AGROFORESTRY RESEARCH AND DEVELOPMENT IN TANZANIA

G. M. Mitawa[1] *and R. Kamala*[2]
[1]Principal Research Officer and Assistant Commissioner for Crop Research
[2]Research Officer.
Department of Research and Training, P. O. Box 2066, Dar es Salaam, Tanzania

Abstract

Agricultural Research and Development in Tanzania has shown a potential to solving agroforestry problems which exist. Environmental deterioration, rapid population growth and shortage of fuelwood are among the problems facing the country. Adoption of integrated land use system including agroforestry is the basis of research in Tanzania. The policy makers, in designing agroforestry development, have been motivated by importance of multipurpose leguminous trees and shrubs which provide food, fodder, fuelwood and improvement of soil fertility. Involvement of farmers in defining priorities on agroforestry research before planning any research activities is one of the most important developments in agroforestry research. Participation of farmers in integrated land use system will help develop communities by encouraging permanent settlement, long term investment and overall development of the nation.

Introduction

Agroforestry is a collective name for systems and technologies of land use where perennial woody plants are deliberately cultivated or used for crop/stock raring in a spatial or temporal arrangement. A given land use system or practice must permit significant economic and ecological interactions between the woody and non-woody components to qualify as agroforestry (Lundgren 1982b). Agroforestry therefore is a new word denoting old practice, that is, it is based on forestry, agriculture, animal husbandry, land resources management and other disciplines which all form the systematic background of land use. Furthermore, it encompasses an awareness of interactions between man and environment and between demand and available resources in a given area (Beets 1988).

The National Agricultural Policy for Tanzania has recognized the fact that benefits from agroforestry cannot be achieved by simply utilizing the already available knowledge in various disciplines. Addition of new strategies and technologies that can be obtained through research is required. Like in other countries, Tanzania has and is experiencing environmental deterioration, rapid population growth of 3.3% and shortages of fuelwood. As such adoption of integrated resource use systems including agroforestry is the basis of landuse research in Tanzania.

The realization by Tanzania of the importance of multipurpose woody leguminous trees and shrubs, that can provide food, fodder, fuel-wood, fix nitrogen, reduce soil erosion and improve soil fertility has motivated policy makers in designing agroforestry research and development.

This paper attempts to show how agroforestry research and development is geared towards sustainable agricultural productivity. Two case studies from Tabora region where tobacco is grown and Mwanza and Shinyanga regions where agro-pastoral system is practised will be used to illustrate the focus on agroforestry research and development in Tanzania.

Case Study

Tobacco Cultivation in Tabora

Tabora Region, agro-ecologically falls under unimodal upland plateau. In this agro-ecological zone a system of agro-pastoralism is found. The natural vegetation in the region consists mainly of Miombo woodland with mainly *Acacia* spp. and or *Cambretum* spp.

Tobacco is the most important cash crop in Tabora Region. Other crops grown are rice, maize and sweet potatoes. Growing tobacco in this region has important implications on agro-forestry because of its intensive use of forest resources and inorganic fertilisers. Since tobacco is always cultivated on virgin land in order to minimise nematode attack farmers practice shifting cultivation. This kind of practice has been affected by several factors such as lack of initiative to have permanent settlement and invest in agricultural related enterprises. As a result, the nutrients in the soil are generally being mined leading to destructive results.

It has always been argued that tobacco production results into severe deforestation in the region, because curing tobacco consumes lots of fuelwood. Consumption of fuelwood per annum for tobacco and other functions like brick making and household needs is approximately 3,200,000 units per year of woodland (Barret 1982). Recently the price of tobacco has gone up. This attractive price has triggered land under tobacco production to increase and therefore deforestation is increasing as a result of clearing land for planting tobacco and tree cutting for fuelwood.

Sukuma Agro-Pastoral System

Sukuma agro-pastoral area encompasses Mwanza and Shinyanga regions. Traditionally, the Sukuma recognized rights of users of land rather than individual ownership. As long as the field had crops there were recognized rights of occupancy. Once the field was harvested the land once again reverted to common ownership (Warner 1993).

Crops grown in this area are cotton, rice, sorghum, millets, cassava and sweet potatoes. Livestock are part of the agro-pastoral system where cattle are kept mainly for capital and as a status symbol. In spite of the ecological pressure, integration of agricultural and pastoral forms of land use has not been realised. The use of land for agriculture and other purposes is perceived as being in direct competition with the use of land for grazing.

Sukumaland is generally severely deforested. In the past deliberate deforestation efforts were made as part of the tsetse eradication campaign. Furthermore, deforestation has been continuing due to growing populations which required more agricultural land for production. There is also a cultural practice of clearing trees within settlements to prevent the nesting of grain eating birds (Mnzava 1980).

Most cattle enclosures are built using *Acacia* spp. and *Dichrostachys cinerea*. Thus cattle "bomas" form a significant constraint to the regeneration of vegetation.

The agro-pastoral land use system is by far one of the most deforested systems. This has resulted into the following:

- Lack of timber and poles for house construction.
- Lack of fuelwood
- Low and declining land productivity (cow-dung and crop residues are used as fuel, as such land is deprived of manure).
- Over-grazing and fodder scarcity. (The herd size rather than productivity is of paramount importance).

Future Perspective

The policy regarding afforestation and agroforestry tree species in relation to the farming practice need to be clearly defined. Unlike the infrastructural arrangements for production and sale of food and commercial crops, markets for agroforestry products are not well developed. Production incentives therefore need to be addressed

The government is becoming more responsive. There has been a shift in policy towards using more indigenous species and promoting fruit and multipurpose trees rather than just fuelwood varieties. It is envisaged that multipurpose agroforestry systems in Tanzania will stimulate development of the people by reducing shifting cultivation of tobacco farmers and the development of permanent infrastructure. This will lead to a well developed infrastructure.

Afforestation also means the improvement of environment of ecosystems. This [illegible] and fertility of the soil are

improved. One is thus inclined to conclude that the quality of life styles of communities would be improved.

Efforts to disseminate agroforestry technologies are just beginning. Government policy should be to make sure that agroforestry technologies are disseminated appropriately to the resource poor farmer in order to have a lasting impact on the community

Since Tanzania has different agro-ecological zones, each zone needs to be assigned specific roles relevant to problems pertaining to the zone. This will make it easier to concentrate on real issues to speed up development of research technologies. Multidisciplinary approaches need more emphasis in the composition of research teams: that is, soil scientists, farming systems experts, foresters, agronomists as well as sociologists should work as a team.

Funding of agroforestry research should be increased from the present level so that more specialists trained in agroforestry can be recruited.

References

Barrett A. T. 1982. A report on survey of tobacco curing fuelwood use and attitudes to afforestation. Tabora Rural Integrated Development Project, Tanzania. Land Resources Development Centre, U. K. Overseas Development Administration.

Beets W. C. 1988. The potential role of agroforestry in ACP Countries. p. 25-30.

Kerkhof P. 1990. Agroforestry in Africa: a survey of project experience. London: Panos publications Ltd.

Lundgren B. (1982b). Introduction. *Agroforestry Systems* 1:3-6.

Lundgren B. O. and Lundgren L. 1982. Social economic effects and constraints in forestry management in Tanzania. pp. 43-53.

Mnzava E. M. 1980. Village afforestation: Lessons of experience in Tanzania. Rome: FAO.

Warner 1993. Patterns of farmer tree growing in Eastern Africa: a socio-economic analysis. Tropical Forestry Paper 27. Oxford (UK) pp. 210.