

**THE ROLE OF
MEDICINAL PLANTS
USE FOR ANIMAL
HEALTH CARE IN A
DYNAMIC PASTORAL
PRODUCTION
SYSTEM IN TANZANIA**

BY

Amy D. Maeda-Machang'u
Salome K. Mutayoba
Germana H. Laswai
D. Mwaseba
Evelyn Lazaro
Nathan Ole Lengisugi
Edna Kimambo

EXECUTIVE SUMMARY

The report is divided into four chapters. Chapter one is the introduction with the overview of the livestock industry in Tanzania, highlighting changes occurring in the pastoral communities. One prominent outcome of these changes is the loss of ethno-veterinary knowledge thus justifying this present study. The objectives of the study are indicated in this chapter. In chapter two, the background information of the study area is reported which include the physical properties of the district, social organisation of the main ethnic group -the Maasai, the environmental characteristics and economic patterns and livelihood analysis of the area. Chapter three presents the methodology used and the forth chapter covers the results and discussion of the findings. The conclusion and recommendations arising from the study are included in the filth chapter.

The research was carried out to examine the use of medicinal plants for animal health care in dynamic pastoral systems in Arusha region, Tanzania. The aim of the study was to find out the social context in which medicinal plants were being use. The main objective being to determine pattern of use and the opportunities for and the threats to the use of medicinal plants in a pastoral production system. The study was conducted in nine villages in the west and east Simanjiro. These villages were purposively selected to represent the zones near and far from Arusha town with the help of an NGO-MAA. Data collection was done using qualitative participatory methods in which focus group interviews were conducted with identified key informants from each village. The main focus groups included men and women of middle age and elders. The group discussion was conducted through a semi-structured interviews following a checklist of research questions and a list of identified medicinal plants from an earlier study by Minja and Allport (2000). Languages used were Kiswahili, Maasai and English. The information generated was recorded on flipcharts.

The study found out that the local medicinal plants were still been used by all pastoralists. These medicinal plants were perceived to be effective for certain disease conditions in cattle and small ruminants. They effectively cured health problems such as retained placenta, fresh wounds, myasis, eye infections, horn and hoof lesions, wounds, endo-and ecto-parasites and skin conditions using this local medicinal plants. The main weakness with these medicinal plants noted was that they could not cure cases of major killer diseases such as trypanosomiasis, CBPP and ECF thus pastoralists resorted to using expensive modern medicines for these diseases. It was also found that the use of these medicinal plants did not depend on social status of the herder. It varied more with the location of the village and availability of the modern and local drugs. It was pointed out that the main threat to the continual use of these local medicinal plants was the diminishing of natural resources (forests) in the district. The natural forests were being depleted due to clearing of fields for large-scale farming; charcoal production and development of other industries such as mining, which is also taking considerable land. It was also pointed out that the migration of young male from the district into towns was also a factor in the loss local medicinal knowledge.

It was suggested by both female and male respondents from the surveyed villages that the best strategy or opportunity to sustain the continual use of these local medicinal plants was to have a proper village land use plan with specific areas demarcated for natural forestry, farming, grazing, wild life and wood-lots with some of the seasonal palnts. There should be a programme designed to protect and plant trees species native to the area as these will include many of the medicinal plants. The pastoralists themselves should be the major stakeholders in such a program. Other stakeholders will include forest department and biodiversity & tree seed projects in the district and villages.

REASERCHERS:

This study was carried out by seven researchers two from the Ministry of Agriculture and five from Sokoine university of Agriculture (SUA). These were:-

Name	Department
Amy D. Maeda-Machang'u	Project leader,SUA Microbiology and Parasitology
Salome K. Mutayoba	SUA, Animal science and Production
Germana H. Laswai	SUA, Animal science and Production
D. Mwaseba	SUA, Agriculture Extension & Education
Evelyn Lazaro	SUA, Agriculture economy and Agribusiness
Nathan Ole Lengisugi	MA, Extension and Maasai IK expert
Edna Kimambo	MA, Extensionist and Gender Expert

ACKNOWLEDGEMENT

The research team wishes to acknowledge the financial support from LINKS-FAO programme without which the study could not have been conducted. In addition, under LINKS the team members were able to receive training in the various techniques used in carrying out this study.

The research team would like to extend their sincere gratitude to Lars Otto Naensen, Ms Hilda Missano, Peter Toima and G. Kifaro who facilitated the carrying out of the field-work. This work would not have been easy without the help of and permission of the regional agricultural and livestock development officer, Mr Ngigwana L and Simanjiro District commissioner, Mr S. Kamote.

The team s greatly indebted to Maasai communities of Simanjiro district especially the village governments of Loiborsoit, Terrat, Sukuro, Narrakauo, Loiborsiret, Namalulu, Nadoilchukin, Naberera and Orkiningu'rung'u, the key informants who endured persistent interviews. The information presented here is the property of these villages who agreed to share it with us for which we are grateful.

We also wish to thank the Inyuat e Maa, the Maasai advancement association in particular Peter Toima, Edward Lengai, Nossim Robert, Simon, Christopher Laiser, Lobulu Sakita and Lawrence Thomas for their support and cooperation during the field work and feedback workshop.

Table of Contents

EXECUTIVE SUMMARY	2
ACKNOWLEDGEMENT	3
INTRODUCTION	7
CHAPTER 2	8
BACKGROUND INFORMATION OF THE STUDY AREA.....	8
2.1 PHYSICAL PROPERTIES OF SIMANJIRO.....	8
2.1. SOCIAL ORGANISATION OF THE MAASAI IN SIMANJIRO	8
2.3. ENVIRONMENTAL CHARACTERISTICS	9
2.4.ECONOMIC PATTERN AND LIVELIHOOD ANALYSIS.....	10
CHAPTER 4	13
RESULTS AND DISCUSSION	13
4.1. GENERAL INFORMATION ABOUT THE STUDY AREA	13
VILLAGE.....	18
G1-RICH.....	18
G2-MIDDLE.....	18
G3-POOR.....	18
TOTAL	18
%.....	18
TOTAL	18
%.....	18
TOTAL	18
%.....	18
NAMALULU	18
36.....	18
14.....	18
78.....	18
32.4.....	18
127.....	18
52.7.....	18
ORKIRUNGRUNG.....	18
19.....	18
24.....	18
19.....	18
24.....	18
41.....	18
51.9.....	18
NABERERA	18
35.....	18
17.5.....	18
30.....	18
15.....	18
135.....	18
67.5.....	18
4.2. PATTERN OF MEDICINAL PLANT USE-.....	19
4.3 PERCEIVED EFFECTIVENESS AND WEAKNESSES OF MEDICINAL PLANTS.....	22
4.4 OPPORTUNITIES FOR SUSTAIN USE OF LOCAL MEDICINAL DRUGS.....	23
CHAPTER 5	24

CONCLUSION	24
RECOMMENDATIONS	24
REFERENCES	24
RESEARCH QUESTIONS?	26
5. <i>Objective 1 Pattern of medicinal plant use</i>	28
6. <i>Objective 2 perceived effectiveness and weaknesses?</i>	28
7. <i>Objective 3</i>	28
APPENDIX 1B RESEARCH QUESTION IN KISWAHILI	29
MADHUMUNI YA UTAFITI	29
MADHUMUNI DHABITI YA UTAFITI HUU NI.....	29
1. 0. MASWALI YA UTAFITI ABARI ZA AWALIMASHIRIKA AU VYAMA	29
<i>Nyenzo za Utafiti - SSI, FGD, mahojiano</i>	29
2. MAZINGIRA YA KIJAMII	29
6. 0.DHUMUNI NAMBARI 2.....	31
7. DHUMUNI NA 3.....	32
APPENDIX II . MINUTES OF THE WORKSHOP	32
ABBREVIATIONS:	34
TABLES	35
NAME OF THE LOCAL MEDICINAL PLANTS IN LOIBORSIRET	35
NAME OF THE LOCAL MEDICINAL PLANTS IN SUKURO	36
NAME OF THE LOCAL MEDICINAL PLANTS IN NARAKUWO	38
<i>Unatumika/hautumikin</i>	38
*	39
TABLE 4: NAME OF THE LOCAL MEDICINAL PLANTS IN TERRAT	40
<i>Unatumika/hautumikin</i>	40
TABLE 5: NAME OF THE LOCAL MEDICINAL PLANTS IN NADOILCHUKUN	41
TABLE 6: NAME OF THE LOCAL MEDICINAL PLANTS IN LOBORSOIT	43
TABLE 7: NAME OF THE LOCAL MEDICINAL PLANTS STILL USED IN NAMALULU	44
TABLE 8: NAME OF THE LOCAL MEDICINAL PLANTS STILL USED IN ORKESUMUT	46
TABLE 9: NAME OF THE LOCAL MEDICINAL PLANTS STILL USED IN NABERERA	47
VALIDATION WORKSHOP ON THE ROLE OF MEDICINAL PLANTS USE FOR ANIMAL HEALTH CARE I A DYNAMIC PASTORAL PRODUCTION SYSTEM IN TANZANIA OF SIMANJIRO DISTRICT A LOIBORSOIT'A'	51
METHODOLOGY	51
RESULTS & DISCUSSION	51
APPENDIX 1	54

APPENDIX 2	54
APPENDIX 3	55

CHAPTER 1

INTRODUCTION

The livestock sub-sector contributes only 30% of the agricultural sector GDP compared to 55% from crops. Agriculture as a whole contribute 18% of national GDP (URT, 1997). The limited contribution of the sector to the economy is explained by many factors including animal diseases, poor nutrition, and lack of water and poor animal genetic base. According to Maeda-Machang'u et al.(1995), animal diseases were perceived by pastoralists as a major cause of animal losses and low production. Historically livestock keepers have depended on subsidized veterinary health services to deal with animal health problems. However, available evidence indicates that indigenous health practices including medicinal plants are still being used to handle animal health problems in all livestock production systems (Bitegeko et al, 1995; Davis, 1995; Quiros, 1996; Rajan and Sethuraman, 1997, Maeda-Machang'u et al, 1997, Minja 1999). Some studies have also documented herbal medicines which are used to treat specific health problems in livestock (Bitegeko et al, 1995; Davis, 1995; Rajan and Sethuraman, 1997; Maeda-Machang'u et al, 1997, Bizimana 1996, Ole Lengisugi 1996,1999, Minja & Allport 2000). In most cases, both men and women have been reported to have a wide local knowledge of ethno-veterinary medicine and perform the treatment themselves. However, in some areas special surgical interventions are dealt with by traditional healers who provide the services at a price (Rajan &Sethuraman 1997).

Evidence provided by studies done in various places in Tanzania (Maeda-Machang'u et al, 1995, Minja &Allport 2000), shows that there is a vast knowledge among pastoralists of medicinal plants for use in animal and human health care. However, the current changes in pastoral communities may pose threats to the sustained utilization of this knowledge base (Laswai et al 1999). Notable changes in the pastoral systems in Tanzania include:-

- ◆ Reduced mobility and becoming more sedentary.
- ◆Diversified livelihood activities- traditionally the pastoralists' main livelihood activity was livestock keeping. Progressively however, the system is diversifying to other livelihood activities such as crop production, mining, wage employment and small businesses.
- ◆ Disrupted social structures in the pastoral system due to changes in livelihood activities. Young men are increasingly emigrating and there is an increase in the mixing of pastoral communities with non-pastoralists
- ◆ Reduced availability of subsidized veterinary services.
- ◆ Lost plant habitat due to population pressure and.
- ◆ Changes in Government economic and land policies which work against the interests of pastoralists.

Many of these changes are interrelated and all of the factors have potentially affected the use of medicinal plants. Whereas data on the actual use of medicinal plants for various animal diseases are available from a number of studies (Bitegeko et al, 1995; Maeda-Machang'u et al, 1997, Ole Lengisugi 1996,1999, Minja & Allport 2000), less attention has been given to the social context in which medicinal plants are used. The missing information includes:- *the patterns of use of the medicinal plants among the different groups in the community and the perceived threats and opportunities for the use of these medicinal plants*. This research was therefore, developed with the main objective of determining the opportunities for and the threats to the use of medicinal plants in a dynamic pastoral production system of Northern Tanzania. The generated information could be useful in ascertaining the role of medicinal plants in sustaining food security in the pastoral system. It could also be useful in the efforts of integrating local animal health care practices in the community-based veterinary services. With this knowledge one may better understand how to involve local pastoral communities in management and conservation of the forest areas providing the source of medicinal plants.

The specific objectives of the study were therefore:-

1. To assess the pattern of use of medicinal plants for maintaining animal health by the main socio-economic groups in selected pastoral production communities.
2. To carry out a gender-sensitive examination of the threats to and opportunities for the use of medicinal plants by the main socio-economic groups in a selected pastoral production communities.
3. To document local knowledge using the guidelines developed through the LinKS project in order to maximize benefit and minimise risks to the local communities.

CHAPTER 2

BACKGROUND INFORMATION OF THE STUDY AREA.

The following chapter describes the physical and social environment which determines the livelihood strategies in the district.

2.1 Physical properties of Simanjiro

Simanjiro district is one of the ten districts in Arusha region. Other districts include Arumeru, Arusha, Babati, Hanang, Karatu, Kiteto, Mbulu, Monduli and Ngorongoro. The region cover a total area of 82,429 sq km, located in the North – Eastern corner of Tanzania and lies below the equator between latitude 2 and 6 and longitude 35⁰ and 38⁰ East of Greenwich. Arusha region has a population of approximately 1.9 million people of which 150,000 (0.07%) are in Simanjiro district. The region is endowed with a large population of livestock mainly managed under pastoral production system (UNFPA,1998).

Simanjiro, is the largest district in the region covering an area of 18,851 sq kilometre. It is a relatively wealthy district with resources such as mining, tourism, farming and grazing lands and largely inhabited by pastoralists, the Maasai (UNFPA,1998). The main ethnic group present in the district is Wa Maasai. Other minor tribes include Waarusha, Wambulu and Wachagga. The district experience in- and out- migrations, due to mining, farming and to cities doing small businesses and employment.

2.1. Social Organisation of the Maasai in Simanjiro

In order to understand the Maasai's socio-economic system, one need to know how they are organised. Through this organisation, informal education is acquired and those of local medicinal plants is passed on to the younger generation as well.

The socialisation of Maasai is strongly gender streamlined (Ole Saitoti 1980; Spear &Waller,1993). The life of Maasai male is well-ordered progression through a series of life-stages, which are determined by age, initiated through ceremonies and rituals, marked by specific duties and privileges. The males pass through three stages, which are boyhood, warriorhood and elderhood. The warriorhood is divided into junior and senior warriors but together form one generation or age-set. Each age-set is given its own name thus we have the names like *Nderito*, *Nyangus*, *Seuri*, *Makaa*, *Landiis* and *Ringish*. Approximately every 15 years a new generation is born (Ole Saitoti 1980; Spear &Waller,1993). The Maasai male are informally educated through this age-set system, which unify them. The passage through age-sets and the performance of four main ceremonies: the *Alamal lengipaata*-ceremony of boys before circumcisions; *emorata*, the circumcision ceremony; *eunoto*, the graduation of a warriors into elderhood and *olngesherr* the confirmation of total elderhood.

During boyhood, the elders mould the young boy into community activity. The *laiyons* as they are called are given chores like herding lambs, kids, and calves near the homestead carrying sticks as herders., However, if the household has no young boys girls can do the herding. Daily behaviour is monitored closely and rewarded if it is good or punished if they misbehave. They are taught also to respect all elders regardless of family relationship. At the age of 8 both males and females have the upper and lower part of there right and left ears pierced. Wooden plugs are inserted in the lobes to increase the sizes. They play a lot of games and as they grow the games become rougher and tougher. There is a lot of story telling at night. Through these, different legends are handed down from generation to generation. Girls at the age of 9-12 associate more with warriors and less with young boys. This time they may select boyfriends and may become lovers. They adorn themselves with soft hides and necklaces made from glass beads, which they prepare themselves with help of their mothers. As they mature, they learn and help their mothers in milking, drawing water, collecting fire-woods, plastering the house, cooking, sewing, taking care of babies and tending sheep and calves if there are no boys in the family. Further knowledge on midwifery, or the use of herbs for treating human and livestock diseases, is gained through observation, discussions, consultations and exposure in the household. In addition husbands teach their newly married wives about

traditional treatment of animals. The senior wife is responsible for imparting knowledge on location of useful herbs and preparations of some of the herbal medicine

The initiation of boys and girls into adulthood is by circumcision (Ole Saitoti 1980). Girls are circumcised as soon they reach puberty individually as they have no age grouping ceremony as boys. The boys are circumcised in a ceremony called *Olpul* where in addition they undergo intensive course on Maasai culture and other practices such as

- traditional practices of treating animals and humans
- herbal knowledge for motivating human libido
- handling of animals
- traditional ethics and
- how to be tough

Maasai elders are responsible for the training, assessing individual talents and those who excel at *Olpul* become age-set leaders.(Ole Saitoti 1980). The age-group system is very important institution: it regulates social relations between men and is the basis of traditional political organisation. Members of each age group choose leaders, *ilaigwanak*, and (sing. *alaigwanani*). Each leader “enforces the collective will and curtails deviance from among age-group members” (Kituyi, 1990). Each age group has about four *ilaigwanak* in the district. The authority of the *ilaigwanak* is based on their power to discipline by cursing. Each *alaigwanani* appoints a group of representatives or assistants, *inkopirr*, (sing. *enkopiror*), to advise him. There are approximately fourteen representatives of age group in the district. Thus the adult Maasai men are organised into five age-group irkimunyak (senior morans) irkishumu (young elders) seuri(senior elders) and meshuki/nyangusi (retired elders). In addition to age-set system, the Maasai belong to clans, that is they recognise descent from common ancestor. Descent is patrilineal, livestock or other wealth and debt obligations are inherited by a man’s brothers or clan relatives. Marriage system is exogamous that is a man or woman will not marry into his or her father’s clan. Strong mutual assistance obligations exist within the clan. Traditional water sources are owned individually or by the clan, access and management is based on the clan (Muir 1994, Fosbrooke,1948)

Formerly, the age-group system was not part of the system of local government or village councils. However, currently the age-group leaders who are very influential and respected leaders, have been elected into local governments, village councils and village committees (Muir 1994, Kituyi,1990). The councils deal with social matters of conflicts in the access to communal resources and social obligations. Women are not formally organised into age groups (Kituyi 1990). Girls graduate to marriage through circumcision. There are no traditional age-set institutions for women to formally contribute in decision making. Women’s participation in issues outside the household is through their husbands and other men folk or women’s groups. However, they do have a cursing institution known as *endiata* which is used as a means of punishment and sometimes, coercion to ensure other women behave in a socially acceptable manner.

