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SUSTAINABLE MANAGEMENT OF NUTRIENTS AND DISEASE IN PEA THROUGH COMBINED USE OF SPENT MUSHROOM SUBSTRATE AND BIOFERTILIZERS

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Abstract

Spent mushroom substrate (SMS), a by-product of mushroom cultivation, is generally discarded but the advantageous physical, chemical, and biological characteristics of the SMS are augmenting its utility in horticulture by repurposing it into a valuable resource for vegetable crop production. Numerous advantageous applications of SMS are presently being executed or assessed worldwide and is becoming increasingly popular due to its cost-effectiveness and its role in enhancing integrated nutrient management. Additionally, pea crops fix atmospheric nitrogen, creating a synergistic effect that improves soil health. The experiment utilized a randomized complete block design with three replications, consisting of thirteen treatment combinations involving inorganic fertilizers, various spent mushroom substrates (button, shiitake, and oyster), and biofertilizers (PSB and RZB) applied through seed and soil inoculation. Different spent mushroom substrates (button, shitake and oyster) in combination with biofertilizers greatly affected the yield (green pod) and growth characteristics of the pea crop. The treatment combination treatment 3 (T_3) consisting of 80 % recommended dose of fertilizers (RDF) and 20 % RDF on a nitrogen equivalent basis via button mushroom substrate exhibited the maximum height (110.80 cm), branch count (4.77), pod length (6.61 cm), pod diameter (1.23 cm), pod weight (6.56 g), grains per pod (8.32), pods per plant (28.37), lowest disease incidence (9.10 %) and yield per hectare (176.95 quintals), with a shelling percentage of 43.54 %.

Key words: garden pea, organic waste recycling, plant nutrition, pooled analysis, waste to wealth

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