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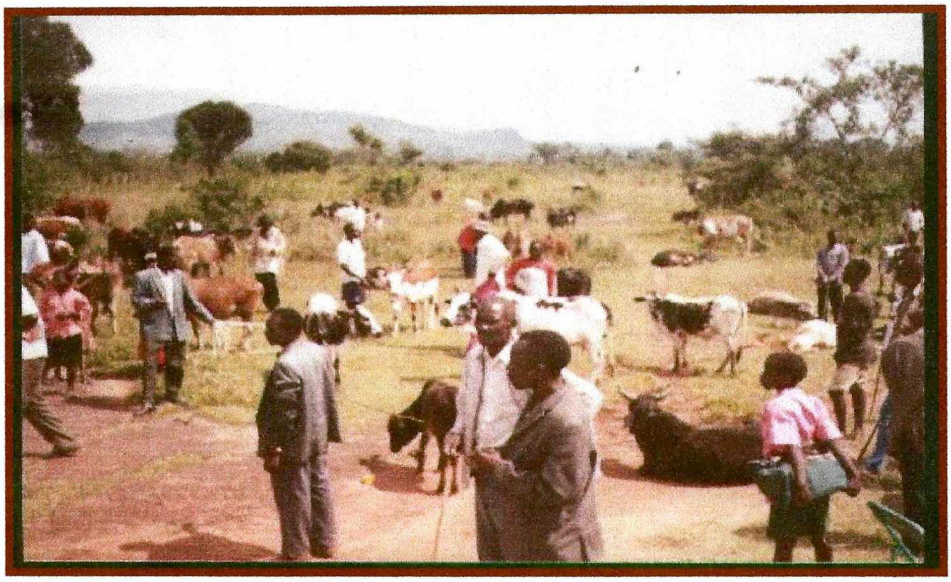

CROSS SECTIONAL CATTLE DISEASE SURVEILLANCE BUNGOMA DISTRICT, KENYA

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Funded by –
FITCA – Kenya
Po Box 261,
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Cross Sectional Cattle Disease Surveillance Bungoma District, Kenya

by

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* *Cover Photo*
(Cross Sectional Survey at Nasimbo stream, East Siboti sub-location)

ACRONYMS USED

AHITI	:	Animal Health Industry and Training Institute
AI	:	Artificial Insemination
BVM	:	Bachelor of Veterinary Medicine
CCS	:	Cross Sectional Survey
CTA	:	Centre for Agricultural and Rural Development (Netherlands)
DVO	:	District Veterinary Officer
DVS	:	Director of Veterinary Services
EU	:	European Union
F	:	Female
FAO	:	Food and Agriculture Organization of the United Nations
ECF	:	East Coast Fever
FITCA	:	Farming in Tsetse Controlled Areas
EPG	:	Eggs Per Gramme (of faeces)
GoK	:	Government of Kenya
GPS	:	Global Positioning System
IGA	:	Income Generating Activity
M	:	Male
M.Sc	:	Master of Science
NGO	:	Non-governmental Organization
NVS	:	Nomadic Veterinary Services
PCV	:	Packed Cell Volume
PMU	:	Project Management Unit
T	:	Trypanosoma
Vet	:	Veterinarian

ACKNOWLEDGEMENTS

My appreciation goes to Dr. Burkhard Bauer and the FITCA team in Busia for funding and providing logistical support which enabled the smooth and fast execution of this exercise. I also wish to acknowledge the work of Mr. Hannington Alushula for his technical assistance in analyzing blood and lympnode samples as well as facilitating the entomological survey for tsetse flies. My special thanks also go to the veterinary department and especially Dr. John Wanjia (the Deputy District Veterinary Officer, Bungoma) and the provincial administration in Bungoma for their moral support and technical assistance in mobilizing livestock owners as well as helping with organizing farmers at the time of sample collection. This support really facilitated the implementation of this exercise. My thanks also go to Bonface Bukhebi and Lucia Juma, both of Nomadic Veterinary Services for their commitment and devotion to this work. Ms Catherine Dulong, a student from Le Institut Superior Le Agriculture (France) is acknowledged for her enthusiastic participation in this exercise. Special thanks go to all the farmers in the sub-locations sampled for their enthusiasm and support for this exercise. It was a big moral booster to see even women farmers and children struggling to restrain their cattle. Lastly, I would like to thank Ms Fridah Wanyonyi for typing this report.

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ABSTRACT

This study was undertaken to identify the major diseases affecting and limiting the health and productivity of indigenous zebu cattle in 3 divisions of Bungoma district, Kenya.

The survey established the prevalence rate of these diseases over the 2 months period (of the exercise) and looked at the effect of age and sex of cattle on infection by different diseases and conditions.

During the survey, 1040 indigenous zebu cattle from 13 sub-locations had their samples (faeces, blood, lymph node smears and ticks, *Amhyllyoma SPP*) collected and analyzed both in the field and in the laboratory for trypanosomiasis, worms, babesiosis, anaplasmosis, east coast fever and cowdriosis. Biconical traps were also used (3-6 per sublocation) to trap tsetse flies which were later identified.

Faecal samples were subjected to the McMaster egg counting technique and worm egg counts per gram of faeces determined. Blood was collected from the ear vein of target animals into heparinized capillary tubes for determination of the packed cell volume (PCV) which was used as an indicator of the anemia status for each animal. Examination of the buffy coat and thin as well as thick blood smears was used to study the presence of trypanosomiasis. Thin blood smears were also used to detect babesiosis and anaplasmosis, while lymph node smears were done to examine for East Coast fever. Samples of *Ambylyomma SPP*(ticks) were collected to analyze the present of cowdriosis.

Out of the 1040 cattle examined as previously described, 28 (2.7%) were found to be positive for trypanosomiasis, 64 (6.15%) had east coast fever, 25 (2.4%) had babesiosis and 30 (2.9%) had anaplasmosis. Tamuleka had the highest number of trypanosomiasis cases (7), followed by Machakha (5) and Chebukuyi (4) and West Siboti (4). It was found in this study that 60.7% of all the trypanosomiasis case were caused by *Trypanosoma Congolense*, and 39.3% by *T. vivax*.

A total of 23 tsetse flies were got in this exercise from 54 traps laid out across in the study area. Tamuleka had the highest number of flies trapped (7), followed by Machakha (6) and Chebukuyi (4) over the 48 hour trapping period. Most of the flies got were *G. pallidipes*. The low fly numbers reported in this study could be due to high level trapping and baiting that was already going on in the area.

There was uniform infection of all cattle in all areas with worms. About 30 – 50 animals in each sub-location were sampled for worm egg counts. Emphasis was given to young stock and those in poor condition. In general, this study reports an average worm egg count of 306.1 eggs per gramme of faeces for all areas and studied. Male calves had the highest EPG of 522, followed by female

calves (448), female growers (303.8), male growers (257), female adults (252.2) and male adults (228.5)

It was observed during this survey that there is a very high tick infestation in all the animals studied. This coupled with the tsetse fly situation calls for a combined tick and tsetse fly control program. It is also noted that provision of veterinary services in the area is a major constraint to farmers, which needs to be addressed.

Chapter One

INTRODUCTION

No one involved with livestock, especially in Africa, needs to be convinced of the importance of animal diseases as a significant constraint to production (Reichard, 1998). Kenya, where livestock keeping is so important has its share of major livestock diseases. Some of these diseases, through long standing efforts, have been brought under control. As in other places however reversals occur, such as the devasting trypanosomiasis situation in Western Kenya. The presence of trypanosomias in especially the districts of Teso, Bungoma, Busia, Siaya and Bondo has brought untold suffering to these poor rural farmers. The disease has brought severe food insecurity and malnutrition (because of lack of animal draught power and lack of animal protein in the form of milk), poverty (as there is no surplus food, milk and animals to sell) and even interfered with traditional activities such as paying of dowry. In badly hit areas of Teso and Busia, one finds stretches of bushes and small hand-dug farm fields. These bushes have become the breeding grounds for tsetse flies, which in turn transmit the disease.

In spite of the importance of livestock and the devasting effects that trypanomiasis has brought, there have been no systematic attempts to monitor the extend of the spread and severity of this disease and other health constraints on livestock production in this region. This has led to a situation where veterinary professionals in the area carry out treatment without proper diagnosis, and this could lead to further problems of drug resistance, high mortality of affected livestock and high and unjustified costs to livestock owners. The situation is further made worse by the high costs of veterinary drugs and services in the region.

In August 2001, FITCA-Kenya contracted Nomadic Veterinary Services, based in Bungoma town to carry out a cross-sectional survey in three divisions of Bungoma district. This is the first ever systematic attempt to understand the spread, extend and severity of trypanosomiasis and other major livestock diseases and conditions (such as East-coast fever, helminthiasis, babesiosis, anaplasmosis and cowdriosis) in the area. The exercise which was funded by FITCA-Kenya has facilitated a rapid mobile field diagnosis of easy to carry out tests, which were followed by detailed laboratory procedures for further diagnosis and confirmation of field results. Throughout the exercise, emphasis was put on understanding the incidence of diseases in indigenous breeds of cattle.

Among other things, the main objectives of this study were –

- To collect epidemiological and entomological data for an assessment of the severity and spread of tsetse – transmitted trypanosomiasis in cattle in Bungoma district.
- To identify high risk areas which may require the design of tailor-made trypanosomiasis management practices to improve the performance of mixed crop / livestock small-holder production systems.
- To create awareness and provide farmers with basic knowledge about major diseases including the use of clinical symptoms for the diagnosis of trypanosomiasis and other diseases and empowering them to take appropriate actions.
- To collect data on the impact of other vector-borne diseases on animal production. These included anaplasmosis, babesiosis, east-coast fever and cowdriosis.
- To come up with a strategic intervention mechanism for the management of tick-borne diseases.
- To collect data and assess the impact of helminthiasis on cattle productivity, especially the young-stock in the district.
- To design a strategic and cost-effective treatment and management plan for helminthiasis in young stock.
- To design geo-referenced disease risk maps with the ultimate aim of providing technical advice for veterinary services (both private and public) for adequate and justifiable disease management practices.

Chapter 2

2.0 MATERIALS AND METHODS

2.01 *The Study Area*

This study was carried out in 13 sub-locations of Malakisi (4), Sirisia (1), and Bumula (8) divisions of Bungoma district, Kenya.

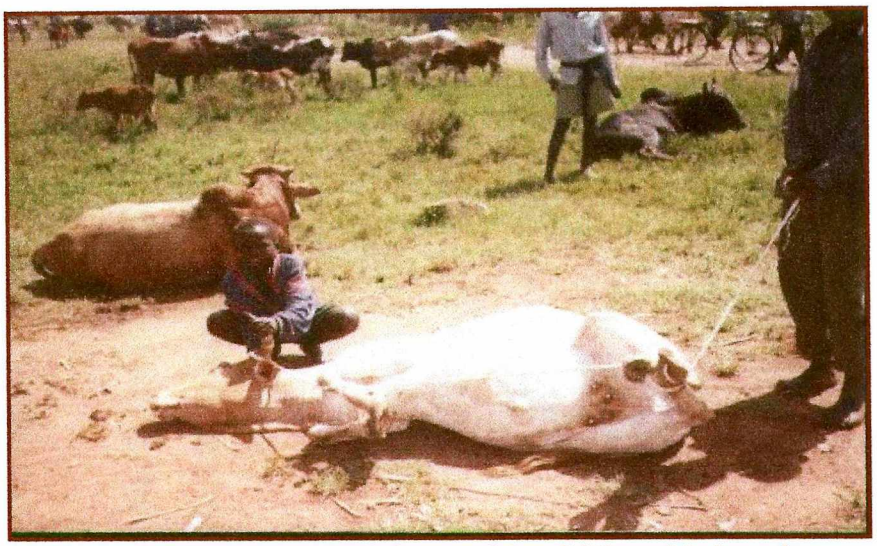
Bungoma district borders Teso district in the north-west, Transnzoia and Malava/Lugari in the north, Kakamega and Butere/Mumias on the east and Busia on the south-east. The divisions surveyed have hills which are interrupted by farm lands, forest areas and marsh grazing lowlands. The upper part of the district neighbouring Mt. Elgon has bushy forested areas, while the lower part is a sugarcane growing area, dominated mostly by farmlands.

Bungoma district is located on the south eastern slopes of Mt. Elgon which influences rainfall and mitigates temperatures. The mean annual temperatures in the southern parts of the district, away from the mountain (Malakisi, Bumula and Sirisia) is 21 to 22 ^{0}C. Bungoma is generally considered to be a district with high agricultural potential. It experiences two rainy seasons, the long rains (March to July) and short rains (August to October). The district receives 1250 – 1800 mm of rain annually. One of the biggest challenges facing development workers in Bungoma district is how to effectively stimulate development in the area using the abundant human and natural resources available.

The district has over 300,000 heads of indigenous zebu cattle and an additional 40,000 improved dairy animals. Cattle are useful as sources of milk, meat and manure and additionally plays other useful traditional roles such as paying of dowry. In general, grazing land consists of natural grass and other vegetation which does not receive any special managerial attention. Overgrazing is a problem in many areas and animals still rely on open areas near river banks, schools and road sides for pasture.

Although most of the indigenous cattle in the area are well adapted to the local climate and diseases, the recent insurgency of trypanosomiasis in the area still poses a major threat to the sector. Additionally, it is felt that since independence (1963), professionals in the area have spend a disproportionately large amount of their time and resources trying to increase the numbers and productivity of the few exotic dairy breeds and totally ignored the large number of indigenous zebu cattle in the area. This is the first projects of its kind to specifically focus its attention on improving the survival, productivity and health condition of these neglected, but useful resource.

During this study, 1,040 animals (80 from each sub-location) were sampled.



(Even children were not left out of the CCS as this boy shows at Myanga Market)

Table 1 below shows the sub-locations involved in this study and the actual areas used for sampling.

Table 1: ***Sub-locations involved in this study.***

Division	***Location***	***Sub-location***	***Where animals were bought***
Sirisia			
	Namwela	South Namwela	Wabukha Cattle Dip
Malakisi			
	Lwandanyi	Chebukuyi	Korosiandet Cattle Dip
	Namubila	Machakha	Machakha Market
	Malakisi	Tamuleka	Tamuleka Market
	Malakisi	Butonge	Butonge Market
Bumula			
	Mukwa	Mukwa	Mukwa Cattle Dip
	Napara	West Siboti	Napara Market
	Siboti	East Siboti	Nasimbo Stream
	Kimaeti	Myanga	Myanga Market
	South Bukusu	West Mateka	Mateka Market
	Khasoko	Khasoko	Khasoko Pri. School
	Kimatuni	Kimatuni	Nasyanda Cattle Dip
	Kabula	East Mateka	Kabula Market (murram)

2.02 Study Animals

Table 2 : **Total animals brought to the sampling sites (calves < 1 year; growers >1 <3 years; adult >3 years)**

Sub-location	*Total No. Of farmers involved*	*TOTAL ANIMALS PRESENTED*					
		Calves	*Growers*	*Adults*	*Total*	*Animals per farmer*	*% of animals sampled*
South Namwela	96	78	212	419	709	7.4	11.3
Chebukuyi	116	109	194	508	757	6.5	10.6
Machakha	103	55	149	312	516	5.0	15.5
Tamuleka	119	48	211	299	558	4.7	14.3
Butonge	68	73	126	314	513	7.5	15.6
Mukwa	73	53	148	402	603	8.3	13.3
West Siboti	125	31	195	398	624	4.9	12.8
East Siboti	117	40	187	373	600	5.1	13.3
Myanga	79	29	170	391	590	7.5	13.5
West Mateka	109	73	49	301	423	3.9	18.7
Khasoko	83	43	58	217	318	3.8	25.0
Kimatuni	61	47	101	113	261	4.3	30.7
East Mateka	83	26	32	130	188	5.7	42.5
TOTALS	***1,182***	***705***	***1,832***	***4,177***	***6,714***	***5.7***	***15.5***

Comments about the animals sampled

- Generally, there were many more animals brought than could be sampled. This was generally a source of many confrontations with farmers in many areas.
- Farmers generally preferred that their most valued animals be sampled during the exercise, when given a choice. This varied from one farmer to another. Some preferred their milking cows (which bring in income), others oxen (that could be used for draught power), and others their highly valued calves.
- Frequently farmers wanted their sickly animals examined and sampled; hence farmers were looking for solutions to their problems through this exercise. Consequently it will be very important that results of this exercise are communicated to each individual farmer.
- Farmers expect a solution to what they perceive to be their problems, which this exercise will identify and document.

Table 2 - shows the total number of cattle brought to the various sites from which approximately 80 were selected for detailed sampling and examination at each sampling site.

2.03 Sampling and laboratory procedures

(a) Blood samples

i. ***Determination of packed cell volume (PCV)***

PCV was determined using blood that was collected from the ear vein of each animal using sterile lancets. The blood was drawn directly into a heparinized capillary tube and the end sealed using crista seal. The samples were immediately analyzed in the field under a shade. They were placed in a microhaemotocrit centrifuge (Hawksley, England) and centrifuged at 10,000pm for 5 minutes. The tubes were then placed in a microhaematocrit reader (Hawksley, England), adjusted for the volume of blood in the capillary tubes and the PCV (expressed as a percentage) read as the volume of red blood cells to the total volume of the whole blood in the capillary.

All the 80 selected animals (per sub location) had their PCV determined The PCV was used as an indicator of anaemia. Animals with a PCV of $\leq$ 25% were given treatment with diminazene aceturate (veriben®) at a rate of 3.5 mg/kg body weight. This helped a great deal in improving the participation of cattle owners in this cross sectional survey.

ii. Examination of the buffy coat

After reading the PCV, the capillary tubes were broken 1mm below and 3mm above the leucocyte layer using a diamond pencil. The isolated segment contained about 5 micro-litres of erythrocyctes, leucocytes and 15 micro-litres of serum. These were expelled onto a slide and covered with 22 x 22 mm covership. The slides were examined under the microscope at x40 objective for trypanosome parasites, without staining. All 80 animals from each sub-location were subjected to this exercise.

iii. Thin blood smears

This was used to study the presense of haemoparasites. Thin blood smears were prepared from a small drop of blood placed on a clean slide 1cm from the edge. The edge of another slide was placed on the first, at an angle of 30 – 45 degrees. The blood was allowed to spread by capillary action along the angle formed by the 2 slides *(Murray, et al 1983).* The angled slide was moved along the first one with a steady movement drawing the blood behind it to spread the drop evenly on the slide.

The blood was dried in the air, away from flies and later (in the laboratory) stained using dilute giemsa (1:10), after fixation in methyl alcohol for 2-5 minutes. The prepared slides were allowed to stand for 30 – 60 minutes in the dilute giemsa. After this, the stain was washed off using neutral water and drip dried in a vertical position. The slides were examined for Babesia and Anaplasma parasites under the microscope. Thin blood smears were prepared for each of the 80 animals selected for study in each sub-location.

iv. Thick blood smears

To prepare a thick blood smear, a drop of blood was applied onto a clean slide and spread out with the corner of another slide (Uilenberg, 1998), to produce a circular area. The film was thoughly dried, and in the laboratory stained without fixation with Giemsa stain. Examination (for trypanosomes) was carried out under the microscope, using oil immersion at x40 objective.

v. Lymph node smears

Lymph was aspired from prescapular lymph nodes using a large bore needle (G18") and made into a thin smear, fixed, stained and examined for schizonts (koch's blue bodies) under the microscope.