2.3. Environmental characteristics

2.3.1. Location and Climate.

Simanjiro district lies south of Arusha town on the Maasai Steppe. It is characterized as semi-arid but the western part of the district is on the upland plateau and Simanjiro plains (Muir, 1994, UNFPA, 1998). Elevation varies from 600 to 1600 m above sea level. Simanjiro district receives an annual rainfall of around 400 to 800 mm. Rainfall is bimodal and in the past the dry and wet season were of similar duration but during the recent years the pattern has changed towards later and shorter rains. In the Simanjiro plains there is a one in ten chance that rain may be as low as 250 mm in any year. In normal years the long rains fall between March and May and short rains between October and December. The soils of the district are variable from area to area ranging from red, sandy, alluvial to black cotton soils suitable for farming and grazing.

2.3.2. Vegetation and water

According to a survey done in 1975 by USAID, the district has been divided into 5 land systems.

- i) *Simanjaro plain including Narakuo and Emboreet villages*: This area is gently undulating with large areas in the center. The vegetation is dominated by short grassland with *Pennisetum* spp.,

- Themeda spp and Acacia – Commiphora bushland. The water sources include two dams (Elueye Nanyuki and Sakuro), two natural springs (Terat and Oloiborsoit) and three bore holes (Emboreet, Lekitejo and Oloiborsoit). The area has a mixture of large-scale farming, small-holdings and grazing. In the wet season the plains are a habitat for migratory ungulates within Tarangire ecosystem. The Maasai refer to the plains or plateau as isupuku on account of higher rainfall and irpurkeli for a low-lying area with lower rainfall.
- ii) *Lelatama mountains and Alaililai escarpment.* This is hilly undulating, moderately dense bush (Acacia – Commiphora) bushland with short grassland of Chloris sp. Cynodon sp. and Sporobolus sp. It is mostly used for grazing. It has some perennial streams, natural wells and springs.
 - iii) *Lolbene including Naisinyai village uplands.* It is also undulating, medium to low density thorn scrub bushland and has scattered hills. The grasses include Pennisetum sp., Panicum, Aristida and Acacia Commiphora bushland. It has two depression areas of pond water, Lake Ambussel (saline) and Olgawari swamp. It is used for grazing.
 - iv) *Ruvu river including Oloborsoit village:* This is flat riverine lowland and it originates in Nyumba ya Mungu reservoir. It has short grassland and light to moderately dense thorn scrub bushland. There are some saline permanent swamp and barren vegetation on the former plains.
 - v) *Naberera including Kitwai and Orkesunet villages:* This has undulating hills, short medium Sporobolus sp., Themeda sp., and Eragostis sp. There is Savannah like bush with grassland and moderate density thorn scrub. There are few permanent water sources, rain ponds, one natural dam south of Naberera, some springs and a few permanent wells. It is an area of land conflicts and has many large-scale farms.

2.3.3. Natural resources

Simanjiro district is endowed with a variety of natural resources (Ecosystems 1980, Muir 1994) such as minerals, wildlife and trees. The main mining areas in the district are Mererani, (tanzanite, graphite, green tomaline, green garnet, rhodelite and blue sapphire); Kaangala (rhodelite, and ruby); Lendanai (ruby, green garnet, green tomaline and rhodelite); Komolo (green garnet) Naberera (rhodelite) and Namalulu (rhodelite). The district has also a large concentration of wild life –Tarangire National park and tees. However, the natural resources are constantly under threat due to climatical changes, social structure and farming activities. For example in Emboreet, Narakuo, Naisinyai, and Oloiborsoit, the traditional grazing areas and water sources have been lost to large scale farms. In addition, excessive cutting of trees has lead to large open areas and subsequently less honey and unreliable rainfall. Movement of wild life has also been restricted by large scale farms and is posing a nuisance and threat to crops and people.

2.4. Economic pattern and Livelihood analysis

The livelihoods of the people in pastoral production system are very complex. Often times many aspects of livelihood of pastoralists are not captured in income or consumption surveys. This is because they are not evident enough to the researchers or development agents. For example, there is very little documentation on the role of medicinal plants in the livelihoods of pastoral societies. The obvious and most recognised is the keeping of livestock and to a lesser extent cultivating of field crops (Maghimbi and Manda 1997). Pastoral societies keep livestock such as cattle, goats, sheep and donkeys. In fact, the economy of the pastoralists is largely dependent on livestock as an asset. Livestock are a source of food (meat and milk) and also cash income. A study (Maghimbi and Manda 1997) conducted in the pastoral societies of Simanjiro District in Tanzania noted that crop cultivation was also common. They cultivate mainly maize and beans.

Knowledge of medicinal plants for both livestock and human is an important asset (human capital) for the livelihoods of the pastoralists. With the privatisation of veterinary services, veterinary drugs have become expensive and often time not readily available. In the 1996/97 agricultural survey it was reported that for respondents who had problems in accessing drugs for livestock vaccination, 23% said drugs were not available, 44% said vaccinations were expensive and 28% reported that vaccines were not available when needed. Thus, medicinal plants are an alternative for treatment of livestock, which is a major livelihood asset. Similarly, in most of rural areas and particularly, pastoral villages provision of health facilities is often very limited. It involves travelling long distances to nearest dispensaries.

The Livelihoods of pastoralists also depend on forests, woodlands and trees. These are sources of medicines for humans and also livestock. They also get products for food preservation such as meat and milk. However, it has been reported that there is currently an indication of disappearance of some of these forests and trees.

Pastoral economies are often integrated and dependent on the crop production economies. While the relationships to more settled agricultural economies (traditionally called by the Pastoral Wamaasai as “waswahili”), has traditionally been complementary, of recent it is competitive and conflicting. There are now increasing cases of conflict over land between pastoralists and agriculturist. A study by Maghimbi and Manda (1997) noted that the “waswahili” provided labour to pastoralists who were engaging themselves into farming. There are reported cases of conflicts, which reached an extent of being a war between the pastoralists and the agriculturists i.e. the case in Simanjiro. In Simanjiro the agriculturists had planted crops in the passage way for animals. A conflict arose because the pastoralists could not get a passage for their livestock so they allowed their animals to go through the ploughed land and ate the crops. Tempers rose and there was confrontation which was put down. This occurred in 1998.

Sustainability of livelihoods depends on the ability of the society to diversify assets and minimise risks. For the case of Pastoral production system, drought and livestock diseases out breaks are the major sources of risk. Since the economy depend largely on livestock, and to a lesser extent crop production with minimal diversification (Maghimbi and Manda 1997), the livelihoods of the pastoral systems are often at risk. The pastoral environment is diverse and uncertain, as a result pastoralists have to make complex decisions as regards herd composition, mix of species, choices of where and when to graze, browse, go for water, preventing and dealing with diseases. These decisions are very crucial for the pastoral livelihoods.

Some of the livelihood strategies employed by pastoralists to reduce risk of livestock loss include exchanging of livestock in form of gifts of payment of bride wealth, sharing of livestock rearing, and temporary shifting of livestock herds (in search of good pasture land and water). This is a form of social capital, which is an important asset for the livelihood of the pastoralists. For example, according to the Maasai culture, when a Maasai girl is married her parents as a gift, give her some cattle which she takes to her husband. At the same time the family of the bridegroom pays bride wealth (a number of cattle) to the brides’ family which is shared among the family members. This is a way of sharing of wealth and contributes to the sustainability of the pastoral society.

A major issue is whether there is potential for improving the livelihoods of pastoral systems through introduction or development of new technology. Among the major constraints in pastoral economies are poor rural infrastructure and education (Øygard et al. 1999). Currently there are deliberate efforts to improve education among pastoral societies through provision of infrastructure such as schools. Other development interventions in pastoral systems include increasing water supply, and improving veterinary services. However, pastoralists’ have two important assets which development agents have not so far used in their efforts to improve their livelihoods. These are i) knowledge on medicinal plants and ii) social relations. It could be very useful if the two assets that the pastoral societies have are used as an entry point for formalisation of livestock marketing and improvement of grazing lands

Cattle are the dominant species followed by goats, sheep and donkeys. Cattle act as store of wealth as well as ready cash. Their cultural and social heritage is bound in livestock with utmost importance attached to ownership, large numbers attesting to wealth and social status.

CHAPTER 3

METHODOLOGY

A multidisciplinary team of researchers, made up of five SUA academic staff and two extension staff from the Ministry of Agriculture conducted the study. The team included a veterinarian, three animal scientists, extension officer, an agriculture economist and agriculture sociologist.

3.1. Stakeholders' Meeting.

A Stakeholders meeting involving the NGOs and CBOs working in Simanjiro district was held. The meeting was attended by members from TPRI, Inyuat-e-Moipo, PINGOS, Inyuat -e-MAA, MARECIK and two members of the research team. During this meeting the objectives of the project were explained and discussed (**Appendix II**). Then each NGO gave their experiences of working in the district. It was agreed that the project should be carried out in the field in collaboration with Inyuat MAA. MAA assisted in the identification of the villages for carrying out the study and provided four enumerators who could read and write and communicate in the Maasai language. They also provided transport to the western part of the district, a map and background information of the Simanjiro district.

3.2. Study area & villages

The study was conducted in Simanjiro District in Arusha Region. Six villages were surveyed in the East Simanjiro namely Terrat, Narakauo, Sukuro, Loibosoit, Loibosiret and Nadoilchukin and three in West Simanjiro- Naberera, Namalulu and Orkesumet-Orkirung'urung. The villages were selected with the help of MAA and represented some of the zones covered by the earlier study by Minja and Allport (2000).

3.3. Research Approach

Qualitative methods of data collection, including Participatory rural appraisal tools in particular SEAGA techniques (SEAGA 1998 IK 1996) were used. Focus group interviews were conducted with identified key informants from each village. The main focus groups included men and women of middle age and elders. The men groups comprised of at least three members from different age sets- the *Nderito* (>80 years), the *Nyangusi* (70 years), the *Seuri* (60years), the *Makaa* (50years), *Landiis* (40) and *Ringish* (19-30). Eight to ten women of all ages formed a group of their own in each of the following villages namely Terrat, Narakauo, Loibosiret, Loibosoit and Nadoilchukin. The group discussion was conducted through a semi-structured interviews following a checklist of research questions and a list of identified medicinal plants documented by Minja and Allport (2000) (**Appendix Ia, Ib**). Languages used were Kiswahili, Maasai and English (mainly for naming the diseases). Generated information was recorded on flipcharts. Visual aid facilities were made available for taking photography of sites and participants (Appendix photographs). The field work was carried out in November 2000 and February 2001.

Figure 1: Scanned picture on PRA

3.4 Wealth ranking in selected villages

Wealth ranking was done with key informants made up of men from Western Simanjiro because it was not culturally possible to sit men and women together in the Maasai society. The groups ranged in size from 3 to 10 persons. In some groups, members were aged above 50, therefore they were quite knowledgeable of the community members. The exercise was done in three stages. First, the names of household heads were written on pieces of cards (one name per card). The listing of the names of household heads on cards continued until all the names that members could remember were written. It was done either by sub-village/hamlet or by *boma* to help members remember the names of household heads. *A hamlet was a smaller than village with 10-20 households. Maasai live in boma rather than hamlet. A boma was collection of households of relatives mainly.* Second, the group members were asked to group household heads by wealth using a criteria developed by themselves. According to this criteria, the households were categorized into three groups, namely the rich designated **G1**, medium **G2** and poor **G3**.

Figure 2: Scanned picture on wealth ranking

3.5. Data Collection

During PRA discussion and observations data was collected on the individual wealth status, income and expenditure outlets, pattern of medicinal plants use, perceived effectiveness and weaknesses of medicinal plants and opportunities for sustainable use of the medicinal plants. Secondary information was gathered from previous studies (Minja & Allport 2000; Maghimbi & Manda 1997, Muir 1994) carried out in the area such as a list of identified local medicinal plants confidently used in the district. Other sources of literature was also sought. However, additional medicinal plants were also included whenever they were mentioned. Information about the villages such as populations, institutions and village plans were obtained from respective village executive secretaries (katibu mtendaji), Arusha socio-economic profile by UNFPA and Arusha regional agriculture and livestock office and from Mr. L. Ngigwana.

3.6. Report Validation

This report draft output has been compiled and has been validated by stakeholders from the respective villages before it is officially published.

CHAPTER 4

RESULTS AND DISCUSSION

The following chapter describes the findings and discusses these findings. The feedback discussions have also been incorporated.

4.1. General Information about the study area

4.1.1. Demographic information

The distribution of human population in two of the surveyed villages is shown in **Table 1**. Records from other villages was not available. However, the available data indicated that the female population was higher than the male. The number of adult male was half that of boys. This confirmed the statement that the adult males were migrating into towns to seek employment or other sources of income. This was also confirmed during the discussions with male focus groups in the nine surveyed villages. Whereas there was no difference between the adult female and girls indicating that the migration of adult females was negligible. In addition during the feedback seminar it was also pointed out that the number of male children being born is smaller than that of female children and this could lead to lower number of adult males in the villages.

Table 1: Number of people in two of the surveyed villages according to gender and age groups

VILLAGE	POPULATION				
	Men	Women	Boys	Girls	Total
Sukuro	496 14.4%	957 27.9%	836 24.3%	1,146 33.6%	3,435
Narakauo	407 15.6%	655 25.1%	796 30.5%	747 28.6%	2,609

Figure 3: Population

The main ethnic group present in the surveyed villages was Wa Maasai. Other minor tribes included Waarusha, Wambulu and Wachagga. The villages experienced in- and out-migrations, due to mining, farming, doing small businesses and seeking employment.

4.1.2. Livestock Production System

The production system practised in the study area was characterised by extensive production with large ruminant herds. The grazing pattern was determined by water and pasture availability. The land for grazing was owned by the village government and was grazed communally. In most villages the grazing land was partitioned into areas for grazing during wet and dry season. Scarcity of water and pasture during the dry season necessitated grazing animals further away from the homestead. For example, during the survey the women and men of Nadolchukin said their animals were far away grazing in the plains so they had no milk for food. Watering of animals was done on the communal waterholes.

The male respondents indicated that breeding of animals was normally controlled by selection of the best bulls to mount the good cows. Selection was based on the performance of the past generation and present merits. The poor bulls were castrated and allowed to mature for sale or slaughter. The female respondents said milk produced from the animals was normally low, especially during the dry season when there was scarcity of natural pastures. Milking was done without any supplementation. Milk letdown was stimulated by allowing the calf to suckle for some minutes and then withdrawn. These findings agreed with those documented by Laswai et al (1999) for other Maasai pastoral groups in Morogoro and Handeni.

4.1.3 Institutions

There were several important actors and institutions in every village surveyed, among them were government agencies, women groups, churches, schools and different NGOs (**Table 2**). It was critical to know which institutions were the most important in the village development and had the respect and confidence of the community. It was noted that the NGOs/CBOs were actively participating in developmental issues of the villages. For example, MAA was involved in dipping schemes of livestock, Ilammatak had community training programmes for community based animal health workers. Most of the NGOs and CBOs were involved in the conservation of environment i.e. Pingo, CORDS, MAA, LAMP and Ilammatak. These could indirectly be used to sustain the medicinal plants.

