MEDWELL PUBLISHING
Environmental Research Journal 3 (2): 42-45, 2009
ISSN: 1994-5396
© Medwell Journals, 2009

Land Tenure Systems and Extension Methods: Assessment of Agroforestry Adoption in Kalungu Sub-County, Masaka District, Uganda

M. Buyinza, R. Nalule and P. Byakagaba
Faculty of Forestry and Nature Conservation, University of Makerere,
P.O. Box 7062, Kampala, Uganda

Abstract: An assessment of the role of land tenure system and choice of extension method on adoption of agroforestry practices was conducted in Kalungu sub-county; Masaka district, Uganda. Questionnaires were administered to 55 randomly selected farmers who practice agroforestry and 5 extension staff members from Vi-Agroforestry Project (VIAP). Chi-square tests ($p<0.05$) were run to determine the relationships between the farmers' preferred extension method and their accessibility. The Gamma and Fisher's tests were also, run to explore the relationship between the most common land tenure system and the preferred extension approach. The most preferred extension methods included group extension (69%) method, individual method (15%) and village meetings (10%), respectively. The radio (2%), field tours (2%) and field days (10%) were the least preferred extension approaches. The decision to adopt agroforestry practice was influenced by land tenure. The 80% of the farmers preferred freehold land tenure system for agroforestry adoption while, few preferred leasehold tenure system (19%). The important policy recommendation made is that farmers should be encouraged to form tree farmers groups in order to access agroforestry extension services.

Key words: Farmers, land tenure, extension, village meetings, Maska District, Uganda

INTRODUCTION

Agroforestry is a collective name for all land-use systems and practices where woody perennial plants are deliberately grown on the same land management unit as agricultural crops and/or animals, either in spatial mixture or in temporal sequence and there must be significant ecological and economic interactions between the woody and non-woody components (Boffa *et al*., 2001). In Uganda currently agroforestry education and extension is being incorporated into higher institutions of learning to facilitate the extension of agroforestry technologies to farmers (Carswell, 2002). However, agroforestry is hampered by lack of well defined rights over land and lack of well tested extension methods. Many NGO's and government agencies have used group methods and individual methods to disseminate agroforestry technologies to farmers in different parts of Uganda. However, these methods have registered varying degrees of success (Mukasa, 2007).

Vi-Agroforestry an international NGO that is operating in Masaka district in central Uganda promotes agroforestry through use of various extension methods (Bukenya *et al*., 2007). However, there is inadequate information as regards, which method can be considered effective in disseminating agroforestry information to local communities. The aim of this study, was to investigate the influence of land tenure systems and choice of extension method on adoption of agroforestry practices. The specific objectives of the study were to: determine the influence of land tenure systems on adoption of agroforestry; identify the extension methods preferred by the farmers in the Vi-Agroforestry project; and explore the strengths and weaknesses of these extension methods.

MATERIALS AND METHODS

Description of study area: Masaka district lies between 0°-25°'S and 34°'E. It has an average altitude of 115 masl. The topography is characterised by rolling and undulating hills with valley bottom swamps including stream flows to lakes and rivers. It has some rocky hills, hilly paddocks, considerable area under river basin, plains, lakes, swamps and bushes. Kalungu sub-county, which was the study site has soil texture that varies from red late-rites along the hills; to sand loam and loam-clay in the lowland (Bukenya *et al*., 2007).

Corresponding Author: M. Buyinza, Faculty of Forestry and Nature Conservation, University of Makerere, P.O. Box 7062, Kampala, Uganda

They are generally deep and fertile on the gentle slopes while on hill tops, they are shallow and lateritic in nature. The rainfall pattern is bimodal with the first season occurring between March and mid June and the second season between July and November. Generally, the people of Kalungu are small-scale farmers; their major livelihood is derived from arable agriculture and livestock farming, (Bukenya *et al*., 2007). The main crops grown include banana, coffee, maize, sorghum, cassava, sweet potatoes and fruits. Animals reared include, cows, goats and pigs.

