STATUS OF FARM FORESTRY IN TINDERET

By

Robert O. Nyambati
(Research Officer)

Charles Koech

George muok

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1.0 INTRODUCTION AND BACKGROUND

The loss of forests through out the world is often depicted by loss of tropical forests, many of which support large numbers of species, and are also centers of endemism. Forest values have variously been categorized into three groups: the maintenance of ecological processes and life support systems; the sustained use of the resources for consumptive and social benefits; and biodiversity conservation. In light of the tremendous values of forests, and their rapid rates of decline, most governments have initiated several development projects to conserve their forests. In Kenya, natural forests are under increased and sometimes uncontrolled human pressure from agricultural expansion, commercial logging, overgrazing and fuelwood consumption. The demand for these products has greatly increased in recent times, resulting in deterioration of forest integrity, and in certain instances to total loss of forest cover. For instance, between 1980 and 1992, a total of 37000ha of forest was lost primarily to agriculture and settlement (Wass, 1995). These forests provide a wide range of goods and services to local communities and the nation at large. They are a source of timber, housing, energy; catchment area for water supply, and a base for a diverse range of other commercial uses. More importantly, closed canopy forests are crucial for conservation of biological diversity. It is imperative that these forests are conserved and managed more rationally to ensure that their productive and regenerative capacities are sustained. Successful forest conservation will depend on balancing many conflicting interests, and will demand that all functions and values of forests are integrated into the socio-political process.

Tinderet forest is part of the Eastern most extensions of the Congolian rain forest that includes the Kakamega, South and North Nandi forests. These are the only rain forests in Kenya. These forests contain perhaps upto 20% of all Kenyan plant and animal species of which 30% are considered endemic. The forest is an important habitat for a wide variety of Kenyan plants and animal species. Those that have been observed here include birds, monkeys, warthogs, wild pigs, duickers, antelopes, bees and small carnivores.

Although the forest is gazetted as a forest reserve, it has undergone different levels of degradation due to over exploitation for cedar posts firewood, charcoal,

honey harvesting, timber, game hunting and herbal medicine by the community leaving next to it. Resources from the forest supplement their meagre incomes from subsistence farming.

Most farmers close to the forest depend on the forest because they cannot meet their tree product requirements from their own farms. This is because farm forestry is not well developed in this area. Unless this is done farmers will continue depending on this resource leading to further conflicts with conservation agents.

A conflict of interest exists between the local community's attempts to meet their forest needs and the initiatives to conserve and effectively manage the forest and its environs by the Government officials.

Objectives

(i)   Evaluate the status of farm forestry in areas neighbouring Tinderet forest

(ii)   Identify limitations to farm forestry development

(iii)   Look at possible interventions for conservation and sustainable utilization of Tinderet forest.

2.0 ROLE OF TINDERET FOREST TO THE COMMUNITY

PRODUCTS FROM THE FORESTS

The community identified the main products from the forests as: timber, charcoal, water, and poles, among others. The community members also ranked the products in term of importance as follows:

(1) Timber

(2) Posts

(3) Honey

(4) Medicinal herbs

(5) Water

(6) Rain

(7) Firewood

(8) Charcoal

(9) Game meat

(10) Grazing

(11) Air purification

(12) Wild fruits

Ranking of Forest products

Community members were divided into two groups and using equal counters they allocated them with the most important products attracting the largest number while the least important product had few counters. Both groups identified timber as the most important product, 17 and 19 counters for group 1 and group 2 respectively. Fruits and charcoal were least in terms of importance to the community (Table 1).

Table 1: Product ranking by community

RANKING		
PRODUCT	**GRP 1**	**GRP 2**
Timber	17	19
Medicine	11	6
Firewood	8	7
Honey	6	4
Water	5	13
Hunting	2	1
Charcoal	1	0
Fruits	1	0

Timber

It ranked the highest in all groups as the major product from Tinderet forest. The main species harvested are *Chepkoibet* and '*Saptet*'. The majority of sizes cut down are medium because they use pitsaws and the terrain is very sloppy. The distance where most the species are cut are around forest margins for *'Saptet'* the species has been cleared in the margins, therefore harvesting is at least 3 km from the forest boundary.

