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Effect of different alley crop species on growth and yield of maize crop

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Alley cropping is a low–input soil management technology that can sustain crop production where farmers cannot afford expensive inputs and where increasing pressure on land does not favor the age–long shifting cultivation. Alley cropping retains the basic features of bush fallow, and can easily be adopted by resource–poor farmers in the tropics.

A field experiment was established at the Faculty of Agriculture, University of Ruhuna Sri Lanka to select the alley species suitable for low country wet zone, to study the N cycling of the soils and the growth and yield performances of maize as affected by three different alley crops, [*Leucenea lecocephala* (Ipil Ipil), *Sesbania grandiflora* (Katurumurunga), and *Gliricidia sepium* (Gliricidia)]. A control treatment (without alley crop) was also included to compare the treatment effect. The Randomized Complete Block Design (RCBD) was used with above four treatments each replicated 4 times. Six months after the establishment of alley crops, maize seeds were planted in the avenues with a spacing of 60 x 60 cm. Alley crops were pruned twice, before planting maize and again once in 2 months after planting of maize and lopping was allowed to decompose on the spot. The soil samples were taken once a month and analyzed for soil N and total C. There was a good recovery rate in all three-alley crops.

Results revealed that the highest biomass yield was recorded from the leucenea alley crops and the other two alley species also recorded higher biomass yield compared to the control treatment (biomass of weeds). Even though there was no significant difference, the growth and yield parameters of maize crop in alley cropped plots were better than that of control. Nitrogen contribution from alley crops was also not significantly different. Since it took a little more time to decompose lopping materials, crops grown in alley cropped plots may perform better and gives a better yield in long-term. Therefore, all tree species may be recommended to use as alley crops in Low Country Wet Zone but studies should be continued to determine the effect in the long run.

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