Research design: The study was stratified basing on the parishes in the sub-county. Two parishes were randomly selected out of the 10 parishes in the sub-county, 25 farmers were randomly selected from each parish i.e., Kasanje and Ntale parish giving a total of 50 respondents. Survey techniques like questionnaires, review of existing documents and observation were used in data collection. Purposive sampling was used to determine the sample size because it was the most convenient since only the farmers with the desirable characteristics were required for the research.

Five extension staff members were also, selected in order to triangulate the information provided by farmers. Content analysis was carried out on all the full text responses of questionnaires and key informants interviews. Chi-square tests were performed at 95% degree of freedom, to identify the relationship between the farmer's preferred extension methods. Gamma and Fisher's exact tests were used to explore the relationship between the most preferred approach and respective strengths or weaknesses and the relationship between land tenure system and agroforestry adoption. The data from the two parishes were subsequently aggregated to sub-county level.

RESULTS

Farmers' preference of extension methods: The extension methods that were preferred by farmers included group, field days, field tours, village meetings, radio and individual method (Table 1).

Land tenure systems in Kalungu sub-county: There were four types of tenure systems, i.e., Freehold, Lease hold, Customary and Mailo land tenure (Table 2).

The majority of the respondents (60%) reported that the type of land tenure system greatly influenced their decision to practice agroforestry and 40% practiced agroforestry regardless of the type of land tenure they hold. A cross tabulation between those who practice agroforestry because of a favourable land tenure system showed that the 2 most preferred tenure systems were freehold and followed by lease hold type of land tenure system. However, the gamma value (-0.353) did not reflect a significant relationship between the two variables meaning that there was no direct influence of the decision to practice agro forestry and the type of land tenure system.

Table 1: Farmers' preference of extension method (N = 48)

Extension methods	Frequency	Percentage
Group	33	68.7
Field days	1	2.1
Field tours	1	2.1
Village meetings	5	10.4
Radio	1	2.1
Individual method	7	14.6

Table 2: Land tenure systems in Kalungu sub-county (N = 39)

Land tenure system	Frequency	Percentage
Free hold	30	76.9
Lease hold	3	7.7
Customary	3	7.7
Mailo land	3	7.7

Farmers' most preferred land tenure system to practice agroforestry: Majority of farmers (81%) preferred the free hold type of land tenure system to practice agroforestry whereas only 19% preferred the lease hold tenure system. None of the respondents was interested in the Mailo and Customary tenure systems.

DISCUSSION

Farmers' preferences of the extension methods used: Group method was the most preferred with 68.7% farmers considering it as the best method. Similar studies done in Kkingo sub county Masaka showed group approach was the most preferred in extending technologies to the farmers (Bukenya *et al*., 2007). It was the most preferred because it promotes sharing of experiences and knowledge. Some farmers mentioned that the use of this method helps in pooling of resources collectively, since most of the group members share common interests, therefore, there are collaborative efforts and it is cost effective. These features make group method more attractive than the other extension methods.

According to Buyinza and Nabalegwa (2007), farmers may form groups and mobilize resources and because of their social cohesiveness, the extension worker can easily be impressed to lobby to the project manager to provide some incentives such as tree seedlings to the group, which makes it more attractive. Nyirenda *et al*. (2001) also,

argues that in communities where groups have already been organized for various tasks, a group approach is preferred and it is more feasible than individual approach. The individual type of extension method was ranked second best with 15% respondents preferring it because the extension worker visits the farmers at their farms to train them and since, there is personal contact between the farmer and the service provider, it enables better understanding through acquiring clarifications on issues that may not be clear to the farmer. This is also, supported by Mukasa (2007) who reports that the major advantage of the individual method is that it facilitates a dialogue in which extension worker can learn from the farmers as well as passing on advice.