'*Chepkoibet* and *Saptet*' compare favourably in the market. When sold locally they fetch 4 shillings and 5 shillings per foot respectively. In far distance markets such as Kericho and Kisumu they fetch 10 and 12 shillings per foot respectively.

The major constraints to harvesting and selling of timber include poor harvesting techniques, poor seasoning and harvesting of immature trees. Marketing structures are non-existent and there is exploitation by middlemen.

Honey harvesting.

Honey is an important product form Tinderet forest. Honey harvesting is undertaken in two seasons. The first is Jan–April which characterizes the high season. The other is June-October, which is the low season. High season stands for a time when honey is plenty while low season, honey harvested is low or may be scarce.

The dominant hives are the traditional lives made from curving trees. They are placed on branches of large trees. Bees take at least six to eight months before the first

harvest is realized. The average number of beehives per individual is five in a locality. In the high season one beehive can produce 8 kg of raw honey, while in the low season it ranges from ½ kg to 2 kg per hive.

Bees also live in large trees caves and on dead trees. The main species bees reside in include.

Local name   botanical name

(1) Poponet: *Podocarpus gracillior*

(2) Lamaiyet: Zyzigium Guineense

(3) Simotwet: Vitex Keniensis

(4) Tendwet: *Prunus africana*

These trees have been felled by honey harvesters who may sometimes find little or no honey in the process. This has resulted in forest degradation.

Table 2: Valuation of forest products

Forest Product	Anchor value:	Forest Product
Firewood	√√√	X
Grazing	X	√√
Charcoal	√√√√√√√√√	X
Timber	√√	X
Fruits	√ X 20	
Water	X	√√√
Posts	√√√	X

Ticks represent the number of times

Grazing becomes more important because it's equated to space or lowed, therefore the more the laced, the more one can keep animals.

THREATS TO FOREST RESOURCE

Community members ranked threats to forest existence based on activities and products harvested from the forest. The biggest threats are those related to tree felling for timber, posts and poles and grazing (Table 3).

Table 3: Nature of threats to Tinderet Forest

THREATS	RANKING
(1) Timber	(1)
(2) Posts/poles	(2)
(3) Grazing	(3)
(4) Firewood/charcoal	(4)
(5) Honey Harvesting	(5)
(6) Cultivation	(6)
(7) Forests Fires	(7)
(8) Medicinal Plants – Debarking	(8)

Although charcoal ranked fourth it was mentioned the main potential threat because of the ready market in Muhoroni, Kericho and Kisumu.

