POTENTIAL OF TEA REFUSE AS A MATERIAL FOR COMPOST PRODUCTION

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Tea refuse is a good source of plant nutrients. However, direct application to the export agricultural crops has shown some toxicity on seedling growth. Thus, decomposition of tea refuse with other readily available materials could be one of the most appropriate solutions. A study was carried out to examine the potential use of tea refuse as a composting material. Decomposition of tea refuse was done by mixing four different ratios of tea refuse with 1:1 cow dung to gliricidia (*Gliricidia sepium*) and cut grasses. Final composition of tea refuse in control, T_1, T_2 and T_3 were 0, 33.3%, 50%, 60% (v/v), respectively. Decomposition method was conventional aerobic piles designed as Completely Randomized Design (CRD) with three replicates. Presence of macro-organisms, colour, particle size, pH, percentage of organic C, total N, available P, exchangeable K, Mg, total polyphenols and seed germination ability were evaluated. The original tea refuse used was slightly acidic (pH = 4.4), and it contained 31.2%, 2.4%, 0.2%, 2.1%, 0.3%, and 17.4% of organic C, total N, available P, exchangeable K and Mg and total polyphenol, respectively. There were about 80-100% germination of vegetable seeds on decomposed products while zero germination on original tea refuse and a gradual reduction in total polyphenols during decomposition. Organic C, total N, exchangeable K, and Mg in treatments at 35 and 75 days of decomposition were significantly higher ($p \geq 0.05$) than those of the control but, no significant differences were observed among the treatments. The study suggests that T_1, containing 33.3 % of tea refuse is more economical as it uses less tea refuse for compositing with cow dung, gliricidia and cut-grasses. pH, organic C, total N, available P, exchangeable K, Mg, total polyphenols and C:N ratio of this composting mixture were 6.8, 6.5%, 0.8%, 0.02%, 0.3%, 0.15%, 1.7% and 9:1, respectively.

Keywords: Compost, Export Agricultural Crops, Tea refuse