

Effect of fallow enrichment and of land preparation methods on weed infestation in the following crop

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Content of Abstract:

In traditional shifting cultivation systems weeding is done manually and thus represents a labor intensive constraint to family agriculture. Since shifting cultivation is characterized by long fallow periods the weed infestation of the consecutive crop is strongly related to the duration and the vegetation composition of the preceding fallow. One of the technologies utilized by the project SHIFT *Capoeira* is to shorten the fallow by enrichment plantings with fast growing tree legumes. Together with a fast accumulation of biomass, high nutrient uptake rates out of deep soil layers and net nitrogen input by biological nitrogen fixation an impact on weed infestation has to be expected. In an experiment conducted with five tree legume species (*Acacia angustissima*, *Acacia mangium*, *Inga edulis*, *Clitoria racemosa*, *Sclerolobium paniculatum*) at three planting densities (10000, 5000, 2500 trees ha⁻¹) the effect on upcoming weeds during the following cropping phase was studied versus the non enriched control as well as in two types of land preparation (slash-and-burn SB and slash-and-mulch SM). Maize was planted shortly after land preparation and cassava was intercropped with the maize after four weeks of maize planting. A moderate fertilizer dose of N, P, and K, at 30, 60, 30 kg ha⁻¹, respectively was applied. Assessment of weeds was done before each weeding. The clearest difference is seen between the two land preparation treatments. SB had significantly higher number of grassy individuals than SM. Looking at the tree species *Acacia mangium* was one of the species that clearly suppressed grassy weeds. This effect was increased with the increasing planting density. *A. mangium* was observed to be the fastest growing tree and consequently closed the canopy very soon which affected the undergrowth, especially the seed-germinated weeds, negatively. It can be concluded that post fallow weed infestation is influenced by the fact that the fallow is being enriched, the choice of the enrichment tree species, its planting density and the land preparation method. Farmers might appreciate this aspect of fallow enrichment.