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Efficacy of liquid organic fertilizers on growth and yield of *Abelmoschus esculentus* (Okra) and *Alternanthera sessilis* (Mukunuwenna)

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Liquid organic fertilizers (LOFs) are environmental friendly, cost-effective alternative products introduced to the agricultural market to minimize the adverse effects of synthetic fertilizers. This study aimed at developing LOFs using widely abundant weeds (*Tithonia diversifolia, Gliricidia sepium*, *Leucaena leucocephala*) in combination with poultry manure or fish waste to evaluate the efficacy of formulated LOFs on growth and yield of *A. esculentus* (L.) Moench and *A. sessilis* (L.) DC. Six combinations (F1: Poultry manure + *Tithonia diversifolia,* F_2: Poultry manure + *Gliricidia sepium,* F_3: Poultry manure + *Leucaenea leucocephala,* F_4: Fish waste + *Tithonia diversifolia,* F_5: Fish waste + *Gliricidia sepium,* F_6: *Fish* waste + *Leucaenea leucocephala*) were prepared as water extractions. In each combination 360 g of weed leaves, 240 g of poultry manure or fish waste and 100 g of coconut husk ash were mixed with 6.0 L of well water in closed plastic containers. Combinations were aerated for two hours daily for a period of six weeks to facilitate decomposition. Based on the highest nutrient contents (N, P, K, Ca, Mg and Zn), F_1, F_2 and F_4 were selected for the foliar application. Well water was used as the control and commercial LOF "Maxicrop" was used as the standard. The field and pot trials were conducted in complete randomized block design maintaining five replicates for each treatment. LOFs were applied once a week on *A. esculentus* "*Haritha*" cultivar for a period of two months, to evaluate the growth performance in terms of number of fruits, number of flowers, leaf area, shoot height and stem circumference. Similarly, LOFs were sprayed once a week on *A. sessils* for a period of two months, to evaluate the growth performance in terms of number of branches, length of plant, leaf area, plant fresh weight and number of internodes. Comparison of growth parameters over time was performed by one way analysis of variance using MINITAB 16 software. Prepared fertilizers significantly ($p<0.05$) increased the growth and yield of both plant species. F_1 resulted in the highest number of fruits in *A. esculentus* compared with F_2 (21 ± 1.32) and F_4 (15 ± 1.63), while F_2 produced the highest biomass in *A. sessilis* in terms of plant fresh weight (11.6 ± 0.30 g) compared with F_1 (9.6 ± 0.22 g) and F_4 (9.2 ± 0.10 g). Therefore, F_1 can be considered the best LOF for *A. esculentus* and F_2 the best LOF for *A. sessils*.

Keywords: *Abelmoschus esculentus*, *Alternanthera sessils*, growth performance, liquid organic fertilizers

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