TABLE 2:NGOs/CBOs found in different villages of Eastern and Western Simanjiro

Name of village	Name of NGOs/CBOs	Activities
(1) Loiborsoit	Ilammatak -Lolkonerai Inyuat e MAA	- handling community animal Health Centre - Training Community based animal health workers - development projects such as dips, water supply
(2) Terrat	Pingos Ilamaratak Erkneinei (Integrated Survival Programme World Vision International	Same as above - Provide solar system for schools - Provides training seminars to farmers - assist on animal drugs and dipping facilities - run a milling machine and water pump - water project for domestic use
(3) Sukuro	MAA Women group	-Just been introduced - own and run milling machine
(4) Narrakauo	World Vision Inyuat e Maa SSL Ilaramatak TANAPA	- Built dispensary and doctor's house - Built a two primary school classrooms and a structure for milling machine - Constructed a dip and a bow-hole - Constructed two short wells - Formed groups - Formed groups - Built one house for school teachers
(5) Loiborsiret	Inyuat e Maa	-Training and sensitisation on conservation of natural and development -Provides basic education on development and nature conservation

	Ilaramatak-Lokonenei SSL Bundu Safaris Ltd. Hunters Tarangire Game Reserve World Vision	-Renovated a dispensary, Built teacher's house,- -Water Association- Water provision. - renovated some classrooms, toilets, provides drugs for the dispensary and books -Constructed water source (wells) in association with the villagers -Built classroom, office and provided chairs -Three hand water pumps -Built a hospital
(6) Nadoilchukin	LAMP	- Land management and planning
(7) Namalulu	LAMP	Hand use planning provided Radio Calls
(8) Naberera	Ilamaratak ADDO – Roman Catholic Organization LAMP	-Built a Nursery School - Renovated a Primary School - Advocacy work about land alienation in Naberera division -Provided maize milling machine to women group known as Upendo Women Group Concerned with environmental Control Tree planting and conservation of forestry
(9) Orkiningu'rung'	LAMP Inyuat-e-Moipo	Community development e,g Environment development

In almost all the villages surveyed there was a pre-school, primary school, dispensary, market place and church either Roman Catholic, Pentecost or Lutheran church or a combination of all (**Table 3**). From both men and women group discussions, it was revealed that there was no gender difference in the accessibility to the various facilities. However, it was observed and indicated that not all children were sent to school. Some children remained at home to take care of livestock and the younger ones. Boys were sent to school if the household had more than one so at least one remained to herd the livestock. Likewise, girls were not sent to school unless the family had someone to help the mother in taking care of the young ones. Many of the boys who reached standard seven returned home to help with livestock keeping or left home to seek employment elsewhere. There was no secondary school in the whole district. Bright pupils were sent to boarding secondary schools in other districts. More boys than girls attended school because girls were meant to fetch big dowry. This observation was also noted with pastoralists in Handeni (Laswai et al 1999) It was also explained that girls were being encouraged to join secondary school and a boarding secondary school had been started in Monduli for Maasai girls only. The girls got a sponsorship from families in USA (personal communication with Ole Lengisugi, a board member). Even with this effort, the number of girls finishing secondary school was relatively small less than 0.1% compared to that of boys 5% (Muir 1994).

TABLE 3: Institutions present in the study villages in the Western and Eastern Simanjiro

VILLAGE	INSTITUTION				
	Primary School	Dispensary	Markets	Church	Others
(1) Loiborsoit	V	No	V	V	Vet. Centre
(2) Terrat	V	V	V	V	Vet. Centre
(3) Sukuro	V	V	V	V	-
(4) Loiborsiret	V	V	V	V	-
(5) Narakauo	V	V	No	V	-
(6) Nadoilchukin	V	V	V	V	-
(7) Namalulu	V	No	V	V	-
(8) Orkirung'ung'I	V	V	V	V	-

(9) Naberera	V	V	V	V	-
--------------	---	---	---	---	---

Key :V= Present

No = not present

During the survey the market days for villages in Western Simanjiro were once in every week. The days were different for each village so as to give a chance to neighbouring villages to participate. In Eastern Simanjiro market day for all villages was once per month. This indicated that business in the Western side was flourishing/booming. Both men and women attended markets to sale and purchase goods required. Men mainly purchased drugs including medicinal plants not available in the locality for their livestock while women mainly bought materials for household i.e. soap, salt, clothing and bead and medicines local and modern for the family. In some villages studied such as Loibosoit and Namalulu did not have neither a dispensary nor veterinary centre, thus depended on the markets for medicines for their animals and humans. Thus, the health of the majority of communities and their livestock partly depended on the availability of medicinal plants.

It was pointed out that the village government was organised under Village Chairman and Village Executive Officer and there were six committees which helped in the governing of the village. These were- Committees for environment, land, finance and planning, education, social and community development and water. One of the functions of the village committees on land and environment was to demarcate the land into areas for habitat, grazing during dry and wet, farming, forestry, water reservoirs and the use of natural resources. There were by-laws in each village which enforced the maintenance of the village rules and regulations. One of the bylaws mentioned was to be fined if one cut a tree and if the offence was repeated the highest penalty was taking his wife away until you reform or pay. Village council had 25 members of which 6 were women. Currently these officials were elected from the leaders of the age-set.

It was noted that all villages were easily accessible by road from Arusha during the dry season but with difficulty during the rainy months. One could also reach Orkesumet via Hedaru during the dry seasons. The villages were connected to each other by radio calls. There was a small aerodrome in the Tarangire National park which was used by tourists visiting the park.

4.1.4 Income sources.

Data obtained from the village executive secretaries indicated that livestock keeping was still the major economic activity of the people in the eastern and western Simanjiro. It was informed that the average cattle population in some villages visited ranged from 14,000 to 42,000 herds per village (**Table 4**). The data collected earlier by Muir in 1994 indicated that the household cattle population and cattle per capita was declining then. This decline was attributed to increased human population and high mortality rates due to diseases. In this study however, the population of small stocks, such as goats and sheep showed to increase and even that of cattle was on the increase. The study confirmed that livestock was still the main source of income in all the nine villages. Funds from livestock was obtained from the sale of excess milk, live animals and skins and hides.

Table 4 : Livestock numbers in the different villages

VILLAGE	ANIMAL SPECIES NUMBERS				
	Cattle	Sheep	Goats	Donkeys	Dogs
Terrat	42,000	19,000	15,000	250	2,700
Loiborsiret	19,800				
Narakauo	14,000	10,000	20,000	100	Few

It was noted from the men and women discussion that the family consumed part of the milk produced and the women took the excess to the market and controlled the funds. The cattle off-take was normally low but that of small stock was high. This was also noted by Muir (1994) and Minja & Allport (2000). However,

cattle for sale were normally old bulls, steer or the weak ones. Men normally sold animals live in the auctions. Income from the sale of excess milk and skins and hide was controlled by women while the sale of live animals or meat was controlled by men.

Other sources of income were crop farming, casual labourers and brokers in mining industry and large farms and other off-farm activities, such as brewing, hand-crafty and petty businesses (**Table 5**). It was also pointed out that the wild life and game reserve contributed to the well being of some districts. They had provided better primary school facilities and living houses for school teachers in three of the surveyed villages.

Table 5 Income sources for the nine villages.

Income source		Terr at	Narak auo	Sukur o	Loibo soit	Loibo siret	Nadoi l- chuki n	Naber era	Nama lulu	Orkir ung'u rung
Livestock- milk	On farm activity	v	v	v	v	v	v	v	v	V
Livestock-meat	„	v	v	v	v	v	v	v	v	V
Livestock –live animal	„	v	v	v	v	v	v	v	v	V
Crop farming	„	v	v	v	v	v	v	v	v	V
Forestry	„	v	v	v	v	v	v	v	v	V
Minig	Off farm activity	V				v		v	v	
Wild life	„		v	v	v	v				
Grazing land	On- farm activity	v	v	v	v	v	v	v	v	V
Farming land	„	v	v	v	v	v	v	v	v	v

Key v- available

4.1.5. Wealth Ranking

The number of cattle owned by a household was considered by villages studied as the most important criteria used to rank household into the different wealth status categories. The number of goats and the area of cultivated land by the household were also the other criteria used to rank households. Occasionally ownership of a shop and tractor were used as indicators of wealth. In the course of discussion it was apparent that households had access to land irrespective of their wealth status but the method of cultivation of the land depended on the wealth of the individual. It was reported that the rich cultivated their land using tractor or hired services while the poor in all cases used own family labour.(**Tables 6 & 7**).

It was noted from the male and female respondent that the survival of the poor among the Maasai was made possible through the social security system culturally in place. Through this system, the rich supported relatives in the poor class. This was also observed by Muir (1994). When food security worsened members from the poor families moved to stay with the rich relatives. Currently in the studied villages, and indeed in Maasailand, the system was open and given that social mobility up and down the social ladder was common. Many households that used to belong to the rich category now belong to the poor category after losing most of their cattle due to frequent incidences of disease epidemics. Similarly, some households that belonged to the poor category have moved up the ladder and now belong to the rich category. This occurred often among individuals who strike fortune in mining industry in Mererani.

Table 6: Wealth ranking in three villages in Western Simanjiro District

Household category	Criteria used to categorize or rank households by village		
	Namalulu	Orkirung'urung	Naberera
Rich households G1	50 or more cattle; 100 or more goats; 10 or more acres cultivated land. Sometimes these households would own a shop and tractor	50 or more cattle; 50 or more goats; 10-20 acres of cultivated land	100 or more cattle; 150 or more goats; 10 acres of cultivated land
Medium households G2	10 or less number of cattle; and 2-3 acres of cultivated land	10 or less cattle; 20-30 goats; 5 or less acres of cultivated land	5-10 cattle; 10-20 goats; 1-2 acres of cultivated land and can hire labour for farm work
Poor households G3	1-2 acres of cultivated land; use hand hoe to cultivate land, sell labour. 1-2 cattle 5 goat and sheep	2 cattle; 2 goats; 1-2 acres of cultivated land	1-2 acres of cultivated land by hand hoe; harvest crops while still green. 1-2 cattle 3 goats and sheep

Table 7. Distribution of households by Wealth

Village	G1-Rich		G2-Middle		G3-Poor	
	Total	%	Total	%	Total	%
Namalulu	36	14	78	32.4	127	52.7
Orkirungrung	19	24	19	24	41	51.9
Naberera	35	17.5	30	15	135	67.5

Figure 4: Chart on Wealth ranking

4.1.6. Expenditure outlets

The major expenditure outlets mentioned by both men and women groups were food (grain), clothes, bride price, school fees, veterinary and human drugs. The younger generation striking wealth in the mining industry invested in fancy cars, modern houses in divisions or village centres for example in Terrat, the small place is growing into a town and the type of cars found there are 'shangingis' –Toyota landcruiser VX. Some Maasai invested in bicycles, properties, motorbikes and tractors. These findings compared well with those described by Muir in 1994.

Table8: Expenditure Outlets by Gender.

	Men	Women
Food (Grain)		V
Clothes	V	v
Bride price	V	
Veterinary drugs	V	
Human drugs		v
School fees	V	v

Key: V = present

4.2. Pattern of medicinal plant use-

4.2.1. Livestock Diseases of Simanjiro and Their treatment

The common diseases as prioritized by men and women in the nine villages is indicated in Table 9. It was stressed that the tick-borne diseases in particular ECF and trypanosomiasis were the main causes of death of cattle. The list collaborate the findings of Minja and Allport (2000).

Table 9: List of most common diseases in order of importance by village.

Cattle diseases	Terrat	Narak auo	Sukur o	Loibos oit	Loibos iret	Nadoil - chukin	Naber era	Namal ulu	Orkirung`ur ung
ECF-East coast fever	1	1	1	1	1	1	1	1	1
Heartwater	3	3	3	3	3	3	4	3	3
Anaplasmosis	4	4	5	4	4	4	5	4	4
Trypanosomiasis	2	2	2	2	2	2	3	2	2
CBPP & other pneumonias	5	5	4	5	5	5	2	5	5
Malignant catarrh fever	9	9	9	9	9	9	9	9	9
Anthrax& B/Q	10	10	10	10	10	10	10	10	10
Alakirkir	6	6	6	6	6	6	6	6	6
FMD	7	7	7	7	7	7	7	7	7
Worms	11	11	11	11	11	11	11	11	11
Babesiosis	8	8	8	8	8	8	8	8	8
Calf scours	12	12	12	12	12	12	12	12	12
Cancer	13	13	13	13	13	13	13	13	13
Ectoparasites- leeches, ticks, flies, mange, myasis	15	15	15	15	15	15	15	15	15
Ephemeral fever	14	14	14	14	14	14	14	14	14
Haemorrhagic septicaemia	16	16	16	16	16	16	16	16	16
Snake bite	17	17	17	17	17	17	17	17	17
Eye infection	18	18	18	18	18	18	18	18	18

Retained placenta	19	19	19	19	19	19	19	19	19
Hooves prolems	20	20	20	20	20	20	20	20	20
Diseases of Sheep & Goats & others									
Worms	1	1	1	1	1	1	1	1	1
CCPP&other pneumonias	3	3	3	3	3	3	3	3	3
Diarrhoea	4	4	4	4	4	4	4	4	4
Anthrax	5	5	5	5	5	5	5	5	5
Skin conditions	2	2	2	2	2	2	2	2	2
Foot rot	6	6	6	6	6	6	6	6	6
Ectoparasites	7	7	7	7	7	7	7	7	7
Newcastledisease	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mange for dogs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tryps for donkey	✓	✓	✓	✓	✓	✓	✓	✓	✓

1-20 ranking of important livestock diseases by villages

During this study the male key informants noted that although many other diseases such as foot and mouth disease, anthrax, malignant catarrhal fever, haemorrhagic septicaemia occurred seasonally, they did not consider them a major catastrophe because they could handle them. For example, in case of MCF the herd is moved from areas where the wildebeest has furrowed. In case of Anthrax & FMD, the herd was vaccinated. Although donkeys, dogs and chicken were present in pastoral production system they were considered as less important and often not attended with same intensity. Diseases mentioned by women for chicken was mainly Newcastle disease and for donkeys was trypanosomiasis.

In addition to the general list of diseases reported for cattle in Eastern & Western Simanjiro, a new form of disease termed: "Wild game disease" (transmitted by a vector, a large fly, brownish and silver in colour) affected cattle and wild ruminants-kudus. The vector came with seasonal migration of wild game into livestock grazing plains. The disease complicated ECF and became a number one killer of cattle. There was also a new disease reported in sheep which caused clotted blood to block the nostrils, central nervous signs and kills the animal within five days from the onset. These two conditions had been reported to the livestock officials and steps were been taken to diagnose and control them. The staff at veterinary investigation centre in Arusha were carrying out detail studies to find out the causative agents.

4.2.2. Handling of Sick animals

Discussion with men and women in all villages studied indicated that Maasai herders administer treatments using local and modern medicines (Table 10). This practical knowledge and skill is passed on to the younger generation during the *Olpul*. It was established that herders were familiar with modern biologicals such as trypanocides, acaricides, antibiotics and dewormers and were capable of administering both modern and local medicines when the need arouse. Modern medicines were used in place of herbal remedies to give fast therapeutic relief in some of the health problems but, due to their prohibitive costs and procurement logistics, their use was limited to a few killer diseases such as ECF-complex, trypanosomoses and vaccines. This observation was similarly noted by Minja and Allport (2000) Wanyama (1997) and Muir (1994). However, local remedies methods for treating certain health problems in livestock were still being practised such as the use of cattle urine and bicarbonate of soda treating FMD lesions, burning of the affected lymph node with a hot iron and the use of local medicinal plants to treat various diseases and health problems.

Table 10: Type of Treatment for certain diseases

Cattle diseases	Treatment (Medicine)	
	Local	Modern
ECF-	✓	✓ ✓
Heartwater		✓ ✓
Anaplasmosis	✓	✓
Trypanosomiasis		✓ ✓ ✓

CBPP & other pneumonias	✓	✓ ✓
Malignant catarrh fever	Move animals to higher areas for MCF	-
Anthrax& B/Q		✓ ✓
Alakirkir	✓ ✓	✓
FMD	✓ ✓	✓
Worms	✓	✓
Babesiosis	✓	✓
Calf scours	✓ ✓	✓
Cancer	✓ ✓	✓
Ectoparasites- leeches, ticks, flies, mange, myasis	✓ ✓	✓
Ephemeral fever	✓	✓
Haemorrhagic septicaemia	✓	✓
Snake bite	✓ ✓	✓
Eye infection	✓ ✓	✓
Retained placenta	✓ ✓	✓
Hooves problems	✓ ✓	✓
Diseases of Sheep , Goats, chickens,donkeys		
Worms	✓ ✓	✓
CCPP&other pneumonias	✓	✓
Diarrhoea	✓ ✓	✓
Anthrax	✓	✓ ✓
Skin conditions	✓ ✓	✓
Foot rot	✓ ✓	✓
Ectoparasites	✓ ✓	✓
Newcastledisease	✓ ✓	-
Tryps for donkey	-	✓ ✓

Key: ✓ indicate use of ; ✓ ✓ indicate more use of; - not used

4.2.3 Identification and Use of local medicinal plants for livestock diseases.

The most common local medicinal plants used by herders in the nine surveyed villages are listed in **Appendix tables 1-9**. Analysis of the lists indicated that some of these plants were commonly being used by all villages as indicated in **Appendix table 10**. This indicated that there was a lot of sharing of knowledge between the pastoralists. However, it was noted that the use of local medicines was higher in the villages which were far from Arusha where natural forestry was still plentiful. Thus the location of the village was found to be a factor in the use of local drugs. The village Nadolchukin which was only about 20 km from Arusha town indicated that they used local medicinal plants less because they could get modern drugs easily from town. This was also noted in Sukuro and Naberera which were not far from Arusha and Olkirung'urung which was only 8 km from Orkesmut, Simanjiro district headquarter town (**Appendix Table 2, 5, 8, 9**). In addition, it was stated that, being near town their natural forest had been depleted and used for making charcoal, building materials and most of their land has been taken up by agriculturalists-Waarusha thereby destroying many of their medicinal plants. This was observed by the bareness of the land we travelled through. This was before the village by-laws were enacted. These by-laws are now being enforced by the village authorities and various NGOs.

