

Research Application Summary

Unveiling opportunities of farming trees in Malawi: Economic impact of integrating trees on smallholder agriculture

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Abstract

The aim of this research is to raise and provide empirical evidence for promoting tree farming in Malawi. It addresses questions such as: Is tree farming a viable system for small-scale farmers in Malawi? Trees have multiple products for subsistence use and are also a source of income security to smallholder farmers. Studies have shown that trees farming can more than double farmers' income. The main objective of this study is to assess the economic benefits of tree farming to small scale farmers for scaling up trees planting as a measure of reducing poverty and reversing land degradation. It will be carried out using farm productivity methods and cost-benefit analysis methods to assess the impact of integrating trees on farm by the smallholder farmers. The study will cover three regions of Malawi, and using multi-stage sampling methods, two districts per region, two Extension Planning Areas (EPA) per district and a total of 600 farmers will be studied.

Key words: Malawi, multi-stage sampling, tree farming

Résumé

L'objectif de cette recherche est de recueillir et de fournir des preuves empiriques pour la promotion de l'arboriculture au Malawi. Il aborde des questions telles que: l'arboriculture est-elle un système viable pour les petits agriculteurs au Malawi? Les arbres ont de multiples produits des fins de subsistance et sont aussi une source de sécurité du revenu pour les petits agriculteurs. Des études ont montré que l'arboriculture peut apporter plus que le double du revenu des agriculteurs. L'objectif principal de cette étude est d'évaluer les avantages économiques de l'arboriculture aux petits agriculteurs pour intensifier la plantation d'arbres comme une mesure de réduction de la pauvreté et de la dégradation des terres. Elle sera réalisée en utilisant des méthodes de la productivité agricole et des méthodes d'analyse coûts-bénéfices pour évaluer l'impact de l'intégration des arbres dans une exploitation agricole par les petits fermiers. L'étude portera sur trois régions du Malawi, et utilisant des méthodes d'échantillonnage en plusieurs étapes, deux districts

par région, deux zones de programme d'extension (EPA) par district et un total de 600 agriculteurs seront étudiés.

Mots clés: Malawi, échantillonnage à plusieurs degrés, arboriculture

Background

Trees are one of the most important resources to the livelihood of small-scale farmers. They are used for their multiple products including implements for the farm and household use; construction of houses, storage and curing structures; fuelwood; food stuffs such as fruits, nuts and leaves; and medicine to name but a few of the tree products. For example, fuel wood is the major source of primary energy for heating and cooking in Malawi. Biomass energy accounts for more than 90% of the total primary energy (NRI, 1996; EAD, 2002).

Trees are also important as a source of income for rural households. Several studies indicate that as a livelihood strategy, most rural communities turn to tree products for subsistence and income. Trees have been reported to increase household income by between 25% to over 100% (Salam *et al.*, 2000; Campbell, 2002; Mithoefer *et al.*, 2004).

While the Malawian population mainly depends on the forests for tree products, supplies of tree products do not meet the current demand. Wood demand exceeds wood supply by about one third. For example NRI (1996) and EAD (2002) reported that by 1995 Malawi had an annual wood consumption of about 11.7 million m³ against wood production of about 5.3 million m³. Therefore, a deficit of 6.4 million m³ of wood.

The objective of this research is to raise and provide empirical evidence for promoting tree farming in Malawi. It addresses the following questions: Is tree farming a viable system for small-scale farmers in Malawi? How does tree-based farming compete with other farm enterprises?

Specifically the study will estimate the impact of trees integrated in farm enterprises on the budget of the smallholder farmers; estimate the amount of influence the main factors have on tree farming enterprises; assess the annual growth of tree products marketing in the rural markets; and evaluate preferences for different tree farming systems by the small scale farmers in Malawi.

Literature Summary

Environmental Affairs Department (EAD) (2002) in Malawi reported that there is growing numbers of communities and individuals that are planting trees for various reasons such as fuel wood, poles, fruit production, boundary demarcation and for shade. Smallholder farmers are planting about 10 million trees every year since 1988 and survival rate is about 60%. The tree planting trend is increasing and the tree planting week of the year 2000 planted 38 million seedlings. Dewees (1995) noted that household fuel wood demand and market prices are the most important factors in influencing subsistence farmers' decision to plant trees in Malawi.

Franzel *et al.* (2002) reported that factors of adoption of agroforestry technologies in Zambia include financial profitability, farmers' perception, resources and skills, labour, risks, compatibility with farmer's values, ornamental value and marking boundaries. Kwesiga and Beniast (1998) indicated that improved fallows of *Sesbania sesban* increase maize yield from 1 ton per ha per year to between 3.4 and 5.36 ton per ha per year and in addition, the farmer got 5 - 10 ton of fuel wood per year. Sileshi *et al* (2009) conducted a meta- analysis using 160 publications and found that agroforestry technologies at least doubles maize yields in Sub-Sahara Africa.

Study Description

The economic concept is that households increase the levels of utility by integrating trees on farm through increased availability of tree products, cash from sells of some of the tree products, higher farm productivity (maize and livestock) and through other non measurable ways. Using farm productivity methods (farm budgets analysis and analysis of factor productivity as economics-based impact assessment of whole farm) and cost-benefit analysis methods, the impact of integrating trees on the smallholder farmers will be studied.

The research will be carried out on farmers from areas that have benefited from various tree planting campaigns and projects in previous three or more years. It will target all the three regions of Malawi. Using multi-stage sampling methods, the study will cover two districts per region, two Extension Planning Areas (EPA) per district and about 600 farmers. Female headed household will be proportionally represented in the sample to measure impact of tree farming by genders.

Structured surveys using questionnaires and in-depth checklists will be used to collect data on farmers' characteristics and

production parameters. Data will include: farmers socio-economic characteristics such as: education, household assets, amount of land, livestock, trees on farm and systems of establishment, sources of income, food security, maize yields, net collection of and quantity of fuel-wood collected from forests, types and quantities of tree product harvests from farm and monetary valuation of tree products. Data will be analyzed using excel and SPSS computer packages using descriptive statistics and regression analyses.

Research Application

The study will provide a comparison of benefits gained from various levels of tree integration versus other enterprises of smallholder farmers. It will also document socio-economic factors that influence planting trees as an enterprise. It is hoped that results, and policy briefs to be produced will contribute to policy evolution from communal forestry approach to farm enterprise approach in tree planting for increased and sustainable supply of tree products.

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