64 hours. Two other trial groups of distilled water were constructed in the same manner as well as three trial groups for each of the three diluted concentration of AAtrex 4L. In conclusion, the hypothesis was not supported by the study. At the applied concentrations rates of atrazine, there was little to no statistically significant difference in the germination rate of R. sativus 'Champion' and the control group.

Awards Won: