

**Effects of Plant Population Density and Leaf Harvesting on Both
Grains and Vegetable Yields of Amaranth**

By

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**A thesis submitted to the Department of Agriculture and Natural Resources,
Faculty of Science and Technology in partial fulfillment of the requirements for
the degree of Master of Science in Agricultural and Rural Development**

of the



KENYA METHODIST UNIVERSITY

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ABSTRACT

Amaranth (*Amaranthus* spp.) is a newly introduced C4 dicotyledonous pseudo-cereal crop in Kenya. Amaranth has high potentials in seeds used as a grains and leaf as vegetables, yet factors affecting grains and leaf yields have not been fully investigated. Field experiments were carried out in Meru Imenti north district of eastern Kenya to investigate the effects of plant density and leaf harvesting on both gains and leaf weight of amaranth (*A. cruentus*). A randomized complete block design (RCBD) experiment was used where inter and extra rows spacing with different plant density (1 million ha⁻¹, 2 million ha⁻¹, 3 million ha⁻¹, and 4 million ha⁻¹,) and Leaf harvesting intervals (four, six and eight days) were the treatment. Data was collected on Leaf dry weight (g) and grain yields dry weight (g) and then analyzed using SPSS software (version 15.0). One-way ANOVA and Tukey post test method was performed to determine statistical difference for group means, while LSD was used to separate the means. Fresh leaf harvested from amaranth plants varied slightly with the plant density. However, beyond a plant density of 3 million plants ha⁻¹, there was a decrease in leaf weight. Increasing plant density did not affect individual plants since the inter-space between plants was not altered. However there was no statistical significant difference in leaf yield $p > 0.05$ between leaf harvest interval of six days and leaf harvest interval of eight days. Grain yield was indirectly proportional to leaf harvesting intervals. The study revealed that planting amaranth at 3 million plants per ha⁻¹ and harvesting leaf at six days interval regime, yielded more fresh leaves and higher grains were obtained. This study recommends that, the best combination between harvesting regime was harvesting amaranth after every six days for optimum fresh leaves and grain yield.