MANAGEMENT OF TREE COMPONENT IN ALLEY CROPPING FOR OPTIMUM BIOMASS PRODUCTION AND CROP YIELD.

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Upland annual crop cultivation in the dry zone of Sri Lanka is constrained by moisture availability, poor structural stability of soil, obnoxious weed proliferation and low nutrient status. It is experimentally evident that the above constraints are minimum in agroforestry farming. Thus, the present study was directed towards management aspect of the tree component as it plays a major role in achieving sustainability.

Experiment plots were established during 1987-yala season at Agriculture Research Station, Maha Illuppallama in the low country dry zone. Gliricidia sepium seedlings were used to form single hedgerows. The experiment was designed to evaluate the system performance on tree management by testing three lopping frequencies (2, 4 and 5 times per year) at two pruning heights (75 and 150cm) on two hedgerow spacings (2 and 4m). During the period of study (1989 yala - 1990/91 maha) plots were cropped with maize (Zea maize) in maha and cowpea (Vigna spp.) in yala seasons under rainfed condition.

Hedgerow spacing tested in the study showed no significant effect on crop yield up to 1990 yala season. During the maha season 90/91, higher maize yield was observed in 4m wide alley compared to 2m wide aley. Pruning heights showed no significant difference on crop yield throughout the study period. Significantly high yield was observed with the high pruning frequency.

The above ground biomass production of gliricidia shrub was significantly higher in 2m wide alley compared to 4m wide alley. A higher biomass production could be achieved when lopped at 150cm. Results indicate that short lopping intervals would raise the biomass production.

Thus, it can be concluded that the system performs well when the trees are grown at 4m row spacing with lopping at 150cm at the rate of 4 times per year.