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Management of Free-floating Aquatic Weeds by Making Compost and Testing its Efficacy against Root-knot Nematode on Tomato

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Abstract

Aquatic weeds are one of the prime pollution causing agents in fresh water bodies of Sri Lanka. In Sri Lanka, free-floating aquatic weeds such as *Salvinia molesta*, *Eichhornia crassipes*, *Azolla* spp and *Pistia stratiotes* are proliferating quickly and invading rapidly to new water bodies where threatening biodiversity by impeding light penetration and altering BOD and COD of the waterbody. This research was aimed to manage the aquatic weeds by composting and testing its efficacy on root-knot nematodes. Aquatic weeds were collected, mixed with fresh cow dung in 1:1 ratio and allowed for decomposition for 21 days. The recommended dose of prepared different compost was applied to tomato along with garden compost as control. The experiment was conducted in Complete Randomized Design (CRD) with four replicates. The data on nutritional qualities of the compost, plant growth parameters, and gall index were recorded. The data were subjected to ANOVA using SAS 9.1 and Tukey's HSD multiple comparison test was used to determine the best treatment combination at $P<0.05$. Total Nitrogen (N) content of composts were ranging from 1.42% to 5.6%. The highest significant N value of 5.6% was recorded in the *Azolla* spp based compost whereas the lowest N value of 1.42% was recorded in control. The highest total Phosphorus (P) content of 3.47% was observed in *P. stratiotes* based plant sample, whereas the lowest P value of 1.32% was recorded in the *E. crassipes* based compost. The total Potassium (K) content of this plant sample ranging from 1.3% to 24.4%. The highest K value of 24.4% was recorded in *P. stratiotes* based compost. The lowest K content of 1.3% was observed in control. Significantly higher shoot height (37.57 cm, 36.53), root length (18.75 cm and 17.5 cm), lower gall index (3.5,1.0), lower goal length (1.5 mm and 1.2 mm) and lower goal diameter (0.95 mm and 0.8 mm) were recorded in the application of *S. molesta* and *Azolla* spp based compost, respectively ($P<0.05$). Considering superiority of N, P and K level, and nematode suppressing efficacy, *S. molesta* and *Azolla* spp. based composts are superior than other composts. Therefore, findings conclude that the compost made from aquatic weeds are good source of plant nutrition, and can be substitute to chemical nematicieds to manage the nematodes in organic agriculture. Extensive field studies are needed for recommendation

Keywords: Aquatic weeds, *Azolla* spp., Compost, Root-knot Nematode