FINAL REPORT

OF

SCOPING STUDY FOR URBAN AND PERI-URBAN LIVESTOCK KEEPERS IN KISUMU CITY, KENYA

JUNE 11, 2002

BY

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i) RECOMMENDATIONS

1. Urban and peri-urban livestock keeping should be given adequate priority that it deserves, and information and reporting on this subject be treated like any others in the rural administrative units like Divisions and Districts.

2. The bylaws of Kisumu city are ancient since they were written between 1925 and 1951. They should therefore urgently be revised and updated to take into account the current realities in the livestock keeping in the city.

3. Extension and veterinary services should be improved for better livestock production in the city. However, private extension and veterinary services are too expensive for the poor city livestock keepers.

4. Livestock production in the city should be strongly supported by the city and government authorities since it has a big potential. Large quantities of livestock products like milk, meat and eggs are imported into the city from far off districts, and even other countries.

5. Future projects on livestock in the city of Kisumu should target the poor, and project managers should make sure the project is not diverted away from the poor. The ongoing Finland (European Union) Dairy Development Project was meant for the poor. However, most of the dairy cattle, as this study shows, ended up at the homes of much better off people.

6. Poultry, goat and pig farming should be strongly encouraged in the city since there is a large range of cheap feeds from by-products of food milling and processing. This study shows that poor livestock keepers readily kept poultry, goats and pigs.

7. Vaccination for livestock should be emphasized as the first line of defence against killer diseases, like Newcastle disease of chicken, since vaccines are cheap and very effective in disease control. This is very important for the poor livestock keepers who often, for example, lose all their chicken to these vaccinable diseases.

8. A thorough follow-up study be conducted on the urban and peri-urban livestock keeping benefiting particularly the poor and unemployed families in the slums.

9. City planning should also provide for the safe disposal of animal manure, for example, for crop production, and charge the livestock farmers a minimum fee for the service.

10. To improve on their services and production, the city livestock keepers should have a network or an association that can help them with better bargaining powers for marketing and services.

1. Introduction.

The scoping study of more urban and more rural urban livestock keepers in five cities of East Africa was coordinated by the Natural Resources International Limited (NR) of United Kingdom. This study was as a result of Stake Holders Meeting and Planning Workshop for Sub-Saharan African Pilot Sites that was held in Nairobi between November 1 and 4, 2000. Forty-three (43) participants attended this workshop from International Agricultural Research Centers (IARCs), Agricultural Research Institutes (ARIs), NGOs, Universities and Municipalities. The theme of the workshop was "Urban and Peri-Urban Agriculture" (UPA). One of the major conclusions of the workshop was that much more attention had been placed on urban and peri-urban crop agriculture, but much less on urban and peri-urban livestock keeping. There was also very little published information on livestock keeping in urban and peri-urban areas. It was therefore decided that funds be sought to study the urban and peri-urban livestock keeping in five cities of East Africa. These cities included Addis Ababa in Ethiopia, Nairobi and Kisumu in Kenya, Dar-Es-Salaam in Tanzania and Kampala in Uganda.

1.1 The More Urban and More Rural Urban Livestock Study.

Methodology used for this study included secondary data retrieval (SDR) from reports and publications and primary data sources that included questionnaire (check-lists) with livestock keeping households. The groups included in this study were:

i) Farmers with any grade livestock like dairy cattle, goats, sheep, pigs, poultry (turkeys, ducks, geese, chickens etc). The families studied in this category were 615. Majority of these families were in the more urban and more rural urban parts of the city. However, a few of them were found in the more rural areas of the city. To the best of our knowledge, all farmers with such grade animals were studied in the city. The decision to study all the families with grade livestock was arrived at after consultations with the Ministry of Agriculture and stakeholders. The main reason was that another project (The Dairy Development Project) that is funded by Finland has been operating for the last 10 years, and the main objective of the project was to alleviate poverty in the districts where this project operated. The Dairy project covered the entire Winam Division (currently City of Kisumu). An earlier project funded by the Dutch government also attempted to alleviate poverty by introducing dairy cattle and grade chicken into several districts, including Winam Division. The two projects are referred to in this report as European Union (EU) Project. Therefore the Ministry of Agriculture and stakeholders felt that the more urban and more rural urban Scoping Livestock study should include all the farmers with improved livestock.

ii) Three groups of livestock keepers were interviewed under PRA, and the farmers came from three clusters of slums in the city. The number of farmers in this category was 51. Many farmers were invited by letters from each slum, and those who came participated in the discussions. The PRAs included guided discussions, with only a very small section for

farmers to fill in, especially their passport information and basics like the types and numbers of livestock they keep.

iii) The third category of farmers were drawn from the more rural areas of the city which were recently included into the new city boundaries. The farmers were randomly sampled using a decided matrix where four farmers were selected for each administrative unit called a sub-location. Sub-Locations make locations, locations make divisions, and divisions make districts. The number of families studied in this category was 121.

Of the 787 farmers visited in this study, each one of them owned some type of livestock since the Kisumu Livestock Study included a total of up to 14 types of livestock, ranging from dairy cows to fish and honey bees.

Focused group discussions with stakeholders in the more urban and more rural urban livestock keepers were also held. These included livestock farmers, government livestock extension staff, veterinary staff, dealers in veterinary drugs, representatives from the city hall -- the Town Clerks office, public health, Town Planning, and water department – vendors of fresh livestock products like eggs and milk, butchers and representatives from the Ministry of Lands.