It was also learnt from the herders that men, particularly warriors, usually collected the far-placed medicinal plants. The preparation of the local medicine was often the woman's job if it involved boiling or pounding but assisted by elders when special care in mixing was required. Concoctions consisting of a single plant or from different plants were common therapeutic remedies. Wanyama (1997) found that pastoralists Samburu of Kenya use only one plant for treatment in their EVK. They do not mix. Once prepared it was administered by men especially morans in large animals. Small ruminants and calves were attended by women and younger members of the family though this depended on the temperament of the

animal. This gender division of labour in the preparation and administration of medicines in livestock was also noted by Wanyama (1997) and Minja and Allport (2000).

Both male and female respondents from the surveyed villages indicated that medicinal plant remedies were procured, prepared and administered throughout the year whenever a disease or ill-health condition manifested in the herds/flocks. Although some medicinal plants appeared seasonally, it was indicated that other perennial species that performed the same function were used. Also those plants found only in highland could be bought from the market or a young male warrior could be sent to procure it from the highland area. For example when there was a disease outbreak and modern medicine was not readily available even from the neighbour. It was commonly reported that health problems such as ophthaemia, retained placenta, wounds, myasis, calf scours, calf pneumonia, red urine and common skin infestation were attended using herbal preparations (**Appendix tables 1-10**). This was also noted by Minja and Allport (2000) and Muir (1994). This can be deduced as local medicinal plants were being used as a first line action in a disease outbreak or for a particular health condition. It was also stressed by men and women interviewed that that new diseases such as trypanosomiasis, ECF could only be treated by modern medicine.

4.2.4 Utilization of local medicinal plants by different socio-economic groups

The question on the use of local medicinal plants in relation to wealth status was answered cautiously in all villages surveyed. It was indicated that whether wealthy or poor, the local medicinal plants were used depending on the disease and availability of the plant. Modern drugs were used by both poor and rich herders in place where local herb concoctions did-not give relief or expected cure in a short period. It was indicated that a poor herder could beg a neighbour for modern treatment if he could not afford it. Clan and stock friendship facilitated the begging process and culturally it was accepted. Since a poor herder had a small number of animals one or two (**Table 6**) it was easy to get medicines through begging. Muir (1994) noted that even the poor herders purchased modern drugs for livestock.

With regard to age groups it was indicated that all herders were aware of the modern and some local medicinal plants. But the knowledge of local medicines was stronger in the older generation than in younger generation although informal education was passed on from early childhood. For example, in one focus group discussion, a 30 year old man in Namalulu did not know that *eluaia*, *ormulatan* and *oloponi* could be used for retained placenta in cattle although elders in the same group used them.

In the five villages namely Terrat, Narakauo, Nadolchukin, Loibosiret and Loibosoit (**Appendix tables 1,3,4,5,6**) where discussions were held with women groups, results indicated that women were aware of local medicinal plants used for different diseases. However, in Loibosiret 23 medicinal plants were not known to women although the men knew of them and their use. Inconsistency existed between men and women in the use of some medicinal plants i.e. in Narakauo (**Appendix table 3**) *ormesire* was mentioned by men to be used for human while women reported as using it for retained placenta. Similarly *arngarooji* was reported as being used for babesiosis by men while women used it for humans. Women reported that they prepared most of the medicinal plants requiring bounding and boiling and were called to administer the drugs only when the men were not around. It was deduced from the analysis of the list of medicinal plants that the women were more familiar with plants used for curing young animals and milking cows (**Appendix table 1,3,5,6**) since these are the animals they came in contact with daily.

4.3 Perceived effectiveness and weaknesses of Medicinal plants

4.3.1 Effectiveness of using medicinal plants

The male respondents in all the nine surveyed villages stated that the local medicinal plants were being used because traditionally they have been using these plants to cure their animals. Thus culturally they were known and accepted. This was indicated clearly in the **Appendix table 10** where about 52 medicinal plants are intensively used for treating similar health problems by all the nine villages. Thus the benefits pointed out for still using these medicinal plants were that they were easier and cheaper to access locally; they were affordable and they gave effective cure for health problems such as retained placenta, fresh wounds,

myiasis, eye infections and horn or hoof lesions, wounds, endo-and ectoparasites, skin conditions and other common ailments. It was also stated in the feedback workshop that the animals of pastoralists who use EVK often were healthier.

4.3.2 Weaknesses to the use of local medicinal drugs

However, the male and female respondents in the surveyed villages stated that there were some weaknesses noted for using local medicinal plants. These weaknesses were listed as not being able to cure the new killer diseases such as trypanosomiasis and ECF, not having preservation methods which could keep the active ingredients thus necessitated collection of fresh materials whenever it was needed and not being able to measure the ideal dosage or toxicity of the drug. It was clearly stated that modern medicines were used for certain diseases like trypanosomiasis, ECF and other tick-borne diseases because they are more effective and fast acting. Similar findings were recorded by Ole Marion (1997) and Minja and Allport (2000)

The major threat indicated by all respondents were the fast disappearance of medicinal plants due to loss of ecosystem especially in villages near Arusha town i.e. Sukuro and Nadolchukin (**Appendix table 2&6**). Information gathered from these two villages indicate that there was scarcity of natural forestry from which many of the medicinal plants could be collected. As we drove through the village noted the lack of forestry and presence of large cleared land used for crop farming. The male and female respondents indicated that the natural bushes had been cleared to make charcoal and give way to sedentary crop farming. The fact that the local medicinal plants were no longer available in these villages their usefulness or the knowledge of such plants was also threatened to be forgotten. In addition, the young male migration into towns or undertaking of different livelihood activities as indicated on (**Table 1**) was also leading to the diminishing role of the traditional educational system resulting to less use of medicinal plants. The fact that medicinal plants were administered without proper dosage and prescription could lead to development of resistance and toxicity.

It was indicated by the male and female respondents from the nine villages that there was no change in the local medicinal plants used since the olden pre-colonial times. However, with the coming of modern vet. Medicines and their utilization one could automatically expect reduced use traditional way of treating animals. On the other hand, the respondents noted that local medicines were used less in some disease conditions due to being slow to cure the sick animal. This shows that herders currently believe more in modern medicines than their traditional ones except in some cases of cost and unavailability of the former made them to use the later. In 1994, Muir noted the same that local medicines were being used as first aid drugs and all categories of society would go for modern drugs whenever they were available. In some villages such as Sukuro they were not using the some of the medicinal plants because they are not available (**Appendix Table 2**).

4.4 Opportunities for sustain use of local medicinal drugs

During the collection of secondary data from village government officials and during discussions with male and female focus groups from the nine villages, it was noted that in each village there were six committees in the governing of the village. The committee for environment was charged with conservation of the natural forestry including most of the medicinal plants and that of land was responsible for demarcating village land for habitat, grazing, farming and forestry. This indicated that the villagers were aware of the danger of misusing the natural resources. It was learnt that in each village there were by-laws which governed the use of land and natural resources and safeguarded their misuse. It was pointed out clearly from the discussion in all the villages that they were aware that some of these trees could be grown and be planted but they did not do so (**Appendix table 1-9**). Wherever we traveled through all the villages we could not find any wood-lots with some of the medicinal plants. We only observed one in Arusha town planted by VETAID in the 'NANENANE' Maasai pavilion. However, they did use one of the acacia spp. for fencing the bomas. Their dependency on nature to sustain the environment was amazing. But they should realize that this has to change as the human population expand, less and less land will remain for natural forest. Minja and Allport (2000) reported finding similar opportunities.

Chapter 5

Conclusion

It was noted that in all the nine villages surveyed the major livestock diseases were common or the same and that modern veterinary medicines and local medicinal plants were still used complementarily to cure ill-health in livestock in the Maasai pastoral system in Simanjiro district. However, modern veterinary medicines provided treatment for ECF, CBPP and Tryps while local medicinal plants provided treatment for health problems such as retained placenta, fresh wounds, myasis, eye infections, horn or hoof lesions, endo-and ectoparasites and skin conditions.

In this study, it was also noted that there was no difference between the poor and rich in the use of local medicinal plants. It was noted that women were equally knowledgeable of the local medicinal plants for livestock diseases and were adept in administering them but under men supervision. However, the collection and administration of local medicines was essentially done by men. It was found that the location of village affected the availability and hence the use of local medicinal plants. The younger generation was noted to be losing the knowledge on local medicinal plants.

It was found that local medicinal plants were facing threats such as some acacia spp disappearance due to cutting down of trees for charcoal leading to the loss of ecosystem especially in villages near Arusha town and migration of the young male into towns or undertaking of different livelihood activities led to the diminishing role of the traditional educational system resulting lack of continuity of EVK.

Lack of proper dosage could lead to the development of resistance to some diseases and toxicity.

This study also found out that unlike the Samburus and Turkanas pastoralists of Kenya (Wanyama 1997), multiple plant preparations were often used to effect cure of a specific disease.

In addition there was consistency in the information on local medicinal plants, preparations, and administration across the informants interviewed. This showed that the pastoralists shared their EVK freely. This was also noted in the Wanyama (1997) study with Kenyan pastoralists.

Recommendations

The following recommendations arose from the study which encompass strengthening the use of local medicinal plants and practices in the district. There is need of:

1. Strengthening the village committees for environment and land so as to enforce their plans on nature conservation and better land use
2. Encouraging villagers to have small wood-lots near their bomas of the medicinal plants
3. Teaching some of the local medicinal plants in schools at all levels so as to retain the knowledge.
4. Disseminating the documented local knowledge on medicinal plants to the villages in a language they can understand.
5. Supporting continual use of those local medicinal plants which appear to be effective by carrying out more research to establish dosage and toxicity levels. This could be done by institutes such as SUA, ADRI
6. Training villagers in establishing tree planting schemes using species adapted in semi-arid areas such as Acacia spp, Croton spp which will include many of the medicinal plants. This could be carried out by the forestry department of the district.
7. To carry out concrete scientific research to validate the treatments. The study will involve the selection, validation, strengthening and dissemination of the EVK using laboratory and field trials.

REFERENCES

Bittegeko S.B.P, Mgasam, Kessy, B., Nkya, ., Arnbjerg, J. Alibhai, H.I.K (1995) Indigenous livestock health care in some parts of Tanzania. Proceed. Of conference on indigenous knowledge and sustainable development held on 15-16 September, 1994 SUA , Morogoro pp75-85.

Bizimana, N. (1994) Traditional veterinary practices in Africa. Published by Cooperation of republic of Germany ISBN 3-88089-502-1.

Davis, D.K. (1995). Gender-based differences in the ethno-veterinary knowledge of Afghan nomadic pastoralists. *Indigenous Knowledge and Development Monitor*. Volume 3/Issue1/April 1995.

Ecosystems Ltd 1980 Livestock, Wildlife and Land use Survey Arusha region Tanzania Final report 3 volumes Ecosystems LTD Nairobi.

Ellis F., (2000). *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press, New York. Pp 273.

Fosbrooke H.A. (1948) A administrative survey of the Maasai social system 'Tanganyika Notes and Records' No. 26 pg 1-50

IK (1996) *Recording and using Indigenous Knowledge: A manual* by IIRR ISBN 0-94271-70-8

Kituyi M. (1990) *Becoming Kenyans- :Socio-economic transformation of the Pastoral Maasai ACTS* Nairobi

Laswai GH, Maeda-Machang'u AD, Mutayoba,SK, Kimambo ES, Mwaseba D, and Lazaro E. (1999) The changing face of pastoralism; What is the dilemma of the pastoral women. *TWOWOS Proceedings of International conference held Cape Town 8-11 Feb 1999*.

Maeda-Machang'u AD, Mutayoba,SK, Laswai, ,Kurwijila,RV,and Kimambo ES (1995) *Local Knowledge in animal health and production systems in Tanzania*. FAO REPORT.

Maeda-Machang'u, AD Mutayoba,SK, Laswai GH, ,Kurwijila,RV,and Kimambo ES, Kondela A & Kessy H (1996) *Local Knowledge in animal health in different livestock production systems in Tanzania* TVA journal 16:230-255.

Maghimbi S. and P. Manda (1997) *Poverty and Gender Division of Labour Among the Maasai of Simanjiro District*. A research Report submitted to REPOA pp. 99.

Minja MMJ (1999) *The Maasai wonder plants* A paper presented in at 'people and Plants' workshop held in Arusha at TPRI 15-18 March 1999.

Minja MMJ, Ole Neselle, Mziray W.and Daborn C (1997) *Ethnoveterinary knowledge (EVK) research project at Simanjiro TANZ*. VET. J 17:117-125.

Minja M.M.J. (1989) *Collection of Tanzania medicinal plants for biological activity studies*. Proceed. of 7th TVA Scientific conference 7: 67-78.

Minja, M.M.J.and R.D. Allpart (2000). *Ethnoveterinary practised by Maasai in Simanjiro District Northern Tanzania*

Muir, Ann (1994) *A Situational analysis of pastoralism in Simanjiro District, Tanzania*. VETAID

Ole Lengisugi N.A. et al, (1996) *The role of indigenous knowledge I sustainable ecology and ethnobotanical practices among pastoral Maasai Olkonereile-Simanjiro experience*. A paper presented at the 5th congress of ethnobiology in association with festival traditions: Old ways to future KICC , Nairobi September 2-8,1996.

Ole Lengisugi N. (1999) Ecosystem Pastoralists local knowledge on medicinal plants uses to alleviate animal and human health in sustainable food security in their livelihoods. A paper presented in Links workshop held in Morogoro 22-23 June 1999.

Ole Miaron J.O (1997) Ethnoveterinary practices of the Loitokitok Maasai pastoralists : Impact on the environment Tan. Vet. J 17:159-167

Ole Saitoti, Tepilit (1980) Maasai. Harvill Publishers ISBN 0-00-272163.5

Rajan, S. And M. Sethuraman (1997). Traditional veterinary practices in rural areas of Digidul district, Tamilnadu, India. Indigenous Knowledge and Development Monitor. Volume 5/Issue 3/December 1997. pp 7-9

Quiros, C. (1996). Local knowledge systems contribute to sustainable development. Indigenous Knowledge and Development Monitor. Vol.4 Issue 1/April 1996. pp 3-5

SEAGA (1998) Socioeconomic and Gender analysis programme Field Handbook by Vicki Wilde FAO Handbook

Spears Thomas and Waller Richard,(1993) Being a Maasai James Currey Ltd. ISBN 0 85255-215-7

UNFPA,1998 Arusha region socio-economic profile

URT (1998). Expanded Agricultural Survey 1996/97 Tanzania Mainland Vol II Main Report, Statistics Unit and National Bureau of Statistics.

USAID (1975) potential ground water and land resource analyses for planning and development in Arusha, Tanzania vols I,II,III USAID Washington DC.

Wanyama J.B.(1997) Confidentially used Ethnoveterinary knowledge among pastoralists of Samburu, Kenya. ISBN 9966-9606-7-8 by ITK Books 1&2.

Øygard R., T. Vedeld and J. Aune (1999) Good Practices in Drylands Management. Noragric Agricultural University Of Norway. Norway, pp.116.

APPENDIX 1a.

Research Questions?

The main objective of conducting this study is to determine the opportunities for and the threats to the use of medicinal plants in a dynamic pastoral production system. The specific objectives of the study are:

1. To assess the pattern of use of medicinal plants for maintaining animal health by the main socio-economic groups in selected pastoral production communities.
2. To carry out a gender-sensitive examination of the threats to and opportunities for the use of medicinal plants by the main socio-economic groups in a selected pastoral production communities.
3. To conduct the study according to the draft guidelines on documenting local knowledge developed through the LinKS project in order to derive lessons learnt.

Background information

1.0 Institutions

1.1 How organizations does the village have? Name them...

1.2. What is the size of membership for each organization?

1.3 How is the membership acquired?

1.4. What is the name of the women's organization?

1.5. Are there any other groups/associations in the area? i.e. religious?

1.6. What is the relationship between different organizations? What are the achievements of these org. in meeting the community needs/

- 1.7 Where are the gov't offices located? Who is in-charge of the office?
- 1.8 Is there a school in the village?
- 1.9 Where do you attend your health problems?
- 1.10 Where do you get most of your health care material /medicines from the health centre?
- 1.11 .11 Is there a veterinary centre nearby? Is there a vet. Officer?
- 1.12 Is it well equipped with drugs? Which ones? How are the prices of the drugs? Dear? Affordable?
- 1.13 Is there a market place in the village?

Research Tools: literature, SSI, FGD, interview with key informant/elders/extensionists/village leaders.

2. Social Environment .

- 2.1 What is the population of this village and its structure?(Distribution by age & gender)
- 2.2 What is the population dynamic like i.e. birth rates, migration in & out?
- 2.3.How many ethnic groups does the village have?
- 2.4 What are the gender relations in terms of labour roles, control over resources, accessibility to production resources- livestock & milk
What are men's duties?
What are women's duties?
What youth's duties? boys? girls?
What children's duties? Boys? Girls
- 2.5. Is the set up changing?
- 2.6.Social structure? Forms of marriage-Polygony or monogony, rich, middling, poor, very poor households?
- 2.7 Rituals? Marriages? Birth? Death?
- 2.8.How many household are female headed? Is the number growing? WHY?

