THE FINANCIAL BENEFITS OF AGROFORESTRY PRACTICING TO HIV AND AIDS AFFECTED HOUSEHOLDS

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A B S T R A C T

HIV and AIDS continue to impact negatively on rural livelihoods. Across the globe households have to cope with loss of labour through nursing the sick and worse still through death. Response to the scourge has ranged from prevention, care and support, to impact mitigation amongst many other strategies. Agroforestry has been an ancient practice dealing with soil fertility improvement. The benefits of agroforestry practicing have been documented since time immemorial. In Malawi agroforestry has been practiced with the support of International Centre for Research in Agroforestry (ICRAF) since the mid-90s. The Malawi government has responded to HIV and AIDS with various interventions within agriculture sector. However, more funding for HIV and AIDS programs never went to impact mitigation in the agriculture sector. The question that remained unanswered was what other mitigation strategies can be used within the agriculture sector to mitigate HIV and AIDS. In this study, the researcher tried to find out whether the practicing of agroforestry could also mean that the households practicing agroforestry derived finance from the practicing. The study was carried out in Kasungu District in Central Malawi. Through a survey design data was collected using questionnaires, focus group discussions and key informant interviews with various stakeholders. The findings of the study showed that households affected by HIV and AIDS practicing agroforestry had significantly more financial resources as compared to households that were affected by HIV and AIDS but did not practice agroforestry. There were four main factors that were found to significantly explain the source of finance of the households and these were; the size of the household, the amount of land under cultivation, the practicing of agroforestry and the location (proximity to township). The results suggest that agroforestry is providing a good mitigation strategy for households affected by HIV and AIDS. The findings of the study therefore imply that there is need to engage in advocacy so that agroforestry is considered as a mitigation factor for households affected by HIV and AIDS. While channeling funds to different aspects of HIV and AIDS programs, it is important to consider scaling up agroforestry practices..

Keywords: Agroforestry, financial benefits, HIV & AIDS.

INTRODUCTION

Since the epidemic started in 1981 more than 25 million people have died of AIDS worldwide and by December 2005 it was estimated that 40.3 million people were living with HIV and AIDS across the globe. Young people (15-24 years old) accounted for half of all new HIV infections worldwide - more than 6,000 became infected with HIV every day (UNAIDS/WHO, 2005). The result of AIDS deaths had translated into existence of more than 12 million orphans in Africa alone. In Sub Saharan Africa

women constituted 57% of the cases (UNAIDS/WHO 2005). This situation is not conducive to development. If HIV and AIDS cases continue to rise like this, it means that production of food will continue to go down globally as it has direct effect on labour availability. Sub Saharan Africa is by far the most leading region in terms of various HIV and AIDS indicators. The Sub Saharan African Region had the highest number of people living with HIV and AIDS, the highest adult infection rate and the highest number of deaths in 2005 (UNAIDS/WHO 2005). In general, HIV and AIDS significantly undermines a household's ability to provide for basic needs such as food, (De Waal and Whiteside, 2003;

HRSC, 2004; Piwoz, 2004). In a discussion of the impacts of HIV and AIDS on household livelihoods, Haddad and Gillespie (2001) stated that HIV and AIDS strips individuals, households, networks, and communities of assets. The rising cases of HIV and AIDS are a big threat to the development of the region. There are a number of programs being implemented by different organizations to respond to HIV and AIDS impacts. Some of the programs relate to prevention, care and support, impact mitigation, behavioral change etc. Agriculture sector implements impact mitigation strategies to deal with HIV and AIDS amongst the farming community. Agroforestry which is an ancient practice has been implemented as soil enhancing technology. Main agroforestry practices include improved fallows, *taungya* (growing annual agricultural crops during the establishment of a forestry plantation), home gardens, alley cropping, growing multipurpose trees and shrubs on farmland, boundary planting, farm woodlots, orchards or tree gardens, plantation / crop combinations, shelterbelts, windbreaks, conservation hedges, fodder banks, live fences, pasture trees and apiculture with trees (Nair, 1993; Sinclair, 1999).

