

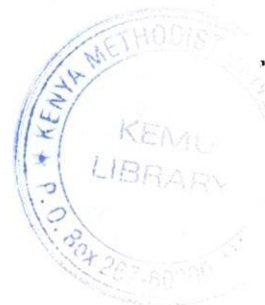
**The Effect of Plant Density and Defoliation Frequency on the Biomass of Spider
(*Cleome gynandra*) plant**

by

Yabesh Matara Nyakundi

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ABSTRACT

A study was carried out at Geta village of Mochenwa location Gesima division, in Masaba North District in the year 2010 to determine the effects of plant density and defoliation frequency on the leaf, seed and root yield (biomass) of spider (*Cleome gynandra*) plant. A randomized complete block design with four replications was used. Three plant spacing of 45 x 15 cm, 30 x 15 cm and broadcasting (control) were used. Poly bags measuring 45 x 45 cm were used to pot plants for root harvest. Yield components measured included leaf length leaf width, fresh leaf weight, dry leaf weight, plant height, number of pods per plant, seed yield and root biomass. Four defoliation frequencies were applied, no harvesting, 5 days, 10 days and 15 days intervals. Artificial leaf defoliation was carried out at each of the stages at an intensity of 50% mature leaf using a pair of scissors. Ten (10) individual plants randomly selected from each of the harvest plots after throwing a quadrant and avoiding the border rows were defoliated and their fresh and air dried weights recorded. The length and width of the basal leaf from the ten randomly selected were measured using a tape measure at each harvest interval. Plant height and number of pods per plant were done 63 days after sowing and recorded. The seed was also harvested at physiological maturity by chopping off the pods with a pair of scissors and their air dried weights recorded. Root biomass was taken 75 days after sowing from the potted plants and separately recorded. The SPSS software package (version 11.5) was used to analyze all the data and means were separated by the least significant difference (LSD) test at $P < 0.05$. The defoliation frequency significantly affected leaf length, fresh and dry leaf weight, plant height, seed and root yield. Fresh leaf weight and plant height were significantly higher at a spacing of 30 x 15 cm. Seed and root yields, leaf length, leaf width and number of pods per plant were significantly higher at a spacing of 45 x 15 cm. Harvesting frequency of 10 days significantly improved leaf yields but reduced seed and root yields compared to 5 days and 15 days frequencies. The 5 day defoliation frequency stressed the plants more as shown from the low yields and yield components.

Key words: spider plant, defoliation frequency, spacing, leaf, seed, and root yields.