Research Tools: literature, key informant interview with village leaders/elders, village register/records,

3. Economic pattern & livelihood analysis

- 3.1 What are the main sources of livelihood by socio-economic groups (rich/poor; women/men, youth)
sale of milk; *sale of beadwork? Sale of animals? sale of skins & hides? Sale of local medicines?*
What are the On-farm or off-farm or non farm activities? Which contributes most to basic needs?
- 3.2 What is the village definition of poor , rich, very poor, middling?
- 3.3. .Livestock composition and numbers/population?
- 3.4. Is there any relationship between source of income and the use of medicinal plants?
- 3.5. What are the main income expenditure outlets for the various socio-economic groups (rich/poor; women/men, youth).
- 3.6. What proportion of income is spent on animal health care?
- 3.7 How do the herders avoid risks? – herd size/split/different species/more females/social bonds-loaning animals

Research Tools: income and expenditure matrices with various socio-economic groups

4. Environment characteristics

- 4.1.Topography & climate of the village: Semi-arid/arid/woodland/highland
Soils/clay/sand/ Foresty cover/ Sources of water/ Rivers/ Annual rainfall- mono or bi-modal/magnitude/variability; temperatures
- 4.2. What are the main types of resources does the village have? Who controls these resources? Who have access to them?
- 4.3 Land tenure-who owns the land/ communal grazing /title deed/ who owns the cropping /farming area-men or women?
- 4.4. What is the level of degradation? What are the perceived causes of degradation? What effect does it have on the availability of medicinal plants?

Research Tools: literature, SSI, key informant interview with village leaders/elders, village register/records, , direct observation village resource .

5. Objective 1 Pattern of medicinal plant use

- 5.1. What the most common diseases for
Cattle, Sheep, Goats, Donkeys, Dogs, Poultry
- 5.2. How are sick animals handled? Treat with modern or local medicines.
- 5.3. If local med. are used what are they?
- 5.4. Who collect & prepare the medicines? Who does the treatment?
- 5.5. Who uses the medicinal plants?
 - gender (sex, age)
 - socio-economic status
 - location (distance from urban centre, agro-ecological zone)
 - education level (formal vs informal)
 - others
- 5.6. When do they use the medicinal plants?
 - seasonality of diseases
 - availability of plants
 - others
- 5.7. Why do they use these medicinal plants?
 - access to or availability of modern drugs
 - affordability of modern drugs
 - efficacy of modern drugs
 - lack of awareness of modern drugs
 - others
- 5.8. Which medicinal plants are used for which diseases?

Research Tools: literature, disease calendar, SSI, key informant interview with village leaders/elders, village register/records

6. Objective 2 perceived effectiveness and weaknesses?

- 6.1. Are the local plants species used currently the same as those used in the past?
- 6.2. What are the perceived strengths and weakness in using medicinal plants?
 - benefits -availability-cheap -effectiveness
 - weaknesses-dosage not clear, does not treat all diseases
- 6.3. What are the perceived threats to the use of medicinal plants, how do these threats affect different groups and why?
 - moved -plants disappearing- loss of ecosystem
- 6.4. What are the perceived opportunities for sustained use of the medicinal plants available to different groups? Why?
 - planting -less mobility -land tenure and land use.
- 6.5. Is there over use of local medicines.? Is the supply diminishing?
- 6.6. Are there any directed management of plants? strategies? conscious or unconscious?
- 6.7. What are the community by-laws regard local med. Conservation/use
- 6.8. Who is in-charge of enforcing the by-laws at community level?
- 6.9. Who is covered by these laws, men. women, outsiders
- 6.10. Are the rules effective
- 6.11. Which plants are conserved all or few? Name them
- 6.12. Can preservation of the local med. Plants by planting possible?
- 6.13. Who has direct control of local med. At household level- men/women or youth?

Research Tools: literature, disease calendar, SSI, key informant interview with village leaders/elders, village register/records

7. Objective 3

- 7.1. Are the guidelines relevant to the nature of the study?
- 7.2. Do they cover adequately the ethical issues encountered in the interactions with the community?
- 7.3. What are the needed modifications in the guidelines based on the team's experience?

Research Tools: literature, ownership rights, workshop with the community & stakeholders

APPENDIX 1b Research question in Kiswahili

Madhumuni ya utafiti

Dhumuni kubwa la utafiti huu ni kuangalia matishio na upenyo uliopo katika matumizi ya miti shamba katika nyakati hizi za mabadiliko katika jamii ya wafugaji.

Madhumuni dhabiti ya utafiti huu ni

1. Kutadhimini /kuchambua kiwango(pattern) cha matumizi ya miti shamba yanavyotumiwa na makundi mbalimbali ya jamii za wafugaji kwa kutunza afya za mifugo yao.
2. Kutadhimini kwa kuzingatia jinsia matishio na upenyo wa matumizi ya madawa ya mitishamba katika makundi ya jamii za wafugaji.
3. Kutafiti kufuatana na mwongozo ulioandaliwa na mradi wa LiNKS wa kukusanya na kuweka kumbukumbu za ujuzi wa asilia ili kuyapata mafunzo yake.

1. 0. MASWALI YA UTAFITI ABARI ZA AWALIMASHIRIKA AU VYAMA

- 1.1. Kuna mashirika au vyama gani hapa kijijini? yataje.
1. 2. Kila shirika au chama kina wanachama wangapi?
1. 3.. Chama cha wanawake kinaitwaje?
- 1.4 .Kuna vikundi gani hapa kijijini? kama kikundi cha kidini?
- 1.5.. Katika vyama au mashirika yaliyopo hapa kijiji kuna ushirikiao gani?
Je mashirika haya au vyama hivi vinasaidiaje maendeleo ya wananchi hapa kijijini
- 1.6. Ofisi za serikali hapa kijijini ziko sehemu gani?
Ni nani kiongozi wa ofisi hizi?
- 1.7. Je kuna shule hapa kijijini?
- 1.8 Matatizo yako ya kiafya unayatatulia wapi?
- 1.9. Huduma za matibabu na madawa unazipata wapi ?kwenye kituo cha afya.?
- 1.10 Je una mifugo hapa kijijini?
- 1.11.Je kuna kituo cha huduma za mifugo hapa kijijini?
- 1.12. Kituo hiki kina madawa ya mifugo ya kutosha? Je ni madawa gani?
Bei za madawa haya zikoje? Ghali au nafuu.?
- 1.13. Kuna soko hapa kijijini

Nyenzo za Utafiti - SSI, FGD, mahojiano

2. MAZINGIRA YA KIJAMII

- 2.1. Kijiji hiki kina watu wangapi? Wanaume wangapi? wanawake wangapi? Ni wangapi kwa kila umri?.
- 2.2. Idadi ya watu ukiangalia kuzaliwa, kuhamia au kuhamia hapa kijijini ikoje,
- 2.3. Kuna makabila mangapi hapa kijijini?
- 2.4. Mgawanyo wa kazi kijinsia ukoje? Shughuli za wanaume, shughuli za wanawake, shughuli za watoto wa kike na kiume
- 2.5. Je umilikaji mali?
- 2.6.Je kuna uwezekano wa kutumia mitaji ya uzalishaji kama vile mifugo - maziwa n.k
- 2.7.Mfumo wa kijamii. Ikoje,
- 2.8. Ndoa ni ya wake wengi au mke mmoja?
- 2.9 Katika hali ya maisha kwa ujumla katika jamii utajiri wa kawaida na umaskini unapimwa vipi.
- 2.10. Matambiko? ndoa, kuzaliwa na kufa kukoje?
- 2.11 Ni nyumba ngapi ambazo mkuu wa kaya ni mwanamke?e idadi hii inapungua au inaongezeka na ni kwa nini
Vifaa vya kutumika katika utafiti mambo yaliyokwisaha kufanyika, kuuliza watu wenye uzoefu viongozi wa kijiji, takwimu za vijijini.

3. UCHAMBUZI WA UCHUMI NA HALI YA MAISHA

- 3.1 Njia za kujipatia maisha kwa makundi mbalimbali ya jamii ikoje? (tajiri maskini, wanawake/wanaume, vijana) uuzaji wa maziwa, uuzaji wa shanga, uuzaji wa ngozi na bidhaa zake, uuzaji wa dawa za kienyeji?
- 3.2. Shughuli gani za shamba au zisizokuwa za shamba zinazochangia katika kupata mahitaji muhimu ya hapa nyumbani.
- 3.3. Hapa kijijini mtu anawezaje kuelezea mtu maskini tajiri au mtu wa kawaida?
- 3.4. Una aina gani ya mifugo na idadi yake?
- 3.5. kuna uhusiano wowote kati ya vyanzo vya mapato na matumizi ya madawa miti shamba.
- 3.6. mapato yanatumikaje na makundi mbali ya jamii? matajiri/maskini/wanawake/wanaume, vijana?
- 3.7. Ni kiasi gani cha mapato kinatumika katika afya ya mifugo?
- 3.8. Ni namna gani wafugaji wanajiepusha na maafa? kiasi cha mifugo/ kugawa mifugo kuwa na aina mbalimbali za mifugo / kuwa na majike zaidi / kukopeshana mifugo.

4.0 MAZINGIRA

- 4.1. Hali ya eneo ukame kiasi/ukame/vichaka/milima/bonde/tambarare
 Udongo - mfinyanzi/kichanga
 Misitu - Vyanzo vya maji
 Mvua kwa mwaka mvua moja/mbili. Inaonyesha kiasi gani ni za uhakika?
 Kiasi cha joto la juu na chini
- 4.2. Kijiji kina rasilimali gani ni nani anayemiliki hizi rasilimali? Ni nani mwenye kuweza kuzitumia.
 Ni nani anamiliki
- 4.3 Mna malisho ya pamoja?
 mna hati ya kumiliki ardhi? Nani mwenye mamlaka na mashamba wanaume/wanawake.
- 4.4. ni kiasi gani cha uharibifu wa ardhi
 Uharibifu huu wa ardhi una madhara gani katika madawa ya miti shamba?

Vifaa vya Utafiti. Kazi zilizokwisha fanyika, mahojiano, kuongea na watu wenye utaalamu wa mitishamba rekodi za vijiji, ramani za vijiji.

5.0 DHUMUNI NAMBA I

Namna ya matumizi ya miti shamba

- 5.1 Ni magonjwa gani muhimu kwa mifugo ifuatavyo
- | | | | | |
|--------|---------|---------|---------|---------|
| Ngombe | 1 _____ | 2 _____ | 3 _____ | 4 _____ |
| Kondoo | 1 _____ | 2 _____ | 3 _____ | 4 _____ |
| Mbuzi | 1 _____ | 2 _____ | 3 _____ | 4 _____ |
| Punda | 1 _____ | 2 _____ | 3 _____ | 4 _____ |
| Mbwa | 1 _____ | 2 _____ | 3 _____ | 4 _____ |
| Kuku | 1 _____ | 2 _____ | 3 _____ | 4 _____ |

- 5.2. Wanyama wagonjwa wanahudumiwa je? Wanatibiwa na madawa ya kisasa madawa ya kienyeji.
- 5.3. Kama madawa ya kienyeji yanatumika ni madawa gani?

Table Used in 8 of the villages for gathering information on the local medicinal plants used (by Catesy of Minja and Allport 2000)

	Jina la miti shamba kwa kimaasai	Je bado inatu mika ?	Hautumiki	Kwa nini? Majibu ya wanaume/wanawake	Upo	Haupo	Tufanyeje
1	Eluai roots						
2	Oiti						
3	Ormukutan						
4	Ormisera roots						
5	Engaiteteyai						
6	Osilalei						
7	Oltemwai						

8	Olchanionyokie						
9	Arng'arooji						
10	Esiteti						
11	Alisikirai						
12	aldarpoi						
13	Oitulet						
14	Oleisusu						
15	Orkumbau						
16	Orng'eriandus						
17	Oremit roots						
18	Olkipirelekima						
19	Orbukoi						
20	Osokonoi						
21	Osukurtutui						
22	Osukuroi						
23	Orponoto						
24	Oloponi						
25	Oldepe						
26	Olderkesi						
27	Osiyamilil						
28	Oloiyapasel						
29	Orng'oswa						
30	Osingwai						
31	Olokildia						
32	Endorko						
33	Oltiasika						
34	Altang'oringoroi						
35	Armame						
36	Olchoki						
37	Emporokwai-ekip						

Je kuna madawa mengine zaidi ya haya yanayotumika kwenye kijiji hichi?

5.4. Nani anatafuta na kutayarisha madawa haya? Nani anayetibu

5.5 Ni nani anayetumia madawa ya mitishamba?

- Jinsia (Mwanamke, mwanaume umri)
- Hali yao kimaisha (tajiri, wastani, maskini)
- Mahali alipo (umbali kutoka mjini, ukanda)
- Kiwango cha Elimu (shuka, jamii)
- Mengineyo

5.6. Ni wakati gani madawa haya yanatumika?

- Wakati magonjwa yatokeapo?
- Wakati mimea hii inapopatikana
- Mengineyo

5.7. Kwa nini wanatumia madawa ya mitishamba?

- Matatizo ya upatikanaji wa madawa ya kisasa dukani
- Madawa ya kisasa ni ghali
- Madawa ya kisasa hayatibu vizuri
- Kukoseana kwa ujuzi wa matumizi ya madawa ya kisasa

5.8. Madawa ya mitishamba yanatumika kwa ugonjwa gani.

6.0. DHUMUNI NAMBARI 2

Nguvu na udhaifu katika matumizi ya madawa ya mitishamba.

6.1. Je aina sa mitishamba zinasotumika siku hizi ni sawa na zile zilizokuwa zinatumika zamani?

6.2 Ni nini nguvu yetu na udhaifu wetu katika kutumia madawa ya miti shamba?

- Faida

- upatikanaji
 - Urahisi
 - nguvu ya kutibu
 - udhaifu kiasi cha kutibu hakijulikani na hayatibu magonjwa yote.
- 6.3 Ni vitisho gani vinavyoonekana katika matumizi ya madawa ya mitishamba, je vitisho hivi vinaathiri vipi makundi mbalimbali katika jamii na kwa nini?
- Kuondolewa
 - Mimea kutoweka
 - kupotea kwa (ecosystem)
- 6.4. Ni mwanya gani unaonekana katika kuendelea kutumia madawa ya mitishamba ambayo ipo katika makundi mbalimbali ya jamii:-
- Kuipanda
 - Kuhama
 - Matumizi bora ya ardhi
 - Matumizi bora ya ardhi
- 6.5. Je kuna matumizi ya ziada ya madawa ya mitishamba?
Je upatikanaji wake unapungua?
- 6.6. Je kuna utunzaji madhubuti ya mimea hii mbinu au hisia za kutunza mimea hii.
- 6.7. Sheria ndogo ndogo za kijiji zinasemaje kuhusu utunzaji na matumizi ya miti shamba.
- 6.8. Nani anahusika na kuona kuwa utekelezaji wa sheria ndogo ndogo katika kijiji unatimizwa?
- 6.9. Ni nani kati ya hawa ambaye sheria hizi ndogo ndogo zinamruhusu mwanaume, mwanamke watu kutoka nje ya kijiji.
6. 10. Ni hatua gani zinachukuliwa kwa mtu ambaye anavunja sheria hizi? adhabu gani.
6. 11. Je sheria hizi zinasaidia?
- 6.12. Ni mimea gani inayohifadhiwa yote au michache? Itaje.
- 6.13. Je kuhifadhi madawa ya mitishamba kwa kuipanda inawezekana?
- 6.14. Ni nani anahusika moja kwa moja na umilikaji wa madawa ya mitishamba katika familia mwanaume/ mama/vijana.

7. DHUMUNI NA 3

- 7.1. Je miongozo hii inakubaliwa na aina ya huu utafiti.
- 7.2. Je inatosheleza katika mahusiano ya kimila katika jamvi.
- 7.3. Je ni mabadiliko gani yafanyike katika miongozo hii kwa kuzingatia uzoefu wa kundi hili la watafiti.

Appendix II . Minutes of the Workshop

WORKSHOP OF THE STAKEHOLDERS ON THE ROLE OF MEDICINAL PLANTS USE FOR ANIMAL HEALTH CARE IN DYNAMIC PASTORAL PRODUCTION SYSTEM.

I. ATTENDANCE:

NAME:	ADDRESS:	POSITION
1. Dr. William Mziray	TPRI BOX 3024- ARUSHA	National Curator
2. Mr. Lekibelie Sakita	I-e-Moipo - ARUSHA	for Director
3. Ms. Ursula N. Moono	I-e- Moipo - ARUSHA	Member
4. Mr. Edwin Ole Kereya	PINGOS BOX 12785-ARUSHA	Administrator
5. Edna Kimambo (Researcher)	BOX 3047-MOROGORO	Ext. officer
6. Lengai Koiria Inyuat -e-MAA-	Box 2720	Field Programme Officer
7. Dr. Nathan Ole-Lengisugi (Reseacher)	Box 14288 Arusha	Director MARECIK

2. AGENDA:

1. NGO Experiences in Simanjiro District
2. Ways of collaboration with envited stakeholders NGOS/ Institutions in this Research Project

3. How to access, Utilize and develop the Research outcome and recommendations(Outputs & Sustainability).

3. OPENING:

The meeting was opened at 9.30am Participants introduced themselves and selected the Chairperson-Dr. W. Mziray was selected and Dr Nathan Ole Lengisugi as Co-Chairmen

4. AGENDA ITEM I:

Experiences of NGOs & Institutions present

a) TPRI- Has been given the responsibility of indentifying plant communities, collect vouchers specimens, label in both local and Scientific names and preserve in the National Herbarium. In the collection process they sit with farmers and use them to identify each plant and its uses whether used as food or medicinal .

Reseracher may wish to visit the National Herbarium in Arusha as a starting point. Medicinal plants specimens collected by VETAID in Simanjiro have been preserved in the Herbrarium.

During the identification of plants , PRA methods used by VETAID EVK Programme involved some of the TPRI staff.

b) Inyuat e-Moipo experience.

