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Effect of different organic fertilizer products on growth and yield of rice in low country wet zone

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Abstract

Rice grown under organic conditions has become important to conserve both consumers' and soil health while ensuring the food security. A field experiment was conducted to evaluate the four different types of organic fertilizer products on growth and yield of rice plant in 2022 *yala* season at Regional Rice Research and Development Center, Bombuwala. Three and half months aged fertilizer responsive popular rice variety (Bw 367) was tested with no fertilizer, commercially produced compost, solid fertilizer pellets (CSP), liquid fertilizer (LF), and bio fertilizer. Rate and time of applications were done following the manufacture's protocol. The standard level of potassium, nitrogen, phosphorous and colony count should be higher than (1%), (1%), (0.5%) and 10^9 CFU, respectively. All the fertilizer products were up to the standards of Sri Lanka Standard Institute. The treatments were applied into 18m^2 plots arranged in randomized complete block design with three replications. Growth and yield related parameters such as plant height (PH), number of productive tillers per plant (PTP), shoot dry weight (SDW), Number of filled grains per panicle (FGP) and 1000 grain weight (TGW) and yield (tons/ha) were recorded at the harvesting stage. The data were statistically analyzed by analysis of variance using SAS version 9.4. Duncan's multiple range test at $p \leq 0.05$ was used to separate the means. According to the results, both SDW (2.21g/plant) and PTP (6/plant) were highest in LF treated plants. The compost recorded the statistically highest FGP and it was 18% increment than the control. Both compost and CSP treated plants showed the statistically similar yield and TGW. Among the applied organic fertilizers, soil applied solid fertilizers performed better over the others while liquid and bio fertilizers seem less effective in increasing the yield when applying alone.

Keywords: bio fertilizer, compost, liquid fertilizer

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