THE EFFECT OF VERMICOMPOST AND VERMIWASH ON GROWTH AND YIELD OF MUNG BEAN

(Vigna radiata)

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ABSTRACT

Organic farming is a sustainable agricultural system that enhances soil health, biodiversity, and food quality by avoiding synthetic chemicals and using natural inputs like compost, vermiwash, and biological pest control. This study evaluated the effects of vermicompost (VC) and vermiwash (VW) on the growth and yield of mung bean (*Vigna mungo*) through a pot experiment in Kalutara District, Sri Lanka. Three mung bean varieties (*MI5*, *MI6*, and *MIMB7*) were tested under different VC (25%, 50%, 75%, 100%) and VW (25%, 50%, 75%, 100%) concentrations, along with an inorganic fertilizer- recommended by Department of Agriculture, Sri Lanka and untreated control. The experiment followed a completely randomized design (CRD) with six treatments and five replicates. Growth and yield parameters were assessed, and statistical analysis was conducted using Minitab 17 software. VC and application VW significantly improved growth and yield parameters of mung bean varieties compared to the control and chemical treatments ($P<0.05$). In VC application, the highest plant height (52.70±0.57cm by *MIMB7*), number of leaves (19.80±1 by *MIMB7*), and number of branches (5.00±0.00 by *MI5*, *MI6* and *MIMB7*) were observed under 100% WC. The lowest days to flowering (31.60 ±1.14 by *MI6*) and the highest number of pods per plant (11.00±1.4 by *MIMB7*) were also recorded under 100% VC, showing significant differences from control and chemical application. In VW application, the highest plant height (29.18±0.89 cm by *MI6*), number of leaves (12.60±1.34 by *MI6* and *MIMB7*), and number of branches (4.20±0.45 by *MIMB7*) were observed under 100%, 75% VW. The lowest days to flowering (35.20±0.45 by *MI5*) and the highest number of pods per plant (6.20±0.84 by *MIMB7*) were also recorded under 100% VW showing significant differences from control and chemical applications. There is a significant interaction effect of fertilizer concentration and variety on plant height, days to flowering, number of pods per plant and pod length. Number of leaves, number of main branches and pod length mainly affected by only fertilizer concentration ($P<0.05$). Seeds per pod mainly affected by fertilizer concentration and variety effect only. These findings highlight the potential of vermicompost and vermiwash as sustainable alternatives to chemical fertilizers for improving mung bean growth and yield.

Keywords: Vermicompost, vermiwash, organic farming, mung bean, sustainable agriculture.

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