The secondary data was extremely limited, and where they were available, they were usually outdated. Primary data was derived from interviews with livestock keepers or in a few cases, institutions, PRAs and Focused Group Discussions. Several enumerators were deployed after initial training in the use of the survey instruments. All the data from various study sources were collated and analyzed, and this draft report summarizes the tentative findings of this study in cases where data collation and analyses have been completed.

1.2 Characteristics of the City of Kisumu.

1.2.1 Geographical Location.

The city of Kisumu lies between longitudes 34 degrees and 35 minutes East and 34 degrees and 55 minutes East, and between latitudes 0 degrees 00 minutes South and 0 degrees and 12 minutes South. The city is on the shores of Lake Victoria. This lake is the second largest fresh water lake in the world. The city of Kisumu has an area of 395.1 square kilometres of which 35.5% is covered by water. The city has a mean population density of 835 people per square kilometre.

The city is bordered to the northwest by the Nyando Escarpment, Lake Victoria to the Southwest, Kano Irrigation Schemes to the East, and Miwani-Kibos sugar plantations to the east.

1.2.2 Topography

The geology of the area shows that the city of Kisumu lies on the arm of tertiary lava which extends southwards overlooking the plains to the east and the Winam Gulf of Lake Victoria to the west. These lavas have formed as a result of techtonomagnetic activities associated with the Kano-Rift Valley system.

The major types of soils found with the city of Kisumu and its peri-urban areas are red loams, black cotton soils (vertisols), lateritic soils and decomposed rocks.

1.2.3 Climate

Kisumu city receives rains every month of the year, however, there is a bimodal rainfall pattern of which more than two thirds falls in the first rainy season from mid-March to end of June. Three weather-recording stations in Kisumu city have rather different rainfall records. The Provincial Commissioner's (PC's) offices at an elevation of 1135 m above the mean sea level (asl) have rainfall records dating back to over 90 years. The PC's offices have an annual rainfall of 1,041 (a mean of 72 years). Kisumu meteorology station at an elevation of 1,148 m asl has a mean annual rainfall of 1,353 mm, while Kisumu New Prison at an elevation of 1,219 m asl has a mean annual rainfall of 1,343 mm. The short rainy season starts in October and stops at the end of November. However, because the city is situated at the shores of Lake Victoria, it enjoys a lot of relief rains, most of which are received closer to the northern shores of the city than to the south. This is because of the wind direction. Most of the time the winds move in the direction of East-west. Kisumu has an annual mean temperature of 23.1 degrees Celsius, with a mean minimum and a mean maximum of 17.3 and 28.9 degrees Celsius respectively. The city has a mean humidity of 70.

1.2.4 Population Density, Growth Rate, Size (ha).

The entire area of Kisumu city is in Winam Division, which has administrative locations of Central Kisumu, Central Kolwa, East Kajulu, East Kisumu, East Kolwa Kondele, North Kisumu, South West Kisumu, Township, West Kajulu, West Kolwa and Miwani. On the average, each Location is made up of 3 – 4 sub-locations. The location with the highest population density is Kondele and West Kolwa, with population densities of 14,484 and 5,771 people per square kilometre respectively.

1.2.5 Distribution of high-density and low-density areas in terms of population.

Both of these locations were studied during the PRA surveys with livestock farmers. The locations with the lowest population densities are Miwani and East Kolwa, with population densities of 69 and 283 respectively. Miwani Location is situated in a sugarcane plantation area.

1.2.6 Location of low-income households.

The locations with low income were the same ones that have the highest population densities, namely Kondele and West Kolwa. The other area with high population density whose livestock farmers were included in the Kondele PRA was Obunga. The field survey team found it very difficult to interview the livestock keepers in Obunga because of the high crime rate and trade on illicit drinks. Approaching peoples' houses in Obunga when one is a stranger sets the households to take off in fear of being arrested. The residents often attack such strangers too.

1.2.7 City boundaries, and description of more urban and more rural urban areas including land-use characteristics.

The map showing the boundaries of the city of Kisumu is presented on map 1. In this map, the following definitions can be made:

a) **City urban area:** The urban city centre is shaded with a light etching on the inside boundary (see key). The urban city centre is defined by the city bylaws as the leasehold land with a maximum of 99 years leasehold. In the urban area, all city bylaws will apply. For example, all dead people in the urban area of the city must be transported and buried in their respective rural homes, or else they must be buried in one of the city or church cemeteries. All city bylaws on livestock (their keeping, movement, slaughter, sale of milk, meat etc) must be followed to the letter. This area constitutes the oldest part of the city.

b) **More rural urban area:** The more rural urban area of the city is approximately between one to two kilometres around the boundary of the urban area. This is an area of the city, which, in many cases, is as old as the urban city centre. It is the area where land was originally under free leasehold, as a rural area then. The poor workers in the urban area moved in and either bought land to construct their cheap housing, or they occupied cheap houses built by upcoming entrepreneurs (land lords). The city bylaws do not by and large apply in the more urban areas, except for a few ones like compulsory meat inspection before meat is sold to consumers. Here, the dead people may be buried at their doorsteps, and they may keep livestock as they wish. Over the years as the municipality grew, the poor city dwellers congregated into these areas and turned many of them into slums. The slums, almost as a rule, lack infrastructure like portable water, roads, health centres etc (see map 1).

c) **The more rural urban areas:** The Kenya government upgraded Kisumu Municipality to city status recently (December of 2001). With this came a vast extension of the Municipal boundaries, until then, into rural areas. A decision was made that the city boundaries follow those of Winam Division. Although these areas are within the new city boundaries, there is nothing city about them. The people live as their compatriots do in areas 100 km away from the city boundaries. None of the city bylaws are followed here. And therefore livestock keeping is completely rural, except for the in and out flows of goods and products to the city centre that have been stimulated by the large city population, and improvements in road transport (see map 1).

