

**Effects of Kale and Onion Intercrops and Manure Application on Number of Aphids, Leaf Damage and Kale Yield**

**Watakila Nasike Christine**

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**Supervisor: Dr. Phyllis Muturi**

**Abstract**

Kale (*Brassica oleracea var.acephala*) is an important source of income to many small-scale farmers in Kenya and is a major dietary component for many Kenyans. The production of kale is however constrained by several pests among which kale aphid is one of the major insect pests. The use of pesticides has resulted to problem of pest resistance, loss of beneficial insects such as ladybird (biological agents) and pollution. The experiment attempts to investigate on alternative methods mainly cultural control. Bulb onion (Tropicana hybrid variety) was intercropped with kale, thousand headed variety. The experiment was laid out in a randomized complete block design with four treatments replicated thrice. The treatments were: treatment one (sole kale crop-control), treatment two (kale+ onion + manure), treatment three (kale + onion), treatment four (kale + manure). Data on aphid counts, percentage kale fresh leaf weight and kale leaf damage was collected from third week to sixth week after transplanting. The data was analyzed using the Genstat software and mean separation was done using the less significant difference. The aim of the study was to determine the effect of intercropping kale with onions and application of manure on aphid population densities, kale leaf damage and yield of kale. Intercropping kale and onion both with and without manure significantly reduced ( $P<0.05$ ) aphid densities and damage on kale leaves compared to kale monocrops with and without manure. The lowest aphid densities and damage on leaves were recorded in kale- onion intercropping with manure application. Moreover, significantly higher marketable leaf weights were recorded in kale monocrop with the application of livestock manure as compared to kale monocrop without manure application. The present study concludes that intercropping kale and onion with application of manure in managing aphids and improving kale yield is most effective as evidenced by lowest aphid densities, lowest leaf damage and highest percent marketable leaf weight. It is recommended that the study be repeated for another season to confirm the results of this study.