During research undertaking it is necessary to take into consideration ecological conditions where medicinal plants occur. Foristane in fertile areas, some medicinal plants found can become poisonous in late dry season (eg. Albezzia anthelmintica, Salvadora persca, Capparis tomentosa etc.). To avoid use of those poisonous in dry season, pastoralists fence them off.

c) PINGOS EXPERIENCE:

There was a similar research carried in Ngorongoro sponsored by IDRC supervised by Professor Timothy and Mr. Lazaro Parkipunyi in collaboration with the University of Dar es Salaam: Institute of Research Assessment and Department of Botany. Efforts should be done to get a copy from those Institutions. Also cautioned not to repeat some mistakes and areas of colinflight experienced by VETAID during Ethnoveterinary knowledge programme process.

Suggested to collaborate with Simanjiro Animal Health Centre with particular reference to enumerators.

d) Inyuat - e- MAA

He defined MAA as Maasai Advancement Association which means Maasai own developments in the first place,have utilize resources available in their areas before asking for external assistance. A policy of self reliance is their objective. Among activities they have carried out include: Natural Reseource Inventory and Socio-economic analysis.

Their organization concentrates on awareness raising for Maasai Advancement. The MAA organogram stretches down to the village level.

ITEM 2: Collaboration.

It was agreed MAA-NGO in ollaboration with MARECIK to be a lead collaborating NGO in this reseach project.

Areas of collaboration:

- . Selection of field enurators
- . Desimination of research output.

MAA - Contact Address

Maasai Advancement Association (MAA) or Inyuat -e-Maa

Sokoine Road, Uchumi House,

2nd floor, Room 202

P. O. Box 2720 - Arusha

Telefax 255-4-444/255-4-4444

Email: maa@habari.co.tz;multicho@yakohabari.co.tz

ITEM 3; ACCESS USE & DEVELOPMENT:

Researchers may be asked on VETAID Ethnoveterinary research output benefits and what benefits would this other study bring to them. In this regards they may want from the researchers concrete benefits from medicinal plant use study. Therefore our study should be carried in a nice and friencely atmosphere and explain how the results are going to benefits the knowledge providers. The collaborating NGO-MAA with MARECIK should be used to disseminate results and development package as sustainability.

CLOSING;

The meeting was closed at 2pm by the Co-Chairman.

ABBREVIATIONS:

SUA- SOKOINE University of Agriculture

CBO –Community based organization

NGO- Non-governmental organization

MAA-Maasai Advancement Association

ADRI- Animal diseases research institute

TABLES

Table 1 Name of the local medicinal plants in LOIBORSIRET

	Jina la miti shamba kwa kimaasai	Je bado inatumi ka?	Hautum iki	Kwa nini? Majibu ya wanaume	Majibu ya wanawake	Upo	Haupo	Kwanini?	Tufanyeje
1	Eluai roots	✓		Kutoa nyumba ya mimba		✓	-	--	-
2	Oiti		✗	binadamu	Binadamu	✓			unaota
3	Ormukutan	✓		vidonda		✓			''
4	Ormisera roots	✓		Kutoa nyumba ya mimba		✓		Upo	''
5	Engaiteteyai	✓		Calf pneumonia	Binadamu	✓		Upo	''
6	Osilalei	✓		Calf scour		✓		Upo	''
7	Oltেমwai	✓		Fleas, ticks, early case of ECF		✓		Upo	''
8	Olchanionyokie	✓		Kutoa nyumba ya mimba			x	Hupatikana milimani	hauoti
9	Arng'arooji	✓		Babesiosis	Binadamu	✓		Upo	unaota
10	Esiteti	✓		Kutoa nyumba ya mimba na lubrication	Binadamu	✓		Upo	''
11	Alisikirai	✓		vidonda		✓		Upo	'''
12	aldarpoi	✓		vidonda		✓		Upo	''
13	Oitulet	✓		vidonda		✓		Upo	''
14	Oleisusu	✓		Fleas		✓		Upo	''
15	Orkumbau	✓		Leeches, myiasis		✓		Upo	''
16	Orng'eriandus	✓		Cancer		✓		upo	''
17	Oremite roots	✓		ECF –early cases	Binadamu	✓		upo	''
18	Olkipirelekima	✓		Kutoa nyumba ya mimba- maziwa		✓		upo	''
19	Orbukoi	✓		ECF early case, babesiosis		✓		upo	''
20	Osokonoi	✓		ECF			x	not endemic	Hauoti
21	Osukurtutui	✓		ECF, Anaplasmosis, de-wormer		✓		upo	unaota
22	Osukuroi	✓		Kideri- NDV		✓		''	''
23	Orponoto	✓		Tick-borne diseases		✓		''	''
24	Oloponi	✓		Dewormer		✓		''	''
25	Oldepe	✓		Kutoa nyumba ya mimba		✓		''	''
26	Olderkesi		x	Binadamu					
27	Osiyamilil	✓		Calf scour		✓		upo	unaota
28	Oloiypasel	✓		Vidonda-myiasis		✓		''	''
29	Orng'oswa	✓		Babesiosis, alakirkir		✓		''	''
30	Osingwai	✓		Calf scour	Binadamu	✓		''	''
31	Olokildia	✓		ECF in calves	Binadamu	✓		''	''
32	Endorko	✓		Macho		✓		''	''
33	Oltiasika	✓		Cancer, bloody diarrhoea cattle		✓		''	''
34	Altang'oringoroi	✓		Babesiosis		✓		''	''
35	Armame	✓		Kutoa nyumba ya		✓		''	''

				mimba					
36	Olchoki	✓		Kutoa nyumba ya mimba		✓		”	”
37	Emporokwai-ekip		x	Binadamu	binadamu				
38	Engokii	✓		Macho		✓		upo	”
39	Esenyi/olekitolya	✓		ECF in calves		✓		”	”
40	Orkobobi	✓		Kutoa nyumba ya mimba		✓		”	”
41	Endepesi? oldekesi	✓		Calf/dam relation		✓		”	”
42	Olorodo	✓		Kutoa nyumba ya mimba		✓		”	”
43	Emangulai		x	Binadamu					
44	Engamai	✓		Kutoa nyumba ya mimba		✓		upo	unaota
45	Oleduai /olodwai	✓		Vidonda		✓		”	”
46	Enkoireroi	✓		Macho		✓		”	”
47	Emangulai	✓		Kutoa nyumba ya mimba		✓		”	”
48	Enkoisikirindoi	✓		Kutoa nyumba ya mimba		✓		”	”
50	Esirai	✓		Vidonda-sugu		✓		”	”
51	Empoponyi	✓		Vidonda-sugu		✓		”	”
52	Oriroi? oiirii	✓		Horn nail healing		✓		”	”
53	Engasurai	✓		Anti-poison snake bite		✓		””	”
54	Olorondo	✓		Macho, calf pneumonia, R. placenta		✓		”	”
55	Engamuluki	✓		Macho vidonda,		✓		”	”
56	Engamai	✓		Surgical wounds		✓		”	”
57	Algaramuni	✓		Surgical wounds		✓		”	”
58	Orkong’u/orkongi	✓		Udder infection		✓		”	”
59	Olchilihili	✓		Removal of cancer		✓		”	”
60	Natuaishi	✓		Udder infection		✓		”	”
61	Arpalwa	✓		Fresh wounds		✓		”	”
62	Embilinang’u	✓		Milk letdown		✓		”	”
63	Enjanialaburi	✓		Milk letdown		✓		”	”
64	olorogesalik	✓		Fleas		✓		”	”
65	olgiriri	✓		Myasis		✓		”	”
66	Altamiyoi/oloirien			Binadamu	Binadamu				

Table 2 Name of the local medicinal plants in SUKURO

	Jina la miti shamba kwa kimaasai	Je bado inatumika?	Hautumiki	Kwa nini? Majibu ya wanaume	Ipo/haipo	Tufanyeje
1	eluai	No	✗			
2	oiti	no	✗	binadamu		
3	oukutan	No	✗			
4	ormisera	No	✗			
5	engaiteteyai	No	✗	No		
6	osilalei	✓		Ecf, ectoparasi	ipo	unaota

				tes		
7	oltemwai	No	✗			
8	olchanionyokie	No	✗			
9	Arng'arooji	No	✗			
10	esiteti	No	✗			
11	alisikirai	No	✗			
12	aldarpoi	✓		Vidonda	ipo	unaota
13	oitulet	✓		Wadudu- fleas	ipo	„
14	oleisusu	No	✗			
15	orkumbau	No	✗			
16	Orng'eriandus	No	✗			
17	oremit	✓		Ecf	ipo	unaota
18	olkipirelekima	✓		r. placenta	ipo	unaota
19	orbukoi	✓		Ecf	„	„
20	osokonoi	✓		Ecf	„	„
21	Osukurtutui	✓		Calf scour	„	„
22	Osukuroi	No	✗			
23	Orponoto	✓		Minyoo	„	„
24	Oloponi		✗	Human		
25	Oldepe	Yes		Retained placenta	ipo	unaota
26	Olderkesi	No	✗			
27	Osiyamilil	✓		Calf diarrhoea	ipo	unaota
28	Oloiyapasel	No	✗	Human		
29	Orng'oswa	✓				
30	Osingwai	No	✗			
31	Olokildia	No	✗	Human		
32	Endorko	✓ Eye infection		Eye infection	ipo	unaota
33	Oltiasika	✓		Cancer	ipo	unaota
34	Altang'oringor oi	✓		Babesiosi s	ipo	unaota
35	Armame	✓		Retained placenta	„	„
36	Olchoki	✓		Wounds	„	„
37	Emporokwai- ekip		✗	Human		
38	Engokii		✗	Human		
39	Esenyi/olekitolya		✗	Human		
40	Orkobobi	✓		Retained placenta	ipo	unaota
41	Endepesi	✓		Cow to like its calf	„	„
42	Olorodo	✓		Retained placenta	„	„
43	Emangulai		✗	Human		
44	Engamai	✓		Retained placenta	„	„
45	Oleduai/olodwai	✓		Wounds	„	„

Table 3 Name of the local medicinal plants in NARAKUWO

	Vernacular	Unatumika/hautumikin	Majibu ya wanaume	Majibu ya wanawake	Upo	haupo
1	eluai	✓	for expulsion of lochia	sawa	upo	
2	oiti		human	„		
3	ormukutan		„	„		
4	ormisera		„	r. placenta	upo	
5	engaiteteyai		Fodder –makengera	Fodder		
6	osilalei	✓	calf scour	sawa	upo	
7	oltemwai	✓	Ectoparasites- myasis	„		
8	olchanionyokie	✓	Alakirkir	„	upo	
9	Arng'arooji	✓	Babesiosis	No human		
10	esiteti		human	Yes calf scours		
11	alisikirai		„	No human		
12	aldarpoi	✓	cancer	No human		
13	oitulet	✓	myasis	Sawa	upo	
14	oleisusu	✓	ectoparasites	sawa	upo	
15	orkumbau	✓	Myasis	„	upo	
16	Orng'eriandus	✓	cancer	„		
17	oremit		human	No human	upo	
18	olkipirelekima	✓	r. placenta	Sawa	„	
19	orbukoi	✓	Babesiosis	„	„	
20	osokonoi	✓	wounds	No	„	
21	Osukurtutui	✓	Calf pneumonia,cancer, dewormer	Sawa	„	
22	Osukuroi	✓	Calves for dewormer	Sawa	„	
23	Orponoto	✓	Coughing in calves	„	„	
24	Oloponi	✓	Babesiosis	No human	„	
25	Oldepe		human	Yes r. placenta	„	
26	Olderkesi	✓	Calf diarrhoea	Sawa	„	
27	Osiyamilil		human	Yes calf scours	„	
28	Oloiyapasel		human	No human		
29	Orng'oswa		human	Calf scours	upo	
30	Osingwai	✓	Cow diarrhoea	Sawa	„	
31	Olokildia		No human	No human		
32	Endorko		washing milk containers	Yes eye infection	upo	
33	Oltiasika	✓	Cancer	Sawa	„	
34	Altang'oringoroi		Yes Babesiosis	„	No	
35	Armame	✓	Retained placenta	„	„	
36	Olchoki	✓	r. placenta & lochia	„	„	
37	Emporokwai-ekip		human	No human		
38	Engokii	✓	eye infection	No not tried		
39	Esenyi/olekito ly	✓	pneumonia	No „		
40	Orkobobi	✓	R. placenta	Sawa	upo	
41.	olchilichili	✓	wounds	„	„	

42	Orpopongi	✓	Cancer, myiasis	»	»	
43	oriroi	✓	wounds	»	»	
44.	Endekesi*	✓	Cow to like its calf	»	»	
45.	Engamai*	✓	R. placenta	»	»	
46.	Oleduai/Olod wai*	✓	Wounds-myiasis	»	»	
47	olorodo	✓	R. placenta	»	»	

*

Table 4: Name of the local medicinal plants in TERRAT

	Vernacular	Unatumika/hautumikin Majibu ya wanaume	Upo	haupo
	Vernacular			
1	eluai	Ndiyo	Yes	
2	Oiti	Ndiyo		
3	oukutan	Hapana		
4	ormisera	Ndiyo	Yes	
5	engaiteteyai	Ndiyo		
6	osilalei	Ndiyo	Yes	
7	oltemwai	Ndiyo		
8	olchanionyokie	Ndiyo	Yes	
9	Arng'arooji	Ndiyo		
10	esiteti	Ndiyo		
11	alisikirai	Ndiyo		
12	aldarpoi	Ndiyo		
13	oitulet	Ndiyo	Yes	
14	oleisusu	Ndiyo	Yes	
15	orkumbau	Ndiyo	Yes	
16	Orng'eriandus	Ndiyo	No	
17	oremit	Ndiyo	Yes	
18	olkipirelekima	Ndiyo		
19	orbukoi	Ndiyo		
20	osokonoi	Ndiyo		
21	Osukurtutui	Ndiyo		
22	Osukuroi	Ndiyo		
23	Orponoto	Ndiyo		
24	Oloponi	Human		
25	Oldepe	Hapana	Yes	
26	Olderkesi	Hapana	Yes	
27	Osiyamilil	Hapana	Yes	
28	Oloiypasel	No human		
29	Orng'oswa	Hapana	Yes	
30	Osingwai	Hapana	Yes	
31	Olokildia	No human		
32	Endorko	Hapana- kuhifadhi maziwa	Yes	
33	Oltiasika	Hapana- silaha- fimbo	Yes	
34	Altang'oriringoroi	Hapana	No	
35	Armame	Hapana chakula	Yes	
36	Olchoki	No	Yes	
37	Emporokwai-ekip	No human		
38	Engokii	No. Human		
39	Esenyi/olekitolya	No Human-stimulant		
40	Orkobobi	No. human	Yes	
41	Endepesi	Cow to calf	Yes	
42	Altamiyoi/olorien	No human	Yes	

Table 5: Name of the local medicinal plants in NADOILCHUKUN

	Vernacular	Majibu ya wanaume	Majibu ya wanawake	Upo
1	eluai	Kutoa nyumba ya mimba	sawa	ndiyo
2	oiti	Ndama kuharisha	Kumpenda ndama	Ndiyo
3	ormukutan	ECF & cancer	ECF & cancer	Yes
4	ormesera	Kutoa nyumba ya mimba	No human	Yes
5	engaiteteyai	Faith for protection at the boma gate	Fodder, Faith for protection at the boma gate	Yes
6	osilalei	Ndama kuharisha	sawa	Yes
7	oltemwai	Fleas, ticks, mange, babesiosis, ECF	sawa	Yes
8	olchanionyokie	Alakirkir, chronic illness	Pneumonia in cattle	no
9	Arng'arooji	Babesiosis	Babesiosis	Yes
10	esiteti	Lumbricant in parturition,	No human	Yes
11	alaisikirai	Vidonda	Eye infection	
12	aldarpoi	Ndama kuharisha	No human	
13	oitulet	Wounds	sawa	Yes
14	oleisusu	Ectoparasites-fleas,	sawa	Yes
15	orkumbau	Leeches	sawa	Yes
16	Orng'eriandus	Vidonda, diarrhoea, late ECF	sawa	yes
17	oremit	Leeches, wounds	sawa	Yes
18	olkipirelekima	Kutoa nyumba ya mimba	sawa	Yes
19	orbukoi	Babesiosis, diarrhoea	sawa	yes
20	osokonoi	Calf pneumonia	sawa	Yes
21	Osukurtutui	Vidonda, myasis	Dewormer	Yes
22	Osukuroi	Coughing, dewormer,	sawa	Yes
23	Orponoto	Calf pneumonia	sawa	Yes
24	Oloponi	Babesiosis	No human – legs	
25	Oldepe	Kutoa nyumba ya mimba	sawa	Yes
26	Olderkesi	Ndama kuharisha	sawa	Yes
27	Osiyamilil	Ndama kuharisha	sawa	Yes

