1.1.6  **Nyambe Hastings N. (2002). Response of maize (*Zea mays* L.) cultivars to single weeding methods at different crop developmental stages. (Supervisors: Dr. D. M. N. Mbewe and Dr. M. S. Mwala).**

It has been reported that 50 to 95% of small-scale maize (*Zea mays* L.) farmers weed their fields once during the growing season. The weeding is done at either 2-3 leaf or 7-8 leaf stage of growth. Farmers using hoes dig up the weeds, shake off the soil and either leave the weeds to dry in the field or heap them on the side. A field experiment to evaluate response of 3 maize cultivars

to single weeding methods at two different times of weeding was conducted at University of Zambia in 2000/2001. Two controls (no weeding and clean weeding) were used. The cultivars were MMV400 (open pollinated), SC601 (single cross) and MM604 (3- way cross). A split -split plot design was laid out with time of weeding as main plot, weeding method as sub-plot and cultivar as sub-sub plot. Standard agronomic practices were employed. Measurements were taken for growth and development parameters of both the crop and weeds. Parameters evaluated for the crop included Leaf Area Index (LAI), Leaf Area Ratio (LAR), and Leaf Weight Ratio (LWR), Stem Weight Ratio (SWR), Specific Leaf Weight (SLW), Root Weight Ratio (RWR), cover and biomass. For weeds parameters included cover, density and biomass. Visual data was arcsine transformed while non- visual was log transformed. The results indicated that there was no significant differences in the effect of the two single weeding methods on LAI, LAR, LWR SWR, grain yield and stalk barrenness. Observed differences were between clean weeding (CW) and no weeding (NW) with highest values in LAI (2.13) and lower SWR (0.43) while no weeding had lowest LAI (1.33) and highest SWR (0.46). Grain yield under CW was highest and had 3,744 kg /ha while NW had the lowest 1,548 kg /ha. Time of the weeding exerted significant effects. The weed cover of 2-3 leaf time of weeding was higher (63.1 %) than 7-8 leaf time of weeding (50.7%). Among the cultivars SC601 showed superior qualities in LAI (1.89), with lower LAR (0.24) and LWR (0.17) and higher SWR (0.46), which exerted negative effects on weed growth. The cultivar MM604 had relatively similar attributes to SC601. The highest grain yield was 2,956 kg/ha for SC601. This was followed by MM604 with 2,585 kg/ha and MMV400 with 1,966 kg/ha. It can be concluded that among the cultivars evaluated SC601 responded with the highest growth qualities that suppressed weed growth resulting into the highest grain yield and related components at single weeding methods at different times of weeding. MM604 was closer to SC601 in all attributes and ranked second. However, MMV400 responded with the least growth qualities and as such resulted into the least grain and related yield components.