1.2.8 The characteristics of Livestock owners in the city of Kisumu: By Questionnaire.

The characteristics of the livestock keepers in Kisumu city are summarized below in Tables 1a – 1e.

- A total of 787 families were studied in the city of Kisumu, of which:

- The respondents ages ranged between 15 – 85 years, with a mean of 45.7 years.

- These respondents were made up of 69.2% males and 30.8% females.

- Of these respondents, 4.6 were not married, 84.5 were married and 10.9 were widowed. It terms of religions, 97.5 were Christians, 1.7% Moslems and 0.9% were others.

Table 1a. Characteristics of the Livestock Keepers in Kisumu City, Kenya.

Key: Fem - Female, Marr'd - Married, Widd - Widowed, Chris - Christian.

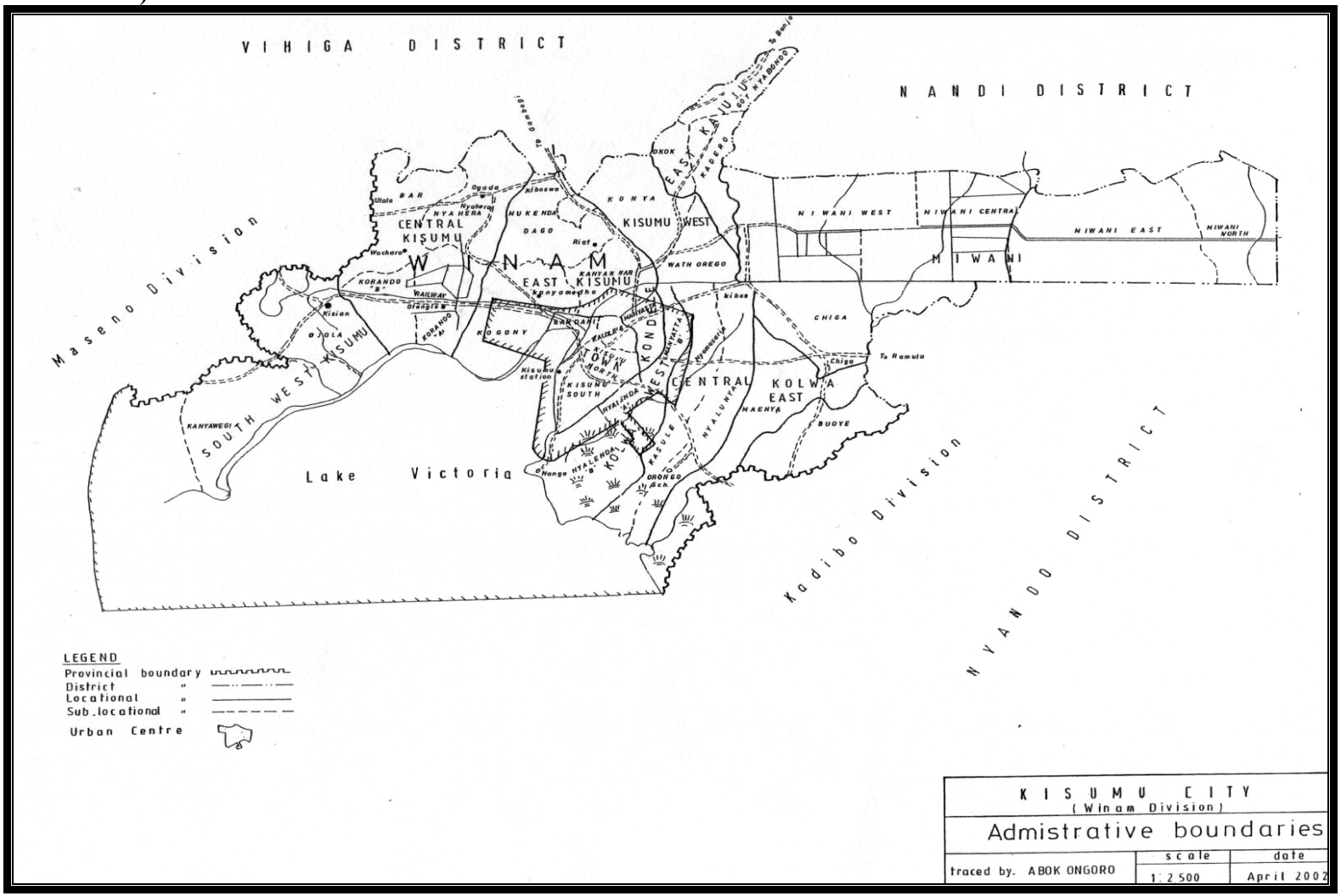
No. of families studied	Sex *		Marital Status*			Religion		
	Male	Fem.	Single	Marr'd	Widd	Chris	Islam	Other
615	429	176	27	504	66	604	6	5
51	37	14	5	43	3	51	0	0
121	71	49	3	102	15	112	7	2
787	537	239	35	649	84	767	13	7
%	69.2	30.8	4.6	84.5	10.9	97.5	1.7	0.9

Sex* - 1.6% were others like institutions + 1 more; Marital Status* - 2.6% fell under others + 1 more

Table 1b. Age ranges of the Livestock Keepers in Kisumu City, Kenya.

