

IMPACT OF FILLER PLANTING AND NUTRIENT MANAGEMENT ON YIELD AND QUALITY OF OKRA (*Abelmoschus esculentus* L. Moench)

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Intercropping with filler crops can enhance space utilization, resource efficiency, and yield stability in vegetable cultivation. In Sri Lanka, the standard okra spacing of 90 x 60 cm leaves gaps that can be used to grow filler crops like chili, improving land use. This study evaluated the effects of chili filler planting and nutrient management on the growth and yield of okra using a split-plot design with three replicates. Main plot treatments included; (1) okra with chili (variety MI 02) as filler crop and (2) okra without filler crops. Subplot treatments comprised; (1) recommended dosage of inorganic fertilizer (RDIF) and (2) integrated nutrient management (50% RDIF + 50% compost). Key parameters measured included plant height, leaf count, SPAD readings, length, weight, count, and diameter of pods. The okra yield was measured based on the main plot area of 108 m², while the chili yield was measured based on the subplot area of 54 m². Data was analyzed in SAS OnDemand for academics using the PROC MIXED procedure, with means compared via Tukey's test at a 0.05 significance level. Results indicated no significant yield differences ($p > 0.05$) between okra with (7.85 ± 0.78 kg plot⁻¹) and without (7 ± 0.78 kg plot⁻¹) filler planting. Furthermore, the interaction effect was not significant. However, filler planting has increased okra yield by 11% compared to okra without filler crop. The chili crop produced an average yield of 287.6 ± 142.24 g plot⁻¹ with inorganic fertilizers and 222.16 ± 55.60 g plot⁻¹ with integrated nutrient management. Non-filler plots with inorganic fertilizer achieved the highest dry biomass (1.01 ± 0.082 kg) and pod diameter (1.97 ± 0.03 cm), while intercropped plots with inorganic fertilizer exhibited the highest pod count (9 ± 0.31). In conclusion, intercropping okra with chili optimizes land use, increases yield, and promotes sustainable farming by maximizing resource efficiency and productivity. This strategy maximizes yield and economic returns for farmers.

Keywords: Crop productivity, Fertilizer, Intercropping, Resource efficiency