3.0 STATUS OF FARM FORESTRY

LAND TENURE

61% of the people around Tinderet forest are settlers. Most of these people have been here for the last 30-40 years (Figure1). In the process of opening up land for agricultural purposes, they have cleared most of the natural trees they found on their lands. Very few remnant trees can be seen on the landscapes.
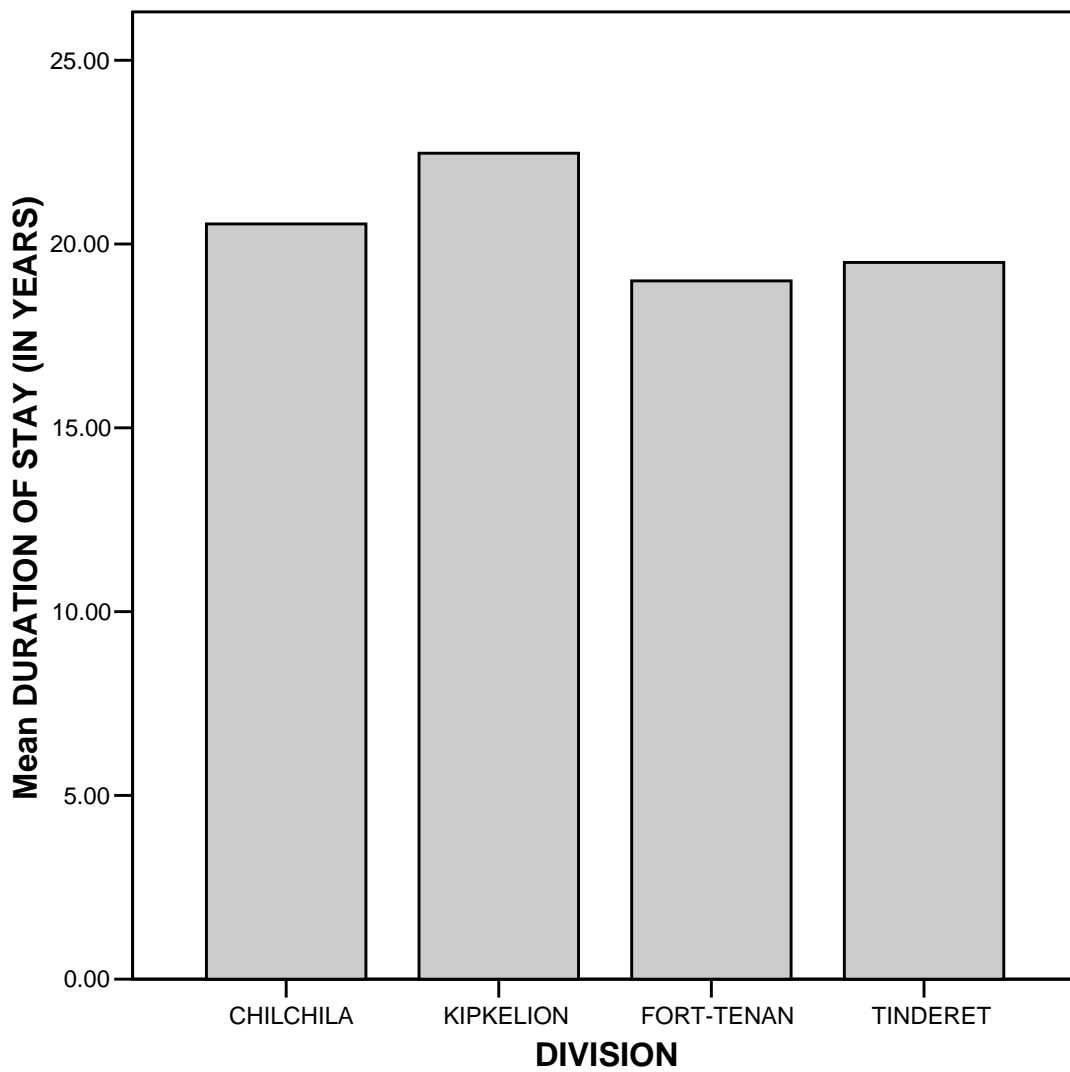

