

**APPRAISAL OF COMMERCIALISATION OF FARM WOODLOTS IN
SUBDIVIDED RANCHES IN EAST LAIKIPIA**

Draft Report Of Household Survey in Matanya, Lamuria and Mutirithia Clusters

15th to 18th June 1999.

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1.0 Introduction

A household Survey was done between 15 to 18th June 1999. The survey was designed to get the production systems practised by farmers, their inputs and outputs, their weaknesses, strengths and explore the feasibility of commercialisation of farm woodlots. The overall goal of the project is to explore the prospects of commercialisation of woodlots as a competitive land use option. The household survey will evaluate the current farm systems being practised and explore feasibility of woodlot establishment. Data collected during this survey will be combined with earlier data got during focus group discussions and data to be collected during financial analysis to come up with feasibility study on commercialisation of farm woodlots in Laikipia.

2.0 Methods

A household survey was done using a prepared questionnaire. The questionnaire was prepared and pre-tested prior to the interview. The interviews were conducted in Matanya, Lamuria and Mutirithia. A total of 44 males and 26 females were covered during the interview. Table 1 gives a breakdown of number interviewed by gender for the three clusters.

Table 1: Breakdown of respondents

	Mutirithia	Lamuria	Matanya	Total
Male	10	17	17	44
Female	6	11	9	26
Total	16	28	26	70

Average interview time per person was 42 minutes with a range of 20 to 30 minutes. Respondents understood the questions read out to them.

Data collected was analysed using SPSS statistical package.

3.0 General information of farms

3.1 Land sizes:

The average land size was 6.11 acres with a range of 1 to 36 acres. Land size varied from cluster to cluster as shown in Table 2

Table 2: Land sizes in acres

Cluster	Mean	Mode	Sum
Mutirithia	4.98	3.2	129.43
Lamuria	6.79	4	190.26
Matanya	6.75	10	108.00
Total	6.11	4	427.7

Farmers could be grouped into 3 according to size of land owned. A total of 15.7% had 3.2 acres, 17.1% had 4 acres and 15.7% had 10 acres.

The amount of land owned by the farmer is a determinant of the land use options which a farmer can practice. It also determines the size of land a farmer can reserve for woodlot establishment.

3.2 Settlement

Farmers in the three clusters settled in the area at different times from 1970 to 1999. On average, most farmers settled in 1987. Matanya is the oldest settlement followed by Lamuria and Mutirithia in that order. Mutirithia is a new settlement where most farmers settled there in 1989. Most of the farmers in the three clusters are migrants from Nyeri district.

On average, 61% of the farms within the three clusters are settled. Matanya has the highest settlement of 74%, Lamuria 57% and Mutirithia, 47%.

3.3 Current Land use

Crops were reported to be the main system by 50% of farmers interviewed while livestock was reported by 35% of the farmers. 6% of respondents gave unused area as the main farm system and trees were identified as main system by 3% of respondents.

3.4 Size of household

Average household size is 7 persons with a range of 2 to 35.

4.0 Farm production system

4.1 Crops production system

4.1.1 Crops grown

Maize is the main crop that is grown in all the clusters. 53% of respondents indicated it as the main crop followed by beans (37%), potatoes (6%) and tomatoes (3%). In Matanya 62% of respondents indicated maize as the first main crop followed by beans (31%). In Mutirithia maize was still the first main crop (69%) followed by beans (31%). However, this was not the case in Lamuria. Beans was the main crop in Lamuria (46%) followed by maize (36%).

Beans was rated the second main crop grown by farmers. It was rated by 75% of farmers in Mutirithia, 40% of farmers in Lamuria and 62% of farmers in Matanya. Potatoes were rated third main crop by 69% of farmers in Matanya and Mutirithia and 46% of farmers in Lamuria.