Number of families studied	15-24 yrs	25-35 yrs	35-44 yrs	45-60 yrs	Over 60 yrs	Institutions
615	30	62	160	262	90	11
121	1	12	29	49	30	0
51	6	10	12	19	4	0
Totals	**37**	**84**	**201**	**330**	**124**	**11**
%	**4.7**	**10.7**	**25.5**	**41.9**	**15.8**	**1.4**

Map 1. Map showing the boundaries of the city of Kisumu (Previous Winam Division).



In Table 1b, the following observations can be made:

- Institutions represent the lowest figure of the livestock keepers (1.4%)
- Ages between 15 – 24 years is the second lowest in terms of livestock ownership (4.7%).
- The next age group of 25 – 35 years is the third lowest number of people (10.7%) owning livestock in the study in Kisumu city.
- The next age group of 35 – 44 years is the second largest group of people (25.5%) owning livestock in this study.
- The largest age group in terms of livestock ownership was between 45 – 60 years this group comprised 41.9%.
- Those over 60 years of age represented 15.8% in terms of livestock ownership.

Table 1c. Other Characteristics of the Livestock Keepers in Kisumu City, Kenya: Education.

No. of families studied	Informal	Primary	Secondary	College	University Degrees			Other
					1st	2nd	3rd	
615	31	168	153	144	62	17	0	40
51	1	21	18	8	3	0	0	0
121	12	60	22	20	6	0	0	1
787	44	249	193	172	71	17	0	41
%	5.6	31.6	24.5	21.9	9.0	2.2	0.0	5.2

The respondents that were interviewed had a range of education as are shown in Table 1c.

- Those with informal education were 5.6%, Primary Education were 31.6%, Secondary – 24.5%, College – 21.9%, those with First degrees were 9.0%, and second degrees – 2.2, while those with other forms of educations constituted 5.2%.
- Those with college and degrees were mainly found in the elite and high-class parts of the city, while lower forms of education were found in the peri-urban and slums parts of the city.
- The women also had a much lower levels of education than men respondents in this study.

Table 1d presents professions of the respondents of this study in the city of Kisumu as follows:

- Farmers and unemployed constituted 25.8%, while petty and medium traders and artisans were 28.1%. Together the farmers, unemployed, petty and medium traders represented 53.9%.

- The big traders, civil servants, many of the retired people and teachers constituted 34.8% who were a middle-class level, with several other sources of income. Livestock provided them with a useful source of food and income, but there were other sources too.

Table 1d. Other Characteristics of the Livestock Keepers in Kisumu City, Kenya: Professions.

Key: F = Farmer, UE = Unemployed, PT = Petty Trader, MT = Medium Trader, BT = Big Trader, CS = Civil Servant, R = Retired, T = Teacher, Cler = Clergy, Art = Artisan, Dr. = Medical Doctor, Nur = Nurse, Eng = Engineer, Law = Lawyer

No. of families studied	F	UE	PT	MT	BT	CS	R	T	Medical		Art	Eng	Law	Cler	Others*
									Dr	Nur					
615	97	56	65	72	27	82	63	53	9	3	26	7	3	12	40
51	5	11	6	8	0	4	5	5	1	2	1	0	0	1	2
121	17	17	23	17	4	13	11	7	0	2	4	1	0	2	3
787	119	84	94	97	31	99	79	65	10	7	31	8	3	15	45
%	15.1	10.7	11.9	12.3	3.9	12.6	10.0	8.3	1.3	0.9	3.9	1.0	0.4	1.9	5.7

*** Others:** These include: Insurance – 1, Bankers – 3, Industrialist – 1, Parastatal – 6, Secretary – 2, Manual Labourer – 7, Student – 3, Herbalist – 1, Farm Manager – 2, Driver – 2, Agriculturalist – 2, Museum worker– 1, Institutions – 5, Librarian - 1, Mechanic - 1, Researcher - 1, Technician – 1, Student - 1.

- Medical people like doctors (1.3%) and nurses (0.9%), engineers (1.0%), lawyers (0.4%) and most of the clergy (especially Bishops) were quite well off in general with excellent sources of income; and although the respondents listed the names of husbands as the owners of the livestock, often the livestock actually belonged to the wives or grown up children. This is a group that keeps livestock of much higher grade, like high producing dairy cattle, with elaborate housing and a wide range of supporting equipment. The livestock enterprise is operated as a business.

Table 1e. Other Characteristics of the Livestock Keepers in Kisumu City, Kenya: Number of wives per husbands.

Number of families studied	Number of husbands in the studied families	Number of wives per husband				Total	Mean number of wives per husband
		1	2	3	>3		
615	565	427	162	42	36	667	1.18
51	47	43	8	0	0	51	1.10
121	108	88	46	15	13	162	1.50
787		558	216	57	49	880	-
%		63.4	24.5	6.5	5.6	100	-

Table 1f. Other Characteristics of the Livestock Keepers in Kisumu City, Kenya: Family size and breakdown of its members.