Figure 1: Duration of settlement

Table 4: land ownership

Division	Ancestral land (%)	Bought land (%)	Total
Chilchila	24	21	45
Kipkelion	8	9	27
Fort Tanan	4	5	9
Tinderet	6	26	32
Total	42	61	103
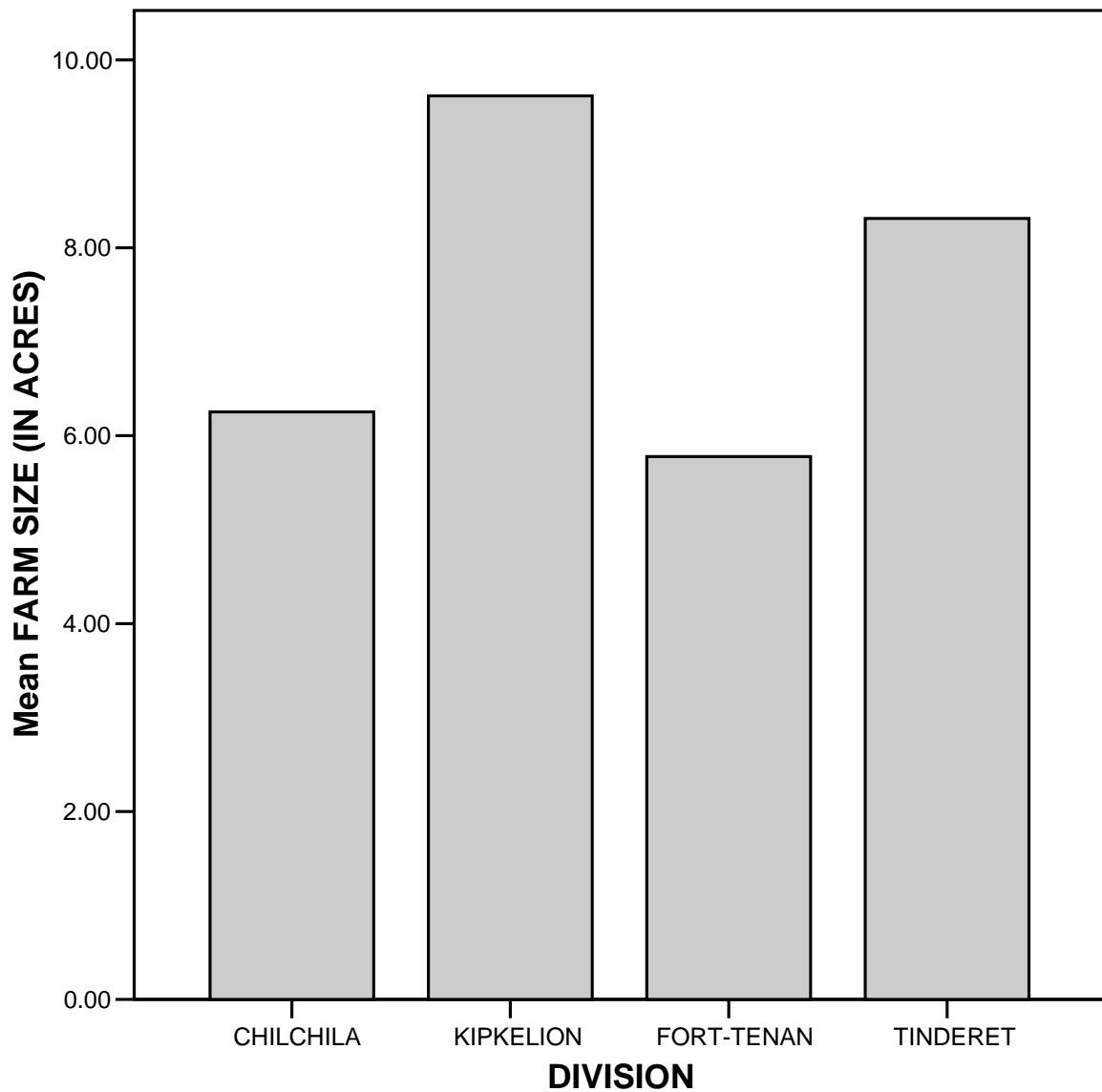
Figure 2: Average land sizes around Tinderet forest

Table 5: farmers with title deeds

Division	Yes	No	Total
Chilchila	19	26	45
Kipkelion	15	2	17
Fort Tanan	1	8	9
Tinderet	30	2	32
Total	65	38	103

Having no title deeds has in some way contributed to the culture of not planting trees. This was more common in the younger generation. Most people were not comfortable with this question. This is more to do with the land clashes that have been witnessed previously in these areas.