(b) Helminthiasis survey

i. The modified Mcmaster egg counting technique

Faecal samples were collected from 40 – 50 animals selected from each of the (80) in the 13 sub-locations. Faecal samples were collected from the rectum of each animal into plastic faecal pots. Glass vials that had two marks at 28ml and 30ml were used. A saturated salt solution (360g of salt in 1,000ml of water) was poured into the vial up to the 28ml mark. By displacement, 2 grams of faeces were added until the level rose to the upper mark of 30ml. The contents were mixed thoroughly and passed through a coffee strainer. The filtrate was stirred with a dropper and, while stirring a dropper full of the mixture was withdrawn and used to fill the counting chamber of the McMaster slide. The slide was left for 10 minutes to allow the eggs to rise to the top of the slide. The slide was then examined under low power (x10 objective) of the microscope and all the eggs in the centimeter square of the slide were counted. The count obtained was multiplied by 100 to get the total number of eggs per gram of faeces (EPG). During this exercise, suspect calves in poor body condition received treatment with the antihelmintic, Albendazole (Panacur®) at a rate of 7.5mg.kgbw

(c) Entomological surveys

At each of the sampling sites in each sub-location, tsetse fly densities were assessed using 3 – 6 baited (cow urine and acetone) bi-conical traps. These were placed in suitable habitats near water drinking areas, cattle dips and generally bushy areas. Trap poles were greased to protect caught flies from ants. At each site where a trap was place geo-referenced position (using GPS) and habitat type were recorded. The traps remained in place for 48 hours. At the time of removal the number of flies trapped was recorded. Live flies were to be dissected for the examination of the proboscis, salivary glands and midgut to detect trypanosomes later. Blood meal relics were to be squashed on whatman filter paper and stored in a deep freezer for later analysis. The later two activities were to be carried out at the PMU, Busia

Chapter 3-

3.0 RESULTS

3.01 Animal Dynamics

Animals sampled

In total, 6,714 cattle belonging to 1,182 farmers were brought to the various sampling sites in the 13 sub-locations. Out of these, 1,040 animals were selected and their samples (blood, faeces, ticks and lymph node smear) collected for this Cross Sectional Survey. The 6,714 cattle comprised of 705 calves (10.5%), 1,832 growing stock (27.3%) and 4,177) adults (62.2%). Table 3 below shows the sex and age of animals sampled in each of the 13 sub-locations. Table 4 shows the average, estimated body weight and body score for the animals used in this study.

Table 3 : ***Sex, and Age of animals sampled in each of the 13 sub-locations.***

Sub-location	***Calves***		***Growers***		***Adults***		***Total***
	M	*F*	*M*	*F*	*M*	*F*	
Chebukuyi	3	7	10	4	36	20	80
Machakha	2	0	7	5	48	18	80
South Namwela	2	3	10	16	15	34	80
Tamuleka	1	3	11	13	40	12	80
Butonge	3	6	13	16	24	18	80
Mukwa	2	6	13	14	20	25	80
West Siboti	1	1	4	9	36	29	80
East Siboti	2	3	16	19	24	19	83
Myanga	0	3	4	10	25	39	81
West Mateka	11	3	9	10	14	33	80
Khasoko	9	17	10	8	4	32	80
Kimatuni	2	4	11	14	13	33	77
East Mateka	4	4	15	16	11	29	79
GRAND TOTAL	***42***	***60***	***133***	***154***	***310***	***341***	***1,040***

Table 4 – Age, Weight and Body score of study animals

Sub-location	*Average Age*	*Weight*	*Body Score*
South Namwela	4.9	132.4	4.1
Chebukuyi	5.41	147.23	4
Machakha	5.7	312	4.3
Tamuleka	4.94	135.06	3.9
Butonge	4.6	138.2	4.1
Mukwa	4.60	115.44	4.2
West Siboti	6.87	132.1	4.2
East Siboti	4.20	117.83	4.14
Myanga	5.6	128.1	4.2
West Mateka	4.6	166.8	4.6
Khasoko	3.3	88.1	4
Kimatuni	4.6	112.13	4.2
East Mateka	4.3	141.3	4.5

In total, 555 female cattle (53.4%) were sampled in this study as compared to 485 males (46.6%). Out of the 1,040 cattle sampled, there were 102 calves (42 males, and 60 females), 287 growers (133 males and 154 females) and 651 adults (310 males and 341 females).

There was great variability in age, weight and body score as different people were used to score the body condition and to estimate the weight and age of each animal. All the same, the results show that West Siboti had the oldest animals (6.87 years) followed by Machakha (5.7 years) and Myanga (5.6 years). Average body scores were nearly the same, while average weight varied widely.

3.02 Study Area

During the year (2001), the area under study has received much higher rainfall than in previous years. This could account partly for the high worm egg counts. It was found that during and before the time of this study, a lot of tsetse baiting had been done in the area, by the veterinary department and this could have led to low fly numbers reported (as compared to previous years)

3.03 Anaemia Status

Table 5 shows the average PCV values for different classes of cattle used in this study, while table 6 – shows the number of animals in each location that had PCV below 20%, below 25%, and above 25%.

Table 5 - Average PCV Value at the various sampling sites

Sub-location	***Calves***		***Growers***		***Adults***		***Average PCV for whole sub-location***
	M	*F*	*M*	*F*	*M*	*F*	
South Namwela	26.67	22	28.6	26	29.2	27.7	27.66
Chebukuyi	18.25	23.56	26.75	23.36	26.75	21.1	22.63
Machakha	28.5	-	23.88	26.2	25.8	25.67	25.51
Tamuleka	19	15	21.9	20.29	20.47	20.24	20.71
Butonge	28.3	30.2	27.5	25.7	25.27	25.65	28.08
Mukwa	24.5	25.67	26.64	25.30	26.2	25.58	25.99
West Siboti	14	24.5	22	20.5	21.8	23.26	22.09
East Siboti	21	27	26.38	27.68	26.23	26.1	26.4
Myanga	-	25.5	29.25	28.6	27.17	27.25	25.43
West Mateka	27.9	31.25	26	26.4	30.5	25.65	28.6
Khasoko	26.36	27.8	28.5	29.75	27.25	28.9	29.32
Kimatuni	22.5	23.5	27.6	24.13	23.17	25.84	25.48
East Mateka	30.3	24.6	29.38	28.6	29.18	30.27	28.0
TOTAL	***287.3***	***300.6***	***344.4***	***332.5***	***339.0***	***333.3***	***335.9***
AVEREAGE	***23.9***	***25.1***	***26.5***	***25.6***	***26.1***	***25.6***	***25.8***

Tamuleka had the highest number of cattle with a PCV of less than 25% (i.e. 68.75%), followed by West Siboti (61.25%) and Chebukuyi (60%). East Mateka (10%) had the lowest number of cattle with a PCV less than 25% followed by Khasoko (16.25%) and West Mateka (21.3%).

Generally the results show low PCV values for areas in the north-west of the district which are bushy and border Teso district's, Angurai Division and high values in the southern sugarcane growing areas of the district.

Overall, Tamuleka had the lowest average PCV (20.71%), followed by West Siboti (22%) and Chebukuyi (22.6% – (Table 6). Figure 1 – shows the number of animals with a PCV less than 25% in the various sub-locations while Figure 2 shows the average PCV of all animals sampled at various sites.

Figure 1 - ***Number of animals with PCV less than 25%.***

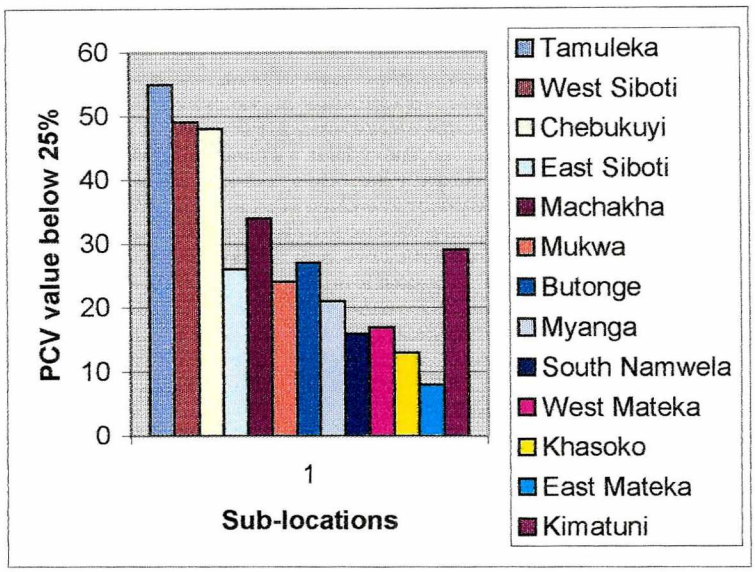
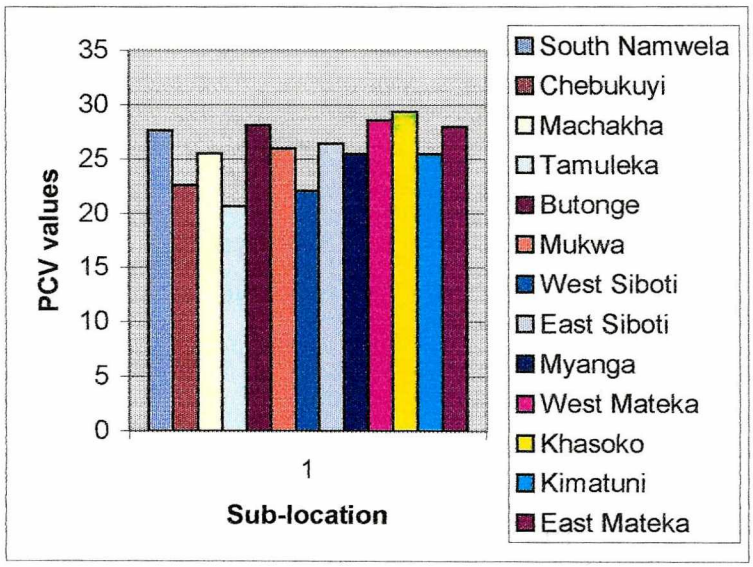


Figure 2 ***Average PCV Value for cattle at the various sampling sites***



3.04 *Effect of Age and Sex on the anaemia status of cattle in the study area*

In terms of average PCV values, Khasoko had the highest (29.32%), followed by Butonge (28.08%) and East Mateka (28%). Generally animals from these sites had better body conditions and had no positive cases of trypanosomiasis. The lowest PCV values were found in Tamuleka (20.7%), West Siboti (22.09%) and Chebukuyi (22.63%). These later areas had animals in much poorer condition

and had several animals that were positive for trypanosomiasis and heavy infestation of worms.

Table 6 : ***PCV Values***

Sub location	*No. of animals with PCV below 20%*	*No. of animals with PCV below 25%*	*No. of animals with PCV above 25%*
Tamuleka	38	55	25
West Siboti	27	49	31
Chebukuyi	19	48	32
East Siboti	12	26	58
Machakha	9	34	46
Mukwa	9	24	56
Butonge	7	27	53
Myanga	6	21	60
South Namwela	5	16	64
West Mateka	4	17	63
Khasoko	4	13	67
East Mateka	0	8	71
Kimatuni	0	29	48
TOTAL	***140***	***367***	***674***

(Mr. Hannington Alushula, the laboratory technician examines samples at Tamuleka)

3.05 Fly Trappings

Generally, this study reports a low tsetse fly count in the areas sampled. Table 7 below summarizes the flies trapped at the various sites in the sub-locations studies. A total of 51 traps were laid during the exercise, catching a total of 23 tsetse flies and 264 biting flies.

*Table 7 - **Total Number of flies trapped**.*

Sub-location	***No. of trapping sites***	***Number of tsetse flies caught***			***Other biting flies***
		(Male)	*(Female)*	*(Total)*	
Tamuleka	6	6	1	7	27
West Siboti	6	3	1	4	34
Chebukuyi	6	2	2	4	34
East Siboti	3	0	0	0	38
Machakha	6	5	1	6	58
Mukwa	3	2	0	2	19
Butonge	3	0	0	0	9
Myanga	5	0	0	0	14
South Namwela	3	0	0	0	7
West Mateka	2	0	0	0	6
Khasoko	3	0	0	0	3
East Mateka	2	0	0	0	4
Kimatuni	3	0	0	0	11
TOTAL	***51***	***18***	***5***	***23***	***264***

Tamuleka had the highest number of tsetse flies trapped (7) followed by Machakha (6) and West Siboti (4). In most places, the team trapped many other biting flies. Annex 2 details the trappings at each site. Machakha had the highest number of other biting flies (58) trapped followed by West Siboti (34), although the number of sampling sites in each sub-location was not the same. This number of flies can be considered low compared to results from other areas, and could be due to baiting and targets laid in the area.

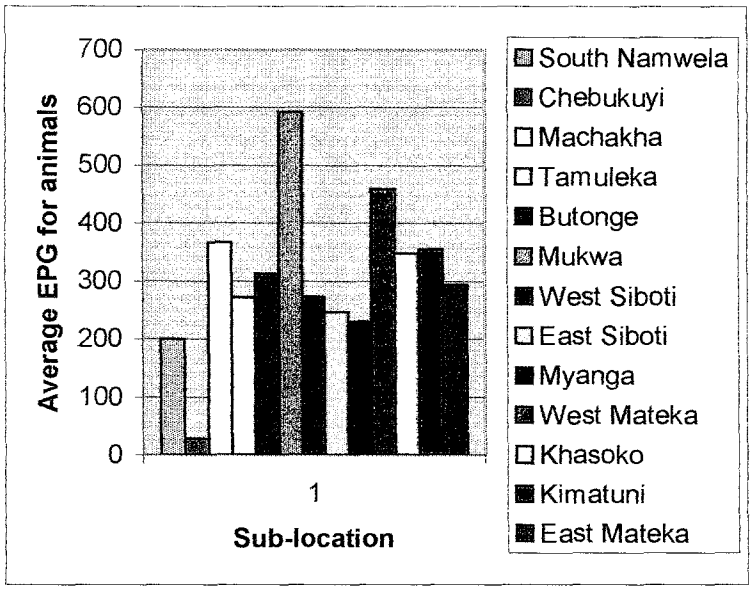
3.06 Worm Egg Counts

Mukwa showed the highest worm egg counts (EPG) of 591.7 eggs per gramme of faeces, followed by Machakha (366.7) and Kimatuni (355.8). In general, all areas had high worm counts and livestock owners were demanding that their animals be de-wormed. It seems that while livestock owners know the value of de-worming their animals, there are factors that prevent or limit them from doing so. The cost and accessibility to drugs could be some of the limiting factors.

Table 8 - **Mean Worm Egg Counts (EPG) for different classes of cattle**

Sub-location	Class and Sex						Average EPG for all animals
	Calves		Growers		Adults		
	M	F	M	F	M	F	
South Namwela		100	125	78.57	281.2	259.3	200.0
Chebukuyi	225	317	250	214.3	343.8	285	27.2
Machakha	950	-	600	475	292.3	170	366.7
Tamuleka	60	433	300	420	273.7	175	272.5
Butonge	325	450	133.3	322.2	435.7	290.9	313.73
Mukwa	-	625	266.7	350	211.1	300	591.67
West Siboti	700	600	50	200	321	256.3	273.9
East Siboti	400	450	288.9	181.8	170	309	246.7
Myanga	-	500	450	275	66.67	228	230.2
West Mateka	475	500	150	700	66.67	208.7	458.6
Khasoko	567	482	266.7	242.9	-	268.4	348.1
Kimatuni	700	725	200	330	225	310	355.8
East Mateka	800	200	260	160	283.3	218.8	294.6
Totals	***5742***	***5381***	***3341***	***3950***	***2970***	***3279***	***3979.7***
Averages	***522***	***448***	***257***	***303.8***	***228.5***	***252.2***	***306.1***

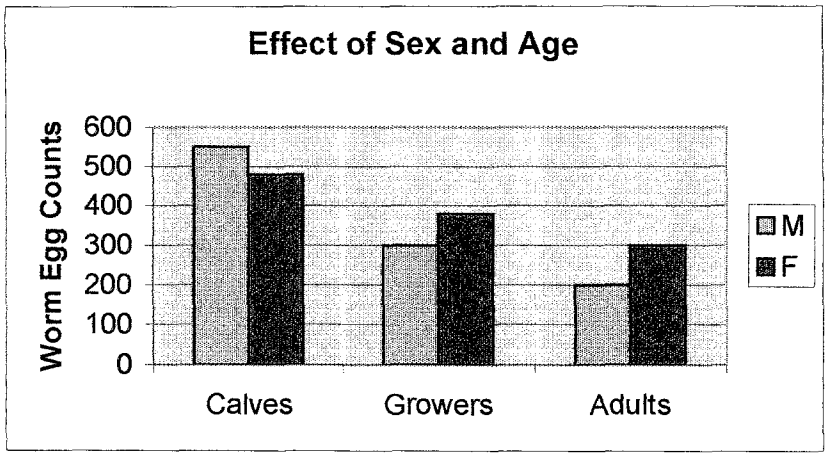
Figure 3 –**below shows the average worm egg counts at the various sampling sites.**



3.07 Effect of Sex and Age

Male calves showed the highest worm infection (EPG) of 552 eggs per gramme of faeces, followed by female calves (448), and female growers (303,3). In general, younger stock had higher worm egg counts than adults. Sex does not seem to affect the worm egg counts in the area under study, except for calves. Figure 3 summarizes the effect of age and sex on worm egg counts

Figure 4 summarizes the effects of sex and age on worm egg counts in Bungoma district



3.08 Cases of Trypanosomiasis using buffy coat examination

Table 9 – shows incidence of trypanosomiasis in the study area. All other areas not shown in the table had no positive cases of trypanosomiasis on buffy coat examination. This is illustrated graphically in Figure 5.

Table 3 - ***Incidence of Trypanosomiasis in Bungoma District.***

Sub-location	*No. of Trypanosomiasis cases*	*Percentage of trypanosomiasis in the area*
Tamuleka	7	25
Chebukuyi	4	14.3
Machakha	5	17.8
Butonge	3	10.7
West Siboti	4	14.3
Mukwa	2	7.1
East Siboti	1	3.6
Myanga	1	3.6
Kimatuni	1	3.6
TOTAL	***28***	***100%***

Tamuleka had the highest number of cattle with trypanosomiasis (25%), followed by Machakha (17.6%) and Chebukuyi (14.3%) Of all the 13 sub-locations sampled, only 9 sub-locations had positive cases of trypanomiasis on examination of the buffy coat.

Figure 5 - Incidence of trypanomiasis in the areas under study.

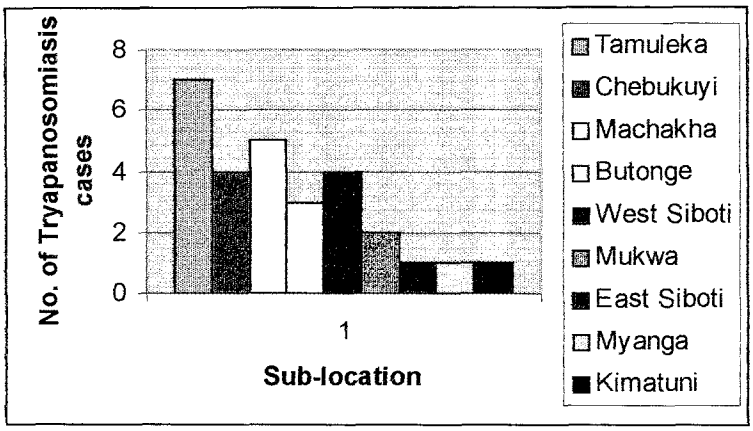
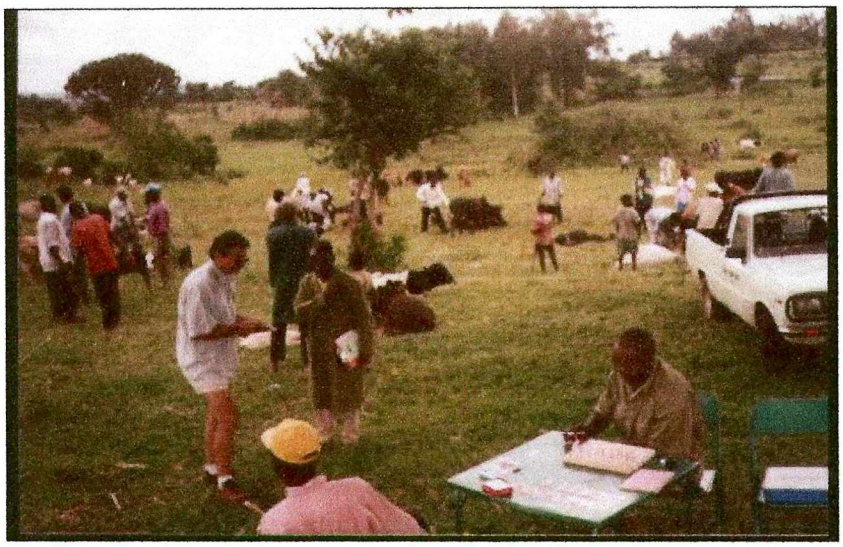


Table 10 below - shows the distribution of trypanosomiasis cases among the various age groups and sexes.

