Abstract:

Much of western Kenya is considered to have good potential for agriculture, with medium elevation (1100 – 1600 metres above sea level), deep, well drained soils, and relatively high rainfall (1200 – 1800 millimetres per year) that permits two growing seasons. Indeed, the region has the potential to be one of the most productive agricultural regions in all of Africa. Unfortunately, this is not the case. Farming is mainly low input – low output farming, practised on small farms of less than 1 ha, due to a burgeoning population. As a result, there are more people below the poverty line per square kilometre in the western Kenya region than anywhere else in Kenya. Indeed, national statistics show that over 50% of the population in many of the districts in western Kenya lives below the poverty line of 1240 KES per adult per month (equal to about USD 16). Why is this? Recent studies have found that crop productivity is very low. The typical output from a 'good' rainy season is less than 1 tonne of maize per hectare, although the potential is for 5 or 6 tonnes. However, farmers are poor and cannot afford to purchase fertilizer at nearly the needed amounts. Thus, as each year passes, soils become more and more depleted of nutrients. In response, ICRAF, KARI, and KEFRI2 developed an agroforestry research programme that had as one of its pillars, systems to improve welfare through soil fertility replenishment. Some successes with farmers were achieved in the mid-1990s and an effort to scale up the successful agroforestry systems was launched in 1997. This paper summarizes the research to document the adoption and impact of these systems since that time. The research involved is diverse, using a range of quantitative and qualitative methods and combining researcher managed trials and surveys of farmers' own experiences. Section 2 describes the main fertilizer tree systems developed and disseminated and how they are envisaged to work. Section 3 provides a brief contextual background for the study areas, including an overview of people's agricultural resources and practices. Section 4 describes patterns of farmer adoption of the technologies. Section 5 presents quantitative and qualitative evidence on the impacts of the fertilizer tree systems on yields, production, income and assets. Section 6 analyzes the effectiveness of different dissemination approaches used in western Kenya. Lastly, there is a brief summary and conclusion.