4.1.2 Yields and consumption

The following tables show the average yields for the main crops grown in the farm

Table 3. Lamuria

Crop	Quantity harvested	Quantity used in the household	Quantity sold	Sale price Kshs.
Maize (bags)	11	5.6	8.5	800
Beans (bags)	4	2	3.4	2850
Irish Potatoes (bags)	9.5	7	4.8	720
Sweet potatoes (bags)	1	0.5	0.5	500
Tomatoes (kg)	3250 kg	300 kg	2950 kg	8
Onions (bags)	20		20	720
cabbages (Heads)	5000 heads	250 heads	4750 heads	10

Table 4: Matanya

Crop	Quantity harvested	Quantity used in the household	Quantity sold	Sale price Kshs.
Maize (bags)	5.7	3.2	2.5	1080
Beans (bags)	3.7	1.3	2.5	2900
Irish Potatoes (bags)	15.8	3.6	20.3	1350
Tomatoes (boxes)	49	3	46	1000
cabbages (Heads)	4600	1750	2850	7.50

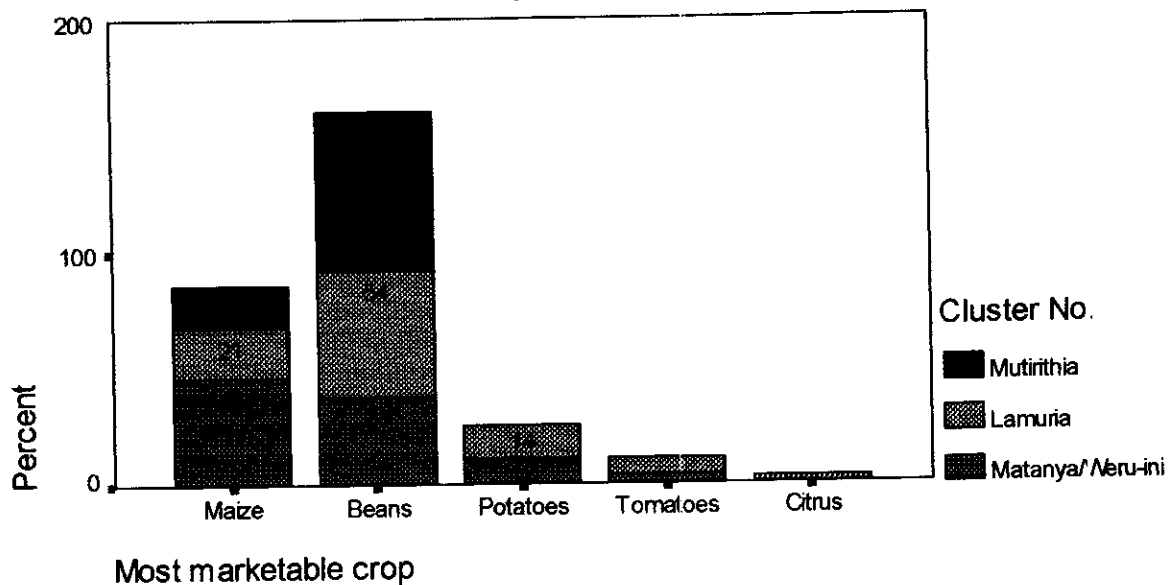
Table 5: Mutirithia

Crop	Quantity harvested	Quantity used in the household	Quantity sold	Sale price Kshs.
Maize (bags)	6.7	5.8	3.3	1390
Beans (bags)	4.5	2.8	2.2	4700
Irish Potatoes (bags)	10.25	6	4.25	1050

4.1.3 Markets for crops

Beans was the most marketable crop followed by potatoes as shown in figure 1 followed by maize.

Most marketable crop per Cluster



Household survey, 1999.

Potatoes was rated as the second most marketable crop while beans was the most selling crop. Maize is the main crop used as subsistence food in the house followed by beans. Maize was rated as the first by 38%, 54% and 69% of farmers in Mutirithia, Lamuria and Matanya respectively. There was sizeable use of potatoes in the house in Lamuria as reported by 15% of farmers in that area.

Beans was rated as the best performing crop by 81%, 71% and 81% of farmers in Mutirithia, Lamuria and Matanya respectively.

4.1.4 Constraints to crop growing

The first main constraints to crop farming is drought followed by lack of capital as shown in Table 6. Drought was rated as the first constraints by 75%, 82% and 85% of respondents in Mutirithia, Lamuria and Matanya respectively.

Second main constraint to crop farming was lack of capital. This response varied between clusters as shown in table 6.

Table 6: Second constraints to crop growing

Constraints	Mutirithia	Lamuria	Matanya	Average clusters
Lack of capital	13	7	31	17
Wildlife damage	25	11	12	14
Pests and diseases	13	14	8	11
Frost	0	11	12	9

Other problems identified are problems of marketing, lack of labour and lack of seeds for planting.

4.1.5. Incidences of crop failures

Incidences of crop failure per cluster as reported by farmers is summarised in table 7.