Sub location	*Calves*		*Growers*		*Adults*		*Total*
	M	*F*	*M*	*F*	*M*	*F*	
Tamuleka	0	1	1	1	4	0	7
Chebukuyi	1	0	0	0	1	3	4
Machakha	0	0	1	0	2	1	5
Butonge	0	0	1	0	2	0	3
West Siboti	0	0	0	0	2	2	4
East Siboti	0	0	0	0	1	0	1
Myanga	0	0	0	0	0	1	1
Kimatuni	0	0	0	0	0	0	1
Mukwa	0	1	0	0	0	2	2
TOTAL	***1***	***2***	***3***	***1***	***12***	***9***	***28***

Of all the 28 positive cases of trypasomiasis, males were the majority (57%), as compared to females (43. Male adults had the highest cases of tryapanosomiasis (12) i.e. 42.9% followed by adult females (32.1%). Taking into consideration the different numbers of different ages and sexes sampled (310 adult males and 341 adult females) and 133 male growers) it was found that

3.9 % of all adult males and 2.6 % of all adult females had trypanosmiasis. This study shows that in general, males had a much higher incidence of trypanosomiasis than female cattle in the study area.



(Dr. Burkhard Bauer, The FITCA Technical Advisor and Mr. Hanningtone Alushula consult at Mukwa Cattle Dip during the exercise)

Table 11 -Identification of Trypanosomes seen on buffy coat examination

Sub-location	*Animal Number*	*Age*	*Sex*	*Trypanosome species*
Chebukuyi	1	A	M	T. congolense
	7	A	F	T. vivax
	25	A	F	T. vivax
	47	A	F	T. vivax
Machakha	87	G	M	T. vivax
	95	A	M	T. vivax
	107	C	M	T. congolense
	123	A	F	T. congolense
	153	A	M	T. congolense
Tamuleka	255	G	M	T. congolense
	258	A	M	T. vivax
	267	A	M	T. congolense
	278	A	M	T. congolense
	287	G	F	T. vivax
	304	C	F	T. vivax
	313	A	M	T. congolense
Butonge	357	A	M	T. congolense
	369	A	M	T. vivax
	388	G	M	T. congolense
West Siboti	491	A	F	T. congolense
	504	A	M	T. congelense
	533	A	M	T. congelense
	547	A	F	T. vivax
East Siboti	611	A	M	T. congelense
Myanga	695	A	F	T. congelense
Kimatuni	916	G	F	T. congelense
Mukwa	454	A	F	T. congelense
	458	A	F	T. vivax

It was found tht 60.71% of all positive cases of Trypanosomiasis were infected with *Trypanosoma congolense*, while 39.3% had *T. vivax.*

3.09 East Coast Fever (ECF)

There was a high incidence of ticks in all areas sampled, indicating there are serious problems with tick control in all sub-locations in which this study was undertaken. Table 12 below – shows the incidence of ECF in all areas studied. While all stakeholders recognize the importance of ticks in this area, a problem

that has been agrevated by poor cattle dip management, all of them try to keep off from it.

*Table 12 – **Incidence of ECF in the Study Area***

Sub-location	***No. of Positive cases***	***% Infection rate***
West Mateka	4	5
South Mateka	3	3.75
West Siboti	4	5
Machakha	5	6.25
East Siboti	4	5
Kimatuni	4	5
East Mateka	3	3.75
Myanga	9	11.25
Butonge	6	7.5
Chebukuyi	4	5
Khasoko	5	6.25
Mukwa	7	8.75
Tamuleka	5	6.25
TOTAL	***64***	***6.15 (Average)***

A rate of 6.15% incidence of ECF is reported in this study for all the 13 sub-locations sampled. Myanga had the highest incidence of ECF (11.25%), followed by Mukwa (8.75%) and Butonge (7.5%). These high levels of ECF in all areas is a big threat to exotic cattle breeds, although local zebu cattle are resistant to the disease, which could still be affecting their productivity in many ways.

(Laying of tsetse fly traps at Chebukuyi stream)

3.10 Anaplasmosis and Babesiosis

This study reports a high incidence of anaplasmosis and babesiosis in Bungoma district. Table 13 – shows the incidence of anaplasmosis and Babesiosis as revealed on examination of thin blood smears.

*Table 13 – **Incidence of Babesiosis and Anaplasmosis in the Study Area***

Sub-location	***No. of cases of Babesiosis***	***No. of cases of Anaplasmosis***
West Mateka	3	0
South Namwela	2	5
West Siboti	3	2
Machakha	2	5
East Siboti	0	3
Kimatuni	2	0
East Mateka	1	3
Myanga	3	2
Butonge	2	3
Chebukuyi	3	3
Khasoko	0	3
Mukwa	0	0
Tamuleka	4	1
TOTAL	***25***	***30***

There was a uniformly high level of the tick-borne diseases of Babesiosis and Anaplasmosis. This calls for concerted efforts to try and address the complex issue of tick control in the area. Most cattle dips in the area have collapsed owing to poor management and leadership of cattle dips.

Chapter 4 –

DISCUSSION

4.01 Trypanosomiasis and Tsetse Flies

In general, it was found that animals on the northern end of the district i.e. Tamuleka, Machakha and Chebukuyi were in much poorer body condition than areas in the lower sugarcane growing sites. The former areas are also bushy, probably explaining the high tsetse fly numbers and the accompanying high incidence of trypanosomiasis. These areas border Angurai Division of Teso district which recorded a high number of tsetse flies in the recent past. The fly numbers recorded in this study is lower than what was recorded recently by the veterinary department (personal communication) in the same area. This could be due to the high number of targets and baits that had been used in the area just before the cross sectional exercise began.

Areas in the lower sugarcane growing areas of the district did not have any tsetse flies recorded over the 48-hour trapping period. There was also no trypanosomiasis recorded in this area, which however showed a high incidence of tick-borne diseases (ECF, Anapiasmosis and Babesiosis) as well as worms.

4.02 Trypanosomiasis - Worms interaction

This study shows a strong interaction between helminthiasis and trypanosomiasis in the study area. This confirms studies done elsewhere which indicate that trypanosomiasis (Wilson 1984) more often than not occurs in combination with other diseases. This is especially so in cases of chronic trypanosomiasis which predisposes affected animals to other infections. In cattle, it has been reported that mixed infections (Mukwana 1993) of trypanosomiasis, roundworms and fascioliasis occurs commonly and is responsible for huge economic losses.

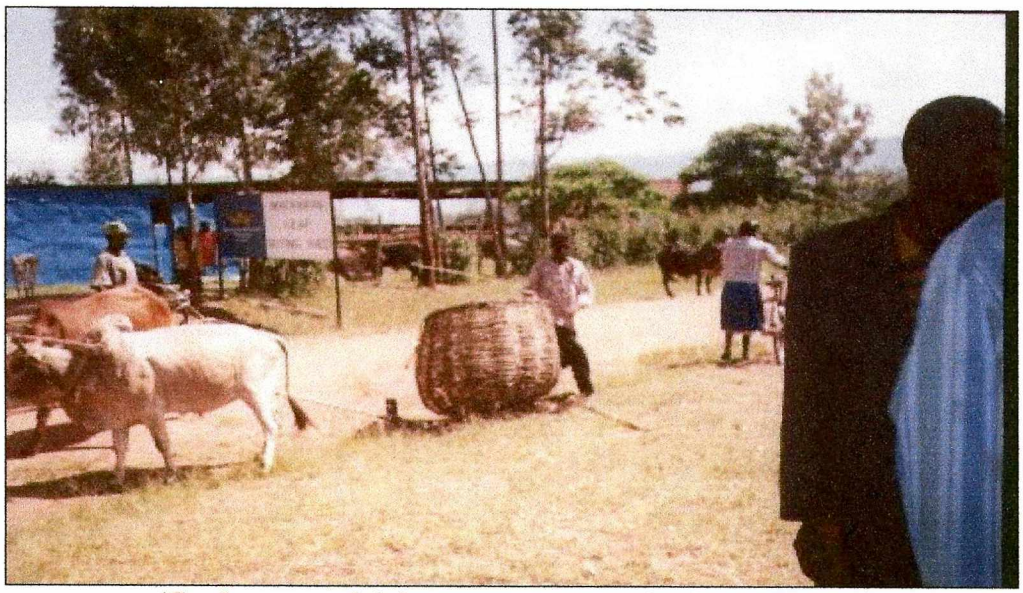
The area under study in this survey has recently experienced high mortality rates of cattle including calves and young stock (personal communication from farmers), and it was found during the survey that the frequency of dual infections of trypanosomiasis and worms as well as other tick-born infections was very high. The study shows that 30% of all cases that were positive with trypanosomiasis also had worm egg counts (per gramme of faeces) of more than 400.

Trypanosomiasis causes immunosuppression in cattle and it has been shown that the immune response of tryapanosome infected rats to helminth infections was reduced and their worm burdens were higher than those of the controls (Mukhwana, 1993). It has also been demonstrated that animals with dual infections were more severely anaemic when compared with those that had

either only worms or trypanosomiasis and the mortality rates in goats with combined infections was higher than those of the controls.

As far as the tsetse fly condition is concerned, this study reports a much lower fly count than that reported previously. This is attributed to heavy trapping and baiting that was going on just before and during the cross sectional survey. This was being done mostly by the veterinary department and FITCA. It is not possible to make any conclusive statements from this 2 months study activity, as fly numbers and impact vary widely over months and weather conditions. However, it has been shown through this exercise that areas in the north-west of the district with bushy and marshy areas (generally bordering Angurai division) had higher tsetse fly counts than those in the lower sugarcane growing zone. This was to be expected as the former provided much better habitats for the flies than the later. Farmers and the veterinary department also report a high incidence of trypanosomiasis in the upper north-western region, confirming the findings of this study. It is suggested that any interventions to control the spread and impact of trypanosomiasis should be concentrated in the Chebukuyi, Machakha, Butonge, Myanga, Tamuleka, Mukwa and West Siboti areas. As indicated earlier, this intervention should integrate with the Management of worms and possibly ticks – which occur in high numbers in all the sub-locations under study. This is mostly because ticks are a major hindrance to the introduction of high value, high yielding exotic dairy breeds that hold the key to rapid poverty alleviation, especially to large numbers of the middle class people in the district.

There is also lack of effective flow of research results (from various livestock and veterinary research institutes) into extension programs and onwards to farmers. FITCA should facilitate this probably through setting up of several resource centers ,starting a farmers' newsletter etc.



(Cattle are useful for many purposes in the study area)

4.03 Tick-born Infections

Generally, a high incidence of tick-borne diseases is reported in this study. It could be observed during the CSS that many animals had numerous numbers of ticks. While the importance of tick control is well-known and appreciated in the district, poor cattle-dip management and leadership over many years has conspired to consign tick control to the periphery of cattle management in the district.

Indeed many stakeholders think that tick control is a no-go area and generally try to keep off from it. If the results of this study is anything to go by, then there is real and urgent need to venture into the complex issue of sustainable tick control in the area. It has been shown so far that isolated farmer spraying at weekily intervals has failed to curb the high number of ticks and tick-borne diseases. It is suggested that tick control services be privatized and value added to include regular de-worming, castration, de-horning, vaccination etc.) and be handled by individual private practitioners in agreement with cattle-dip committees or communities living near the cattle dips.

4.04 Delivery of Animal Health Care services in the study area

It is common knowledge that proper and timely veterinary intervention obviously reduces the occurrence of diseases and subsequently has beneficial effects on cattle productivity.

Disease control and management is probably the easiest, most effective and quickest way to improve the productivity of local zebu cattle. Genetic improvement through cross-breeding coupled with improved forage management are equally important in the long-term. It has been shown through this study and many others before it that delivery of veterinary services in the district (and indeed the whole region) is not only wanting but needs urgent attention to correct the situation.

More and more clinical and other veterinary services are being offered by less and less qualified people in the name of liberalization and restructuring while more than 60% (personal observation) of all sick animals are attended to by unemployed AHITI graduates and retired veterinary staff. The activities of all these professionals remain illegal under Kenyan law. For many years, the government of Kenya offered to the public both veterinary, clinical, AI, meat inspection and disease preventive services. As part of general liberalization, government services are being restructured and scaled down. This has opened some room for private veterinary practitioners. But there is also still much acrimony and many more people have come into the veterinary service provision than earlier anticipated, mostly because of unemployment and poverty. The government vets are not only un-cooperative, but are also offering stiff competition to up-coming private practitioners and in the process completely

undermining the process of privatization of veterinary services. The situation is particularly bad in the lucrative urban areas that also tend to have a large number of well to do urban dairy and poultry farmers. At the same time, running of private veterinary services in the remote rural areas is not economically viable as the scramble for the towns intensify.

Liberalization and privatization of veterinary services in Kenya has also opened doors to a wide range of unqualified people to try and make a living from the vacuum left by departing government vets, especially in the rural areas. The area of veterinary drugs supply and distribution is the worst hit, and there is urgent need to create an enabling environment through better regulation of the currently uncontrolled sale of drugs and offering of sub-standard veterinary services. During the CCS, it became very apparent that professional public vets are unable to engage in effective dialogue with livestock owners as equal partners. This not only needs change of altitude, but also change of training curricular at our training institutions.

Chapter 5

RECOMMENDATIONS

5.01 Veterinary Service Delivery

- Farmers reckon that trypanosomiasis had such a devastating effect when it resurged in the area, mostly because of –
  - Poor and unreliable diagnostic services
  - Use of inappropriate drugs and doses
  - Unavailability and unreliability of veterinary clinical services
  - Some element of drug resistance (to some of the drugs used)
  - Lack of appropriate knowledge and awareness by livestock owners about the disease
  - Unavailability of relevant drugs in good quantities
  - Unavailability of preventive and curative drugs
- The role played by unemployed AHITI graduates in the provision of veterinary services in the area needs to be recognized and strengthened.
- These need to be trained in basic disease diagnosis tools and approaches, provided with regular opportunities to share their experiences and given loans (in form of veterinary drugs and bicycles).
- To enable these graduates operate legally, a qualified existing veterinary surgeon should be supported and empowered to legally cover, support and backstop these AHITI graduates and others that merit.
- The veterinary department in the Ministry of Agriculture needs to increasingly play the role of a regulator and support the work of private animal health providers. The department should privatize all services including meat inspection.
- Involve farmers (and livestock communities) more in the solving of their problems through the FITCA project. Currently, farmers play a negligible role in the diagnosis and ranking of problems as well as implementation and feedback to the project.
- Design a basic veterinary package that shows how much it costs (annually) to prevent and manage various major diseases of cattle and the return / benefit that would accrue from such a package through improved milk yields, growth rates and improved survival.
- Much more recognition, capacity building and facilitation of freelancing animal health assistants (who finished college and are currently unemployed and are carrying out animal treatments). These need to be trained so that they can provide valuable services to the livestock owners to supplement government and private vets who are neither enough nor accessible in the rural areas. This is already provided for in the current legislation as long as it is approved by the DVO who is the representative of the DVS.

- Ensure and facilitate reliable and sustainable community based drugs (and where possible) vaccine supply systems and channels e.g. self-help group based non-ethical drugs stores as income generating activities.
- Facilitate close cooperation between GoK, NGO and private sector livestock service providers. This will greatly increase the efficiency of the work and effectiveness of services provided. There is need for more joint activities and meetings that will facilitate interaction and reduce tensions and suspicions between GoK and NGO vets.
- Blend community based service providers with qualified private and GoK vet professionals. The CCS was one successful case study of working together. There is need for more dialogue between vets in the region and other animal health providers, especially from community based organizations and service providers as well as other professionals such as economists and sociologists. More emphasis on professional standards and incentives while at the same time reaching out to community based service providers.
- Control and regulate the competition between GoK and private vets. More and better control of the veterinary drugs, trade and service provision. GoK vets should be not allowed to derail privatization of vet services by out-competing competing upcoming private vets.
- .Retrain veterinary and livestock experts in the region on the specifics of husbandry and disease management of local cattle and poultry, not only to change their attitudes but also sharpen their skills. This is because, while emphasis for the FITCA project is on local breeds of cattle and poultry, the orientation of professionals in the areas is towards exotic breeds.
- Train private AHAS on minor surgery, sterile techniques and pregnancy diagnosis (and may be AI).

5.02 Management of major disease problems

- There is need for better coordination and information sharing about tsetsefly control in the target area between FITCA and the Veterinary department to better use available resources.
- There is need to look beyond the prevention and management of tryapanosomiasis and also look at strategic worm control and sustainable tick control in the area.
- Need for a longer term study of the tsetse fly numbers and dynamics in the area as well as the monthly incidence of trapanosomiasis.
- Refresher courses should be conducted for basic diagnosis and management of worms, tsetse flies and trypanosomiasis for GoK and private vet staff.
- Need to undertake a study to compare the efficacy (and hence resistance of the various drugs used for the prevention and treatment of trypanosomiasis, worms, and even tick control in the area.

- Widely share the results of this CCS for Bungoma district with farmers (that participated through public meetings), GoK, other private vets and the provincial administration (through stakeholder workshops)
- Take action to start studies that will demonstrate the effects, costs and impacts of regular de-worming among calves and young stock in the district. Study and document the seasonal variation in worm egg counts in various locations so as to come up with effective strategic worm control programs.
- Strengthen and facilitate the use of Decatix® to control both tsetse flies and ticks. This should be done using existing dip facilities rather than being sprayed to save on costs and also to try and make use of existing resources and facilities in the area.
- FITCA to start a traypanomiasis control newsletter and resource centers so as to facilitate sharing of information that emanates from the project. Alternatively, reading materials can be availed through established resource centred liblaries.
- Study and document in details the combined effects of trypanosomiasis and other diseases in the area.
- Start a network of FITCA professional collaborators and farmers and facilitate regular sharing of their experiences, knowledge and skills.
- Facilitate the starting of district-based animal disease diagnostic services as income generating activities to be run by private vet practitioners.

5.03 Tick Control and Other issues

- Carry out a comparative study to compare the cost and benefits of dipping cattle (using existing dips) as compared to spraying. Carry out a feasibility study for running cattle dips as IGA ventures. Need for a systematic study to understand the major reasons behind the collapse of tick control services in the area and suggest sustainable ways forward.
- Develop strategies to add value to cattle dips to include services such as de-worming, castration, de-horning etc. under the guidance of private vets.
- Train private vets in credit management and customer care.
- Promote and facilitate student field attachments (from local colleges and universities) to FITCA and collaborating partners for sustainable livestock expertise capacity building.
- Research and design interventions that can help reduce the calving interval and productivity of local zebu breeds.
- Help improve forage quality and quantity through promotion of use of fodder legumes including awareness creation, sustainable seed supply and demonstration of the same in farmers' fields.
- Introduction of donkeys and accompanying technologies for animal draught power in severely affected trypanosome areas of Chebukuyi, Tamuleka and Machakha.
- Carry out studies to understand the extend and depth of knowledge of diseases and traditional treatments within the local communities which

should be documented , explored further and built upon. This will help gauge the level of traditional knowledge of husbandry and diseases that could be disseminated through the project.

