ABSTRACT

The beneficial effects of vermicompost have been shown to improve plant growth, yield, and overall quality in previous research. Vermicompost acts as a natural fertilizer, enhances soil health, improves water holding capacity, and can provide some pest suppression. This study evaluated the application of vermicompost (WormGold®) in organic field plots to evaluate the effect on romaine lettuce (*Lactuca sativa* L. var. *longifolia*) growth characteristics and pest resistance of aphids. In a certified organic field at California State Polytechnic University, two trials were evaluated with four treatments; a top dress vermicompost application, a root-zone vermicompost application, a root-zone and top dress vermicompost application, and a control with no vermicompost application. Aphid densities were counted in lettuce heads sampled from each treatment. Head height, weight, and dry root mass were also measured. Data were analyzed using SPSS software with a two-fold analysis procedure; I) descriptive statistics and II) MANOVA ($P < 0.05$). The results were not statistically significant in plant growth characteristics, $F(102.368, 0.115) = 1.545$, $p = 0.139$ Wilk's $\Lambda = 0.721$, partial $\eta^2 = .61$. Comparing the average means of treatments individually compared to the control, all treatments outperformed the control treatment in Trial A. In Trial B, the control outperformed all treatments for head height and weight. However, for root biomass, the top and root zone treatment outperformed the control while the top/root treatment was lower than the control. Total aphid count for trial A and B were 2 and 25 respectively and were not analyzed in the study. Given the time constraints of the study compounded with a global pandemic, we were unable to conduct additional research trials. Further research in field studies is needed to thoroughly understand the effects of vermicompost.

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