Number of families studied	Number of wives	Number of husbands	Number of daughters	Number of sons	Total number of family members	Mean of number of people in the family	Range of members of one family
615	667	565	1,500	1,526	4,258	6.92	1-35
51	51	47	128	124	350	6.9	1-15
121	162	108	388	385	1,043	8.62	2-28
787	**880**	**720**	**2,016**	**2,035**	**5,651**	**7.2**	**-**
%	**111.8**	**91.5**	**256.2**	**258.6**		**-**	**-**

Table 1f presents information on the family sizes and a breakdown of family members of the respondents.

- Of the 787 families studied, husbands were married to one wife 63.4%, while 36.6% had polygamous marriages. In general, a ratio of wives to husbands in this study was 880:720 (1.2: 1).

- The numbers of daughters to sons were, 2,016 to 2,035 respectively. This is very good since census statistics in general normally have many more females than males, e.g. Kenya National Census of 1989 (Examples of Divisions in western Kenya: Maseno– Male – 49,988, Female – 56,345; Nyando – Males - 45,252, Females – 49,725; Upper Nyakach – Males – 24,546, Females – 28,232; Lower Nyakach – Males – 20,574, Females – 23,705 etc).

- In Table 1f, of the 787 families studied, there were 5,651 people, giving an average of 7.2 people per family, with a range of 1 – 35 people per family. As the mean number of people per family in Table 1f shows, the 615 families studied were from the more urban, but better endowed areas of the city, and this had a mean of 6.92 people per family. The 51 families were from the slums of Nyalenda, Dunga, Manyatta, and Obunga of the city, and there were 6.9 people per family, while the 121 families studied were from the more rural parts of the city where there were 8.62 people per family. So as one moves away from the city centre, the number of people per household increases.

Table 1g shows the distribution of headship of the households. It shows that:

- Of the 787 families studied, 87.0% of them had men as the heads of the households, while 2.9% women (living with their husbands) were heads of their households.

- Widowed individuals who were heads of the households were 8.3%

Table 1g. Other Characteristics of the Livestock Keepers in Kisumu City, Kenya: Head of the household

Number of families studied	No. of husbands heading households	Number of wives heading households in presence of their husbands	Number of widowed individuals heading households	Institutions
615	539	16	50	10
51	45	2	2	2
121	101	5	13	1
787	685	23	65	13
%	87.0	2.9	8.3	1.7

Others - One single person

2.0 Types of Livestock kept by families with one or two types of grade livestock (615 + 121) Kisumu city.

There are several types of livestock that are kept in more urban and more rural urban areas of Kisumu City in Kenya. These types include ruminants like cattle, goats and sheep; non-ruminants like pigs, rabbits and guinea pigs; poultry like chickens, ducks, turkeys, geese, pigeons and quails; and occasional ones like fish and bees. Tables 2a and 2b below summarize the types and numbers of the frequently encountered livestock in this study. For certain species of animals where breeds exist among the studied farmers, these are also shown in Tables 2a and 2b.

Tables 2a and 2b show that there are very many livestock of grade types, especially for cattle (33.2%), pigs (66.3%) chicken (73.6%), turkeys (63.8%) and geese (63.0%). The reverse is true for the more rural areas. Table 2a shows that 14 different types of livestock were recorded in this study in Kisumu city.

Table 2a. Types and numbers of Livestock kept in the City of Kisumu, Kenya.

Type of Livestock	615 families with grade livestock (More urban)				121 families (more rural)		
	Breed	No.	Owners	Mean	No.	Owners	Mean
Cattle	Grade	1,167	465	7.6	25	78	8.1
	Crosses	225			6		
	Local	2142			597		
Goats	Grade	39	188	7.7	0	44	6.3
	Crosses	5			0		
	Local	1403			276		
Sheep	Grade	20	142	6.4	0	40	5.2
	Crosses	0			0		
	Local	887			206		
Pigs	Grade	972	82	16.5	47	10	5.0
	Crosses	126			0		
	Local	253			3		
Chicken	Grade	25216	493	65.4	658	94	24.1
	Crosses	117			65		
	Local	6890			1538		

Type of Livestock	615 families with grade livestock (More urban)				121 families (more rural)		
	Breed	No.	Owners	Mean	No.	Owners	Mean
Ducks	Grade	35	97	10.1	0	15	8.1
	Crosses	5			0		
	Local	936			122		
Turkeys	Grade	232	73	5.01	28	9	8.0
	Crosses	26			0		
	Local	108			44		
Geese	Grade	29	15	2.9	0	1	3.0
	Crosses	0			0		
	Local	14			3		
Pigeons	Grade	9	14	14.4	0	1	1.0
	Crosses	0			0		
	Local	192			1		
Guinea Fowls	Grade	0	3	8.0	0	1	12.0
	Crosses	0			0		
	Local	24			12		
Rabbits	Grade	6	14	6.4	11	3	4.7
	Crosses	5			0		
	Local	78			3		
Guinea Pigs	Grade	0	0	0.0	0	1	6.0
	Crosses	0			0		
	Local	0			6		
Bee Hives	Grade	0	2	6.5	0	0	0.0
	Crosses	0			0		
	Local	13			0		
Fish							
Tilapia	Local	3704	10	370.4	0	0	0.0
Mudfish	Local	100	10	10.0	0	0	0.0
Clarias spp	Local	705	10	70.5	0	0	0.0

- This study indicates that in terms of biomass, cattle were by far the most important type of livestock. For example an average live weight of one cow/bull is approximately 200 kg, and since there were 4,361 cattle in the study, this gives us a biomass (weight) of 872,200 kg (872.2 tonnes). However, the chicken that was more numerous than cattle (36,062) with an average weight per bird of 1.5 kg, the total biomass of the chicken is 54,093 kg (54.1 tonnes).