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ANNEX 1

WORK PROGRAM FOR THE CROSS SECTIONAL SURVEY

Date	*Activity*	*Location*	*Milleage (Km)*	*Local Running within sub-location*
27/8/2001	Preliminary arrangements and awareness creation	Chebukuyi, Machakha, South Namwela	140	60
28/8/2001	Preliminary arrangements and awareness creation	Tamuleka, Butonge, Mukwa	120	70
29/8/2001	Preliminary arrangements and awareness creation	West Siboti, East Siboti, Myanga / Syombe	110	70
30/8/2001	Preliminary arrangements and awareness creation	West Mateka, Khasoko, Kimatuni, East Mateka	120	60
31/8/2001	Collection of supplies, stains, equipment from FITCA office - Busia	Busia	140	-
10/9/2001	Sample collection, faceal egg counts, blood smears slaughter house	Chebukuyi	120	50
11/9/2001	As above	Chebukuyi	120	60
12/9/2001	As above	Machakha	110	60
13/9/2001	As above	Machakha	110	60
14/9/2001	As above	South Namwela	115	60
17/9/2001	As above	South Namwela	115	60
18/9/2001	As above	Tamuleka	105	70
19/9/2001	As above	Tamuleka	105	70
20/9/2001	As above	Butonge	80	70
21/9/2001	As above	Butonge	80	60
22/9/2002	As above	Mukwa	70	70
24/9/2001	As above	Mukwa	70	60
25/9/2001	As above	West Siboti	95	60

26/9/2001	As above	West Siboti	95	70
27/9/2001	As above	East Siboti	85	70
28/9/2001	As above	East Siboti	85	70
29/9/2001	As above	Myanga	80	60
1/10/2001	As above	Myanga	80	70
2/10/2001	As above	Busia-Bungoma	140	-
3/10/2001	Laying of traps	West Siboti	130	-
4/10/2001	Laying of traps, collection of traps (West Siboti)	East Siboti	160	-
5/10/2001	Laying of traps, collection of traps (East Siboti)	Myanga	120	-
6/10/2001	Laying of traps, collection of traps (Myanga)	West Mateka	120	-
8/10/2001	As above	West Mateka	80	60
9/10/2001	As above	West Mateka	80	60
10/10/2001	As above	Khasoko	110	70
11/10/2001	As above	Khasoko	110	70
12/10/2001	As above	Kimatuni	90	60
13/10/2001	As above	Kimatuni	90	70
15/10/2001	Laying of traps	Khasoko	130	-
16/10/2001	Laying of traps, collection of traps (Khasoko)	Kimatuni	120	-
17/10/2001	Laying of traps, collection of traps (Kimatuni)	East Mateka	110	-
18/10/2001	Evaluation meeting	Bungoma	-	-
19/10/2001	Preliminary report to FITCA and DVO / Consultation	Busia - Bungoma	140	-
22/10/2001	Sample collection, faecal egg counts, blood smears and slaughter house	East Mateka	80	60
23/10/2001	Sample collection, faecal egg counts, blood smears and slaughter house	East Mateka	80	70
26/10/2001	Laying of traps	Chebukuyi	140	As above
27/10/2001	Laying and collection of traps	Machakha / Chebukuyi	140	As above

29/10/2001	Laying and collection of traps	South Namwela / Machakha	140	As above
30/10/2001	Laying and collection of traps	Tamuleka / South Namwela	120	As above
31/10/2001	Laying and collection of traps	Butonge / Tamuleka	120	As above
1/11/2001	Laying and collection of traps	Mukwa / Butonge	120	As above
2/11/2001	Data entry	Bungoma	-	As above
3/11/2001	Data entry	Bungoma	-	As above
5/11/2001	Data entry	Bungoma	-	As above
6/11/2001	Data entry	Bungoma	-	-
7/11/2001	Data entry	Bungoma	-	-
8/11/2002	Data Analysis / Report writing	Bungoma	-	-
9/11/2002	Data Analysis / Report writing	Bungoma	-	-
10/11/2001	Data Analysis / Report writing	Bungoma	-	-
11/11/2001	Data Analysis / Report writing	Bungoma	-	-
12/11/2001	Data Analysis / Report writing	Bungoma	-	-
13/11/2001	Data Analysis / Report writing	Bungoma	-	-
14/11/2001	Data Analysis / Report writing	Bungoma	-	-
15/11/2001	Data Analysis / Report writing	Bungoma	-	-
19/11/2001	Submission of final report	Bungoma	-	-

ANNEX 2

FLY TRAPPINGS

Table 8 - Chebukuyi

Trap No.	*Trapping site (GPS)*				*Date set*	*Tsetse fly caught*	*Other flies*	*Remarks*
	Way Point	*Altitude*	*North*	*UTN*				
1	212		0655271	0085344	10/9/2001	1	6	- Villagers report that trapping has been done in this area before - We came across FITCA target no. 79 about 120 yds from our trap 3B - One may easily conclude that Chebukuyi area has some targets
2	213		0653716	0086433	10/9/2001	0	11	
3	214		0656980	0084911	10/9/2001	2	9	
1B	235		0655031	0085132	30/10/2001	0	2	
2B	236	13277	0655005	0084013	/10/2001	1	2	
3B	237		0654519	0083465	30/10/2001	0	4	

Table 9 - Machakha

Trap No.	*Trapping site (GPS)*				*Date set*	*Tsetse fly caught*	*Other flies*	*Remarks*
	Way Point	*Altitude*	*North*	*UTN*				
4	215		0660238	0084528	12/9/2001	2	13	- Generally, Machakha has targets in close neighbourhood, close enough to affect current trapping. - An old type target still standing at Tororo school on the edge of Machakha
5	217		0661005	0084241	12/9/2001	1	5	
6	218		0661170	0084776	12/9/2001	0	16	
4B			0661352	0084929	30/10/2001	0	10	
5B	239	114457	0662577	0084302	30/10/2001	2	3	
6B	241		0662285	0084778	30/10/2001	1	11	

Table 10 - South Namwela

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
7	219		0672211	0082313	14/9/2001	0	2	- Looks too high for fly advancement
8	220	16377	0670918	0082089	14/9/2001	0	4	
9		16497	0670782	0082086	14/9/2001	0	1	

Table 11 - Tamuleka

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
10	Trapped without taking GPS reading				18/92001	0	4	Trapping and use of targets has been recorded in the area in the recent past. Currently use of targets has been observed in very close neighbourhood and at least within Tamuleka, e.g. at Changara on the edge of Tamuleka, FITCA target is in operation. Within Tamuleka, the Asst. Chief is said to be controlling some target exercise
11		14027	0657887	0079322	18/92001	2	6	
12	223		0657993	0079291	18/92001	1	2	
10B	242		0657348	0077456	31/10/2001	1	4	
11B	243		0657684	0078894	31/10/2001	3	9	
12B	244		0657526	0078954	31/10/2001	0	2	

Table 12 - Butonge

Trap No.	*Trapping site (GPS)*				*Date set*	*Tsetse fly caught*	*Other flies*	*Remarks*
	Way Point	*Altitude*	*North*	*UTN*				
31	245		0663815	0080171	31/10/2001	0	2	Trapping is also seen in this area. Currently the Asst. Chief is controlling trapping exercise and possibly targets are in use along with the traps. Traps had been removed from the areas of site 31 & 32, about a week before we moved in
32	246		0663913	0079116	31/10/2001	0	1	
33	247		0663271	0077747	31/10/2001	0	6	

Table 13 - Mukwa

Trap No.	*Trapping site (GPS)*				*Date set*	*Tsetse fly caught*	*Other flies*	*Remarks*
	Way Point	*Altitude*	*North*	*UTN*				
13			0665567	0075082	29/9/2001	0	9	A very potential area where we still think that thorough work may reveal something.
14	223	14247	0666263	0075378	29/9/2001	1	3	
15	224	14277	0666193	0075329	29/9/2001	1	7	

Table 14 - West Siboti

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
16		13637	0659156	0070681	25/9/2001	1	5	Repeated thorough search may reveal something here. Apparently awareness and use of Veriben is high and the local people say that they cannot do without it. Sites 16.17. & 18 very good. People claim they lost animals due to Trypanasomiasis.
17			0659449	0070016	25/9/2001	1	2	
18	248		0658880	0069925	25/9/2001	1	7	
16B	249		0656144	0070532	31/10/2001	0	10	
17B	250		0656985	0072160	31/10/2001	0	3	
18B			0657489	0072408	31/10/2001	1	7	

Table 15 - East Siboti

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
19			0662172	0067663	27/9/2001	0	12	Valley with running stream, broken large thickets along the stream. The best available trapping site in the ridge.
20		13347	0662038	0067793	27/9/2001	0	16	
21		13427	0661987	0067931	27/9/2001	0	10	

Table 16 - Myanga

Trap No.	*Trapping site (GPS)*				*Date set*	*Tsetse fly caught*	*Other flies*	*Remarks*
	Way Point	*Altitude*	*North*	*UTN*				
22			0654563	0062837	29/9/2001	0	3	Areas visited – largely not condusive to fly invation, except along Mayanja river where trapping is being reported. Bits of torn traps have been seen only along the river. The area is notorious for interfering with traps. Our trap was stolen from site 22B
23			0654466	0062847	29/9/2001	0	7	
22B	251		0655215	0063604	5/11/2001	0	2	
23B	252	12917	0654407	0062117	5/11/2001	0	1	
34	253	12847	0655241	0062040	5/11/2001	0	1	

Table 17 - West Mateka

Trap No.	*Trapping site (GPS)*				*Date set*	*Tsetse fly caught*	*Other flies*	*Remarks*
	Way Point	*Altitude*	*North*	*UTN*				
24		14047	0666785	0059566	8/10/2001	0	4	Although the area is greatly under sugarcane cultivation – awareness of use of Veriben and Novidium is very high and there is great demand for drugs.
25	228	13697	0667903	0059292	8/10/2001	0	2	

Table 18 - Khasoko

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
26		12937	0655032	0053603	11/10/2001	0	2	Areas visited are largely under sugarcane cultivation, leaving almost no suitable patches for trapping
27			0656063	0053489	11/10/2001	0	0	
28	231		0654901	0053480	11/10/2001	0	1	

Table 19 - Kimatuni

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
35	254	13577	0661179	0057538	5/11/2002	0	5	Kimatuni is largely a sugarcane growing area, leaving negligeable space for threats from tsetse flies
2736	255	13317	0661524	0056619	5/11/2002	0	3	
2837	256		0661438	0055309	5/11/2002	0	3	

Table 20 - East Mateka

Trap No.	Trapping site (GPS)				Date set	Tsetse fly caught	Other flies	Remarks
	Way Point	Altitude	North	UTN				
29	232	14407	0670852	0054881	16/10/2001	0	3	Area largely under sugarcane cultivation
30	234	14407	0670593	0054880	16/10/2001	0	1	
						0		

Annex 3
CROSS SECTIONAL SURVEY RESULTS FOR CHEBUKUYI SUB LOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt (kg)	BC	BE (TRYPS)	PCV %	EPG	ECF	BBS (Thin smear)	APMS
1	Justus Chebubi	Antomu	Local	M	6	190	4	postive	15	0			
2	John Omuse	Labu	Local	M	4	180	4	negative	26	400	postive	negative	
3	Peter Etyang	Aleko	Local	M	6	720	4	negative	21	200			
4	Jacob Omoit	Kuro	Local	M	10	190	4	negative	27	0			
5	Benjamin Cheseto	Makale	Local	F	1.5	80	4	negative	20	300			
6	Peter Juma	Taabu	Cross	M	1	60	4	negative	14	400			
7	Wilson Cheseto	Serei	Cross	F	4	145	4	postive	18	0			
8	Wyclife Mukenya	None	Cross	M	1	48	3	negative	16	300			
9	Josephat Mukenya	Nalulingo	Cross	F	6	200	4	negative	24	0			
10	Hassan Lukoye	Swara	Cross	M	4	200	3	negative	18				
11	William Wekesa	Tobe	Cross	M	6	130	3	negative	17	600			
12	Fredrick Oboloto	Akinyi	Cross	F	11	120	3	negative	14	1200			
13	Peter Mukenya	Tobe	Cross	M	1.5	70	4	negative	22	900			
14	James Wandulu	Miga	Local	F	7	115	4	negative	25	0			
15	David Marango	Nelima	Local	F	1	65	4	negative	14	800			
16	Mourice Waraka	Labu	Local	M	1	55	4	negative	25	0			
17	Jairus Oroni	Faru	Local	M	7	300	5	negative	25	300			
18	Christopher Kamili	Nasimiyu	Cross	F	1	50	4	negative	29	600			
19	John Barasa	Masaai	Local	M	9	170	4	negative	27	200		postive	
20	George Ebu	Tobe	Local	M	9	150	4	negative	19	600			
21	David Opiu	Blezi	Local	M	3	100	4	negative	20	0			
22	Fredrick Epoloto	Mrembo	Cross	F	9	180	4	negative	18	500			
23	Abdi Ali	Nasimiyu	Cross	F	1.5	90	4	negative	32	300		postive	
24	Ben Etyang	Simba	Cross	F	4	105	3	negative	15	500			
25	Jeirus Oroni	Amka	Cross	F	6	160	4	postive	20	0			
26	Charles Kisachi	Samboko	Local	M	9	185	5	negative	32	300			
27	Titus Omuse	Blue	Cross	M	8	250	4	negative	25	200			
28	Ben Etyang	Soroiti	Cross	F	11	150	4	negative	26	200			postive
29	Charles Kisachi	Labu	Local	M	9	190	4	negative	29	300			
30	Kaitano Ochuma	Emazeti	Cross	F	5	190	4	negative	24	600			

31	Salim Wafula	Kharobo	Local	F	6	140	4	negative	26	0			
32	Eliud Emoit	Ekwangelat	Cross	F	1	40	3	negative	24	0			
33	Christopher Omuse	Kuro	Local	M	9	170	4	negative	25	200			
34	Keneth Emoiti	Captain	Local	M	1.5	40	4	negative	30	300	postive	postive	postive
35	Maurice Musungu	Tobe	Local	M	1.5	65	4	negative	22	600			
36	Judas Bwabi	Nasimiyu	Local	F	1	55	4	negative	24	200			
37	Judas Bwabi	Tobe	Local	M	1.5	70	4	negative	23	0			
38	Josson Mulongo	Nasimiyu	Local	F	9	180	4	negative	21	300			
39	Japhether Juma	Blue	Local	M	12	190	5	negative	30	100			
40	Christopher Kamili	Labu	Local	M	9	200	5	negative	31	0			
41	George Wanyonyi	Andomu	Local	M	9	190	4	negative	20	300			
42	Ibrahim Nakhayima	Swara	Local	M	7	140	4	negative	13	900			
43	Naghan Barasa	Labu	Local	M	9	130	4	negative	20	200			
44	John Simiyu	Masaai	Local	M	8	170	4	negative	27	600			
45	Josephat Mukenya	Captain	Local	M	8	180	4	negative	28	600	postive		
46	Wycliffe Barasa	Labu	Local	M	2	95	4	negative	25	0			
47	Wilson Wamukota	Nasimiyu	Local	F	9	190	3	postive	14	600			
48	Nelson Emojong	Labu	Cross	M	7	240	4	negative	20	200			
49	David Nabiswa	Nanjala	Local	F	1	70	4	negative	24	0			
50	Noah Wekesa	Masaai	Local	M	6	160	5	negative	29	0			
51	David Nakhungu	Tobe	Local	M	2	80	4	negative	19	0			
52	Wilson Nambalu	Nasimiyu	Cross	F	1.5	75	4	negative	26	700			
53	Titus Omuse	Mongo	Cross	F	9	220	5	negative	23	200			
54	James Khisa	Nangila	Cross	F	1	50	4	negative	25	300			
55	Benard Ogada	Shoman	Local	M	5	135	4	negative	24	400			
56	John Musungu	Nyundo	Local	M	7	160	4	negative	22	600			
57	Samson Ongore	Maridadi	Local	M	7	195	4	negative	16	700			
58	Sammy Wafula	Maridadi	Local	M	10	210	5	negative	22	300			
59	Ibara Juma	Simba	Local	M	6	170	4	negative	20	400			
60	Buke Jeremiah	Nekesa	Local	F	2	100	4	negative	25	0			
61	Josephat Pepela	Labu	Local	M	1.5	80	4	negative	18	100			
62	Charles Omelu	Swara	Local	M	3	100	4	negative	29	0			postive
63	Charles Tanah	Nabangala	Local	F	2.5	100	5	negative	29	0			
64	Nathan Barasa	Kebe	Cross	F	9	195	3	negative	20	400			
65	Wekesa Wiliam	Simba	Local	M	5	150	4	negative	18	600			
66	Jackson Wepukhulu	Tobe	Local	M	7	160	4	negative	23	300			

67	Patrick Ngenywa	Chepku	Local	F	7	150	4	negative	21	300			
68	Julius Cheptoti	Blue	Cross	M	0.5	50	4	negative	18	200			
69	Moses Wafula	Simba	Local	M	4	175	5	negative	25	600			
70	Nicholas Wanda	Blue	Local	F	5	150	4	negative	22	0			
71	Titus Kirui	Chemwa	Local	F	8	150	3	negative	30	100			
72	Joseph Pepela	Khalayi	Cross	F	5	140	4	negative	28	0		postive	
73	Mourice Weraka	Labu	Local	M	7	150	4	negative	18	0			
74	James Khisa	Maridadi	Local	M	4	165	4	negative	14	200			
75	Titus Omuse	Maridadi	Cross	M	7	200	5	negative	22	600			
76	Celestine Olegedi	Tobe	Cross	M	6	200	5	negative	24	300			
77	Josephat Mukenya	Risk	Cross	F	9	150	4	negative	24	200			
78	Jotham Muyeye	Nyundo	Local	M	1.5	65	4	negative	20	600			
79	Saulo Kirui	Nyundo	Local	M	4	90	4	negative	22	600			
80	Widat Papa	Swara	Cross	M	6	210	4	negative	30	0	postive		
	TOTALS				432.5	11778	322		1810	23500			
	AVAERAGES				5.40625	147.23	4		22.63	297.5			

Annex 4

OSS SECTIONAL SURVEY RESULTS FOR MACHAKHA SUB LOCATION

OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE (TRYPS)	PC %	EPG	ECF	BABESIOSIS	ANAPLAS
Joseph Wamalwa	Sarah	Local	M	6	200	5	negaive	36				
Pius Masasabi	Labu	Local	M	3	150	4	negaive	24	600			
Robert Imo	Chepshe	Local	F	5	160	5	negaive	28				postive
Robert Imo	None	Local	F	4	140	4	negaive	29				
Godfrey Nabayukha	Tobe	Cross	M	7	230	5	negaive	25				
Martin Mulumeti	Kimbo	Local	F	3	100	3	negaive	20	800			
Andrew Nangili	Simba	Cross	M	3	190	5	postive	12				
Richhard Oboma	Tobe	Local	M	6	180	4	negative	27	0	postive		
Bramuel Ichaka	Alomai	Local	F	3	120	5	negative	30	100			
Benson Juma	Fesa	Local	M	8	220	5	negative	31				
Dismas Wekesa	Labu	Local	M	10	12000	4	negative	29				
Josephat Okabisi	Kadoko	Local	F	5	150	4	negative	29	300			
Francis Lwambila	Mary	Local	F	4	150	5	negative	25				postive
Godfrey Wekesa	Simba	Local	M	8	220	5	negative	26		postive		
Albert Noliama	Swara	Local	M	8	190	4	postive	19	400			
Jonathan Wekesa	Nyayo	Cross	M	6	200	5	negative	23	0			
Emaigel Mwasame	Nyundo	Local	M	10	220	4	negative	35	400			
Vincent Pilipili	Maridadi	Local	M	6	160	4	negative	32				
John Nambafu	Simba	Local	M	6	150	5	negative	38	700			
Titus Ekanyani	Maridadi	Cross	M	9	230	4	negative	25				
Joseph Wamalwa	Placy	Local	M	7	200	4	negative	28	300	postive		
Alfred Barasa	Maridadi	Local	M	7	190	4	negative	23				
Henry Wanyonyi	Kharobo	Loca	F	4	170	4	negative	27	0			
Henry Wanyonyi	Tobe	Local	M	4	200	4	negative	33			postive	
Godfrey Nabayukha	Simba	Local	M	7	210	4	negative	25				
Benito Mulumedi	Swara	Local	M	7	180	4	negative	23				
Robert Barasa	Placy	Cross	M	1	50	4	positive	25	1200			
Bramuel Omoja	Fesa	Local	M	3	140	4	negative	22	400			
Samuel Barasa	Tobe	Local	M	5	160	4	negative	26		postive		
Mourice Mukinisu	Simba	Local	M	2	90	4	negative	24	1300			

William Khanusu	Opuru	Local	M	9	205	5	negative	18				
Rasmol Emoit	Simba	Local	M	7	210	5	negative	26	600			
Benson Juma	Blue	Local	M	8	220	5	negative	32				postive
Dismas Wekesa	Tobe	Local	M	10	250	4	negative	23				
David Omeketi	Scholar	Local	F	1.5	90	4	negative	33	100			
Albert Mabonga	Blue	Local	M	8	190	4	negative	23				
Joy Namalwa	Mrembo	Local	F	5	150	4	negative	30	100			
Mourice Omilia	Alamai	Local	F	3	140	5	negative	18	0			
Japhether Nambalu	Simba	Local	M	6	200	3	negative	26	600			
Eli Papa	Payada	Local	F	6	100	5	negative	22	0			
Zacharia Oriama	Hadija	Cross	F	7	180	4	negative	22				
Justus Mang'eni	Maridadi	Cross	M	5	170	3	negative	31		postive		postive
Patrick Kiberiti	Tangoni	Cross	F	8	100	4	postive	29	400			
Simon Juma	Tobe	Cross	M	6	160	5	negative	20				
Zakhayo Igua	Jonjo	Cross	M	10	230	5	negative	30				
David Ikenyani	Anguva	Cross	F	5	150	4	negative	24				
Bilasio Mulongo	Tobe	Cross	M	5	100	3	negative	31				
Erick Etyang	Okotoni	Cross	F	8	120	3	negative	21				
Shadrack Onaswa	Island	Local	M	1	50	4	negative	32	700			postive
David Murakwa	Swara	Local	M	10	220	4	negative	17				
Olegedi Daniel	Labu	Cross	M	4	140	4	negative	24				
John Wanyonyi	Maridadi	Cross	M	8	250	5	negative	24	100			
Rebulo Omusilo	Tobe	Cross	M	5	140	4	negative	20	100			
Noah Sitadi	Simba	Local	M	5	180	4	negative	27				
Gabriel Karani	Akatole	Cross	F	6	190	4	negative	25				
Major Mulongo	Jonjo	Cross	F	7	200	5	negative	32				
Jackson Chepkurui	Tobe	Cross	F	1.5	70	4	negative	27	900			
Stephene Walubisi	Bahati	Cross	F	7	180	4	negative	26				
Amos Samburumo	Raymoni	Local	F	8	170	4	negative	22				
Robert Simiyu	Nasimiyu	Cross	F	4	140	4	negative	26	300			
Chesebe Wyclife	Major	Cross	M	2	80	4	negative	20			postive	
Robert Ekiraba	Kuro	Cross	M	6	180	4	negative	19	600			
Fredrick Namanga	Placy	Local	M	5	180	4	negative	26				
Grace Ekiraba	Golal	Cross	M	5	185	4	negative	18	100			
Eliakim Ekiraba	Swara		M	7	220	5	negative	17				
Fred Ode	Nyundo	Local	M	3	90	4	negative	33	100			

