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Designing Sustainable Soil Fertility Management Programmes: What Have we Learnt from Farmers’ Perceptions and Preferences in Zambia and Malawi?

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Abstract

The diminishing natural resources per capita arising from growing population means that more resilient and efficient agricultural technologies are needed. A number of resilient farm production technologies that have high biophysical performance have been developed. However, apart from a few cases, their widespread adoption by smallholder farmers has been limited in many developing countries. Several studies have identified lack of understanding of the attitudinal components- specifically farmers’ perceptions about the technologies- as important causes for the low adoption. Using the case study of “fertiliser tree systems”, a sustainable soil fertility management that was developed in southern Africa based on nutrient cycling principle, this study aims to **(i)** understand farmers’ knowledge, attitude and perceptions on soil fertility management, **(ii)** identify opportunities and constraints to the widespread adoption of these technologies and, **(iii)** provide feedback to the technology developers by highlighting implications for the design and modification. The data for the study was collected using a stratified sampling approach involving 603 smallholder farmers in Malawi and Zambia. The results show that farmers’ preference for specific tree species is influenced by multiple criteria: quantity of biomass produced by trees (60%), ease of tree establishment and management (15%), ability of tree to re-grow after being pruned (6%), amount and market value of seeds produced (5%). Other criteria are duration (waiting period) before farmers begin to obtain benefits from the trees, compatibility of the technologies with ox-drawn ploughing. A dis-aggregation of the data revealed that important differences exist in the perception and preferences for tree species among different social groups (sex and wealth groups) within the communities. These differences have implications for the potential adoptability and farmer uptake of fertiliser trees in the targeted farm communities. An understanding of this preference will assist researchers to develop sustainable technologies that are appropriate to and enhance acceptability by farmers. It is concluded that in addition to economic models, an understanding of the farmers’ attitudinal preferences provide greater insights to their adoption behaviour regarding sustainable production systems.

Keywords: Agroforestry, nutrient recycling, participatory research, southern Africa, sustainable agriculture