28	Oloiyapasel	Human	Human	
29	Orng'oswa	Kutoa nyumba ya mimba	No human	Yes
30	Osingwai	Human	No human	
31	Olokildia	Human	Human	
32	Endorko	Macho	sawa	Yes
33	Oltiasika	Human	Human, fimbo	
34	Altang'oriring oroi	Babesiosis	sawa	No
35	Armame	Kutoa nyumba ya mimba	sawa	Yes
36	Olchoki	R. placenta	sawa	Yes
37	Emporokwai-ekip	Ndama kuharisha	No human	
38	Engokii	Udder infection	No	
39	Esenyi/olekito lya	Human	Human	
40	Orkobobi	Kutoa nyumba ya mimba	sawa	Yes
41	Endepesi	Cow to like its calf	No human	Yes
42	enkoireroi	Eye infection	No human	Yes
43	Emangulai	Ndama kuharisha	No human	
44	Engoisikiriandoi	Kutoa nyumba ya mimba	Sawa	Yes
45	Engamai	Kutoa nyumba ya mimba	No human	Yes
46	Olodwai/oleduai	wounds, scour	No human	
47	Endulelei	Alakirkir, ephemeral fever	sawa	
48	Naing'ong'ondeyo	macho	sawa	
49	olorodo		Kutoa nyumba ya mimba	
50	ormee		Calf scour	
51	Natwa-eishu/natuaishi		mastitis	
52	olokunonoi		Calf scour	
53	Orng'aboli		Calf scour	
54	olerai		fodder	
55	Oltisa*	R. placenta.	sawa	

Table 6: Name of the local medicinal plants in LOBORSOIT

	Vernacular	Majibu ya wanaume	Upo	not	Tuf any eje
1	Eluai (roots)	Kutoa nyumba ya mimba	Yes		Una ota
2	Oiti	Human			”
3	Ormukutan	De wormer	Yes		”
4	Ormisera (roots)	Kutoa nyumba ya mimba	Yes		”
5	Engaiteteyai	Food, dewormer	Yes, seasonally	No	
6	Osilalei	Calf diarrhoea	Yes		”
7	Oltewwai	Fleas, skin conditions	Yes		”
8	Olchanionyokie	Alakirkir, chronic disease	Yes		”
9	Arng'arooji	Babesiosis	Yes		”
1	Aldarpoi (bark)	FMD,	Yes		”
2	oitulet	Wounds, myiasis	Yes		”
1	oleisusu	Fleas, ticks	Yes		”
4	orkumbau	vidonda	Yes		”
1	Orng'eriandus	vidonda	No		
6	oremit	Leeches, wounds	Yes		”
1	olkipirelekima	Kutoa nyumba ya mimba			”
8	orbukoi	Babesiosis			”
1	osokonoi	Cow cancer			”
2	Osukurtutui	Dewormer			”
2	Osukuroi	NDV,			”
2	Orponoto	Coughing in calves			”
3	Oloponi	Kids with diarrhoea+magadi			”
2	Oldepe	Human	Yes		”
5	Olderkesi	Human	Yes		”
2	Oloiyapasel	Human	Yes		”
2	Orng'oswa	Human	Yes		”
8	Osingwai	Human	Yes		”
2	Olokildia	Human			”
3	Endorko	Human	Yes		”

2					
3	Oltiasika	vidonda	Yes		”
3					
3	Altang’oring oroi	Babesiosis	No		”
4					
3	Arname	Food	Yes		”
5					
3	Olchoki	Not used	-		”
6					
3	Emporokwai- ekip	Not used	Yes		
7					
3	Engokii	Human	Yes		
8					
3	Esenyi/olekito lya	Human	Yes		”
9					
4	Orkobobi	Kutoa nyumba ya mimba	Yes		”
0					
4	Endepesi	Cow to like its calf	Yes		”
1					
4	Olorodo	Kutoa nyumba ya mimba	Yes		”
2					
4	Emangulai	Human			”
3					
4	Engamai	Kutoa nyumba ya mimba	Yes		”
4					
4	Olodwai/oledu ai	vidonda	Yes		”
5					

Table 7: Name of the local medicinal plants STILL USED in NAMALULU

	Vernacular	Majibu ya wanaume	upo	tufanyeje
1	Eluai roots	Formally – r. placenta	Yes	Modern med. More effective
2	Oiti	Human/ fencing	Yes	
3	Ormukutan	worms	Yes	
4	Ormisera roots	FormallyR. placenta	Yes	Modern med.
5	Engaiteteyai	Fodder & ritual	Yes	
6	Osilalei	Calf scour	Yes	
7	Oltemwai	Fleas, ticks, wounds	Not ende mic	
8	Olchanionyokie	Alakikir,		Highland Arusha
9	Arng’arooji	Salt lick container- ornamental	Yes	
10	Esiteti	Lubricant in parturition, weapon – fimbo	Yes	
11	Alisikirai	Eye infection	Yes	
12	aldarpoi	Human	Yes	
13	Oitulet	Wounds myasis	Yes	
14	Oleisusu	Fleas	Yes	
15	Orkumbau	Leeches,myasis	Yes	

16	Orng'eriandus	r. placenta	No	
17	Oremit roots	Alakikir, calf pneumonia, wounds	Yes	
18	Olkipirelekima-good	Retained placenta	Yes	
19	Orbukoi	babesiosis	Yes	
20	Osokonoi	Human	NO	not endemic
21	Osukurtutui	Human	Yes	
22	Osukuroi	Human	Yes	
23	Orponoto	Tick-borne diseases in calves	Yes	
24	Oloponi	Container - minerallicks	Yes	
25	Oldepe	Human	Yes	
26	Olderkesi	Human	Yes	
27	Osiyamilil	Fencing, firewood	Yes	
28	Oloiyapasel	Eye, blisters-photosensitization	Yes	
29	Orng'oswa- wax	Eye infection	Yes	
30	Osingwai	Calf scour	Yes	
31	Olokildia	Human	Yes	
32	Endorko	Eye infection	Yes	
33	Oltiasika	Fencing, rungu, fimbo	Yes	
34	Altang'oringoroi	Babesiosis	Yes	
35	Armame	Retained placenta	Yes	
36	Olchoki	Human	Yes	
37	Emporokwai-ekip	Human		
38	Engokii	Eye infection	Yes	
38	Esenyi/olekitolya	Not used		
39	Orkobobi	Retained placenta	Yes	
40	Endepesi? oldekesi	Calf/dam relation	Yes	
41	enkoireroi	Eyea	Yes	
42	Emangulai	Human		
43	Engoisikirinda/enkouisiriandoi	Retained placenta	Yes	
44	esirai	Wounds	Yes	
45	Empopangi/empoponyi	Warts	Yes	
46	oriroi	horn wounds hooves	Yes	
47	olorodo	Retained placenta	Yes	
48	Olemudong'o	„	Yes	
49	ekokunonoi	„	Yes	
50.	Olorien/altimiyo i	Human		

Table 8: Name of the local medicinal plants STILL USED in orkesumut

	Vernacular	Majibu ya wanaume	upo	Tufanyeje
1	Eluai roots	Formally – r. placenta	Yes	Unaota
2	Oiti	Human/ fencing	Yes	„
3	Ormisera roots	R. placenta	Yes	„
4	Engaiteteyai	Fodder & ritual	Yes	„
5	Osilalei	Calf scour	Yes	„
6	Oltemwai	Fleas, ticks, wounds	Not endemic	
7	Olchanionyokie	Alakikir,		Highland Arusha
8	Arng'arooji	Babesiosis	Yes	Unaota
9	Esiteti	Lubricant in parturition, weapon –fimbo	Yes	„
10	Alisikirai	Wounds foot rot – goat	Yes	„
11	aldarpoi	Human	Yes	„
12	Oitulet	Wounds myasis	Yes	„
13	Oleisusu	Fleas	Yes	„
14	Orkumbau	wounds enema-constipation-emanyita	Yes	„
15	Orng'eriandus	r. placenta	No	
16	Oremit roots	--	--	
17	Olkipirelekima-good	Retained placenta	Yes	„
18	Orbukoi	Babesiosis, anaplasmosis	Yes	„
19	Ormukutan	Worms	Yes	„
20	Osokonoi	Pneumonia	NO	not endemic
21	Oleirien, altamiyoi	Dewormer-goats	Yes	Unaota
22	Osukurtutui	Calf pneumonia	Yes	„
23	Osukuroi	Dewormer-calves	Yes	„
24	Oloponi	no	No	Not endemic
25	Orponoto	Calves pneumonia	Yes	Unaota
26	Oldepe	no	no	Not endemic
27	Olderkesi	Calf scours	Yes	„
28	Osiyamilil	no		
29	Oloiyapasel	Wounds,myasis	Yes	Unaota
30	Orng'oswa- wax	Eye infection	Yes	„
31	Osingwai	no	no	Not endemic
32	Olokildia	Human-fodder	Yes	„
33	Endorko	Eye infection	Yes	„
33	Oltiasika	Fencing, rungu,fimbo	Yes	„
34	Altang'oringoroi		no	Not endemic
35	Arname	Retained placenta	Yes	Unaota
36	Olchoki	Retained placenta	Yes	„

37	Emporokwai- ekip		No	
38	Engokii	Eye infection	Yes	Unaota
38	Esenyi/olekitoly a	human		
39	Orkobobi	Retained placenta	Yes	„
40	Endepesi? oldekesi	Fencing, fodder	Yes	„
41	enkoireroi	Wounds-fresh	Yes	„
42	Emangulai	--	No	
43	Engoisikirindai/ enkoisikiriandai	--	no	
44	esirai	Wounds	Yes	„
45	Empopangi/emp oponyi	Wounds, mange	Yes	„
46	oriroi	horn wounds hooves	Yes	„
47	olorodo	Retained placenta	Yes	„
48	Orupande	Calf scours	Yes	„
49	olchurai	calf scours	Yes	„
50.	olchilichili	wounds	yes	„

Table 9: Name of the local medicinal plants STILL USED in Naberera

	Vernacular	Majibu ya wanaume	upo	Tufanyeje
1	Eluai roots	No		Unaota
2	Oiti	No		„
3	Ormisera roots	No		„
4	Engaiteteyai	Fodder & ritual	Yes	„
5	Osilalei	Calf scour	Yes	„
6	Oltmwai	Fleas, ticks, wounds	Not ende mic	
7	Olchanionyokie	Alakikir,		Highland Arusha
8	Arng'arooji	No		
9	Esiteti	weapon –fimbo	Yes	Unaota
10	Alisikirai	Eye infection, Wounds	Yes	„
11	aldarpoi	No	No	
12	Oitulet	Wounds myasis	Yes	„
13	Oleisusu	Fleas, ticks	Yes	„
14	Orkumbau	Wounds- leeches	Yes	
15	Orng'eriandus	No	No	
16	Oremit roots	no	No	
17	Olkipirelekima- good	Retained placenta	Yes	„
18	Orbukoi	Babesiosis, anaplasmosis	Yes	„
19	Ormukutan	Worms	Yes	„
20	Osokonoi	No	NO	Not endemic
21	Oleirien, altamiyoi	Eye infection	Yes	„

22	Osukurtutui	Calf pneumonia	Yes	„
23	Osukuroi	Tickborne diseases	Yes	„
24	Oloponi	no	No	Not endemic
25	Orponoto	Calves pneumonia	Yes	„
26	Oldepe	no	no	Not endemic
27	Olderkesi	Calf scours	Yes	„
28	Osiyamilil	Calf scour	Yes	„
29	Oloiyapasel	no	No	
30	Orng'oswa- wax	no	No	
31	Osingwai	no	No	Not endemic
32	Olokildia	Eye infection	Yes	„
33	Endorko	Eye infection	Yes	„
33	Oltiasika	Fencing, rungu, fimbo	Yes	„
34	Altang'oringoroi	No	no	Not endemic
35	Arname	Retained placenta	Yes	„
36	Olchoki	no	No	
37	Emporokwai- ekip	no	No	
38	Engokii	no	No	
38	Esenyi/olekitolya	human		
39	Orkobobi	Retained placenta	Yes	„
40	Endepesi? oldekesi	Fencing, fodder	Yes	„
41	enkoireroi	Eye infection	Yes	„
42	Emangulai	--	No	
43	Engoisikirindai/ enkoisikiriandoi	--	no	
44	esirai	Cancer in cattle	Yes	„
45	Empopangi/empoponyi	Wounds, mange	Yes	„
46	oriroi	horn wounds hooves	Yes	„
47	olorodo	Retained placenta	Yes	„
48	elrukunyi	Calf scours	Yes	„

Table 10:
COMPARISON OF RESPONSES FROM THE NINE VILLAGES ON THE USE
OF MEDICINAL PLANTS

No.	Vernacular	Used for	L/siret	Sukuro	Naraka uo	Terrat	L/soit	Nado	Namalul u	Orkes umut	Nabere a
1	Eluai roots	R.placenta	✓●	✗	✓●	✓●	✓●	✓●	✓●*	✓●*	✗
2	Oiti	Human	✗	✓●	✗	✓●	✗	✓●	✗	✗	✗
3	Ormukutan	wounds	✓●	✗	✗	✗	✓●	✓●	✓●	✓●	✓●
4	Ormisera roots	R.placenta	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●
5	Engaiteteyai	Calf pneumonia	✓●	✗	✗	✓●	✓●	✓●	✓●	✓●	✓●
6	Osilalei	Calf scour	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●
7	Oltemwai	Fleas, ticks, early case of ECF	✓●	✗	✓●	✓●	✓●	✓●	✓●	✓●	✗
8	Olchanionyok ie	Alakirkir, retained placenta	✓●	✗	✓●	✓●	✓●	✓●	✓●	✓●	✓●
9	Arng'arooji	Babesiosis	✓●	✗	✓●	✓●	✓●	✓●	✓●	✓●	✓●
10	Eseteti	Lubricant in parturition, placenta	✓●	✗	✓●	✓●	✓●	✓●	✓●	✓●	✓●
11	Alisikirai	Wounds	✓●	✗		✓●	✓●	✓●	✓●	✓●	✓●
12	Aldarpoi	Wounds	✓●	✓●	✓●	✓●	✓●	✓●	✓●		✓●
13	Oitulet	Wounds myasis	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●
14	Oleisusu	Fleas	✓●	✗	✓●	✓●	✓●	✓●	✓●	✓●	✓●
15	Orkumbau	Leeches, myas is	✓●	✗	✓●	✓●	✓●	✓●	✓●	✓●	✓●
16	Orng'eriandus	Cancer	✓●	✗	✓●	✓●	✓●	✓●	✓●	✗	✓●
17	Oremit roots	ECF –early cases	✓●	✓●		✓●		✓●	✓●	✗	✓●
18	Olkipirekim a	Retained placenta Milk-let down	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●
19	Orbukoi	ECF early case, babesiosis	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●
20	Osokonoi	ECF	✓●	✓●	✓●	✓●	✓●	✓●	✗	✓●	✓●
21	Osukurtutui	ECF, Anaplas mosis, de- wormer	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✗	✓●
22	Osukuroi	NDV in chicken	✓●	✗	✓●	✓●	✓●	✓●	✗	✓●	✓●
23	Orponoto	Tick-borne diseases	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●
24	Oloponi	Dewormer	✓●		✓●	✗	✗	✓●	✓●	✗	✓●
25	Oldepe	R.planta, calf pneumonia	✓●	✓●	✗	✗	✗	✓●	✗	✗	✗
26	Olderkesi	Calf scour	✗	✗	✓●	✗	✗	✓●	✗	✗	✗
27	Osiyamilil	Calf scour	✓●	✓●	✗	✗	✗	✓●	✗	✗	✗
28	Oloiyapasel	Wounds- myasis	✓●	✗	✗	✗	✗	✗	✓●	✓●	✓●
29	Orng'oswa	Babesiosis, alakirkir	✓●	✓●	✗	✗	✗	✓●	✓●	✓●	✓●
30	Osingwai	Calf scour	✓●	✗	✓●	✗	✗	✗	✓●	✗	✗
31	Olokildia	ECF in calves	✓●	✗	✗	✗	✗	✗	✗	✗	✗
32	Endorko	Eye infection	✓●	✓●	✗	✗	✗	✓●	✓●	✓●	✓●
33	Oltiasika	Cancer, bloody diarrhoea	✓●	✓●	✓●	✗	✓●	✗	✓●	✓●	✓●

		cattle										
34	Altang'oring oroi	Babesiosis	✓●	✓●	✓●	×	✓●	✓●	✓●	×	×	
35	Arname	Retained placenta	✓●	✓●	✓●	×	×	✓●	✓●	✓●	✓●	
36	Olchoki	R. placenta, lochia	✓●	✓●	✓●	×	×	✓●	✓●	✓●	✓●	
37	Emporokwai-ekip	Udder infection	×	×	×	×	×	✓●	×	×	×	
38	Engokii	Eye infection	✓●	×	✓●	×	×	✓●	✓●	✓●	✓●	
39	Esenyi/olekito lya	ECF in calves	✓●	×	✓●	×	×	×	×	×	×	
40	Orkobobi	Retained placenta	✓●	✓●	✓●	-	-	-	✓●	✓●	✓●	
41	Endepesi? Oldekesi	Calf/dam relation	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	
42	Olorodo	Retained placenta	✓●	✓●	✓●	-	✓●	-	✓●	-	-	
43	Emansulai	Human	-	-	-	-	×	-	-	-	-	
44	Engamai	Retained placenta	✓●	✓●	✓●	✓●	✓●	✓●	-	-	-	
45	Oledwai	Wounds	✓●		✓●			✓●				
46	Enkoireroi	Eye infection	✓●	-	-	-	-	✓●	✓●	✓●	✓●	
47	Emangulai	R. placenta	✓●	-	-	-	-	✓●		-	-	
48	Engoisikirindoi	R. placenta	✓●	-	-	-	✓●	✓●	-	-	-	
50	Esirai	Chronic wounds	✓●	-	-	-	-	-	✓●	✓●	✓●	
51	Empopongi	Chronic wounds	✓●	-	-	-	-	✓●	✓●	✓●	✓●	
52	Oroi? oiirii	Horn nail healing	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	✓●	
53	Engasurai	Anti-poison snake bite	✓●	-	-	-	-	-	-	-	-	
54	Olorondo	Eye infect. Calf pneum. R. placenta	✓●	-	-	-	-	-	-	-	-	
55	Engamuluki	Eye infect. Wounds	✓●	-	✓●	-	-	-	-	-	-	
56	Engamai	Surgical wounds	✓●	-	-	-	-	-	-	-	-	
57	Algaramuni	Surgical wounds	✓●	-	-	-	-	-	-	-	-	
58	Orkong'u	Udder infection	✓●	-	-	-	-	-	-	-	-	
59	Olchilihili	Removal of cancer	✓●	-	✓●	-	-	-	-	✓●	✓●	
60	Natuaishi	Udder infection	✓●	-	-	-	-	-	-	-	-	
61	Arpalwa	Fresh wounds	✓●	-	-	-	-	-	-	-	-	
62	Embilinang'u	Milk letdown	✓●	-	-	-	-	-	-	-	-	
63	Enjanialaburi	Milk letdown	✓●	-	-	-	-	-	-	-	-	
64	Olorogesalik	Fleas	✓●	-	-	-	-	-	-	-	-	
65	Olgigiri	Myasis	✓●	-	-	-	-	-	-	-	-	
66	Altamiyoi/ole rien	human	-	-	-	-	-	-	×	-	-	
67	Oledwarai	Wounds-myasis	-	-	✓●	-	-	-	-	-	-	
68	Olorodo	r. placenta	-	-	✓●	-	-	-	-	-	-	
69	Endulelei	Alakirkir	-	-	-	-	-	✓●	-	-	-	
70	Naing'ong'on deyo	Eye infection	-	-	-	-	-	✓●	-	-	-	
71	Oltisa	R.placenta	-	-	-	-	-	✓●	-	-	-	
73	Ekekunonoi	r.placenta	-	-	-	-	-	-	✓●	-	-	
74	Olemudong'o	R. placenta	-	-	-	-	-	-	✓●	-	-	
75												

VALIDATION WORKSHOP ON THE ROLE OF MEDICINAL PLANTS USE FOR ANIMAL HEALTH CARE I A DYNAMIC PASTORAL PRODUCTION SYSTEM IN TANZANIA OF SIMANJIRO DISTRICT A LOIBORSOIT'A'

Summary.