Margret Etyang	Jonjo	Local	M	8	200	5	negative	27	600			
Albert Oliama	Market	Local	F	6	180	5	negative	27	0			
Sarah Wamanga	Nasimiyu	Local	F	7	180	4	negative	18	0			
Boaz Nyongesa	Swara	Local	M	3.5	150	4	negative	27				
Bramuel Wanjala	Labu	Local	M	3	90	4	negative	24				
Jeremiah Wambisi	Simba	Cross	M	5	160	4	negative	36	300			
Wanyama Wabukuku	Simba	Local	M	5	170	4	postive	24				
Jostine Kiterie	Simba	Local	M	6	180	5	negative	18				
Sammy Boyo	Tobe	Local	M	5	200	5	negative	35				
Solomon Wabuke	Tobe	Local	M	6	200	5	negative	23				
Joseph Obusuru	Captain	Cross	M	5	100	4	negative	24				
Fred Mamalo	Kampala	Cross	M	4	100	4	negative	23				
Fridah Wanyoni	Maridadi	Local	M	9	190	4	negative	20				
John Wanyama	Masaai	Local	M	6	140	3	negative	22				
TOTALS				**458.3**	**25020**	**339**		**2041**	**12100**			
AVERAGES				**5.72875**	**312.75**	**4.3**		**25.51**	**366.67**			

Annex 5

CROSS SECTIONAL SURVEY FOR SOUTH NAMWELA SUBLOCATION

	OWNER	NAME	BREED	SEX	AGE	Wt	BC	BE(TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLAS
161	John Wanyama	Masaai	Local	M	7	200	5	negative	27	400			
162	Joseph Mukhwana	Labu	Cross	M	5	200	5	negative	28	0			
163	Philip Saisi	Mary	Cross	F	4	180	5	negative	38	300	postive		
164	Protus Bikala	Nfula	Local	F	2.5	100	4	negative	23	0			
165	Jamin Nasiuma	Tobe	Local	M	6	150	4	negative	30	0			
166	Fred Chonge	Siombe	Cross	M	6	200	4	negative	32	200			
167	Henry Wafula	NaKhu	Cross	M	6	180	4	negative	35	1300			
168	Benson Wekunda	Kewa	Local	M	1.5	90	4	negative	31	0			
169	Isaac Wanjala	Luchi	Local	F	2.5	90	4	negative	27	300		postive	
170	Dan Wekesa	Labu	Local	F	9	120	3	negative	22	500			
171	Bilali Juma	Swara	Cross	F	2	80	4	negative	28	0			
172	Jamin Nasiuma	Simba	Local	M	3	110	4	negative	34	100			
173	Patrick Manyonge	Mabu	Local	F	3	130	4	negative	27	0			
174	Francis Simiyu	Tobe	Cross	F	2.5	90	4	negative	24	0			
175	Margaret Siruchi	Labu	Local	F	7	140	4	negative	26	0			postive
176	Benson Wekunda	Wacho	Cross	M	6	190	4	negative	24	200			
177	Jackson Makokha	Mai	Local	F	6	180	4	negative	25	0			
178	Fred Chonge	Sebu	Local	F	8	190	4	negative	28	0			
179	Wekhanya Machacha	Elgon	Local	F	7	180	4	negative	25	100			
180	Jotherm Wochuru	Gucho	Cross	M	8	180	4	negative	25	200			
181	George Mauka	Boya	Local	F	8	140	4	negative	30	300			
182	Francis Simiyu	Sibi	Local	F	2.5	90	4	negative	26	0			
183	Juma Bilali	Simba	Local	F	4	130	5	negative	33	1400			
184	Waliaula Sungura	Seta	Cross	F	1	40	3	negative	18	200			
185	Peter Sitati	Pony	Local	F	6	140	4	negative	31	0			
186	Margaret Siruchi	None	Local	F	2.5	110	5	negative	30	100			postive
187	Jestimore Wakhungil	None	Cross	M	2	70	4	negative	20	900			

188	Justus Chosobi	Mary	Cross	F	1	95	4	negative	32	0			
189	Absolom Wanjala	Mary	Local	F	3.5	150	4	negative	35	300			
190	Richard Namanyala	Nasio	Local	M	4	165	4	negative	24	0			
191	Eliud Nabiswa	Khafu	Local	M	7	160	4	negative	38	400			
192	Dominic Stati	None	Cross	M	5	170	4	negative	29	0			
193	Jackson Makokha	None	Cross	M	1.5	90	4	negative	27	0			
194	Dismas Wanyama	Netondo	Local	F	8	180	4	negative	34	0			
195	Alex Makheti	Nundo	Local	M	2.5	95	4	negative	31	0			
196	Eliud Kinyuluso	Khalayi	Cross	F	4	100	4	negative	25	0			
196	Protus Bikali	Nelima	Local	F	8	150	5	negative	35	0			
198	Henry Nambakha	Namalwa	Local	F	9	140	4	negative	28	100			
199	Daniel Kisiang'ani	Nasimali	Local	F	8	190	4	negative	26	0			
200	Stephen Mayamba	Nambusi	Local	F	2.5	80	4	negative	29	0			
201	Justus Wotiya	Tobe	Cross	M	7	190	4	negative	38	300			
202	Gilbert Nabie	Nang'oni	Cross	F	1.5	25	4	negative	17	600			
203	Henry Wafula	Simba	Cross	F	5	160	4	negative	23	200			
204	Jeremiah Lusweti	Nabukimwey	Cross	F	1.5	65	4	negative	26	0			
205	Dan Wekesa	Nangila	Cross	F	6	90	3	negative	26	0	postive		
206	Moses Nasiuma	Netondo	Local	F	1.5	80	4	negative	25	0			
207	Job Wanambisi	Masaai	Cross	F	5	200	4	negative	21	400			
208	Wiliam Mechi	Placy	Local	F	10	190	4	negative	18	300			
209	Wiliam Makuso	Swara	Local	F	2.5	80	4	negative	25	100			
210	Wafula Nasiuma	Namaemba	Cross	F	4	140	4	negative	28	700			
211	Wakaula Wyclife	Swara	Local	M	3	80	4	negative	27	0		postive	
212	Sylvanus Nasiuma	Tusker	Local	F	4	100	4	negative	26	800			
213	Simon Nalianya	Swara	Cross	M	4	160	4	negative	15	800			
214	Haron Wamalw a	Alice	Local	F	1.5	60	4	negative	25	0			
215	Maurice Nandokha	Tote	Cross	M	1.5	95	5	negative	31	0			
216	Wiliam Mechi	Netondo	Cross	F	1	40	3	negative	10	100			
217	Martin Wekunda	Netondo	Cross	F	3	140	4	negative	32	100			
218	Edward Kundu	Nekesa	Cross	F	5	170	5	negative	25	500			
219	Patrick Wasike	Nasimiyu	Local	F	6	100	4	negative	27	0			postive

220	Francis Nyongesa	Maua	Local	F	8	190	4	negative	25	0			
221	Joyce Kakayi	Netondo	Local	F	2	80	4	negative	24	0			
222	Dominic Stati	Swara	Cross	M	4	100	4	negative	26	300			
223	Jeremiah Nasaba	Judith	Cross	F	5	180	4	negative	30	0			
224	Alfred Wekesa	Simba	Local	M	2.5	80	4	negative	28	0			
225	Collin Mucholi	Maua	Cross	F	9	180	4	negative	26	0			
226	Jotherm Wekesa	Marubia	Local	F	9	220	4	negative	29				postive
227	Edward Lusweti	Judith	Cross	F	2	80	4	negative	30				
228	Jane Silayi	Joy	Local	F	5	190	4	negative	35				
229	Job Muraya	Tobe	Local	M	4	190	4	negative	34				
230	Sichangi Waliaula	Namarome	Local	F	10	190	4	negative	28				
231	Elijah Juma	Maridadi	Cross	M	1	50	3	negative	22				
232	Francis Soita	Kharobo	Cross	F	2.5	90	4	negative	25				
233	Lenard Webale	Captain	Local	M	7	150	4	negative	24				
234	Francis Masaai	Nanjala	Local	F	10	150	4	negative	25	300			
235	Jother Wotia	Simba	Local	M	6	200	4	negative	30	400			
236	Dishon Walubengo	Simba	Local	M	12	140	4	negative	34	0			
237	Ruben Sakwa	Nanjala	Cross	F	8	190	4	negative	29				
238	Janet Muraya	Nasimiyu	Local	F	5	180	4	negative	28		postive		postive
239	Kaika Chesebe	Khayanga	Cross	F	5	160	4	negative	27	600			
240	Jotherm Wekesa	Swara	Cross	M	0.5	50	4	negative	25				
241	Jairus Soita	Kharobo	Local	F	5	120	5	negative	24				
	TOTALS				**388**	**10790**	**328**		**2213**	**13800**			
	AVERAGES				**4.9**	**134.9**	**4.1**		**27.66**	**200**			

ANNEX 6

CROSS SECTIONAL SURVEY RESULTS FOR TAMULEKA SUB LOCATION

	OWNER	NAME	BREED	SEX	AGE (YRS)	Wt (Kg)	BC	BE (TRYPS	PCV %	EPG	ECF	BABESIOSIS	ANAPLAS
242	Walter Opagala	Tobe	Local	M	6	150	4	negative	14	0			
243	Moses Karani	Swara	Cross	M	6	160	4	negative	18	200			
244	Moses Karani	Labu	Local	M	7	160	4	negative	17	100			
245	Godfrey Imo	Masaai	Local	M	7	160	4	negative	20	100			
246	Michael Nyaiti	Swara	Local	M	5	190	4	negative	13	400			
247	David Etyang	Labu	Local	M	2	80	4	negative	27	400	postive		
248	Denis Amuke	Labu	Local	M	2.5	80	4	negative	22				
249	Harun Akiru	Simba	Local	M	2.5	75	4	negative	18				
250	Philip Iraru	Simba	Local	M	5.5	180	4	negative	19				
251	Manuel Simiyu	Placy	Local	M	4	100	3	negative	14	600			
252	Wyclife Churchil	Labu	Local	M	3	90	3	negative	19			postive	
253	Pamela Ichaga	None	Local	F	2	65	3	negative	17	300			
254	Margaret Emuruoyu	Sister	Local	F	5	100	3	negative	23	0			
255	Margaret Emuruoyu	None	Local	M	2	80	3	postive	13	200			
256	Elisha Opili	Ang'olet	Local	F	3	90	3	negative	28				
257	Benson Juma	Simba	Local	M	3.5	90	3	negative	32				
258	Patrick Okiyo	Masaai	Local	M	7	170	4	postive	18	600			
259	Mike Omukile	Omuke	Local	M	4	160	4	negative	25				
260	Richard Wanyonyi	Mary	Local	F	2.5	100	3	negative	26	500	postive		
261	Richard Wanyonyi	Nandako	Cross	F	3.5	165	3	negative	25				
262	Eliud Inakayi	Simba	Local	M	6	150	4	negative	20	100			
263	Bramuel Kusai	Faru	Cross	M	7	220	4	negative	26				
264	Joshwa Ikaraudi	Ang'ore	Local	F	10	210	4	negative	25	100			
265	Joshwa Ikaraudi	Tobe	Local	M	2	80	4	negative	30	0		postive	
266	Japheth Imani	Kuro	Local	M	4	100	3	negative	18	300			
267	Jopham Sirare	Swara	Cross	M	4	160	4	postive	17	500			
268	Sammy Omarebe	Nyundo	Local	M	6	120	3	negative	17	400			
269	Maurice Wanyonyi	Marisela	Cross	F	4	90	3	negative	11				
270	Dan Emoyo	Akotole	Local	F	2.5	105	4	negative	26				
271	Protus Sakwa	Captain	Local	M	3	90	4	negative	27		postive		
272	George Ichaga	Anyiro	Local	F	1.5	60	4	negative	11	600			

273	Bramuel Chele	Labu	Local	M	10	140	4	negative	29				
274	Alfred Muganda	Kuro	Local	M	9	190	4	negative	14				
275	Linus Osangiri	Labu	Local	M	12	120	4	negative	21	600			
276	Christopher Imo	Nyangesho	Local	F	0.5	40	4	negative	16	0			
277	Christopher Imo	Akabele	Local	F	2	60	4	postive	15				
278	Jeremiah Imo	Labu	Local	M	4	105	3	negative	30				
279	Bonface Mabonga	Zambia	Local	M	2.5	70	4	postive	11				
280	Betrunila Achoti	Alamai	Cross	F	4	105	3	negative	12				
281	Emanuel Simiyu	Chemutu	Cross	F	2.5	90	5	negative	30	700			
282	George Wenwa	Labu	Local	M	5	140	4	negative	20				
283	Walter Osanwa	Nyangesho	Local	F	5	140	4	negative	25	0			
284	Wyclife Chele	Maridadi	Local	M	5	90	4	negative	17	300			
285	Fred Pepela	Nafula	Local	F	6	210	5	negative	18	100			
286	Godfrey Imo	Kuro	Local	M	7	200	5	negative	30	100			
287	Brenda Sangile	Alba	Cross	F	2.5	100	5	postive	15	0			
288	Emanuel Osilingi	Kuro	Cross	M	10	190	4	negative	21				
289	Abel Okimau	Swara	Cross	M	7	180	4	negative	17				
290	Elisha Opili	Masaai	Cross	M	6	180	4	negative	27	200		postive	
291	Fred Pepela	Tobe	Cross	M	1	65	4	negative	19	600			
292	Walter Opagala	Omusi	Cross	M	6	120	4	negative	18				
293	Denis Masinde	Selangishi	Cross	F	3.5	130	4	negative	22				
294	Alfred Wanikina	Nakhumicha	Cross	F	13	120	4	negative	11	0			
295	Patrick Mukanda	Mbuni	Local	M	4	150	4	negative	27	400	postive		
296	Michael Barasa	Nafula	Cross	F	6	180	4	negative	20				
297	David Etyang	Ilematu	Local	F	3.5	140	4	negative	24				
298	Jerald Atung'ula	Omusi	Local	M	5	200	5	negative	16	100			
299	Philip Ochilong'u	Ong'ole	Cross	M	4.5	130	4	negative	26			postive	
300	Emanuel Osilingi	Alamai	Local	F	3	100	4	negative	24	400			
301	Emanuel Osilingi	Swara	Local	M	2.5	90	4	negative	27		postive		
302	Isa Ibrahim	Tobe	Local	M	1.75	60	4	negative	20				
303	Ramadhan Lukhale	Kenya	Local	M	6	180	4	negative	24	100			
304	Richard Wanyonyi	Mori	Local	F	1	140	4	postive	14	700			
305	Protus Nalianya	Simba	Cross	M	5	160	4	negative	19				
306	David Mabonga	Tobe	Local	M	4	190	4	negative	20				
307	Julius Wafula	Kadogo	Cross	F	7	200	4	negative	21	300			
308	Reuben Iya	Simba	Local	M	5	160	3	negative	10				

309	Joseph Wepukhulu	Maridadi	Local	M	5	250	5	negative	20	100			
310	Muhammed Juma	Swara	Local	M	6	170	4	negative	17				
311	David Pepela	Nafula	Cross	F	6	200	4	negative	21	800			
312	Titus Ekenya	Omusi	Local	M	4	190	4	negative	22				
313	Isaac Nyongesa	Tumbu	Local	M	7	180	4	postive	15	100			
314	Laban Eweta	Manga	Cross	F	1	30	3	negative	15	600			
315	Wyclife Pepela	Nanjala	Local	F	3.5	90	4	negative	20				
316	Kenneth Ahita	Labu	Local	M	10	200	5	negative	28				
317	Hamphrey Ochilong'o	Aketi	Local	F	12	100	3	negative	16				
318	Florence Matinyu	Kuro	Local	M	7	200	5	negative	26				
319	Bramuel Imo	Tobe	Local	M	7	160	4	negative	26				
320	Robert Opagala	Blue	Local	M	2	70	4	negative	23				
	TOTALS				**385.25**	**10535**	**307**		**1615**	**10900**			
	AVERAGES				**4.9391026**	**135.06**	**3.9**		**20.705**	**272.5**			

Anex 7

CROSS SECTIONAL SURVEY RESULTS FOR BUTONGE SUB LOCATION

	OWNER	NAME	BREED	SEX	AGE (YRS)	Wt(Kg)	BC	BE (TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLAS
321	Solomon Wanyama	Mary	Local	F	5	140	4	negative	32	100			
322	Solomon Wanyama	Nakhanyusi	Local	F	1	65	4	negative	34	0			
323	Francis Wanyama	None	Local	M	4	200	4	negative	30	0			
324	Ronald Wambaya	Namaemba	Local	F	3	120	4	negative	33	0			
325	Ronald Wambaya	Nanjala	Cross	F	7	190	4	negative					
326	Patrick Wabukala	Nasimiyu	Cross	F	1	45	3	negative	25	700			
327	Patrick Wabukala	Labu	Cross	M	6	180	3	negative	18	600			
328	Ronald Wambaya	Mumeyo	Cross	F	3	90	3	negative	15	400			
329	patrick Wambaya	Nanjala	Cross	F	5	110	3	negative	29		postive		
330	Patrick Wabukala	Mary	Cross	F	6	170	4	negative	21	200			
331	Patrick Wabukala	Swara	Local	M	5	140	4	negative	20				
332	Francis Wanyama	None	Local	M	4	180	4	negative	25				
333	Ronald Wambaya	None	Cross	F	2.5	110	4	negative	27				
334	Patrick Wabukala	White	Local	F	5	130	4	negative	32	300			
335	Alexander Wafula	Mary	Local	M	10	220	5	negative	28				
336	Dismas Nyongesa	Nyayo	Local	F	5.5	130	4	negative	22				
337	John Kilwake	Nekesa	Local	M	4	130	4	negative	20	600			
338	John Kilwake	Swara	Local	M	3.5	100	4	negative	22				
339	Ronald Wambaya	Maridadi	Cross	F	0.5	90	4	negative	22	700			
340	Ronald Wambaya	Red	Cross	F	2	70	4	negative	27	700			
341	Ronald Wambaya	Nafula	Cross	M	1.5	160	4	negative	27	0	postive		
342	Eliud Watiti	Nyundo	Local	F	4	50	4	negative	30	0			
343	Eliud Watiti	Netondo	Local	F	0.5	120	3	negative	27	200		postive	
344	Wanyama Yakobo	Nanjala	Local	F	4	110	4	negative	31	200			
345	Ronald Masifwa	Nafula	Local	M	2.5	160	4	negative	28				postive
346	Ronald Masifwa	Nekesa	Local	F	3.5	180	4	negative	26				postive
347	Jason Baraza	Simba	Cross	M	6	190	5	negative	16	900			
348	Ronald Masifwa	Cross	Cross	F	11	180	4	negative	22				
349	Chrispus Silungai	Maua	Local	M	7	160	4	negative	29				
350	Patrick Wabukala	Nyundo	Local	M	4	130	4	negative	20	600			