Table 6: Main activities on the farm

Division	Livestock	Crop production	Quarrying	General farming	
Chilchila	7	33	0	40	
Kipkelion	0	6	0	94	
Fort Tanan	0	89	0	11	
Tinderet	0	16	3	81	
Total					

Most farmers are involved in various forms of farming (livestock production or crop production). Forestry was not reported as a major activity.

Table 7: Ability to meet wood requirements

Division	Yes (%)	No (%)	Total
Chilchila	40	60	
Kipkelion	58	42	
Fort Tanan	22	78	
Tinderet	30	70	
Total	40	60	103

It is clear from the table above that 60% of the farmers are not self reliant in wood requirements. This is because they do not have enough trees on their farms. They have to get them from somewhere else. Inadequate supply of wood products is the main cause of degradation of Tinderet forest. Continuous dependence on the forest is likely to impact negatively on the conservation of Tinderet forest. There is therefore a need to intensify on farm forestry development not only for domestic wood requirements but also for income generation.

Fort-Tanan with (78%) and Kipkelion (70%) were the most affected in terms wood product requirements. Most of the charcoal selling business is near Fort Tanan. It is the driest part of Tinderet. It is also far off from the forest. Accessibility to the forest is limited as compared to other areas. Distance prohibits them from exploiting the forest.

Table 9: Source of tree seedlings around Tinderet

Division	Buying (%)	Own nursery (%)	Buying/own
Chilchila	70	20	10
Kipkelion	63	37	
Fort Tanan	57	28	14
Tinderet	80	13	7
Total	65	25	10

Most of the people (70%) have no nurseries of their own and therefore have to buy seedlings from elsewhere. Those that are available are poorly stocked and far a part. The East African wildlife Society nursery is small and therefore cannot meet the demand for seedlings. Although Tinderet Tea Factory management has made some effort, this too is inadequate.

Table 10: Land under forestry

Division	<0.1ha	0.5-1ha	1-2ha	> 2ha
Chilchila	80	6	12	0
Kipkelion	47	26	20	7
Fort Tanan	100			
Tinderet	72	16	12	
Total				

Most farmers in Chilchila (75%) and Fort-Tanan (100%) have very little land under forestry. This is particularly pronounced in Chilchila. Most of the land here is hilly and used for cultivation. This area is very close to the forest. This may explain why most people have not bothered to engage in forestry activities. They have some access to the forest resource. Limited land acreage in Fort-Tanan may explain why most households are inadequate in wood products. There is therefore a need to intensify afforestation here as a way of providing the forest products they go for in the forest and reduce soil erosion as most people cultivate on very steep slopes.

Table 11: Uses of various trees

Scientific Name	Local name	Timber	Const	Firewood	Fruit	Firewood/ timber
	Museset	1	3			
Croton macrstachyus	*Tebeswet*	8	1	24		
Albizia gumifera	*Seet*			2		
	Mbarayakat			3		
Cupressus lusitanica	*Cypress*	38	13	2		
Prunus africana	*Tendwet*		3	9		
Grevilea robusta	*Sebesebe*	24	8	3		

Eucalyptus grandis	*Blue gum*	41	27	9		
	Kimolwet		3	4		
Zizygium guineense	*Lamayat*	7		4		
Croton megalocarpus	*Masinetet*	5	4	6		
	Samutet	1				
Persia americana	*Avocado*				11	
	Laquard				3	
	Chepkumiat			1		
	Chebetit		10	8		
Ekebegia capensis	*Chemagaldet/ Kaldit*			1		
Pinus patula	*Pinus*			1		
	Morombit			4		
Casuarina equisetifolia	*Casuarina*	2				
	Kemeliet			11		
Spathodea nilotica	*Nandi flame*	1				
	Mogoriet					4
	Lemerwet					4
Ricinus communis	*imanek*					1

Timber and firewood were the most dominant uses. Most of these products were from *Croton megelocarpus, Cupressus lusitanica, Eucalyptus spp and Grevilea robusta.* It is therefore important that in the promotion of farm forestry we may need to stress on the trees that are in high demand and these includes the above.