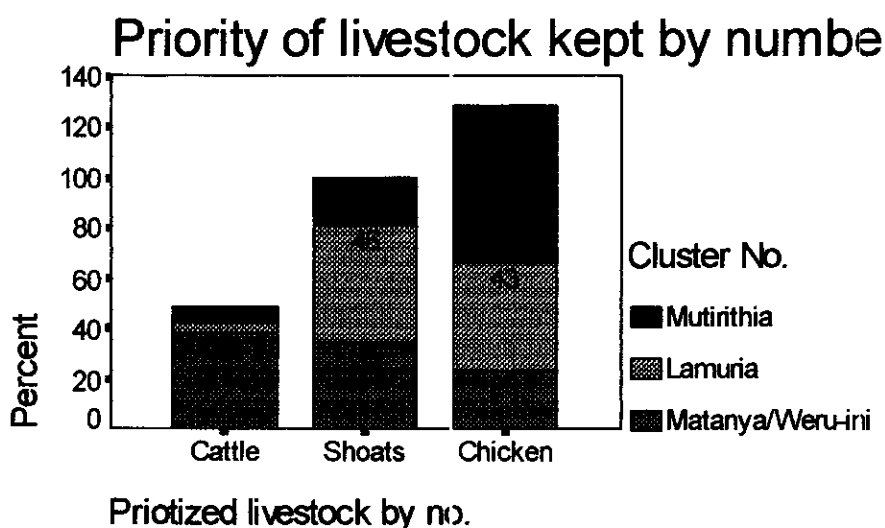
Table 7. Incidences of crop failures (out of 5 seasons)

	Mutirithia	Lamuria	Matanya
Maize		4	3
Beans		3	2
Irish potatoes		3	2

4.2 Livestock production system

4.2.1 Livestock kept

Livestock was kept by 91% of farmers interviewed. Chicken were ranked first as the main livestock kept followed by shoats and cattle. Figure 2 prioritize animals kept.



Chicken were the main animals kept in Mutirithia. 63% of farmers indicated chicken as the first main livestock while 19% and 6% indicated shoats and cattle respectively. In Lamuria 43%, 46% and less than 5% indicated chicken, shoats and cattle respectively. Cattle was the main livestock in Matanya followed by shoats and chicken. Table 8 gives the average number of livestock kept in each cluster.

Table 8. Number of livestock kept per household

	Mutirithia	Lamuria	Matanya
Cattle	4	5	5
Shoats	21	33	14
Chicken	10	15	9
Rabbits	6		3
pigs	12		
Beehives	4	11	

The most valued livestock in all the clusters was cattle (51%) followed by shoats (23%) and chicken (13%). The valuation of animals varied from cluster to cluster as shown in table 3.

Table 7: Most valued livestock.

Cluster	cattle	shoats	chicken
Mutirithia	25	25	44
Lamuria	57	25	7
Matanya	62	19	4
Average	51	23	13

4.2.2 Valuation

Chicken was the most valued livestock in Mutirithia unlike the other clusters where cattle was the most valued. Table 8 gives the average market prices for various livestock and livestock products.

Table 8. Average market prices (Kshs.)

	Mutirithia	Lamuria	Matanya
Cattle		14000	12000
shoats	1300	1300	12000
Chicken	150	160	150
rabbit			70
Milk/kg	10	10	11
Honey (per kg)	350**	85	4.25
Eggs (Per piece)	6	5	
Manure (Per lorry)	2250	2000	

Cattle is the main livestock whose products are used in the household followed by chicken. Product used from cattle is milk while chicken is kept for eggs and meat. Shoats are rarely used in the household. Only 3% of responders indicated shoats as the main household use compared to 53% and 30% who indicated cattle and chicken to be the main livestock used in the house respectively. Rabbits are also used for household consumption especially in Mutirithia.

The respondents were asked whether they have access to free grazing areas. 69% of farmers had access to free grazing areas mainly in the unsettled farms. This was later identified as one strength to livestock production in the area.

4.2.3 Main constraints to livestock keeping.

The first main constraint to livestock keeping is pest and diseases which was identified by 36% of respondents followed by rustling (24%) and drought (21%). Table 9 shows constraints faced in each cluster.