351	Dismas Nyongesa	Blue	Local	M	3	70	4	negative	26	100			
352	Jared Wekesa	Blue	Local	M	2.5	70	4	negative	35	200			
353	Raymond Wambaya	Placy	Local	M	8	170	4	negative	21	300			
354	Raymond Wambaya	Tope	Local	M	5	180	4	negative	32		postive		
355	Raymond Wambaya	Nyerere	Cross	M	2.5	100	4	negative	26				
356	Alexander Wafula	Faro	Local	M	5	190	4	negative	29				
357	John Kilwake	Tope	Local	M	3.5	140	4	postive	16	700			
358	Eliud Watiti	Nasimiyu	Cross	F	5	120	4	negative	30	600			
359	Wanyama Yakobo	Nekesa	Local	F	5	160	4	negative	28	700			
360	Wanyama Yakobo	Masaai	Local	M	0.5	35	4	negative	29	0			
361	Patrick Wanjala	Maua	Local	F	3	120	4	negative	30				
362	Patrick Wabukala	Nasimiyu	Cross	F	3.5	120	4	negative	22	200			
363	Eliud Watiti	Swara	Cross	M	1	50	5	negative	36	600		postive	
364	Ronald Masifwa	Swara	Local	M	1	50	4	negative	20	600			
365	Jason Baraza	Labu	Cross	M	3	120	4	negative	28	200			
366	Moses Kunikina	Nafula	Cross	F	7	120	3	negative	14	600			
367	Josephat Simiyu	Kenya	Local	M	5	160	4	negative	34				
368	Shadrack Nandokha	Blue	Local	F	6	180	4	negative	30				
369	Denis Wanjala	Labu	Local	M	7	200	5	postive	20				
370	John Kilwake	Kharobo	Local	F	1	55	4	negative	30	700			
371	Scholastic Simbauni	Labu	Cross	M	2.5	90	3	negative	29				
372	Wanjala Watelo	Tope	Local	M	6	190	4	negative	21	500			
373	Alexander Wafula	Tope	Local	M	2	50	3	negative	22	400			
374	Alexander Wafula	Nakhanyusi	Local	M	10	190	4	negative	31				
375	Christopher Natembea	Nyundo	Local	M	5	220	5	negative	28				
376	Christopher Natembea	Simba	Local	M	5	190	4	negative	23	200			
377	Godfrey Chemao	Mrembo	Local	F	2.5	100	5	negative	27	100			
378	Simon Fwamba	Nambusi	Cross	F	2.5	80	4	negative	21	300			
379	Wanyama Yakobo	Nanjala	Local	F	2	130	5	negative	31	400			
380	Clement Malimbe	Labu	Local	M	6	180	5	negative	25				
381	Richard Wasike	Mating'ili	Local	F	5	150	4	negative	22				
382	Patrick Wanjala	Mary	Local	F	0.5	50	4	negative	35	400			postive
383	Timothy Simiyu	Nabwile	Local	F	2	70	4	negative	30		postive		
384	Simon Wangwe	Maridadi	Local	M	12	250	5	negative	34	0			
385	Denis Wanjala	Tumbako	Local	F	5	140	4	negative	30	0			
386	Raphael Chemao	Nasimiyu	Cross	F	1.5	55	4	negative	27	0			

387	Simon Fwamba	Nyundo	Local	M	10	180	4	negative	26	0			
388	William Kuyundo	Romario	Local	M	3	110	4	postive	21	400			
389	Ben Wandabwa	Nasimiyu	Cross	F	2.5	80	4	negative	20				
390	Keva Ndalila	Nasimiyu	Cross	F	1.5	80	4	negative	18				
391	Evans Wanjala	Nyundo	Cross	M	7	190	4	negative	31				
392	Jose Chemao	Nangekhe	Cross	F	3	120	4	negative	28	600	postive		
393	Jason Baraza	Masaai	Local	M	7	280	4	negative	22	300			
394	Alex Wafula	Naliaka	Cross	F	3	170	5	negative	23				
395	Denis Wanjala	Simba	Local	M	7	270	4	negative	26	0	postive		
396	Godfrey Chemao	Swara	Cross	M	3	190	5	negative	29	0			
397	Binea Wafula	Maridadi	Local	M	3	140	4	negative	33	0			
398	John Kilwake	Kharobo	Cross	F	12	210	4	negative	27	300			
399	Benard Wafula	Blue	Local	M	9	190	4	negative	29	400			
400	Martin Sikuku	Nakhumicha	Cross	F	10	150	5	negative	13				
401	Frank Kukubo	Suzi	Cross	F	10	100	3	negative	18				
	TOTALS				365	11055	327		2246	16000			
	AVERAGES				4.5625	138.19	4.1		28.075	313.7255			

Annex 8

CROSS SECTIONAL SURVEY RESULTS FOR MUKWA SUB LOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE (TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLAS
402	George Wekesa	Kharobo	Local	F	6	150	4	negative	30	0			
403	Erick Munyabiri	Tobe	Local	M	2	50	4	negative	21				
404	Erick Munyabiri	Maua	Local	F	1.5	75	4	negative	26	900	postive		
405	Robert Baraza	Blue	Local	M	3	110	4	negative	23				
406	George Fwamba	Nasimali	Local	F	2	45	4	negative	31	300			
407	George Wekesa	Kenya	Local	M	5	180	4	negative	28	300			
408	Baraza Esiraeli	Netondo	Local	F	7	100	3	negative	25	400			
409	David Mafura	Nasimiyu	Cross	F	0.5	35	4	negative	26	700	postive		
410	David Mafura	Nafula	Cross	F	0.5	35	4	negative	27				
411	Matayo Wopicho	Solome	Cross	F	6	160	4	negative	25	900			
412	Charles Wamukota	Labu	Cross	M	10	190	5	negative	19				
413	Dickson Wafula	Nasambu	Local	F	6	180	4	negative	31	0			
414	George Fwamba	Kharobo	Cross	F	2	90	4	negative	27	500			
415	Baraza Esiraeli	Maua	Local	F	8	130	4	negative	30	800			
416	George Wekesa	Nekesa	Cross	F	1.5	45	4	negative	23				
417	Zakayo Muse	Tobe	Cross	M	6	160	4	negative	36	100			
418	Zakayo Muse	Labu	Cross	M	4	140	4	negative	26				
419	George Wekesa	Masaai	Cross	M	7	180	5	negative	25	0			
420	George Wekesa	Labu	Cross	M	1.5	90	4	negative	30	0			
421	John Kitui	Simba	Local	M	2	80	4	negative	27	0			
422	Baraza Sungura	Nanjala	Local	F	5	140	4	negative	26				
423	Matayo Wopicho	Nasimali	Local	F	6	170	4	negative	24	200			
424	Zakayo Muse	Chonge	Local	M	7	170	5	negative	37	400			
425	Zakayo Muse	Mbuni	Local	M	6	140	4	negative	31				
426	Zebastiano Muse	Maria	Local	F	3.5	100	4	negative	21	0			
427	Isaac Wamachari	None	Local	M	5.5	140	4	negative	29		postive		
428	Isaac Wamachari	Simba	Local	M	5	160	4	negative	26				
429	Isaac Wamachari	Nekesa	Local	F	4	140	4	negative	35	300			
430	Jackton Wamalwa	Jersy	Local	F	5	130	4	negative	32	0			
431	Milto Lusweti	Simba	Local	M	2.5	90	4	negative	25	600			

432	Milto Lusweti	Tobe	Local	M	2	60	4	negative	21	700			
433	Milto Lusweti	Namaemba	Local	F	5	130	4	negative	31				
434	Milton Lusweti	Tumbu	Local	M	4	140	4	negative	34	0	postive		
435	Isaac Wamachari	Nekesa	Local	F	5	150	4	negative	31	300			
436	Zephan Wekesa	Nasimali	Cross	F	2.5	90	5	negative	32	200			
437	Baraza Sungura	Naliaka	Local	F	0.5	15	4	negative	30	700			
438	George Wekesa	Khayanga	Local	F	10	100	4	negative	32		postive		
439	Sivester Wanjala	Maua	Local	F	6	100	4	negative	29	100			
440	Sivester Wanjala	Antom	Local	M	1	60	4	negative	24				
441	Kuloba Biboko	Kharobo	Cross	F	1.5	65	4	negative	26				
442	Kuloba Biboko	Nabukimwei	Cross	F	1	40	4	negative	25	600			
443	Paul Khachoge	Simba	Local	M	1	45	4	negative	25				
444	Rose Kundu	Nasimali	Local	F	5	110	4	negative	15				
445	Fwamba Mukinusu	Tobe	Local	M	6	130	5	negative	20	0			
446	John Kitui	Nyundo	Local	F	1	50	4	negative	27	500	postive		
447	Fwamba Mukinusu	Simba	Local	M	6	180	5	negative	30				
448	Eliud Munyasia	Namatondoi	Cross	F	1	60	5	negative	19				
449	Zepastian Muse	Sela	Cross	F	2	55	3	negative	11	900			
450	Zedekiah Wanyama	Nangekhe	Local	F	10	160	5	negative	31	100			
451	Eliud Munyasia	Nandako	Local	F	6	150	4	negative	25				
452	Joseph Wanjala	Namusiche	Cross	F	3	40	4	negative	30	0			
453	Moses Muloka	Nambusi	Local	F	3	110	4	negative	30	0			
454	George Wekesa	Jersy	Cross	F	12	160	4	positive	27	800			
455	Cleophas Wafula	Lapu	Cross	M	3	110	4	negative	27				
456	Cleophas Wafula	Manteti	Local	M	3	100	5	negative	32				
457	Baraza Sungura	Nylon	Local	M	10	200	4	negative					
458	Matayo Opicho	Nabusonge	Local	F	7	150	4	positive	25	300			
459	Martin Wafula	Nafula	Local	F	10	140	4	negative	24				
460	Martin Wafula	Nasimiyu	Local	F	8	170	5	negative	26	400			
461	Isaya Khaemba	Nangendo	Cross	F	10	140	4	negative	12				
462	Isaya Khaemba	Boss	Local	M	15	200	5	negative	20	400			
463	Festus Fwamba	Sudi	Cross	F	1.5	40	4	negative	16				
464	Georfrey Kitui	Nyundo	Local	M	3	100	4	negative	32				
465	Georfrey Kitui	Nafula	Cross	F	3.5	100	3	negative	22	100			
466	Dan Wekesa	Kharobo	Cross	F	2	110	5	negative	31				
467	Job Simiyu	Simba	Cross	M	5	180	4	negative	20				

468	George Wabomba	Nasimiyyu	Local	F	3	160	5	negative	30	0	postive		
469	Robert Wafula	Simba	Cross	M	6	150	4	negative	25	100			
470	Jeralt Wepukhulu	Simba	Cross	M	12	150	4	negative	27				
471	Fwamba Mukinisu	Swara	Local	M	3	90	4	negative	30				
472	Fwamba Mukinisu	Blue	Local	M	6	160	4	negative	22				
473	Patrick Nyongesa	Simba	Local	M	2.5	90	5	negative	30				
474	Denis Biketi	Blue	Local	M	4	190	5	negative	26				
475	Milton Wamalwa	Kenya	Local	M	5	180	5	negative	22	600			
476	Milton Wamalwa	Maruboy	Local	M	2	50	4	negative	19	0			
477	Robert Busolo	Cross	Cross	F	5	100	4	negative	21	0			
478	Robert Busolo	Sahiwal	Cross	F	3	90	4	negative	16				
479	Samuel Wakhungu	Kharobo	Local	F	6	140	4	negative	15	700			
480	Edward Wamalwa	Nandati	Local	M	1.5	70	4	negative	27	300			
481	Zebastiano Muse	Swara	Local	M	2	70	4	negative	29				
	TOTALS				**367.5**	**9235**	**333**		**2053**	**14200**			
	AVERAGES				**4.59375**	**115.44**	**4.163**		**25.987**	**591.67**			

ANNEX 9

CROSS SECTIONAL SURVEY RESULTS FOR WEST SIBOTI SUBLOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE (Tryps)	PCV %	EPG	ECF	BABESIOSIS	ANAPLASMOSIS
482	Martin Wanjala	Swara	Cross	M	5	150	4	negative	23				
483	Christopher Wanyama	Edinah	Local	F	3	110	4	negative	18				
484	Richard Wepukhulu	Khalayi	Local	F	6	120	4	negative	22	300			
485	Simon Wanjala	Namaeso	Local	F	8	130	4	negative	24				
486	Wanjala Okinjo	Mardadi	Local	M	4	110	4	negative	18	1500			
487	Agrey Kibito	Market	Cross	M	9	180	4	negative	31		postive		
488	Charles Wanjala	Maua	Cross	F	10	130	4	negative	18				
489	Benard Kasili	Anah	Local	F	3	140	3	negative	12	300			
490	Fredrick Baraza	Dobe	Cross	M	9	100	3	negative	16	700			
491	Vincent Bwangi	Nalonja	Cross	F	8	90	3	postive	13				
492	Protus Bwifoli	Bandu	Local	F	15	90	3	negative	18	400			
493	Nyongesa Okune	Dobe	Local	M	5	140	4	negative	19				
494	Wilberforce Wamalwa	Kharobo	Local	F	8	160	4	negative	23	0			
495	Benjamin Makokha	Place	Local	M	8	160	4	negative	27	0			
496	John Ramadhan	Lydiah	Local	F	5	170	5	negative	25				
497	Justus Wamalwa	Mbuni	Local	M	5	180	5	negative	28			postive	
498	Albert Masinde	Wenyonga	Cross	F	3	95	4	negative	13	0			
499	Chrisostine Wanjala	Swara	Local	M	5	170	4	negative	20				
500	Peter Baraza	Baraka	Local	M	3	130	5	negative	14	0			
501	Mathias Wamalwa	Dobe	Local	M	8	190	5	negative	15	600			
502	Pius Wafula	Dobe	Local	M	3.5	100	4	negative	27				
503	Charles Masinde	Netondo	Local	F	3	90	4	negative	23				
504	Fred Bwani	Maridadi	Local	M	12	220	5	postive	10	100			
505	Evans Muluma	Netondo	Local	F	9	180	5	negative	26				postive
506	Martin Ngilandala	Kharobo	Local	F	5	180	5	negative	28	500			
507	Francis Wesangania	Blue	Local	F	3	200	5	negative	10	100			
508	Cleophas Wetuya	Simba	Local	M	8	130	4	negative	12				
509	Moris Makokha	Maresa	Local	F	7	160	5	negative	26	100			
510	Fred Munjosi	Maridadi	Local	M	4	90	4	negative	25				
511	Patrick Nalwa	Simba	Cross	M	0.5	40	3	negative	14	700			
512	Martin Sikuku	Labu	Local	M	12	180	5	negative	15	0			

513	Julius Obetule	Kharobo	Local	F	5	130	5	negative	18	0			
514	Charles Nyongesa	Maridadi	Local	M	14	120	4	negative	23				
515	Corinarius Wanyama	Namaemba	Cross	F	0.5	40	4	negative	22	600			
516	Moses Nyongesa	Kharobo	Cross	F	6	170	4	negative	26	0	postive		
517	Chrispinus Kuloba	Dobi	Local	M	5	120	4	negative	25				
518	Luke Simiyu	Maridadi	Cross	F	10	160	5	negative	29	500			
519	Fred Masika	Simba	Cross	M	10	150	4	negative	18				
520	Bonface Makokha	Kadogo	Local	F	10	250	5	negative	30			postive	
521	Linus Wafula	Kharobo	Local	F	5	150	5	negative	24	600			
522	Milton Nyongesa	Kenya	Local	M	8	230	5	negative	23				
523	David Wachana	None	Local	F	10	150	4	negative	36	100			
524	Khasim Nambiyo	None	Local	F	6	120	4	negative	11	600			
525	Vincent Wekesa	None	Local	F	5	140	4	negative	19				
526	David Khaemba	Sungura	Cross	M	5	150	5	negative	20	300			
527	Mary Nabwoba	Nabukhala	Local	M	10	180	4	negative	25	200			
528	Charles Kiokulo	Maridati	Local	F	5	150	4	negative	30		postive		
529	Mary Nanyama	Namaemba	Local	M	11	140	4	negative	23	300			
530	Isaac Khasili	Mary	Cross	F	1.5	60	4	negative	27	600			
531	Wanyoni Kizito	Cross	Local	F	6	170	4	negative	27	0			
532	Casper Munyalo	Swara	Local	F	12	180	4	negative	23	0			
533	Simon Papa	Nafula	Cross	M	10	140	4	postive	15	100			
534	John Khaemba	Swara	Cross	F	5	100	4	negative	23				
535	Vitalis Makokha	Nekesa	Local	M	2	100	4	negative	23				
536	Justus Wasike	Blue	Cross	F	8	130	4	negative	15	700			
537	Corinarius Nyongesa	Dobe	Local	M	6	100	4	negative	23				
538	George Makokha	Dobe	Cross	M	10	170	4	negative	19	0			
539	Patrick Wanjala	Dobe	Local	M	6	200	4	negative	18				
540	Isaac Kundu	Blue	Local	M	12	140	4	negative	24				
541	Levi Kundu	Labu	Cross	M	10	140	4	negative	24				
542	Mark Waswa	Dobe	Local	M	12	150	4	negative	18				
543	Shadrack Murutu	Namaemba	Local	M	8	150	4	negative	26	400			
544	Robert Kasili	Maua	Cross	F	2.5	80	4	negative	28				postive
545	Martin Salania	Nalonjo	Local	F	3	100	4	negative	30	0			
546	David Namiti	Mary	Cross	F	3	90	4	negative	30				
547	Nicky Nalianya	Kharobo	Cross	F	8	120	4	positive	25	0			
548	Magerius Nyongesa	Kharobo	Local	F	10	170	4	negative	24	0			

549	Corinarius Masinde	Netondo	Local	F	5	170	4	negative	31				
550	Silas Kundu	Maridadi	Local	M	6	150	4	negative	26	600			
551	Lynus Wafula	Labu	Local	M	6	130	4	negative	22	0			
552	Sylvestus Wafula	Kharobo	Local	F	4	110	4	negative	28		postive		
553	Simon Makokha	Ochuka	Local	M	7	120	4	negative	27	600		postive	
554	Reuben Mwanya	Swara	Local	M	8	150	4	negative	13	0			
555	Sammy Mukhwana	Blue	Local	M	6	160	5	negative	23	0			
556	Benard Mukhonji	None	Local	M	2	60	4	negative	29	100			
557	Patrick Mureki	Swara	Local	M	10	170	5	negative	35				
558	Ben Khasili	Swara	Cross	M	11	160	5	negative	29	0			
559	Edward Simati	Maua	Local	F	6	140	4	negative	20				
560	Simon Maruti	Labu	Local	M	8	150	4	negative	22	700			
561	Stephen Lumbe	Nangekhe	Local	F	6	140	4	negative	23	300			
					542.5								
	TOTALS				**542.5**	**11165**	**334**		**1745**	**12600**			
	AVAEAGES				**6.87**	**141.33**	**4.2**		**22.089**	**273.9**			

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Annex 10

CROSS SECTIONAL SURVEY RESULTS FOR EAST SIBOTI SUBLOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE(TRYPS)	PCV	EPG	ECF	BABESIOSIS	ANAPLAS
562	Martin Namukhasi	Simba	Local	M	7	140	4	negative	35				
563	JohnSimiyu	Victoria	Cross	F	2	100	4	negative	30	0			
564	Timothy Baraza	Nakhombe	Cross	F	6	120	3	negative	19	1000			postive
565	Fred Watoka	Tobe	Local	M	2	90	4	negative	26				
566	David Wafula	Nyundo	Local	M	1	30	3	negative	15	200			
567	Robert Simiyu	Swara	Local	M	3	90	4	negative	31				
568	Patrick Nyaranga	Nasimali	Local	F	8	130	4	negative	23	500			
569	Francis Walunyala	Maua	Cross	F	2.5	90	4	negative	23	300			
570	Ben Lukorito	Khaki	Cross	M	0.5	35	3	negative	30	0			
571	Francis Wabwoba	Maua	Local	F	3	60	3	negative	27				
572	Joseph Wafula		Local	M	2.5	100	4	negative	24	600			
573	Wanjala Wanyonyi	Blue	Cross	M	1.5	35	3	negative	16				
574	Fred Baraza	Dobe	Local	M	10	120	3	negative	22		postive		
575	Denis Wafula	Swara	Local	M	1.5	40	3	negative	35				
576	Luke Wekhanya	Nasimali	Local	F	3	130	4	negative	34	200			
577	Joseph Wekesa	Maua	Local	F	4	100	4	negative	30	0			
578	Wanyonyi Khisa	Mary	Cross	F	8	130	4	negative	23				
579	Kobilo Simiyu	Nyundo	Local	M	6	150	4	negative	25	0			
580	Maxwel Simiyu	Nyundo	Local	M	6	170	4	negative	25	400			
581	Raphael Misiko	Namaemba	Local	M	4	120	4	negative	22				
582	Sylvester Wanjala	Maua	Local	F	3	80	4	negative	31	0			
583	Vincent Juma	Kharobo	Local	F	5	120	5	negative	21				
584	Wiliam Kundu	Place	Local	M	6	200	5	negative	25	0			
585	Geofrey Waswa	Dodo	Local	M	5	250	5	negative	30				
586	Godfrey Wekesa	Dobe	Local	M	5	170	4	negative	30	300			
587	Fred Baraza	Maua	Local	F	7	130	4	negative	29	600	postive		
588	Joseph Ngangi		Local	F	3	100	5	negative	31				
589	Godfrey Muanga	Dobe	Local	M	1.5	50	4	negative	28	700			
590	Keneth Kuloba	Mrembo	Cross	F	1.5	100	5	negative	29				
591	Richard Silikhu		Local	M	2	100	5	negative	24				

