A Tree/Crop Association System in the Guinea Savanna of West Africa. (A06-tian080647-Poster)

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Abstract:

A study was initiated at Mokwa, Nigeria in a low fertility Alfisol in southern guinea savanna of West Africa, to develop a tree-based system, combining merits of bordered trees and alley cropping. Treatments included food crop with Gliricidia sepium, food crop with Acacia leptocarpa and sole food crop (no-tree control). Gliricidia produces organic matter-OM of high quality, whereas OM from Acacia has a low quality. In the first year - 1997, trees were planted in May at a distance of 1.5 m to form a square of 15 x 15 m with maize plants inside the tree square. There was no cropping in the second year. In the third year - 1999, trees were cut at 25 cm above ground in March, and pruning was used as mulch before planting maize. Second pruning was done in Gliricidia plot. Roots of both Gliricidia and Acacia reached as deep as 3 m. Gliricidia had relatively more root biomass in the surface soil whereas Acacia allocated relatively more root biomass in the subsoil horizon. Gliricidia showed high root surface area and root length than Acacia. Maize grain yields were higher in the plots with trees, 50% in 1999 and 46% in 2000 for Gliricidia, and 38% in 1999 and 59% in 2000 for Acacia as compared to notree control.

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