EFFECT OF PLANT DENSITY AND TIME OF INTERCROPPING THE LEGUME WITH MAIZE ON THE ECONOMIC BENEFITS OF MAIZE-MUCUNA INTERCROPPING SYSTEMS IN COASTAL LOWLAND KENYA

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ABSTRACT
The maize-mucuna intercropping system can increase maize yields in coastal lowland Kenya but little effort has been made to examine the economic implication of the system. A study was therefore conducted in coastal Kenya to determine the effect of strategic modifications of the system on the economic benefits. Six maize-mucuna intercropping systems, based on factorial combinations of two plant densities for intercropped mucuna (40,000 and 20,000/ha) and three times of intercropping the legume with maize (0, 2 and 4 weeks after planting maize), were evaluated for four cropping seasons, along with pure stand maize. The results showed that intercropping systems in which mucuna was planted at a plant density of 40,000/ha had higher MRR (266-338%) than those with the legume planted at 20,000/ha (164-171%). Systems in which legume planting was delayed by four weeks relative to maize had higher MRR (338%) than those delayed for two weeks (MRR = 266). Since late planting of mucuna results in low legume biomass and nitrogen yields, a two-week delay in intercropping the legume with maize would be more appropriate than the for-week delay. Although results of the cost-benefit analysis showed that the low legume plant density is more beneficial (B/C ratio of 2.8) than the high legume density (B/C ratio of 2.0), low mucuna plant density leads to poor ground-cover and high weed infestation. The high mucuna plant density and early intercropping of the legume would, therefore, be more appropriate since farmers would recover their production costs and make a profit, in addition to ensuring adequate ground cover, increased N fixation and weed suppression. The mucuna plant density of 40,000/ha and a two-week delay in intercropping the legume with maize is therefore recommended for the coastal lowlands in Kenya.

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