592	Baraza Manyonge	Nakhanyusi	Local	F	6	100	3	negative	16				
593	Stephen Mayila	Captain	Cross	M	2	70	4	negative	23	300			
594	John Nyongesa	Namusonge	Cross	F	6	100	4	negative	19				
595	Julias Wanyonyi	Nabangala	Local	F	3	100	4	negative	27	100			
596	Patrick Lubao	Nabucherawile	Local	F	3	100	5	negative	30				
597	Fred Baraza	Swara	Cross	M	3	95	4	negative	30				
598	Ignatius Khisa	Blue	Local	M	4	110	5	negative	30	100			
599	Moses Wangila	Nakhanyusi	Cross	F	7	110	4	negative	25				
600	Moses Juma	Nanjala	Local	F	4	200	5	negative	33	0			
601	Simon Chepsoi	Mangu	Local	M	6	180	5	negative	31				
602	Mathias Wenani	Labu	Local	M	3	110	4	negative	26	0			
603	Martha Wekesa	Tumbu	Cross	M	2	150	5	negative	29	600			postive
604	Evans Simiyu	Mary	Cross	F	6	150	5	negative	43				
605	Martin Wamalwa	Congo	Local	M	0.5	75	4	negative	18	600			
606	Hadson Wafula	Nyundo	Local	M	4	110	4	negative	28	0			
607	Wachie Nyakhurenya	Nasambu	Local	F	2	100	4	negative	30	0			
608	Dorius Nabikhui	Tongoren	Cross	M	5	120	4	negative	23				
609	Benjamin Masika	Nyundo	Local	M	3	90	4	negative	30				
610	Bonface Wakholi	Nawanga	Local	F	7	110	4	negative	15	600			
611	Jerald Wamela	Nyundo	Local	M	5	170	4	positive	25				
612	Martin Wamalwa		Local	F	5	150	4	negative	28				
613	Wilson Saramu	Place	Local	M	7	270	5	negative	29				
614	Dismas Wanyonyi		Local	F	3	90	5	negative	29	100	postive		
615	Wangila Wepukhulu	Dobe	Local	M	5	220	5	negative	23				
616	Albert Kisembe	Grace	Cross	F	1.5	100	5	negative	15	600			
617	Charles Nalianya	Namulonda	Local	F	8	170	4	negative	21	0			
618	David Juma	Nekesa	Local	F	4	150	4	negative	32	700			postive
619	Wenslause Juma	Labu	Local	M	2	70	4	negative	22				
620	Juma Sudi	Koa	Local	F	5	170	4	negative	16				
621	Alex Wambati	Simba	Local	M	5	170	4	negative	21	0			
622	Wamalwa Murefu	Maua	Local	F	1	30	3	negative	29	500			
623	Denis Wabwoba	Kharobo	Local	F	3	120	4	negative	31	300			
624	John Wangwe	Blue	Local	M	2	70	4	negative	18	0			
625	Simon Matere		Local	F	1.5	50	4	negative	19	100			
626	Fred Juma	Maridadi	Local	M	5	170	4	negative	23				
627	Mark Khaemba	Kharobo	Local	F	2	70	4	negative	35	200			

528	Francis Nyongesa	Mary	Local	F	6	120	4	negative	27	0			
529	John Ingo	Nafula	Local	F	2.5	170	4	negative	30				
530	Francis Wekesa	Nambengele	Local	F	6	100	5	negative	35	0			
531	Martin Simiyu	Nyundo	Local	M	3	110	4	negative	30	100	postive		
532	Henry Wanyonyi		Local	F	1	70	4	negative	25	400			
533	Justus Baraza	Kharobo	Local	F	1.5	90	5	negative	32				
534	Juma Tembu	Nambengele	Local	F	8	140	4	negative	35	0			
535	Augustine Makokha	Simba	Local	M	3	70	4	negative		100			
536	Kizito Sasita	Nalonja	Local	F	8	100	4	negative	32	600			
537	Basco Sifuna	Blue	Cross	M	5	120	4	negative	26				
538	Francis Makhuyu	Swara	Local	M	6	140	5	negative	27	0			
539	Michael Sifuna	Maridadi	Local	M	14	150	4	negative	30	300			
540	Francis Kazungu	Nasimali	Local	F	2	90	4	negative	20				
541	Moses Sifuna	Maridadi	Cross	M	2	90	4	negative	30				
542	Enock Sikuku	Maua	Cross	F	3	120	4	negative	23				
543	E. Naliama	Simba	Local	M	7	200	5	negative	19				
544	E. Naliama	Swara	Local	M	9	200	5	negative	28				
	GRAND TOTAL				**349**	**9780**	**344**		**2164**	**11100**			
	AVERAGES				**4.20**	**117.83**	**4.14**		**26.39**	**246.67**			

Annex 11

CROSS SECTIONAL SURVEY RESULTS FOR MYANGA SUB LOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE (TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLAS
645	David Muliro		Local	M	1.5	70	4	negative	26	600			
646	Johnstone Baraza	Nekesa	Cross	F	6	130	4	negative	26				
647	Felix Wanyonyi	Kharobo	Local	F	6	120	4	negative	32	0			
648	Chrispinus Nyongesa	Surdi	Local	F	6	140	4	negative	26				
649	Martin Simiyu	Namusonge	Local	F	4	120	4	negative					
650	Joseph Wamalwa	Nakhabyusi	Local	F	7	130	4	negative	33	300			
651	Wenslause Sifuna	Swara	Local	M	10	170	5	negative	27	100			
652	David Sikuku		Local	F	7	150	5	negative	21	500			
653	Silas Simiyu	Swara	Local	M	8	170	4	negative	32		postive		
654	Fedinand Walubili	Namubuya	Local	F	6	120	4	negative	25				
655	Christopher Lubisha	Maridadi	Local	M	7	180	5	negative	25	0			
656	Geofrey Wabakala	Maridadi	Local	M	13	190	5	negative	29			postive	
657	Patrick Wekesa	Tobe	Local	M	2.5	100	4	negative	22	600			
658	John Singoro	Namalelo	Cross	F	2.5	150	5	negative	33	0			
659	Fred Ndalila	Maua	Cross	F	14	160	4	negative	28	0			
660	Gilbert Sitati	Bahati	Cross	F	10	170	5	negative	37	500			
661	Silas Muchenje	Maua	Cross	F	9	180	5	negative	28	0			
662	Ben Khatete		Cross	F	9	150	4	negative	32	100			
663	Donald Juma	Nalinja	Cross	F	4	170	4	negative	35				
664	Edmond Singoro	Masaa	Local	F	1.5	70	4	negative	31	100			
665	Wanjala Muchongole	Rosemary	Local	F	5	120	4	negative	30		postive		
666	Albert Wanyonyi	Kimbo	Cross	F	7	100	3	negative	26				postive
667	Julias Obacho	Namubuya	Cross	F	2	90	5	negative	27	300			
668	Wilfred Sifuna	Nekoye	Cross	F	5	120	3	negative	24	0			
669	Agustine Sifuna	Nyundo	Cross	M	7	160	4	negative	30	0	postive		
670	David Wamalwa	Nawanga	Cross	F	5	100	4	negative	22				
671	Ronanas Wanyonyi	Nafula	Cross	F	3	120	5	negative	34	0			
672	Ken Simiyu	Namubuya	Local	M			4	negative	35	200			
673	Pius Sakwa	Nawanga	Local	F	2.5	90	4	negative	15				
674	David Fwamba	Nafula	Local	F	3	70	4	negative	33				

675	Fred Wafula	Namubuya	Local	F	2	80	4	negative	29	600			
676	Joash Mukabani	Nasimali	Local	F	7	160	4	negative	27				
677	Fred Wafula	Tobe	Local	M	2	60	4	negative	37	600	postive		
678	George Khaemba	Nyundo	Local	M	5	170	4	negative	36				
679	Richard Wabuge	Nabakole	Cross	F	7	120	4	negative	25	300			
680	Benard Wanjala	Kharobo	Local	F	6	140	4	negative	21	0			
681	Kenned Kadamo	Muungwana	Local	F	5	120	5	negative	26	0			
682	Benjamin Wanyonyi	Rose	Local	F	6	110	3	negative	36	0			
683	Fwamba Patrick		Local	M	5	160	5	negative	28			postive	
684	Fred Wanjala	Simba	Local	M	6	170	5	negative	16	0			
685	Rodgers Chetambe	Simba	Local	M	5	170	4	negative	27	100			
686	Elias Simiyu	Nalonja	Local	F	8	170	5	negative	20	600			
687	Alfred Juma	Maridadi	Local	M	7	160	4	negative	25	0	postive		
688	Fred Ndalila	Simba	Local	M	4	200	5	negative	30				
689	Jackson Mulongo		Local	M	5	100	4	negative	31				
690	Benard Wanjala		Cross	F	4	120	4	negative	32	800			
691	Francis Wamalwa	Maridadi	Local	M	6	190	5	negative	31	0			
692	Robert Sakwa	Nabusala	Cross	F	6	120	4	negative	23	600			
693	Margaret Wanyonyi	Kharobo	Cross	F	6	150	4	negative	18	300			
694	Tunguta John		Cross	F	1	70	4	negative	22	800			
695	Moses Wafula	Namuleyi	Cross	F	4	120	3	postive	26				
696	Khaemba Naunalo	Maridadi	Local	M	6	150	4	negative	27				
697	Rodgers Chetambe	Nasimali	Cross	F	0.5	30	3	negative	23	400			
698	Stephen Makokha		Cross	F	5	130	4	negative	21	300			
699	Charles Khisa	Nambengele	Local	F	5	120	4	negative	30				
700	Charles Muliro	Simba	Local	M	5	120	4	negative	22				
701	Thomas Wangila	Nalonja	Cross	F	6	140	4	negative		0			
702	Mark Wafula	Sungura	Local	M	2.5	90	4	negative	32	0	postive		
703	Patrick Sifuna	Kharobo	Cross	F	1	70	4	negative	28	300			
704	Wenslause Waneloma	Nambilifuma	Local	F	7	150	5	negative	29				postive
705	Robert Wekesa	Nyundo	Local	M	5	190	5	negative	28	0			
706	Matthios Wasabi	Mukukimbisi	Cross	F	5	140	3	negative	28	100			
707	Wilfred Khaemba	Nyayo	Cross	M	10	160	3	negative	21	300			
708	Wiliam Wamalwa	Maria	Local	F	6	150	4	negative	20	0			
709	Fred Wafula	Simba	Local	M	5	140	4	negative	29	0	postive		
710	Godfrey Wafula	Kharobo	Cross	F	10	120	4	negative	29				

711	Elias Simiyu	Sungura	Local	M	9	100	4	negative	31				
712	Mouris Onget	Makoba	Local	F	7	150	5	negative	15	700			
713	Benard Okumu	Maridadi	Local	M	10	140	4	negative	35	0			
714	Moses Wesonga	Netondo	Cross	F	2	90	5	negative	36	0	postive		
715	Aoron Baraza	Nasimali	Local	F	2	80	5	negative	30	700			
716	Bonface Masinde	Kharobo	Local	F	1.5	60	5	negative	18	500			
717	Martin Nyongesa	Kharobo	Cross	F	5	100	4	negative	30	0		postive	
718	Fred Masika	Nabukimwei	Cross	F	10	150	4	negative					
719	Nartin Wabwaba	Khayanga	Local	F	4	80	4	negative	32	0			
720	Josephat Mikisi	Sungura	Local	M	4	100	4	negative	30	300			
721	Sifuna Pazo	Lapu	Local	M	10	170	3	negative	27				
722	Vincent Wekesa		Local	F	6	100	3	negative	38	600			
723	Evans Simiyu	Simba	Local	M	4	100	4	negative	35				
724	Moses Khatete	Kharobo	Local	F	8	120	4	negative	30	0	postive		
725	Bonface Namukhalaki	Nylon	Cross	M	6	140	4	negative	0				
	TOTALS				448	10250	336		2034	12200			
	AVERAGES				5.6	128.13	4.2		25.425	230.2			

ANNEX 12

CROSS SECTIONAL SURVEY RESULTS FOR WEST MATEKA SUB LOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE (TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLASMOSIS
726	Chrispinus Nyongesa	Swara	Cross	M	1	50	5	negative	32	500	postive		
727	Rebecca Namachanja	Nasimali	Cross	F	5	200	5	negative	24	100			
728	Rebecca Namachanja	Nyundo	Local	M	0.5	30	4	negative	29	600			
729	Chrispinus Nyongesa	Simba	Local	M	6	150	5	negative	33	300			
730	Vincent Kwoba	Swara	Local	M	6	250	5	negative	36				
731	Chrispinus Nyongesa	Cheliti	Local	M	4	150	5	negative	27				
732	Sylvenus Simiyu	Mary	Local	F	5	250	5	negative	22	500			
733	Peter Simiyu	Swara	Local	M	0.5	50	5	negative	28	0	postive		
734	Peter Simiyu	Rose	Local	F	1.5	80	5	negative	30				
735	Vincent Kwoba	Dobe	Local	M	7	250	5	negative	29				
736	Electin Namukuru	Nasimali	Cross	F	1	70	5	negative	35	500			
737	Mourice Mukhebi	Sarah	Cross	F	4.5	80	3	negative	31				
738	Chrispinus Nyongesa	Nasimali	Local	F	4	200	5	negative	37	0		postive	
739	Vincent Kwoba		Local	F	6	200	5	negative	29	0			
740	Sylvenus Simiyu	Nakhone	Local	F	7	200	5	negative	32				
741	Steven Masika	Nasimali	Local	F	10	250	5	negative	26	0			
742	Vincent Kwoba	Nyundo	Cross	M	5	200	5	negative	24	0			
743	Electin Namukuru	Kharobo	Cross	F	6	200	5	negative	36	600			
744	Mourice Mukhebi	Mary	Cross	F	7	250	4	negative	25				
745	Steven Masika		Local	F	1	50	5	negative	31	500			
746	Peter Simiyu	Nekesa	Cross	F	11	200	5	negative	24				
747	Mourice Nabangi	Blucky	Cross	M	1	50	4	negative	27	200			
748	Mourice Nabangi	Nyundo	Local	M	0.5	30	4	negative	40	300			
749	Patrick Kesima	Tuzo	Cross	M	1	90	5	negative	39				
750	Francis Waswa	Namulekhwa	Local	F	0.5	50	5	negative	28	600			
751	Vincent Kwoba	Placy	Local	M	4	300	5	negative	31	0			
752	Florence Wanyonyi	Nakhanyusi	Local	F	4	200	5	negative	30	100			
753	Jumos Malaa	Maridadi	Local	M	5	200	5	negative	32		postive		
754	David Simiyu	Victoria	Local	F	5	300	5	negative	25	0			
755	David Simiyu	Bull	Local	M	0.5	30	4	negative	15	700			
756	Tobias Wamalwa	Brown	Local	F	0.5	30	4	negative	31				

757	James Mulaa		Local	F	6	300	5	negative	27				
758	James Mulaa	Swara	Local	M	3	190	5	negative	29				
759	Vincent Kwoba	Masaai	Local	F	3	90	4	negative	28	700			
760	Albert Wafula	Rose	Local	F	4	150	4	negative	25	600			
761	Wandili Muchana	Maridadi	Local	F	10	200	4	negative	26	100			
762	Kenneth Nabangi	Kharobo	Local	M	3	200	5	negative	30				
763	Redempta Muliro	Swara	Local	F	6	300	5	negative	32	0			
764	Simiyu Wekesa	Cross	Cross	M	5	200	5	negative	30			postive	
765	Simiyu Wekesa	Copro	Local	F	7	250	5	negative	35	300			
766	Simiyu Wakona	Namenga	Local	F	10	300	5	negative	25	200			
767	Patrick Ketima	Kharobo	Local	F	4	300	5	negative	33				
768	Tobias Nabangi	Todla	Local	F	5	300	5	negative	28	400			
769	Vincent Kwoba	Mary	Local	F	4	350	5	negative	29				
770	James Mulaa	ONGARU	Cross	M	10	300	5	negative	32				
771	James Mulaa	Lapu	Cross	F	5	100	3	negative	24	200			
772	Anah Wafula	Nandako	Cross	F	2	80	4	negative	27		postive		
773	Chrispinus Nyongesa	Litondo	Cross	M	8	300	5	negative	28				
774	Mourice Nabangi	Swara	Local	M	0.5	30	4	negative	12	400			
775	Wiliam Simiyu	Simba	Local	M	0.5	50	4	negative	29	700			
776	Joseph Lukorito	Maridadi	Local	F	3	90	3	negative	22				
777	Joseph Lukorito	Nandako	Local	M	3	90	3	negative	15				
778	Joseph Lukorito	Nanjala	Local	F	6	100	3	negative	25	100			
779	Joseph Lukorito	Nalonja	Local	M	2	50	3	negative	24	0			
780	Evas Wasolo	Lapu	Local	F	6	200	5	negative	27	0			
781	Calistus Sifuna	Maua	Cross	M	1.5	50	4	negative	22	600			
782	Calistus Sifuna	Tope	Cross	F	2	100	5	negative	26				
783	Electin Namukuru	Mary	Cross	F	10	200	5	negative	21	100			
784	Steven Wafula	Nasimiyu	Cross	F	7	250	5	negative	37	0			
785	Kenneth Namakhale	Nabwala	Cross	F	2	90	5	negative	18	400			
786	Kenneth Namakhale	Nasimali	Local	F	1.5	50	5	negative	24				
787	Majuma Makhisu	Nabangala	Local	F	5	200	5	negative	30				
788	Chrisandus Wafula	Nasimali	Local	F	1.5	70	5	negative	28				
789	Simon Juma	Kharobo	Local	F	4	200	5	negative	30				
790	James Mulaa	Netondo	Cross	M	6	200	4	negative	28	0			
791	James Mulaa	Tope	Local	F	6	200	4	negative	30	0			
792	James Mulaa	Namalwa	Local	F	7.5	250	5	negative	29	100			

793	Vincent Namachanja	Simba	Local	M	3	80	3	negative	26				
794	Vincent Namachanja	Maridadi	Local	M	5	100	4	negative	33	0			
795	Vincent Namachanja	Nyundo	Local	M	8	300	5	negative	31	100			
796	David Simiyu	Suzzy	Local	F	8	250	5	negative	24				
797	David Simiyu	Kenyatta	Local	M	1	50	5	negative	28	600		postive	
798	David Simiyu	Queen	Cross	F	16	250	5	negative	29	700			
799	Joseph Mukhale	Nekoye	Cross	F	12	250	5	negative	26				
800	Joseph Mukhale	Swara	Local	M	1.5	30	3	negative	29	0			
801	Eliud Munafa	Tumbo	Local	M	3	200	4	negative	33	0			
802	Wiliam Khaemba	Nangila	Local	F	4	200	4	negative	20	800			
803	Chrispinus Baraza	Nakhone	Local	F	2	150	5	negative	35	700			
804	Chrispinus Nyongesa	Nyundo	Local	M	8	200	4	negative	38				
805	Jerald Wanaswa	Simba	Cross	M	3	100	4	negative	26				
	TOTALS				365.5	13180	364		2261	13300			
	AVERGES				4.6265823	166.84	4.6		28.62	458.6			