Table 9: First main constraint to livestock keeping

Constraint	Mutirithia	Lamuria	Matanya
Disease and pests	6	43	46
Rustling	63	14	12
Drought	13	25	23

Rustling was reported more in Mutirithia than the other clusters to the extent that few farmers were keeping cattle, goats or sheep. Only the farmers who were close to the antistock theft unit kept livestock.

Second main constraint to livestock keeping identified other constraints like lack of pastureland and capital in addition to problems identified earlier. 34% of farmers had no response meaning that they only had one main problem. Response for this question is shown in Table 10

Table 10: Second main constraint to livestock keeping.

	Mutirithia	Lamuria	Matanya	Total
No response	38	50	15	34
Drought	31	7	15	16
Disease & pests	6	18	19	16
Rustling	19		27	13
Lack of capital	6			6

Other constraints identified include lack of markets and high costs of veterinary drugs.

4.2.4 Strengths to livestock keeping

Farmers were asked to identify why they value livestock and what they consider as strength to livestock keeping. The first main strength was that livestock was a source of income for the family (rated by 47% of respondents), source of food (24%) and availability of grazing area (9%). This response varied from each cluster as shown in table 11.

Table 11: 1st main strength to livestock keeping.

	Mutirithia	Lamuria	Matanya	Total
Source of income	50	43	50	47
Source of food	25	29	19	24
community grazing	13	11		9

Second response to main strength to livestock keeping had a nonresponse rate of 23%, 31% indicated food source, 24% indicated source of income, 7% indicated source of manure and 6% indicated keeping the livestock for prestige/wealth. Other strength identified is that livestock is better adapted to drought than crops.

4.3 Tree production system

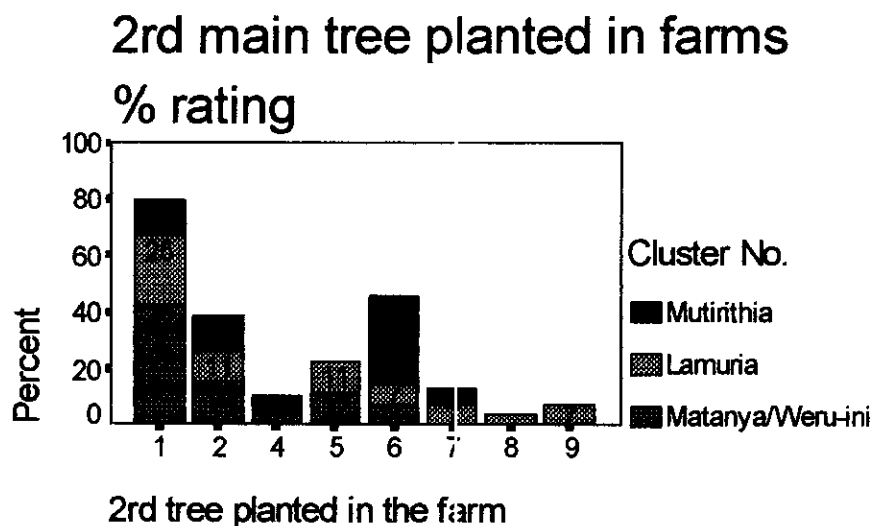
Most farmers (96%) had planted trees in their farms. This shows that there is inherent need for tree planting. The trees were planted as boundary/fence (30%), agroforestry (13%), woodlots (4%) and a combination of the above (40%). Decision of where to plant trees is done by either man (60%), woman (13%) or both (27%). This shows that men play a leading role in deciding where to plant trees and allocating extra land for tree planting.

4.3.1 Trees planted

Grevillea was identified as the main tree planted by 66% of respondents followed by Eucalyptus (13%). Grevillea rated higher in Lamuria (75%) and Matanya (73%) than in Mutirithia (38%). In Mutirithia the main tree was mulberry tree that is used for silkworm production.

Figure 3 shows the second main tree grown in the farms. 26 % had no response meaning that they had only planted one main tree species.

Figure 3



Grevillea was identified to be the most valuable tree by 60% of farmers while 33% identified Eucalyptus to be the most valuable tree. However mulberry tree was the most valuable tree in Mutirithia as shown in table 12.

Table 12: Most valuable tree

	Mutirithia	Lamuria	Matanya
Grevillea	50	68	58
Eucalyptus	38	29	
Mulberry	13		

Farmers were asked to prioritize the most marketable tree species. 24% of farmers did not give a response meaning that they had no trees to market. Eucalyptus is the most marketable tree followed by Grevillea. Other trees which are marketable are mulberry, Casuarina and cypress.