Total 10% of the farmers preferred the village meetings method which was ranked as third best because of the social capital that may evolve from such meetings. The farmers find these meeting as an opportunity to share knowledge and experiences (Buyinza *et al*., 2008). The other methods i.e., field days, field tours and radios were ranked relatively poorly by the farmers probably because they have not been introduced to them by extension agents who find them expensive to implement.

Land tenure aspects and agroforestry practice: The majority of farmers (81%) preferred and ranked freehold type of land tenure system as the best land tenure system on which agroforestry should be practiced. This was preferred because under this system, farmers have full perpetual ownership of land and free decision making thereby allowing them practice any agroforestry technologies even those that may be long term such as tree planting. However, only 19% of the farmers preferred the lease hold tenure system for effective adoption of agroforestry technologies. This probably is because under lease hold, ownership is guaranteed for just a specific period of time which may not be an incentive to invest in agroforestry.

It is also, recommended that there should be greater co-ordination of the various extension teaching methods for example when a method demonstration is made, it could be followed by radio talk or field day/tour with all these methods covering the same objectives hence encouraging greater adoption just as Nyirenda *et al.* (2001) observes that a combination of extension methods is more effective than just one method. The land tenure system of the people in the study area was complicated since it comprised of Mailo land (quasi-free hold system) and lease hold land tenure systems. Land is in most cases fragmented because of the people's cultures but where possible the extension staff should encourage farmers to consolidate or individualize the land and to operate on relatively bigger scale, in order to achieve higher technical and operational efficiency.

CONCLUSION

The group extension method was observed as the most preferred method in Kalungu sub-county. In general differences in land tenure systems did not affect agroforestry adoption, although the majority of the farmers preferred acquiring Free-hold land tenure to practice agroforestry because of the advantages attached to it. Since group approach was most preferred, agroforestry projects are therefore advised to encourage farmers to mobilize themselves into groups so as to access agroforestry extension services thus increasing its adoption. The question of land tenure should be immediately resolved so as to enhance formulation of a good accompanying land use policy where by titling costs are reduced so that farmers can acquire land titles to guarantee security of their land hence encourage or promote adoption of both short and long term agroforestry practices.

ACKNOWLEDGEMENT

This study is an output of a student's special research project for the award of Bachelor of Community Forestry degree programme funded by the government of Uganda and the Faculty of Forestry and Nature Conservation, Makerere University. We are grateful to the farmers in Masaka district for their cooperation during fieldwork.

REFERENCES

Boffa, J.M., L. Turomurugyengo, L. Barnekow and R. Kindt, 2001. Enhancing farm tree diversity as a means of conserving landscape-based biodiversity: Insights from Kigezi highlands Southwest Uganda. Mountain Res. Dev., 25: 212-217.

Bukenya, M., F. Bbale, M. Buyinza and P. Ndemere, 2007. Effectiveness of individual and group agroforestry extension methods: Case study of VI-agroforestry project, Uganda. Res. J. Applied Sci., 2 (12): 1274-1281.

Buyinza, M., A.Y. Banana, G. Nabanoga and A. Ntakimanye, 2008. Farmers' adoption of rotational woodlot Technology in Kigorobya sub-county of Hoima District, Western Uganda. Ethnobotany Res. Appl., 6: 107-115.

Buyinza, M. and M. Nabalegwa, 2007. Gender mainstreaming and community participation in plant resource conservation in Buzaya county, Kamuli district, Uganda. Afr. J. Ecol., 45: 7-12.

Carswell, G., 2002. Farmers and fallowing: Agricultural Change in Kigezi District, Uganda. Geographical J., 168 (2): 130-140.

Mukasa, C., 2007. Adoption of *Calliandra calothyrsus* and *Sesbania sesban* in Masaka and Rakai district, Uganda. Res. J. Applied Sci., 2 (10): 1087-1094.

Nyirenda, M., G. Kanyama-Phiri, A. Bohringer and C. Haule, 2001. Economic performance of improved fallow agroforestry technology for smallholder maize production in Central Malawi. Afr. J. Crop Sci., 5: 638-687.