AGROFORESTRY PRACTICES

Table 12: Trees on grazing fields

Scientific name	Local name	Frequency	%
Croton megalocarpus	Tebeswet	26	22.6
Cupressus lusitanica	Cypress	9	7.8
	Tendwet	11	9.6
Grevilea robusta	Sebesebe	12	10.4
Eucalyptus spp	Blue gum	9	7.8
	Kimolwet	2	1.7
Zyzygium guinensis	Lamaiyat	10	8.7
	Masineitet	6	5.2
	Samutet	2	1.7
	Kaldit	2	1.7
	Chebitet	12	10.4
Pinus patula	Pinus	3	2.6
	Kemeliet	11	9.6
Total			100

Table 13: Tree crop combination

Tree crop combination	Frequency	%	
Grevilea/maize	2	4.4	
Grevilea/coffee	35	77.8	
Grevilea/samutet/coffee	2	4.4	
Banana/Grevilea	2	4.4	
Tebeswet/coffee	2	4.4	

Grevilea robusta was the most common tree in tree crop combinations. These were however very old trees planted before independence. Most of these have been cut to provide timber for construction. There is therefore a need to intensify on new establishment.

Table 14: Trees preferred by women

Scientific name	Local name	Characteristics/Uses					
		Fast maturity	Soft	Firewood	Cleaning guard	Ferment milk	Medicine
Croton megalocarpus	Tebeswet	6	4	16			
Albizia guinensis	Seet		2				
	Chepkeleliet		2				
Cupressus lusitanica	Cypress		2				
Prunus africana	Tendwet		4				
Grevilea robusta	Sebesebe	2		10			
Eucalyptus spp	Blue gum	5		8			
	Masineitet			4			
Cordia abysinica	Samutet			4			
Ekebegia capensis	Kaldit			3			
Acacia mearnsii	Wattle			6			
Acacia lahai	Chebitet			2			
Spathodea nilotica	Nandi flame			2	6		
	Cheptuiyet			3			
Sena sept	Arorwet					1	
	Senetwet		1				
Total		**4**	**68**	**6**	**5**		

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From the table above it is clear that women preferred trees that provide firewood. These are those that grow fast or are soft to split. Main species preferred by women include: *Tebeswet, Grevilea robusta, Eucalyptus grandis, and Spathodea nilitica.*