The workshop was held on 15/11/2001 in Loibosoit A to validate results recorded in the study report. The meeting was opened at 10.30 am by Nathan Ole Lengisugi on behalf of the regional livestock officer Mr Ngigwana who was away on other official duties. The participants mainly livestock keepers, one representative from MAA and Mr Ole Lengisugi, who attended in his capacity as livestock specialist in the regional office and Director of MARICEK were welcomed and thanked for attending the workshop on short notice. The objectives of the workshop were discussed and agreed upon.

The results and outcome of the discussions were recorded on flipcharts and tape recorder. Language used throughout were three English, Kiswahili and Kimaasai. Generally the participant agreed wholly with the results recorded from the study. Only few omission were added i.e. the population of man was noted to be half that of female not because of the male youth moving to towns only but also the number of male children being born was smaller than that of female children. The workshop was closed by a vote of thanks from the project leader, Prof. A.D. Maeda-Machang'u.

Introduction

This study of the role of medicinal plants use for animal health care in a dynamic pastoral production system in Tanzania was carried out in nine villages in both eastern and western Simanjiro district. The study was an add on to an Ethno veterinary knowledge study conducted by VETAID earlier on. The objective of this study was to assess the pattern of use of medicinal plants for maintaining animal health by the main social-economic groups in the selected pastoral production communities. The study was also to find out the threats and opportunities for the use of these medicinal plants with gender perspective. The study followed closely the guidelines developed through the LINKS project in order to minimize risks to the local communities and maximize benefits in gathering local knowledge on medicinal plants used to cure animal diseases. The validation workshop was one of the way of getting feedback from the stakeholders of the results obtained from the study.

Methodology

A list of the results was presented to the participants and discussion initiated along the results. Flipcharts were used for recording the deliberations. Main language used was Kiswahili but this was translated to Kimaasai by a participant for easy comprehension by the elderly Maasais.

Results & Discussion

The results and discussion are summarized in this table

Findings	Comment.
1. Demographic data- noted that men population was between 14-15 % while that of women was 25-28% . The reason given was that male youth moved to towns to seek other employment.	Participants agreed with this observation but said an additional reason was number of male children being born was much smaller than that of female children.
2. The List of institutions on the villages Ilaramaak lolkonerei, MAA, PINGOS , TANAPA, SSL, World vision, LAMP, ADDO, Moipo, Bundu safari, Tarangire game reserve, Big game, LIRDO.	Participants agreed and said they have been of great help in helping in development of the villages
3. Economy noted that income sources were mainly livestock products and outlets were food-grain, and clothing.	Agreed.

4. Type of livestock production: open grazing and tanshumane to seek for better pasture and water	Participants agreed.
5. List of Diseases confidentially treated with local medicinal plants: retained placenta, wounds, eye infections, myiasis, skin cancer, calf diarrhea, FMD, ectoparasites- fleas, ticks, leeches & worms	Participants agreed that not all diseases could be treated with medicinal plants but these were the ones they confidentially treat with local plants and prefer to do so
6. List of medicinal plants: see attached list appendix 4	Agreed with the list.
7. Socio-economic group use: see below for answers to the individual questions.	See below

7.1. Who collect the medicines? –mainly men but if near women. Far off a moran is sent to fetch it

Who prepare the medicines? – mainly women if it requires boiling

Who does the treatment?-strong men mostly morans

7.2. Who uses the medicinal plants?

- gender – (age &sex) mainly elderly both men and women had more EVK and practise the art more.
- wealth ranking (socio-economic status – all status use local medicinal plants
- location (distance from urban centre, agro-ecological zone – the far off villages i.e. Loibosiret uses more local medicines but only for the confidentially treatable diseases.
- education level – informed that the educated tend to use more the modern medicines for the health of their animals
- **Do people prefer local medicines over modern medicines? This will depend on the type of disease and whether the drugs are available.**

7.3. When do they use the medicinal plants? this depends entirely on the occurrence of the disease

7.4 Why do they use these medicinal plants?

- benefits are health livestock for farms where EVK is used consistently
- access to or availability of modern drugs is not constant
- affordability of modern drugs whose prices are high after removal of govt. subsidy.

7.5 What are the perceived strengths and weakness in using medicinal plants?

- availability easy in the locality
- cheap- affordable
- effective- provide cure for some diseases
- weaknesses-dosage not clear, does not treat all diseases, storage facility lacking, toxic level not known

7.6. What are the perceived threats to the use of medicinal plants?

- frequent movement from original land
- plants disappearing due to farming activity, land clearing
- loss of ecosystem due to increase in human population.

7.7 What are the perceived opportunities for sustained use of the medicinal plants?

- planting
- less mobility
- land tenure and land use.
- lobbying and advocacy to sensitize villagers on the importance of trees

7.8 What are the community by-laws regarding local medicinal plants.

Conservation policy enforced by village committee for environment

Village by-laws enforced by village government

7.9. Which plants are conserved? Trees which if removed occurrence of lightning increases or there is lack of rain such as. acacia spp- (itepes), Ximenia- (alemayai,) oirii, .

Conclusion

The participants agreed with the report and requested if they could get a copy in a language they could understand. There are over 60 plant species used in various way to keep their animals health. The knowledge of these plants is freely shared amongst individuals in the community and is passed on by word of mouth. Participants are worried this medicinal knowledge or ethno-veterinary knowledge (EVK) might be lost as the youth move away from traditional systems of living. It was also noted that some plants i.e. ormukutan are highly toxic thus further research should be carried to determine their pharmacological properties.

Appendix 1

Programme

Opening ceremony

Objectives

Opening of the workshop

Presentation

Introduction

-Title –

Objectives

Study area

Results

Discussion

Recommendation

Closing of the workshop

OPENING SPEECH:

By Nathan Ole Lengisugi,

Livestock specialist,

Livestock advisory services at Regional Secretariat. Arusha.

Interpreter: Mr. Saningo Moines, a pastoralists villlager from Loiborsoit A.

Chairperson, I have the honour to officiate the opening of this important validation workshop of a research project conducted by researchers from SUA, Ministry of Agriculture and NGO-MARECIK, Arusha.

The presentation to be made to you soon by the researchers for your approval is your own knowledge. The wealth of your knowledge about medicinal plants use on your animals is of great importance to the Tanzania community and to the international community. The knowledge was collected from you since November 2000 is now documented for you to validate to day ready to be forwarded to FAO where it will be preserved released and disseminated to the rest of the world community for sharing. Your knowledge will be written and binded in books like these confidently used ethno-veterinary knowledge among pastoralist of Samburu, Kenya Book 1 &2 when other people can read and gain from your knowledge experience as shred knowledge This documentation you are validating today will go down in history and your names will be inside as a source wen the knowledge cam from. You should be proud of your own traditional knowledge on medicinal plants use being made available and valued. Your broad knowledge on medicinal plants use on animals tells the whole national and international community that you care and conserve your natural plant diversity for sustainable use.

The continued use of medicinal plants for animals even to our times of science and technology speaks loudly to the local and international community that you are conservators of the natural resources and environment you live in.

With this few remarks I would like to thank you Mr Chairman for making this validation workshop a success and many appreciation goes to all pastoralists that turned up in gender and elder age groups to approve the findings of this researchers. May I also thank Mr. Moines for interpreting this speech to all the Maasai participants in their own language. May lastly, but not least thank the team of researchers and the sponsors of this study and workshop. I now have the honour of declaring this workshop officially open.

Appendix 2

Place: Loibosoit A

Date: 15/11/2001

Present.

1. Partimbo Tendee- Mwenye kiti wa kijiji
2. Nengeliali Olekone
3. Samingo M. Moinas
4. Tumaini Mariko
5. Ngaama Aldamu

6. Ndiinga Olemareo
7. Lulunge Kilakoi
8. Sangau Kilakoi
9. Musando Ndiimu

Address ya Kijiji
P.O. Box 3060, Arusha.

Appendix 3

Validation report ya Uhakiki wa taarifa ya utafiti wa umuhimu wa madawa ya miti shamba kwa tiba na afya ya wanyama wa fugwao wa wafugaji wenye hulka ya kuhama hama wa Kimaasai.

Madhumuni ya mkutano

1. Kuwakilisha matokeo ya utafiti
2. Kujadiliana kuhusu matokeo
3. Kutoa mapendezo

Mahali Vijiji ambako utafiti ulifanyika

Terrat, Sukuro, Narakauo, Loibosiret, LoibsoitA, Naidochikin, Namalulu, Naberera Orkirung'urung'u.

Matokeo ya utafiti

1. Demographic (Idadi ya wafugaji)

Wanaume 14-15%

Wanawake 25-28%

Kwa nini-

Vijana wengi uhamia mijini kutafuta kazi za kuajiriwa.

- watoto wa kike wanazaliwa wengi zaidi.

2. Uzalishaji wa mifugo

Kuhama kutafuta malisho hasa wakati wa kiangazi.

3. Mashirika au vyama katika kijiji

Ilaramaak lolkonerei, MAA, PINGOS, TANAPA, SSL, World vision, LAMP, ADDO, Moipo, Bundu safari, Tarangire game reserve, Big game, LIRDO.

4. Kipato (Income sources)

Hupaikana kutokana na

Mifugo-maziwa, nyama,ngozi, damu, mnyama

Kilimo

Madini

Wanyama poi

Nyinginezo kupika pombe, vito way ushanga, kibarua.

5. Matumizi ya fedha

Chakula- nafaka

Nguo

Mahari

Dawa za mifugo

Dawa ya binadamu

Ada za shule

6. Hali ya katika jamii

Chart: G1- KUNDI LA MATAJIRI 5%

G2- KUNDI LA WATU WA KATI 20%

G3- KUNDI LA WASIOJIWEZA 50-60%

7. Namna ya matumizi ya miti shamba kwa afya ya mifugo

7.1. Magonjwa ya mifugo kwenye vijiji tulivyotafiti

Magonjwa yanayotibika

1. Kutoa kondo ya mimba
2. ugonjwa wa macho
3. vidonda
4. vidonda vya kuoza
5. kansa ya ngozi
6. kuharisha
7. Ugonjwa wa midomo na miguu- FMD
8. Minyoo

Magonjwa yasiyotibika

1. Ndigana kali- ECF
2. Ndorobo
3. Ndigana baridi- anaplasmosis
4. Minyoo
5. MCF
6. Kimeta- anthrax
7. CBPP
8. CCPP

7.2 Miti shamba inayotumika sana

Jina la dawa kwa kimaasai	Matumizi	ndivyo	Additional comment
Eluai roots	Kondo ya mimba	v	
Oiti	Watu	v	
Ormukutan	Vidonda,	v	minyoo upeple, kansa ya ngozi
Ormisera roots	Kondo ya mimba, kushusha maziwa	v	
Engaiteteyai	Ugonjwa wa mapafu ndama	v	
Osilalei	Kuharisha watu	v	
Oltেমwai	Viroboto, kupe,	v	upele, funza, homa ya manjano
Olchanionyokie	Alakikir, kondo ya mimba	v	
Arng'arooji	Kukojoa damu	v	
Esiteti	Kulainisha njia ya mimba	v	
Alisikirai	Vidonda, kansa	v	
Oleisusu	Viroboto	v	
Orkumbau	Leeches, vidonda vyenye wadudu	v	
Orng'eriandus	Kansa	v	
Oremi roots	Ndigana kali, nyongo,	v	pneumonia
Olkipirelekima	Kondo ya mimba,	v	Kutoa maziwa
Orbukoi	Ndigana kali, kukojoa damu	v	
Osokonoi	Ndigana kali	v	Kuumua na tumbo
Oleisusu	viroboto	v	
Orkumbau	Leeches, myasis	v	
Orng'eriandus	kansa	v	
Oremi roots	Ndigana kali	v	
Olkipirelekima	Kondo la mimba na kutoa maziwa	v	

7.2. Maswali juu ya matumizi

MASWALI	MAJIBU
I Ni nani anatafuta madawa haya?	<i>ni baba zaidi na vijana wa kimorani kama dawa yenywe iko mbali. Mama pia anatafuta kama iko karibu.</i>
Ni nani anayetayarisha?	<i>Kama inahitaji kuchemswa mama ndiye anayeichemsha</i>
Nani anayetumia zaidi haya madawa kienyeji?	<i>Watu wote awe tajiri au maskini</i>
Ni wakati gani madawa yanatumika?	<i>Wakati wowote ugonjwa unapotokea.</i>
Ni nani wenye ujuzi wa madawa ya kienyeji?	<i>Wazee wa kiume na kike</i>
Je watu wanajifunzaje kuhusu madawa ya kienyeji ya mifugo	Kutoka kwa vizazi vya zamani.
Kwa nini watu wengine wanajua au wana ujuzi zaidi kuhusu madawa ya kienyejikuliko wengine	Hii inategemea uwezo wa mtu na anavyopenda kuyafahamu madawa ya kienyeji.
Kati ya yale matibabu yanayotumika kwa uhakika ni yapi yanatumika zaidi?	Angalia orodha
Je wasichana wanafundishwa kuhusu madawa ya kienyeji ya kutibu mifugo	Kutoka mama na mumewe.
Je ni watu gani wanaotumia madawa ya kienyeji zaidi ni waliosoma au ambao hawajasoma	Waliosoma wanatumia zaidi ya kisasa
Je watu wanapendelea madawa ya kienyeji zaidi ya madawa ya kisasa?	Inategemea ugonjwa wenyewe.
Je madawa ya kienyeji yanaendelezwa?	Hapana
Je wakati wa kutumia madawa ya kienyeji unatumia mti mmoja au mingi	Hutumia mti mmoja au miwili kutegemeana na ugonjwa.

Nguvu katika matumizi ya madawa ya kienyeji

- hupatikana kwa urahisi
- hutibu magonjwa kadhaa kama vidonda , macho, kwa muda mfupi

Udhaifu wa haya madawa

- mimea kupotea
- kutokutibu magonjwa makubwa kama ndorobo
- vipimo kamili havijulikani (dosage)
- ni kazi inahitaji muda na nguvu – wamesema si kweli
- madwa mengine ni makali sana i.e. ormukutan

Vitisho

- kupotea kwa mimea
- mtandao wa elimu ya jamii umevunjika kwa kuhama kwa vijana na kuwepo madawa ya kisasa.

Mwanya wa madawa ya kienyeji

- kupanda
- matumizi bora ya ardhi ya kijiji
- kamati ya mazingara imetenga sehemu ya hifadhi ya mimea ya miti shamba
- sheria ndogo ndogo za kijiji kuhusu kuhifadhi mazingira.
- Kulaani kwa mila watu wanaokiuka sheria au miiko
- Uhamasishaji –miti mingine ikikatwa ina sababisha radi pia mvua hupungua.
- E.e. acacia spp- itepes, Ximenia- alemayai, oirii .

Mikakati – recommendation

-vipimo halisi vifanyiwe uchunguzi- utafiti

- wataalamu wa jadi wazingatiwe na kuombwa watoe mafundisho
- kuwe na kumbukumbu za madawa ya kienyeji katika vitabu ili watu wengine waweze kusoma
- utafiti
- wanaomba wapatiwe hii ripoti kwa lugha wanayoielewa.