4.3.2 Utilisation of tree products

Farmers were asked to prioritize tree product used for household consumption and commercial use. They were also to identify tree products bought from outside and those sold out.

Firewood is the first main tree product used for household consumption. 53% of respondents prioritized firewood as the main product, 31% had no response while 6% gave poles as the main product. The second main product used in the household is fencing posts (13%), charcoal (10%), firewood (10%), rafters (7%) and timber (6%).

Majority of farmers (77%) have not used tree product commercially. Only 10% had used timber and 6% had used fencing posts mainly in Lamuria. Most of the farms were recently settled and so trees planted have not reached commercialisation stage.

94% of respondents had bought tree product from outside while 71% had not sold any tree product outside.

4.3.3 Main constraints to tree planting.

Farmers were asked to prioritize first two constraints to tree planting. The first main constraint was inadequate rainfall which was reported by 57% of respondents, followed by lack of capital (20%) and lack of seeds (7%). Lack of capital was more prevalent in Mutirithia where it was reported by 50% of respondents compared to other clusters where it was reported by less than 5%.

Second constraints to tree growing were lack of seeds/seedling (21%), inadequate rainfall (11%), lack of tree planting skills (7%), lack of capital (7%) and pests and diseases (4%). Other constraints identified were game damage in Mutirithia, frost, small land size, labour shortage and having no value to trees.

4.3.4 Woodlot establishment.

30% of respondents had planted woodlots in their farms while 66% had no woodlot in the farms. The average area under woodlot was a quarter acre. 94% of farmers felt that establishment of tree woodlot is a viable land use option. Farmers were asked about the size of land they can

reserve for woodlot establishment. The average size was 0.73 acres with a range of 0.25 to 3 acres. The total sum of area reserved for woodlot in the 3 clusters was 46 acres.

The first main tree species preferred for woodlot establishment was Eucalyptus and Grevillea. Both were preferred by 43% of respondents. Other tree species preferred were Cypress, wattle, Croton and Casuarina which were each preferred by 4% of respondents. Cypress was preferred in Matanya.

Table 13 shows response rates to obstacles in woodlot establishment.

Table 13: First obstacle to woodlot establishment

	Mutirithia	Lamura	Matanya	Total
Establishment capital	44	21	38	33
Inadequate rains	25	14	23	20
Seedling availability	13	21	5	14

As shown above establishment capital was identified as the main obstacle to woodlot development. Problem of establishment capital was more in Mutirithia where the general standard of life is low compared to the other clusters. Other concerns for woodlot establishment were; reduction of cropland, small land size, shortage of labour and markets for the products.

4.4 Problems faced in Marketing

Farmers were asked to identify problems faced in marketing their products. The response rates is shown in table 14.

Table 14: Problems faced in marketing;

	1st problem	2nd problem
No markets	36	11
Transport means	36	7
Exploitation by brokers	7	7
Poor marketing channels	6	6
Low prices	3	4
Poor infrastructure	3	4

Major problem in marketing stems from the fact that big market centres are far off. Most product are sold in Nanyuki or far markets like Nyeri and Nairobi. Transport to these market centres becomes expensive making the products to have a low profit margin. Farmers have no organised market associations and this makes them subject to exploitation by brokers.

5.0 Integration of household survey with Financial analysis

Data collected during household survey will be used in estimating inputs and outputs for various production systems for the whole cluster. It will be assumed that data collected gives a true representation for the farms which were not sampled. Data collected will give a guide in conducting a more detailed financial analysis. Financial analysis will borrow from household survey especially when extrapolating inputs and output. Various response rates for each question will be used to indicate expected output and inputs per cluster. Incidences of crop failures will be used to calculate returns from crop growing and comparing alternative land use options.

6.0 Remaining work

To accomplish the task of conducting the feasibility study of commercialisation farm woodlots, the following activities will be carried out.

- Collect data of inputs and output for the farm systems identified during the survey. To have detailed interviews with 5 farmers in each cluster. (4 days)
- Collect data on market prices of commodities sold and bought by the farmers. (3 days)
- Compute establishment cost of farm woodlot, intermediate products which can be harvested and final products. (2 days)
- Financial and comparative analysis (4 days)
- Draw up business plan for woodlot establishment and prepare management plan (4 days)
- Report writing (4 days)