Agricultural Runoff: The Effect of Types of Fertilizer and Application Methods on the Amount of Nitrates Released From Capsicum annuum (Bell Pepper)

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This project investigated the effects of the type of fertilizer (organic and synthetic) and application method (spray, sprinkle, and ring) on the amount of excess nitrates released from Capsicum annuum, or Bell Pepper. The goal was to determine a fertilizer type and application method that could be used in the agricultural industry that prevents the formation of red tide. The experimental groups in this experiment included "Spray and Coffee", "Spray and Oyster Shells", "Spray and Synthetic", "Ring and Coffee", "Ring and Oyster Shells", "Ring and Synthetic", "Sprinkle and Coffee", "Sprinkle and Oyster Shells", and "Sprinkle and Synthetic". The Bell Pepper seeds were added to a flowerpot that was placed on top of a plastic deli container, which allowed the excess water and nutrients to be collected. Nine plants were placed in each experimental group, and the changes in nitrate levels were recorded every two weeks for a total of three months through the use of a test kit. After conducting a two-way ANOVA test, the researcher was able to determine that the coffee fertilizer and sprinkle application method had the fewest nitrates released. In the future, it would be beneficial to look into other forms of fertilizer and application methods as well as testing for other nutrients, like phosphates, that are known to have a devastating impact on aquatic organisms and ecosystems. Overall, this experiment has many implications in the agricultural industry and could help further preserve our aquatic ecosystems.

Awards Won: