Effect of basal application of inorganic fertilizer and compost on the growth and the yield of onion (*Allium cepa* L.)

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Abstract

An experiment was carried out to find suitable ratio/s of inorganic fertilizer and compost, which could give an economic yield of onion (*cv.* Jaffna Local). This experiment was conducted for two seasons at the Agronomy farm, Eastern University, Sri Lanka. Five treatments were included according to the different ratios of inorganic fertilizer and compost as basal application as follows. Recommended dosage of inorganic fertilizer [Urea (100 kg ha^{-1}), Triple Super Phosphate (100 kg ha^{-1}) and Muriate of Potash (50 kg ha^{-1})] (T_1), three-fourth the recommended inorganic fertilizer + compost (2 t ha^{-1}) (T_2), half the recommended inorganic fertilizer + compost (4 t ha^{-1}) (T_3), one-fourth the recommended inorganic fertilizer + compost (6 t ha^{-1}) (T_4) and compost alone (8 t ha^{-1}) (T_5). These treatments were arranged in a Randomized Complete Block Design with four replications. Crop was managed and top dressing was done according to the recommendations. Number of roots and number of leaves per plant were recorded at regular intervals and number of bulbs per plant and yield were measured at the time of harvesting. Collected data were analyzed statistically.

Results revealed that there were significant ($p<0.05$) differences in the number of leaves and number of roots between different treatments during the early stage of growth. Compost applied treatments (T_5) had more bulbs per plant than inorganic fertilizer applied treatment (T_1). High yield (5.03 t ha^{-1}) was obtained from inorganic fertilizer applied treatment (T_1), meanwhile compost treatment (T_5) had produced lowest yield (3.43 t ha^{-1}). It was also observed that, there were no significant ($p<0.05$) differences in the yield between T_1 and T_2 as well as T_1 and T_3. The inorganic fertilizers would have compensated with slow release of nutrients from the compost and their combined effects would have increased the yield. From this study it could be stated that, half the recommended inorganic fertilizer and compost at the rate of 4 t ha^{-1} (T_3) produced the economic yield (4.75 t ha^{-1}) of Onion.

Keywords: Inorganic Fertilizer, Onion, Compost, Yield