- This study clearly showed that grade cattle, chickens (both layers and broilers), turkeys and geese were livestock kept by the well to do people, especially in the high-class more urban and slums areas.

For example in Table 2a, the 615 families studied in the more urban area, with grade livestock owned a total of 3,534 cattle. Of these cattle 1,392 were grade and crosses (39.4%), those owned by slum dwellers (51 families studied) the total number of cattle were 199, of which grade and crosses were 24 (12.1%), and the more rural urban livestock keepers (121 families studied), the total number of cattle were 628, of which grade and crosses were 31 (4.9%).

Table 2a present data on two-survey sample of 615 (more urban families with grade livestock) and 121 families from more rural urban areas. It is therefore

important to present data from the 51 families from slum areas of the city (Table 2b).

Table 2b. Type and number of livestock kept by studied families (51) in the Three slums of Kisumu city

Type of livestock	Total		Grade		Crosses		Local		Without animals	
	No. of owners	No. of livestock	No. of animals	No. of owners	No. of animals	No. of owners	No. of animals	No. of owners	Families	%
Cattle	33	199	18	4	6	4	175	25	21	41.0
Goats	30	272	0	0	0	0	272	30	21	41.0
Sheep	17	102	0	0	0	0	102	17	34	66.7
Pigs	20	326	0	0	0	0	326	20	31	60.8
Chicken	32	1,578	484	7	0	0	1,094	25	19	37.3
Ducks	15	161	0	0	0	0	161	15	36	70.6
Turkeys	2	10	0	0	0	0	10	2	49	96.1
Rabbits	1	4	0	0	0	0	4	1	50	98.0
Others	0	0	0	0	0	0	0	0	0	0

The data presented in Table 2b indicates that the most popular livestock among the poor slum dwellers were ranked as follows: (1) local chicken, (2) local cattle and goats, (3) local pigs (4) local sheep and (5) ducks. For example in Table 2a, among the better of farmers (615 + 121) local pigs were 256 (18.3%), while in the slums they were 326 (100%). There was minimum investment on housing and management of local livestock.

- Although higher numbers of goats and sheep were expected to be associated with the poor, their numbers were much lower than expected in the more urban and more rural urban areas. There are more goats and sheep in areas adjacent to the more rural urban areas of the city.

- Fish farming was a new venture that surprisingly was catching up very fast in the more rural urban areas of the city where there were water resources as rivers or creeks.

According to an Annual Report for Winam Division (Kisumu City) for the year 2001, there were 5,838 grade cattle, 50,840-grade chicken, 21 grade goats, and 164 completed zero-grazing units for grade cattle. This study systematically surveyed approximately 98% of the people keeping grade cattle in the city of Kisumu. Comparing the data from annual report and this study, the drop of the number of grade cattle from the Annual Report for the year 2001and the study is about 75%. This is quite drastic.

- There are many reasons advanced for this drastic drop in the number of grade cattle, including:

    - Closure of the Kenya breweries in Kisumu and thereby depriving cattle keepers in the city of a cheap and high quality source of feed (brewer's waste), leading to severe underfeeding of cattle in the city.

- This forced many farmers to graze their grade cattle outside the zero grazing units, hence exposing them to tick-borne diseases like East Coast Fever (ECF).

- The cost of treating grade cattle is extremely high. To treat one cow infected with ECF costs approximately Kshs 5,000.00 (Sterling Pounds 45.5), and often the animal still dies.

- The farmers bitterly complained of low or lack of veterinary and agricultural extension services.

- The cost of constructing the recommended zero-grazing unit for grade cattle is too high for the low resource farmers.

- These reasons hold true for many other livestock in the city, hence the reason why poor livestock farmers in the city allow their livestock to scavenge.

2.1 Who owns which livestock in the family?

2.1.1 Ownership of various types of livestock by members of the family in Kisumu city

For various communities, traditionally livestock ownership by members of the family takes into account certain issues like gender and age. Table 3 below shows who in the family generally owns what types of livestock.

- Cattle are mainly owned by husbands (65%), wives own 29.8% and adult sons own only 3.6%.

- Goats are similarly mainly owned by husbands (70.5%), wives own 24.5% and adult sons own 2.9%.

- Sheep are also mainly owned by husbands (66.7%), wives own 27.8% and adult sons own 2.5%.

Table 3. Who owns which livestock in the family?

