WATER AND LIGHT USE IN MAIZE INTERCROPPED WITH MUCUNA

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Abstract (C2049)
High biomass yielding legume *Mucuna pruriens* L (mucuna) can improve soil nutrient status in low input maize production systems if integrated as a cover crop. The amount of mucuna biomass would be influenced by water and light use in the systems. Field experiments were conducted at the University of Nairobi Kabete Field Station for three seasons to investigate the effects of mucuna planting density and planting time on light and water use of maize-mucuna intercrop. Maize was inter-planted with mucuna at two mucuna planting densities and three planting times. Mucuna planting densities of 44,000 and 88,000 plants ha^{-1} were obtained by planting one and two rows of mucuna between maize, respectively. The planting times were 0, 2 and 4 weeks after planting maize. The experiment design was randomized complete block replicated three times. Canopy photosynthetically active radiation (PAR) interception, soil water content, mucuna and maize biomass and maize grain yield were measured. Sole mucuna, maize-mucuna intercrop, sole maize and mucuna under maize intercepted 90%, 80%, 65% and 30%, respectively of PAR. Soil water content was comparable among the treatments. Maize grain yield was comparable in sole and intercrop but mucuna biomass in the intercrop was reduced by 26-56%. Land equivalent ratio was 0.96. Planting density did not influence mucuna biomass but delayed planting reduced biomass at 10% per week. The amount of mucuna biomass produced in the intercrop can improve maize production. Planting mucuna at the same time as maize is the best option in an intercrop system. Maize-mucuna rotation would be a better option where land is not limiting.

KEY WORDS: Ceptometer, neutron probe, root length density