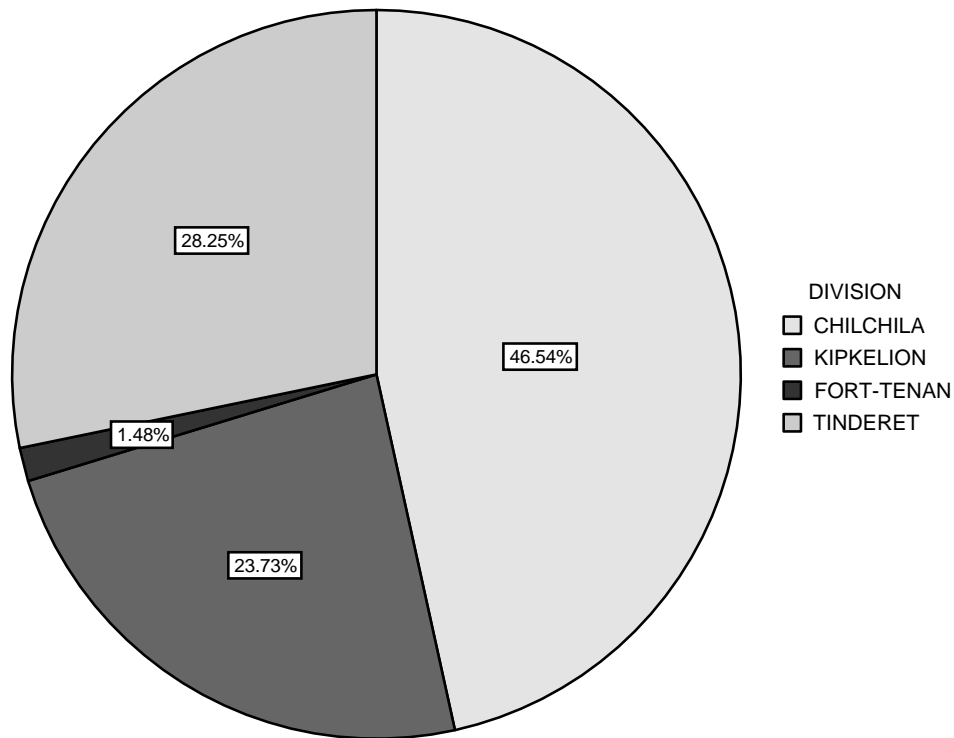ANNUAL INCOME FROM WOOD PRODUCTS

Figure 3: Annual income from wood products

Chilchila (46%) was the leading in the sale of tree products followed by Tinderet (28%), Kipkelion (24%) and the last was Fort Tanan (1.5%). The number of people getting income from forest products is an indication of the level of farm forest development or the closeness to the forest resource. Chilchila area has a lot of remnant natural wood lots that can be sold for various products e.g. poles, firewood and charcoal. The area is not well developed in infrastructure. Exploitation by people from far off is not possible.

Fort Tanan is much drier and has little vegetation cover. Being close to the main road the area is accessible and well settled for agriculture.

Table 15: Agencies involved in forestry work

Division	Yes (%)	No (%)	Total
Chilchila	15	26	41
Kipkelion	2	14	16
Fort Tanan	2	6	8
Tinderet	18	11	29
Total	37	57	94

60% of the respondents were not aware of any agencies providing forestry extension services. During the survey, it was realized that only one agency-East Africa Wildlife Services does provide some services (training, provision of tools, seeds and polythene tubes). Given the expansive area of coverage, these services are not adequate. Forest department extension services are very limited due to lack of staff. Most farmers therefore depend a lot on the ministry of agriculture for these services.

Table 16: Training requirements

Division	Forestry	Agriculture	Total
Chilchila	80	20	
Kipkelion	78	25	
Fort Tanan	100	0	
Tinderet	82	18	
Total	82	18	

73% of the people interviewed felt that there are extension services that are important. The same % has not received any training. Trainings have mainly been by the ministry of Agriculture and NGO (East Africa wildlife society). 82% of the farmers do require training in forestry related issues e.g nursery establishment and management, tree planting techniques and tree management. Most of those requiring training are from Fort Tanan. As shown above this is the area with least vegetation cover and where the scarcities of forestry products was most pronounced.

Conclusion

(i)   There is no doubt that Tinderet forest plays an important hydrological, ecological and economic role to the people of this region.

(ii)   Continued dependence on the forest for various products (fuelwood, timber, cedar posts, charcoal, honey, fodder and herbal plants), has led to various degrees of degradation of this important forest resource.

(iii)   There are very few trees planted on the farms being the main cause of wood product scarcity

(iv)   Most farmers still depend on old remnant trees left behind by colonialists

(v)   Inadequate seedling production and technical information on farm forestry were noted as the main limitation to farm forestry development.

Recommendation

(i)   To stop further degradation of this forest resource and minimize conflict on resource utilization, every effort should be made to sensitize the community on forestry conservation, intensification and diversification on tree planting on farm.

(ii)   Certain tree species e.g *Prunus africana* should be highly priotized for conservation, due to the high level of extraction and further opportunity for domestication for certain products should be investigated.

(iii)   To minimize further dependence on the forest resource, the local community should either be encouraged or assisted to plant trees on their own farms.

(iv)   There is therefore a need to intensify on farm forestry development not only for domestic wood requirements but also for income generation.

(v)   Development of sustainable tree nurseries is necessary

(vi)   Capacity building on farm forestry development is very necessary