

Agronomic and Physiological Efficiency of Radish (*Raphanus Sativus*) in Response to Rates of Vermicompost and Fermented Fruit Juice (Ffj) Supplementation

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Abstract

The authors present this research investigation to add more evidence in organic farming, particularly in radish production. This study was conducted to determine the agronomic and physiological efficiency of radish in response to vermicompost rates (120-90-60, 10 t ha⁻¹, 20 t ha⁻¹, 30 t ha⁻¹, and fermented fruit juice supplementation (without FFJ, 10 ml L⁻¹, 20 ml L⁻¹, 30 ml L⁻¹). The study was conducted in the split-plot design and replicated three times. Results revealed that the rates of vermicompost influenced the plant height of radish at seven days after planting (DAP), some leaves at 7 and 14 DAP, and leaf area index (LAI) at 28 DAP, while the rates of FFJ influenced the number of leaves at 7 DAP, and leaf area index (LAI) at 7 DAP. Synthetic fertilizer (120-90-60) produced the highest tuber yield of 38.41 t ha⁻¹, followed by vermicompost at 10 t ha⁻¹ with 31.78 t ha⁻¹. The effects of vermicompost are not comparable to synthetic fertilizer since it gave the yield advantage of 20.86 to 27.57% and increased LAI of 14.22 to 21.11 % in favor of the latter. Rates of fermented fruit juice did not reveal any significant difference in the length (cm), diameter (cm), weight per tuber (g), and tuber yield (t ha⁻¹). The interaction effects of rates of vermicompost and rates of FFJ did not influence the agronomic and physiological parameters of radish. Despite its effects, vermicompost can still be the best option for sustainable radish production amidst the degrading environment.

Keywords: fermented fruit juice, leaf area index, radish, tuber, vermicompost, yield