Number of families studied	Number of families owning the type of livestock	Type of livestock	Husbands %	Wives %	Adult sons %	Adult daughters %	School going sons %	School going daughters %	Relatives %	Institutions %
736	573	Cattle	65.0	29.8	3.6	0.2	0.2	0.2	0.0	1.2
736	232	Goats	70.5	24.5	2.9	0.0	0.0	0.0	0.4	1.8
736	182	Sheep	66.7	27.8	2.5	0.0	1.0	0.0	0.0	2.0
736	92	Pigs	62.3	18.4	17.5	0.0	0.0	0.0	0.0	1.8
736	587	Poultry	32.3	61.6	4.6	0.6	0.3	0.3	0.1	0.7
736	17	Rabbits	5.3	0.0	26.3	0.0	63.2	0.0	0.0	5.3
736	4	Guinea fowls	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
736	2	Bees	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Number of families studied	Number of families owning the type of livestock	Type of livestock	Husbands %	Wives %	Adult sons %	Adult daughters %	School going sons %	School going daughters %	Relatives %	Institutions %
736	10	Fish	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Means for the family			**66.9**	**18.0**	**6.4**	**0.1**	**7.2**	**0.1**	**0.1**	**1.4**

- Pigs have a better ownership distribution among husbands (62.3), wives (18.4%) and adults sons (17.5%), since adult sons have 3.6%, 2.9%, and 2.5% for cattle, goats and sheep respectively.

- Poultry that include chickens, ducks, turkeys and geese are for the first time mainly owned by wives (61.6%), husbands own only 32.3%, and adults sons own a mere 4.6%.
- Rabbits are mainly owned by school going sons (63.2%) and adult sons (26.3%), with husbands owning only 5.3%.

- The rest of the occasionally owned livestock like Guinea fowls, bees and fish were 100% owned by husbands.

- Overall, husbands own 66.9% of the livestock, wives 18.0%, adult sons 6.4% and school going sons 7.2%.

- It is important to note that both the adult daughters and school going daughters virtually own no livestock. This is setting a very weak investment base for the daughters and a sense of ownership, while the sons are significantly preferred.

2.1.2 Roles of various family members in livestock management in Kisumu city.

The roles of various family members in the management of livestock, and that of veterinary and agricultural officers is summarized in Table 4 below.

The data summarized in Table 4 shows that:

- Male workers do most of the chores (24.4%) in livestock keeping in the city of Kisumu. Even the poor families in the slums often hire male workers to assist with livestock chores, for example group herding. A similar example is given in the 1985 Kisumu Municipality study – Nyalenda Slum (Urban Food Production and the Cooking Fuel Situation in Urban Kenya: Town Report for Kisumu, 1985 pages 28 – 38 by Mazingira Institute).

- The husband, his wife and adult sons variously do 22.2%, 19.7% and 11.6% respectively.

- Slaughtering and dressing of livestock on-farm, especially chickens, is largely done by the wife (34.7%), with significant input from the husband (16.4%), male worker (15.3%), adult son (14.6%), adult daughter (5.9%) school age son (5.6%) and school age daughter (2.4%).

- Male veterinary officer handles most of the disease control (16.6%) and disease treatment (74.2%), with a mean of 13.0, as compared to the female veterinary officer who does 1.5% and 5.6% disease control and disease treatment respectively. This implies that the female veterinary officers are very few in the field.

- The school age son contributes 3.6% towards livestock duties despite the fact that they have very little time after school.

- The adult and school age daughters, male relative, female relative, and female worker do very little with regard to livestock duties.

- Wearing of protective clothing when doing disease control and treating livestock is generally not observed (61.1%), with only 38.9% practicing it.

Table 4. Roles of various family members in livestock management in Kisumu City (Families studied in more urban= 615, more rural urban = 121)

Family members And others	Grazing %		Feeding %		Cleaning livestock House %		Milking %		Disease control %		Disease treatment %		Slaughtering /Dressing %		Means for family members	
	615	121	615	121	615	121	615	121	615	121	615	121	615	121	**615**	**121**
Husband	29.7	27.8	24.8	23.7	20.8	18.3	21.7	22.1	29.6	26.3	11.2	3.6	16.4	17.5	**22.0**	**19.9**
Wife	23.9	26.3	23.8	29.0	22.7	27.5	20.4	33.7	8.9	9.6	3.4	6.3	34.7	28.0	**19.7**	**22.9**
Adult son	11.9	14.3	12.8	15.3	13.8	15.0	15.6	16.3	9.9	11.0	2.4	4.5	14.6	19.6	**11.6**	**13.7**
Adult daughter	0.7	0.0	0.9	1.5	1.3	2.0	0.9	0.0	0.3	1.7	0.0	0.0	5.9	7.7	**1.4**	**1.8**
School age son	3.9	11.3	4.9	9.9	5.4	8.5	4.1	3.8	1.5	0.8	0.0	0.0	5.6	4.2	**3.6**	**5.5**
School age daughter	0.2	3.0	0.4	3.1	0.5	3.9	0.2	0.0	0.1	0.0	0.0	0.0	2.4	2.1	**0.5**	**1.7**
Male relative	1.7	0.8	2.3	1.5	2.3	1.3	1.2	1.0	1.8	4.2	0.3	0.9	2.7	1.4	**1.8**	**1.6**
Female relative	0.2	0.8	0.4	0.0	0.4	1.3	0.2	1.0	0.0	0.0	0.0	0.0	1.4	1.4	**0.4**	**0.6**
Male worker	27.7	15.8	28.6	14.5	32.0	20.9	35.6	21.2	29.4	15.3	2.4	0.9	15.3	16.8	**24.4**	**15.1**
Female worker	0.2	0.0	1.0	1.5	0.7	1.3	0.2	1.0	0.3	0.8	0.4	0.0	1.0	0.0	**0.5**	**0.7**
Male vet staff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.6	30.5	74.2	77.5	0.0	0.0	**13.0**	**15.4**
Female vet staff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.8	5.6	6.3	0.0	0.0	**1.0**	**1.0**
Agric officer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	**0.0**	**0.0**

- Similarly, wearing of gloves when carrying out disease control or treating livestock is practiced by 54.5%, while 45.5% do not wear any.