Malawi is one of the countries in the Sub Saharan region with very high HIV and AIDS prevalence rate estimated at 10.6% (http://www.aidsmalawi.org.mw/) with women being more infected than men (National AIDS Commission, 2003). The statistics presented here are quite disturbing bearing in mind that Malawi as country has so many other problems that require long term solutions and the HIV and AIDS problem is making the poverty situation even more complicated. Analysis of funding patterns to address HIV and AIDS shows that more resources are devoted to prevention, care and support and less into impact mitigation. Agroforestry as a practice has been found to offer many opportunities to farming households in an agro-based based economy as is the case of Malawi.

The objective of this study was to assess whether agroforestry contributed to the generation of cash incomes of households affected by HIV and AIDS. While it is known that it does contribute to maize yields the study wanted to explore the financial aspect of agroforestry practicing in HIV and AIDS affectedness context.

RESEARCH METHODOLOGY

Research design: This study was designed as a comparative study. Households affected by HIV and AIDS and practicing agroforestry technologies were compared to households affected by HIV and AIDS but not practicing agroforestry technologies. The agroforestry non practicing households were a control in analysing the contributions of agroforestry to incomes. Data was collected through a survey. The data was analysed using both descriptive and inferential statistics. One hundred and three households were affected by HIV and AIDS and practiced agroforestry while eighty three households were affected by HIV and AIDS but did not practice agroforestry. Questionnaires were used to collect quantitative data from the households from household heads. Focus group discussions involved community leaders and agroforestry committee members separately. Key informant interviews were done with heads of institutions and various development practitioners.

Ethical issues and human subjects considerations

As Hilhorst *et al.* (2004) *in 'Impact of AIDS on Rural Livelihoods' in Benue State, Nigeria* pointed out, issues concerning illness and death are in general sensitive topics to discuss. So in this study special care was taken when collecting data. This was especially so in the case of HIV and AIDS, which is still highly stigmatised in Malawi. It was noted that most people did not know what exactly killed their loved ones in cases where reference was made to a relative who had died. In this case proxy indicators were used to assess whether the case was HIV and AIDS related or not.

Proxy indicators for HIV and AIDS affectedness

The study made use of a combination of a number of proxy indicators for HIV and AIDS affectedness. A household was classified as HIV and AIDS affected when any of the following conditions existed:

- If the respondent either had HIV or HIV and AIDS. These households were easily identified through development workers and local leaders.
- If a household was keeping orphans. The orphans must have lost their (both) parents to HIV and AIDS related sickness. Such households were identified through the assistance of the village health committees.
- If a household was nursing a sick relative who was suffering from HIV and AIDS related sickness. Such households were identified through the efforts of development workers and the village health committees.

- If a household lost an economically active member for example an aunt/uncle/son/daughter. Identification of these households was through the consultation with health surveillance assistants and agricultural extension development workers.
- If a household head lost a spouse through AIDS related sickness. Again here identification was through consultation with health surveillance assistants, village health committees and agricultural extension development officers.

Model specification

Logistic regression model was used in analysing data in this study. When measuring cash incomes of the households, special effort was made to explore all possible ways and means through which people realised money. For example not only was farming considered as a source of income, other sources like salaried jobs, income generating activities like selling doughnuts, selling agroforestry products, selling labour (piece works) and a lot more were considered. Those households that got less than MK50.73/person/day were deemed poor (assigned a code of zero) and those which were able to raise at least MK50.73/person/day were deemed rich and ass*i*gned a code of one. According to Malawi Demographic and Healthy Survey 1, (2004) Policy Brief 2 the poverty line for central region (rural) was MK18.30. At that time the exchange range for a dollar to a Kwacha was at 1: 50 and during the time of the study the exchange rate was at 1:139 and therefore MK18.30 translated to MK50.73. The model components of the cash incomes (CI) part of the analysis is documented below:

Maritalstat	marital status of household head was measured using representative codes as explained below: 1. single, 2. divorced/separated, 3. widowed, 4. married, 5. polygamous.
Hhsize	was measured as the number of people that ate from the same pot and lived within the same compound. Measured as a continuous variable.
Affectedness	affectedness measured how the household had experienced the effects of HIV and AIDS. The options for affectedness were: 1. Infected with HIV and AIDS 2. Lost a husband/wife 3. Lost a dependable relative (Brother/sister, uncle/aunt, child) 4. Keeps orphans 5. Long illness of any household member
Fertuse	measured whether a household used chemical fertilizers or not in the past 2005/2006 crop growing season. Yes was denoted as 1 and 0 was assigned for non-use of chemical fertilizers. This was measured as a categorical variable.
Afpract	whether household practiced agroforestry was a binary dependent variable with 1 for agroforestry practicing households and 0 for non-agroforestry practicing households
Landsize	measured total amount of land that was cultivated by a household measured in hectares as a continuous variable.
Cropno	number of crop enterprises a household was engaged in measured as a continuous variable
Livestock	whether household kept livestock or not where Yes=1, No=0.
Respocc	the main occupation of household head. The categories for this variable were: 1. farming, 2. salaried job, 3. business, 4. builders and carpentry
Edu level	Level of education of the household head measured continuously in years of schooling.
Sexhh	sex of household head 2 represented male and 1 represented female.
ε	error term assumed to be normally distributed, with mean zero and constant variance.

RESULTS AND DISCUSSIONS

Table 1 below provides a comparison of the socio-economic characteristics of the respondents. The mean and the range were used to compare the agroforestry practicing households and non-agroforestry practicing households. The results show significant differences that exist between the agroforestry practicing households and the non-agroforestry practicing households. The major differences were in the areas of cash realised from crop sales, livestock and livestock product sales, maize yield obtained from a piece of land. These differences signified that there were more benefits (apart from

financial benefits) associated with practicing agroforestry technologies. In addition to the socioeconomic characteristics analysed in Table 1 above, a logistical regression was run to test the significance

levels of the important variables that explained the dependent variable. The results are presented in Table 2 below.

Table 1: Comparison of agroforestry practicing households and those not practicing.

Statistic	Agroforestry practicing households	Non-agroforestry practicing households	Level of significance	Comment
	Mean	Mean	P	
Age (Years)	45.7	41.86	0.072	Not significant
Education (*Years*)	5.2	5.55	0.572	Not significant
Household size	6.3	6.42	0.951	Not significant
No of crops grown	3.8	3.02	0.000	Significant
Land size (ha)	1.6	1.44	0.279	Not significant
Maize yield (Kg)	1720.6	881.19	0.000	Significant
Cash earned from crops (MK)	19, 834.6	8993.06	0.000	Significant
Cash from livestock sales (MK)	3, 389.37	1192.71	0.000	Significant
Total cash Income	20, 416.1	7849.92	0.000	Significant

From the results shown on the Table 2 above it can be seen that the following five independent variables significantly explained change in the dependent variable (Income): whether household practiced agroforestry or not, size of household, land holding size, number of crops a household grew and location (Extension Planning Area-EPA). All the five significant dependent variables are explained below.

Results of logistic regression analysis on factors influencing incomes.

Table 2. Results of the logistic regression analysis for income of the households:

Variable	Coefficient	S.E	Wald	Sign
SEXHH	1.292	0.658	3.852	0.050
HHSIZE	-.691	0.184	14.095	0.000*
AFRACT	2.237	0.905	6.114	0.013*
LANDSIZE	1.148	0.329	12.158	0.000*
No of crops	1.011	0.339	8.887	0.003*
LIVESTOC	0.806	0.794	1.030	0.310
EPA	2.651	1.324	4.009	0.045*
Constant	-6.721	1.769	14.433	0.000

Key * means significant variable at $p<0.05$ $R^2= .62$

Practicing of agroforestry: In the study respondents were asked whether they practiced agroforestry or not. This question was based on the hypothesis of the research which said that agroforestry practicing contributed financial benefits to households. The practicing of agroforestry was found to be positively associated with incomes of households ($p<0.05$). Households that practiced agroforestry technologies had higher incomes as compared to households which were not practicing agroforestry technologies. There were a number of reasons for this finding. One of the major reasons was that households that practiced agroforestry options derived cash from sales of seed of agroforestry technologies, which they sold to other farmers as well as

ICRAF (International Centre for Research in Agroforestry). The other reason was that there was a significant difference in terms of maize yield amongst those that practiced agroforestry options as compared to those that did not. In an agro based economy one cannot disassociate agricultural production with incomes. And in the case of Kasungu where the main crops grown are maize and tobacco, the maize yield was a good indicator of having good incomes. The maize yield was a source of income in rural areas more especially for households that do not grow tobacco and other cash crops. It is a known fact that agroforestry improves soil fertility and this did not benefit maize growing only. It meant that even other cash crops also benefited from practicing of

agroforestry. Most of these other crops when they are sold they generate income for the households.

