

Abstract

Declining land productivity is a major problem facing smallholder farmers in Kenya today. This decline is a result of reduced soil fertility status, which is caused by continuous cultivation of soils without adequate addition of external inputs in form of manures and fertilizers. The low soil fertility contributes enormously to one of the greatest challenges facing farmers in the central highlands of Kenya currently; the inadequate food production for the rapidly growing population. A farmers' participatory trial was established in Meru South District, Kenya in 2000 with the main objective of offering poor resource smallholder farmers feasible soil nutrient replenishment technologies. The results across the seven seasons indicate that, sole tithonia gave the highest grain yield followed closely by tithonia with half recommended rate of inorganic fertilizer with 6.4 and 6.3 Mg/ha respectively. Control treatment gave the lowest yield of 1.5 Mg/ha across the seasons. The integration of organic and inorganic nutrient sources of N gave higher maize grain yield as compared to the sole application of organic materials during the seven seasons of the study. Results of the economic analysis indicate that, on average across the seven seasons, tithonia with half recommended rate of inorganic fertilizer recorded the highest (USD 787.2) net benefit while control recorded the lowest (USD 271.7). On the other hand recommended rate of inorganic fertilizer gave the highest (USD 12.5) return to labour while sole tithonia gave the lowest (USD 4.0). On average in the farmers' fields, manure alone gave the highest return to labour of USD 3.6, while the control treatment gave the lowest return to labour of USD -0.2. Despite the fact that tithonia had the lowest return to labour in the demonstration site, most farmers in the study area were willing to try it in their farms. This could be due to its local availability and the low opportunity cost of farmers' time.