INTERFERENCE OF KIKUYU GRASS (*PENNISETUM CLANDESTINUM.* HOCHST. EX-CHIOV.) AND EFFECTS OF HERBICIDES ON YIELD AND QUALITY OF PYRETHRUM (*CHRYSANTHEMUM CINERARIAEFOLIUM.* VIS.)

BY

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ABSTRACT

Pyrethrum is an important cash crop in Kenya which easily succumbs to invasion of Kikuyu grass as a weed. The study was undertaken in Molo, Rift valley province where 45% of pyrethrum is grown. The main objective was to focus on effect of nutrient sources, Kikuyu grass control and herbicides performance on pyrethrum yield and quality. The specific objectives were to establish the effect of Kikuyu grass control and herbicides on pyrethrum flower yield, pyrethrins content and plants componenets under separate, but uniform application of triple superphosphate and farm yard manure; to determine the critical competition period of pyrethrum and Kikuyu grass and further show the correlation coefficient between pyrethrum and Kikuyu grass parameters; to determine the economics of control of Kikuyu grass by different methods in pyrethrum under the influence of Triple superphosphate and Farm Yard Manure separetely and compare performance of Triple superphosphate and Farm yard Manure under uniform conditions on productivity of pyrethrum.

Five trials were conducted with the first two designed as Complete Block Design in two-factor trials of 11 x 2 factorial with treatment combinations of 11 periods of weed control in weeks and two clones sb/66/107 and Mo/74/223 replicated four times, where either Triple superphosphate and Farm Yard Manure was used. In trials three and four a Complete Block Design with a split of 18 by 2 with 18 main treatments splitted twice and replicated four times. The herbicides, Metribuzin 48%, Diuron 80%, Alachlor 48%, Lenacil 80% were tested in main plots and two clones in sub plots, whereas in the fifth trial was a Complete Block Design in 2 x 5 factorial replicated four times with five levels of triple superphosphate and farm yard manure each with two clones.

The data was collected on pyrethrum yields and pyrethrins content and Kikuyu grass parameters. Results in the first and second experiments during the first, second and third seasons showed that the maximum period that pyrethrum clones Mo/74/223 and Sb/66/107 can be left under the influence of Kikuyu grass weed is 8 weeks under influence of triple superphosphate or farm yard manure. It was also shown that flower yields had a significant and positive correlation coefficients to plant parts in all three seasons in the two trials. In experiments 3 and 4, it was found that diuron 80% at 1.5 litres/ha, Metribuzin 48% combined with alachlor 48% at 0.4 + 2.0 litre/ha had very promising results in weed control and flower yields resulting into high gross margin. Hand weeding, had good control of Kikuyu grass, but quite expensive, scarcity cases, inefficience and with damage to the crop and soil hence reduced gross margin.

It is recommended that chemical weed control in pyrethrum has a bright future as an alternative to hand weeding particularly as it regards to large and medium scale growers. It is also recommended that farm yard manure should be utilized as an alternative source of nutrient at a rate of five to ten metric tonnes per hectare in pyrethrum crop while underscoring the cultivation of clone Sb/66/107 rather than clone Mo/74/223. Future research should involve studies encompassing other obnoxious weeds such as Portulaca and Oxalis and apply Integrated Pest Management phenomenon for control of Kikuyu grass. Also the future research to focus on toxicological and residue studies on herbicides used.