Land holding sizes: The bigger the land size, the bigger the incomes, that were derived ($p<0.05$). Bigger pieces of land allowed the households to diversify their farming enterprises. Just like it was seen that maize yields increased as the land size increased the situation repeated itself also with incomes of households. Cross tabulating incomes and land sizes confirmed this. Large land sizes gave farming communities an opportunity to diversify.

Household size: Household size was found to be negatively associated with incomes of households ($p<0.05$). This was so because as the number of household members increased the income declined. This meant that many people scrambled for minimal resources. Households that had large sizes were generally clouded by young ones (below age 14). These young ones did not contribute to income generation of the households they belonged to. They spent most of their time in school or just staying in the home. The situation was arising because of the effects of HIV and AIDS whereby through the extended family system practiced in Malawi children are adopted by close relatives when the parents die. Average household size in the study areas was found to be at 6.5 (the maximum was 13 and the minimum was 2) while the national average is 6.

Number of crop enterprises a household was engaged in: The number of crop enterprises was found to significantly explain the variation in incomes of the households ($p<0.05$). Households that engaged in growing more crop enterprises had more income than those which did not. Secondly when a household engaged in more than one crop enterprise, apart from one or two crops the rest of the crop enterprises were for sale. In short the mere fact that a household grew more crop enterprises implied that the household had more labour supply. The households that grew more than one crop grew the following crops; maize, tobacco, soya and other winter grown crops. These practices helped the families to generate incomes throughout the year.

Extension planning area: Ninety five percent (95.6%) of respondents who were living above the poverty line came from Kasungu Chipala Extension Planning Area ($p<0.05$). This result did not come as a surprise. This can be explained by the fact that Kasungu Chipala is close to Kasungu Township where there are many economic opportunities as compared to Chulu EPA, which is 40km away from the township. Although Chulu EPA received relatively good rains leading to better yields but again being far away from the town put the residents at a disadvantage. The farm produce prices that households obtain for their produce in Kasungu Chipala are higher as compared to households from Chulu EPA. Other economic opportunities like renting out land pieces to residents of Kasungu Township could also be one other factor that helped to give higher incomes to residents of Chipala EPA. There were higher populations of people living within the perimeters of the township and that meant that demand for agro based products was higher. This automatically forced prices to go up for the benefit of the farming communities.

CONCLUSIONS AND RECOMMENDATIONS

A lot of literature is available that explains that agroforestry is a good practice in increasing soil fertility. It is so clear that in a normal situation agroforestry has been found to be a good practice. This study confirms further that in the context of HIV and AIDS, agroforestry practicing financially benefits households. In situations of resource constraints, agroforestry provides an indirect mitigation strategy for farming households.

The findings of the study therefore help suggest that there is need to engage in advocacy so that agroforestry is considered as a mitigation factor for households affected by HIV and AIDS. While channeling funds to different aspects of HIV and AIDS programs, it is important to consider scaling up agroforestry practices.

REFERENCES

De Waal, A. and Whiteside. A (2003). "New variant famine: AIDS and food crisis in Southern Africa." The Lancet. Dec. 6, 362, 9399:1938-9.

De Waal A. and Tumushabe (2003). HIV and AIDS and food security in Africa. DFID UK.

Haddad, L. and Gillespie S. (2001). "Effective Food and Nutrition Policy Responses to HIV AND AIDS What We Know and What we Need to Know." Journal of International Development. 13, 4:487-511.

Hilhorst T, Liere M, Koning K (2004), Impact of AIDS on rural livelihoods in Benue State, Nigeria. Royal Tropical Institute. Netherlands.

Nair, P.K.R (1993). An introduction to agroforestry. In FAO (2005) State of the World's Forests Page 88. Rome. Italy.

NAC, (2013). Lilongwe, Malawi. Personal

Communication with A. Massi.

Nair, P.K.R., Buresh, R.J, Mugendi, D.N., Latt, C.R., (1999). Nutrient Cycling inTropical Agroforestry Systems: Myths and Science.

Sinclair, F.L (1999). A general classification of agroforestry practice. In FAO (2005)State of the World's Forests Page 88. Rome. ItalyUNAIDS/WHO (2005) AIDS epidemic update.(http://www.unaids.org/epi/2005/index.asp).