Annex 13

CROSS SECTIONAL SURVEY RESULTS FOR KHASOKO SUBLOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE(TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLASMOSIS
306	Namanga Johnah		Local	F	1	50	4	negative	40	800			
307	Geofrey Sikuku		Cross	F	4	100	4	negative	34	700			
308	Esbon Mulama	Silwale	Cross	M	1	40	4	negative	33	300			
309	Esbon Mulama	Lando	Cross	M	0.5	30	4	negative	26				
310	Esbon Mulama	Raduori	Cross	F	0.5	35	4	negative	25	600			
311	Esbon Mulama	Dijoli	Cross	M	0.5	30	3	negative	30	600			
312	Wiliam Papa	Silwale	Local	F	1	45	4	negative	26	0			
313	Wiliam Papa	Lando	Cross	M	1.5	40	3	negative	24	700			
314	Martin Sitialo		Local	F	5	120	4	negative	27	0	postive		
315	Rose Kwoba	Litondo	Local	F	1.5	50	4	negative	38	0			
316	Osodo Kadori	Grade 1	Local	F	2.5	90	4	negative	35	200			postive
317	Geofrey Sikuku		Cross	F	5	140	4	negative	29				
318	Johnah Namango		Local	F	0.5	40	4	negative	44	100			
319	Eliud Sikuku		Local	M	0.5	30	3	negative	14	300			
320	Rose Kwoba		Local	F	0.5	35	3	negative	14				
321	Patrick Sitialo	Lando	Local	F	10	120	4	negative	33				
322	Esbon Mulama	Khabala	Cross	F	1	50	5	negative	27	700	postive		
323	Esbon Mulama	Blue	Local	M	3	90	4	negative	25				
324	Esbon Mulama	Lando	Cross	F	2	60	4	negative	35	300			
325	Wanyala Pasliano	Tibora	Cross	F	6	120	3	negative	36				postive
326	Jared Nyongesa		Local	F	2	60	3	negative	23				
327	Martin Sitialo	Dijoli	Local	F	4	160	5	negative	41	300			
328	Ambrose Makokha	Namamali	Local	F	6	100	3	negative	31	0			
329	Peter Ojula	Apala	Local	F	5	150	5	negative	30	700			
330	Geofrey Sikuku	Ngilu	Local	F	4	100	4	negative	18	100			
331	Geofrey Sikuku	Balozi	Local	M	3	100	4	negative	39				
332	Eliud Sikuku	Save	Local	F	1	40	4	negative	25	600			
333	Eliud Sikuku	Chokora	Local	F	1.5	60	5	negative	26	0			
334	Eliud Sikuku	Punda	Local	F	0.5	35	4	negative	25	900			
335	Esbon Mulama	Rateli	Cross	M	1.5	70	5	negative	35	0	postive		

336	Rose Kwoba		Local	F	5	180	5	negative	33	0			
337	Johnah Namango	Dibworo	Local	F	6	150	3	negative	28	400			
338	Patrick Sitialo	Lando	Local	F	10	170	4	negative	31	0			
339	Wiliam Papa	Titieli	Cross	F	6	140	4	negative	19	0			
340	Wiliam Papa	Dijoli	Local	F	10	100	3	negative	35	600			
341	Javan Muchocho		Cross	F	6	120	3	negative	24				
342	Benard Muharo	Upando	Local	M	1	30	3	negative	16	600			
343	Emanuel Nyongesa		Cross	M	2	40	3	negative	25				
344	Kennedy Nyongesa		Cross	F	7	140	5	negative	26	0			
345	Joseph Wakhula		Local	M	1	40	4	negative	29	700			
346	Sarah Mulala	Lando	Local	F	5	140	4	negative	25				
347	Robert Were	White	Cross	F	6	140	4	negative	27	800			
348	Sikuku Geofrey	Maridadi	Cross	M	1.5	40	4	negative	28	0			
349	Sikuku Geofrey	Dipo	Cross	F	0.5	30	4	negative	33				
350	Sikuku Geofrey	Dichoti	Cross	F	1	50	5	negative	25				
351	Gilbert Makokha	Makhibe	Local	F	6	130	4	negative	20	300			
352	David Wanyonyi	Ang'echi	Cross	F	5	120	5	negative	40	0			
353	Martin Sitialo	Achero	Cross	F	0.5	30	4	negative	25	0			
354	David Olando	Mary	Cross	F	4	150	4	negative	30				
355	David Olando		Cross	M	0.5	30	4	negative	30	600			
356	Eliud Sikuku	Dicholi	Cross	F	5	120	4	negative	29	400			
357	Basliano Wanyalwa	Nakhaula	Local	F	7	180	4	negative	33				postive
358	Wilson Kitui	Lando	Local	F	5	130	4	negative	30				
359	Patrick Makhandia	Dicholi	Local	M	1	50	4	negative	24	600			
360	Esbon Mulama	Dicholi	Cross	M	5	140	4	negative	25				
361	Manuli Makhone	Tobe	Local	F	6	170	4	negative	34	100			
362	Alaju Robert	Nyundo	Local	M	2	70	4	negative	40	900	postive		
363	Kennedy Nyankwezo		Local	M	5	130	4	negative	30				
364	Florence Makila	Tumbu	Local	F	5	130	4	negative	20	700			
365	Suzan Mulala		Local	M	0.5	35	3	negative	29	700			
366	David Mulando	Simba	Local	F	2	50	4	negative	26	0			
367	Javan Mulacho	Tumbu	Local	M	1.5	50	4	negative	24	0			
368	Charles Mukhebi	Dicholi	Local	M	1.5	70	4	negative	28	0			
369	Itam Wekesa	Ditiero	Cross	F	1.5	60	4	negative	27	0			
370	Geofrey Sikuku	Dicholi	Cross	F	1	40	4	negative	32	300			
371	Wesonga Juma	Matoatoa	Local	F	6	170	4	negative	24				

372	Wesonga Juma		Cross	M	7	150	4	negative	25				
373	Esbon Oduor	Apala	Local	F	2.5	70	4	negative	28				
374	Wiliam Papa		Local	F	0.5	35	3	negative	33	400			
375	Albert Muchocho	Tobe	Local	F	4	110	4	negative	27				
376	Patrick Sitialo	Tobora	Local	M	6	170	5	negative	29	0			
377	Joash Oduor	Nyundo	Local	F	5	110	4	negative	28	0			
378	Hassan Baraza	Lando	Local	M	0.5	40	3	negative	29	700	postive		
379	Hassan Baraza		Cross	M	0.5	30	3	negative	30				
380	Joseph Wakhola	Dipo	Local	F	0.5	30	3	negative	21				
381	Patrick Wanjala	Blue	Local	F	0.5	30	3	negative	22	900			
382	Florence Makokha	Lando	Local	F	6	170	5	negative	34				
383	Alfred Wasike	Nyeusi	Local	F	4	100	4	negative					
384	Wilson Kutoi	Nyere	Local	F	1.5	50	4	negative		1200			
385	Frida Mukhobe	Dicholi	Cross	F	8	110	4	negative	30				
	TOTALS				261.5	6960	313		2228	18800			
	AVERAGES				3.3101266	88.101	4		29.316	348.1			

Annex 14

CROSS SECTIONAL SURVEY RESULTS FOR KIMATUNI SUB LOCATION.

	OWNER	NAME	BREED	SEX	AGE(YRS)	Wt(Kg)	BC	BE(TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLASMOSIS
386	Cleophas Wafula	Mary	Local	F	4	90	4	negative	45				
387	Cleophas Wafula	Chemimah	Local	F	2.5	70	4	negative	27	200	postive		
388	Pius Nabwela	Namukhulu	Local	F	7	140	4	negative	16	700			
389	Constant Nyongesa	Netondo	Local	F	1	50	4	negative	24	900			
390	Lukers Asenyi	Faro	Local	M	3	100	5	negative	30	0			
391	Benson Kokonya	Nyambura	Local	F	1.5	50	4	negative	29				
392	Juma Opicho	Tobe	Local	M	6	110	4	negative	24	600			
393	Benard Nyongesa	Nabakholwe	Local	F	1.5	70	4	negative	23	700			
394	Charles Makokha	Maridadi	Local	M	6	110	4	negative	22				
395	Charles Makokha	Nyeusi	Local	M	2	70	4	negative	24				
396	Charles Makokha		Local	M	1	30	3	negative	22	500			
397	Charles Makokha		Local	F	2	70	4	negative	26	200			
398	Sylvanus Wangila	Kharobo	Local	F	4	80	4	negative	32	600			
399	Elijah Masakwe	Nyundo	Local	M	10	170	5	negative	28				
900	Elijah Masakwe	Bakasi	Local	M	10	150	4	negative		300			
901	Simon Baraza	Maua	Local	F	1	45	4	negative	27	700			
902	Benson Kokonya	Maridadi	Local	M	5	90	3	negative	20				
903	Sylvanus Wangila	Namulunda	Local	F	2	60	4	negative	25	0			
904	Sylvanus Wangila	Mary	Local	F	10	100	3	negative	15	400			
905	Julias Malaba		Local	F	9	100	4	negative	27	100			
906	Sylvanus Wangila	Kharobo	Local	F	7	100	3	negative	24	900			
907	Vincent Sahan	Nyundo	Local	M	2	70	4	negative	33	0		postive	
908	Baraza Watima	Nalonja	Local	F	5	100	4	negative	21	0			
909	Wesonga Nangila		Local	M	3	80	4	negative	29	0			
910	Autrika Sitialo	Nalonja	Local	F	6	100	4	negative	23	0			
911	Wesonga Nangila	Lando	Local	F	7	100	4	negative	25				
912	Simon Baraza	Labu	Cross	M	5	170	4	negative		0			
913	Julias Kilande	Nabakolwe	Local	F	3	70	4	negative	19				
914	Andrew Opiyo	Nabakolwe	Local	F	7	190	5	negative	25				
915	Julias Wanjala	Mary	Cross	F	2.3	70	4	negative	22				

916	Vincent Sahan	Namulunda	Cross	F	3	80	4	positive	26		postive		
917	Elizabeth Juma	Natejo	Local	F	3.5	90	4	negative	26	0			
918	Johnston Kundu		Local	F	4	100	4	negative	33	0			
919	Titus Wafula	Rosemary	Local	F	7	130	5	negative	27	800			
920	Ronald Masinde	Swara	Local	F	3.5	70	4	negative					
921	Ronald Masinde	Nabiala	Local	F	7	130	4	negative	29	0	postive		
922	Benson Kokonya	Swara	Cross	F	2	50	4	negative	13	700			
923	Sylvanus Wangila	Maua	Cross	F	0.5	35	3	negative	16				
924	Mourice Nabwile	Maridadi	Cross	M	0.5	35	3	negative	23	900			
925	Benard Nyongesa	Marther	Cross	F	4.5	100	4	negative	28				
926	Mathew Nabwela	Kharobo	Cross	F	7	180	4	negative	26	100			
927	Juma Opicho	Mary	Cross	F	7	100	3	negative	31				
928	Ben Kokonya		Cross	F	6	140	4	negative	27				
929	Dismas Wabwile		Cross	F	6	200	5	negative	28	400			
930	Dismas Wabwile	Namandala	Cross	F	0.5	40	4	negative	27	600			
931	Baraza Sitialo	Nanjala	Cross	F	1.5	100	5	negative	29	400			
932	Ben Kokonya		Cross	F	5	140	4	negative	31	100			
933	Elijah Masakwa	Nakhone	Local	F	5	140	4	negative	26				
934	Pius Nabwela	Mary	Cross	F	7	120	4	negative	17	1200			
935	Pius Nabwela		Cross	F	1.5	60	4	negative	20				
936	Ben Kokonya	Maridadi	Local	F	6	140	4	negative	20	0			
937	Charles Waswa	Nabukala	Cross	F	6	180	5	negative	26	0			
938	Peter Baraza		Cross	F	10	170	5	negative	28				
939	Catherine Naliaka	Nasibwoni	Cross	F	4	100	4	negative	30			postive	
940	Sylvanus Wafula	Nabaki	Local	F	5	190	5	negative	19				
941	Anah Nafula	Maua	Cross	F	5.5	190	5	negative	20	700			
942	Moses Nekara	Nekara	Local	F	5	120	4	negative	20				
943	Shadrack Baraza	Nyeusi	Cross	F	2	50	4	negative	21	600			
944	Andrew Opiyo		Local	F	2	45	4	negative					
945	Anjeline Namarome	Kharobo	Local	F	5.5	45	5	negative	25				
946	Charles Waswa	Simba	Cross	F	5	50	4	negative	23				
947	Alex Wanamili	Swara	Cross	F	5	170	5	negative	22				
948	Sylvanus Wangila	Maridadi	Local	M	10	170	5	negative	25				
949	Charles Otieno	Apala	Local	F	6	190	5	negative	32	100			
950	Mathew Nabwela	Mary	Local	F	2	95	5	negative	28				
951	Fred Wekhayi	Nasimali	Local	F	10	190	4	negative	31				

952	Michael Simiyu	Joginda	Cross	M	2.5	100	5	negative	23				
953	Michael Simiyu	Masaai	Cross	M	7	200	5	negative		100			
954	Michael Simiyu	Maridadi	Cross	M	7	250	5	negative	20				
955	Wanjala Wamalwa	Nabukhwan	Cross	F	2	90	5	negative		400			
956	Edward Mudonyi	Nalonja	Local	F	8	190	5	negative	21				
957	Simon Baraza	Eliza	Local	F	4	150	4	negative	31		postive		
958	Wesonga Nangila	Kharobo	Local	F	4	140	4	negative	26	0			
959	Vincent Saeni	Bathseba	Local	F	3	180	5	negative	19	0			
960	Denis Makokha	Kharobo	Local	F	2	90	4	negative	26	800			
961	Charles Waswa	Simba	Cross	M	2	80	4	negative	32	600			
	TOTALS				348.3	8410	318		1758	15300			
	AVERGES				4.644	112.13	4.2		25.478	355.8			

Annex 15

CROSS SECTIONAL SURVEY RESULTS FOR EAST MATEKA SUBLOCATION

	OWNER	NAME	BREED	SEX	AGE(YRS)	WT(Kg)	BC	BE(TRYPS)	PCV %	EPG	ECF	BABESIOSIS	ANAPLASMOSIS
962	Chrispinus Baraza	Namukilu	Local	F	4	130	5	negative	34	0	postive		
963	Saul Baraza	Simba	Local	M	4	200	5	negative	35	0			
964	Gabriel Wekulo		Local	F	4	190	5	negative	33	100			
965	Godfrey Wafula		Local	F	3	100	5	negative	28				
966	Onesmus Chemuko		Local	M	1.5	80	4	negative	29				
967	Fredrick Wamoi	Kabete	Local	M	4	180	5	negative	31	300			
968	Pius Wanjala		Cross	F	1	50	5	negative	23	600			
969	Onesmus Chemuko		Local	F	1.5	70	4	negative	29				
970	Joseph Juma	Nyundo	Local	M	2	90	4	negative	32				
971	Edward Wafula	Maridadi	Local	M	0.5	30	4	negative	33	700			
972	Saul Baraza	Brown	Local	F	7	100	4	negative	32	900			
973	Daniel Shiundu	Simba	Local	M	6	180	5	negative	30				
974	Edmond Wafula	Kharobo	Cross	F	6	190	4	negative	31	400			
975	Cosmas Simiyu	Teresa	Local	F	2	70	4	negative	22				
976	Onesmus Chemuko		Local	M	3	120	4	negative	30				
977	Protus Khaemba	Swara	Cross	M	1	60	5	negative	21	900			
978	Joseph Juma	Kharobo	Cross	M	3	130	5	negative	30		postive		
979	Protus Wabwile	Simba	Local	M	1.5	60	4	negative	28	100			
980	Protus Khaemba	Khalayi	Local	F	0.5	45	4	negative	26	0			postive
981	Daniel Shiundu		Local	F	1.5	80	4	negative	28	0			
982	Saul Baraza	Khayanga	Local	F	5	190	4	negative	30	400			
983	Gabriel Sifuna		Local	F	1	40	4	negative	21	0			
984	Joseph Sichangi	Nakhanyusi	Local	F	4	190	5	negative	38	0			
985	Antony Simiyu		Local	F	4	180	5	negative	27				
986	Onesmus Chemuko		Local	F	4	190	5	negative	31				
987	Joseph Juma		Local	F	2	90	4	negative	30				
988	Saul Baraza		Local	F	1.5	50	4	negative	25	600			
989	Onesmus Simiyu	Tobe	Local	M	3	100	4	negative	26				
990	Protus Khaemba	Mila	Local	F	6	100	4	negative	23	100			
991	Syvanus Simiyu		Local	M	7	200	5	negative	26				

992	Joseph Juma	Nasimali	Local	F	4	190	4	negative	30				
993	Cosmus Simiyu	Tamoni	Local	M	1.5	70	4	negative	28				
994	Saul Baraza	Dobe	Local	M	2	70	4	negative	34	600			
995	Protus Khaemba	Rose	Cross	F	6	180	5	negative	23				
996	Syvastus Simiyu		Local	F	3	100	5	negative	35	100			
997	Protus Wabwile	Mrembo	Local	F	4	120	4	negative	33	0			
998	Daniel Shiundu	Nyeusi	Cross	F	4	140	5	negative	36	0			
999	Cosmus Simiyu	Maua	Local	F	2.5	90	4	negative	26				
1000	Fredrick Wamoi	Soilo	Cross	M	0.5	40	4	negative	37	900			
1001	Syvester Simiyu	Kharobo	Local	F	4	190	5	negative	30				
1002	Edmond Wafula	Ann	Local	F	4	190	5	negative	31				
1003	Cosmus Simiyu		Cross	F	4	180	5	negative	30				
1004	Protus Khaemba	Tumbu	Local	M	6	250	5	negative	27	400			
1005	Masika Sammy	Rose	Local	F	1	40	4	negative	26				
1006	Francis Waswa	Nyundo	Local	M	2	80	4	negative	25				
1007	Sammy Machilo	Tumbu	Local	M	1	40	3	negative	27	500			
1008	Cosmas Simiyu	Maua	Local	F	6	190	4	negative	30				
1009	Moses Walucho	Nakhanyusi	Local	F	5	180	4	negative	31	100			
1010	Moses Waswa	Mary	Cross	F	4	120	4	negative	28			postive	
1011	Bonface Wanyonyi		Local	F	3	180	5	negative	28				postive
1012	Francis Nyongesa	Nasimali	Local	F	4	180	4	negative	24				
1013	Sammy Machilo	Turisi	Cross	F	4	140	4	negative	30	300			
1014	Protus Wabwile	Nakhone	Local	F	2.5	90	4	negative	33				
1015	Moses Waswa	Nafula	Local	F	3	180	5	negative	30	100			
1016	Bonface Wanyonyi		Local	M	1.5	90	5	negative	26	0			
1017	Gabriel Sifuna	Ford	Local	M	10	250	5	negative	35	100			
1018	Moses Walucho	Tumbu	Local	M	11	200	5	negative	28				
1019	Moses Walucho	Engiland	Cross	M	10	210	5	negative	30	0			
1020	Sammy Machilo	Grace	Local	F	11	250	5	negative	35	0			
1021	Gabriel Sifuna	Tonny	Local	M	9	300	5	negative	26	800			
1022	Francis Nyongesa	Nasitacha	Local	F	11	140	3	negative	29				
1023	Bonface Wanyonyi		Local	F	7	180	4	negative	29				
1024	Joseph Wamalwa	Nasimali	Local	F	3	140	5	negative	30				
1025	Walucho Moses	Blue	Cross	M	6	190	5	negative	29				
1026	Moses Waswa	Nyundo	Cross	M	7	220	5	negative	29	200			
1027	Francis Nyongesa	Nasimali	Local	M	3	140	5	negative	37	0			

028	Moses Walucho	Maria	Local	F	10	200	4	negative	30				
029	Wafula Peter	Sister	Local	F	3	150	5	negative	26				
030	Tito Wanyonyi	Nakhu	Local	F	2	70	3	negative	38				
031	Vincent Wasike	Nakhone	Local	F	12	260	5	negative	31	300			
032	Protus Waraba	Simba	Local	M	3	170	5	negative					
033	Khisa Makari	Simba	Cross	M	2	75	4	negative	30	600			
034	Sylvester Situma	Mary	Cross	F	9	230	4	negative	29		postive		
035	Protus Waraba	Maridadi	Local	M	3	90	4	negative	27				
036	Peter Wafula	Sindikisha	Cross	F	8	180	4	negative	30	100			
037	Chrisandus Wanjala		Cross	F	8	180	4	negative	27				postive
038	Peter Wafula	Murembo	Cross	F	8	180	4	negative	27	700			
039	Peter Wafula	Tumbu	Local	M	2	90	4	negative	28				
040	Margaret Wafula	Nakhone	Local	F	3	120	4	negative	21	0			
	TOTALS				338	11020	348		2156	10900			
	AVERAGES				4.333333	141.28	4.5		28	294.6			