2.1.3 Decision making on livestock farms and sharing of the benefits from livestock in the City of Kisumu

Different family members make decisions in livestock management in the city of Kisumu. The family members in various ways also share the benefits from livestock. Table 5 indicates how decisions are made and how the benefits accruing from livestock are shared.

- Decisions on husbandry practices are made by the husband (53.6%), wife (35.8%) and adult son (5.5%).

- Decisions on buying and selling of livestock are made by husband (58.4%), wife (34.1%) and adult son (5.9%).

- Benefits accruing from livestock enterprises including food and cash are shared by the whole family (90.0%), while some members of the family share a bit more than others; e.g. the husband receives 3.2%, wife 3.5% and male worker 1.3%.

- Other family members and workers hardly make decisions on husbandry practices, buying and selling, and they do not benefit much from livestock.

Table 5. Decision making on livestock farms and sharing of the benefits from livestock in the City of Kisumu (Families studied = 615 +121).

Family members And others	Husbandry Practices %		Buying and Selling of livestock %		Distribution of benefits %		Means of decision making %	
	615	121	615	121	615	121	615	121
Husband	53.6	54.5	58.4	51.5	3.2	0.0	38.4	35.3
Wife	35.8	34.5	34.1	38.7	3.5	0.0	24.5	24.4
Adult son	5.5	9.7	5.9	8.6	0.2	0.0	3.9	6.1
Adult daughter	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0
School age son	0.4	0.0	0.0	0.6	0.2	0.0	0.2	0.2
School age daughter	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0
Male relative	0.1	0.0	0.0	0.0	0.3	0.0	0.1	0.0
Female relative	0.1	0.0	0.0	0.0	0.2	0.8	0.1	0.3
Male worker	1.7	0.7	0.6	0.0	1.3	0.8	1.2	0.5
Female worker	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Male vet staff	0.1	0.0	0.0	0.6	0.0	0.0	0.0	0.2
Agric officer	0.3	0.7	0.0	0.0	0.0	0.0	0.1	0.2
Whole family	0.2	0.0	0.3	0.0	90.9	98.3	30.5	32.8

2.2 Livestock husbandry practices in the city of Kisumu.

Table 6 shows the types of livestock husbandry practices in the city of Kisumu, Kenya. These practices include housing, feeding (grazing, scavenging, and stall feeding), provision of animal health, water and disease prevention by vaccinations. The summaries of the findings are presented below.

- Out of the 543 families who keep cattle (Table 6), 449 (82.7%) house them, while 17.3% do not provide housing. The number of cattle that are grazed were 49.2%, 17.9% scavenge and 21.9% were stall-fed. Some animals were fed by more than one method. Most of the local livestock were scavengers, and occasionally feeds from city hotels, hospitals and boarding schools would be supplied to pigs, chicken and ducks.

- Most of the cattle get healthcare (96.6%) and 63.4% were vaccinated.

Table 6. Livestock Husbandry Practices in Kisumu City, Kenya.

Key: Y = Yes, N = No, Gr. = Grazing, Sc = Scavenging, St = Stall Feeding.

No. of families studied	No. of families with the type of Livestock	Type of Livestock	Housing		Feeding			Provision of Animal Health		Watering		Vacci-nation	
			Y	N	Gr	Sc	St	Y	N	Y	N	Y	N
736	543	Cattle	449	94	267	97	119	515	28	512	31	343	200
736	232	Goats	182	50	100	124	7	202	30	217	15	91	141
736	182	Sheep	133	49	83	93	4	152	30	166	16	70	112
736	92	Pigs	90	2	6	67	18	91	1	87	5	58	34
736	587	Chicken	333	254	(86)	282	63	362	225	426	161	200	387
736	112	Ducks	73	49	(62)	113	1	41	71	101	11	18	94
736	82	Turkeys	63	19	(43)	68	15	62	20	80	2	28	54
736	16	Gees	11	5	(6)	9	7	11	5	15	1	7	9
736	15	Pigeons	15	0	(2)	12	2	7	8	13	2	1	14
736	17	Rabbits	17	0	(14)	0	5	10	7	16	1	0	17
736	4	Guinea fowls	4	0	(7)	5	0	4	0	4	0	3	1
736	2	Quail	2	0	0	0	2	2	0	2	0	0	2
736	3	Bees	2	1	0	3	0	0	3	0	3	0	3
736	10	Fish Species in the pond:											
		Tilapia	10	0	0	10	10	1	9	10	0	0	10
		Mud fish "Mumi"	10	0	0	10	10	1	9	10	0	0	10
		Clarias spp.	10	0	0	10	10	1	9	10	0	0	10

- For goats, 78.4% were housed, 43.1% and 53.4% were grazed and scavenged respectively. For healthcare, 87.1% get treated when sick and only 39.2% were vaccinated.

- Sheep were treated similarly to the goats in all aspects.

- Virtually all pigs were housed at night to avoid attacks by dogs and theft by people. However, 72.8% of the pigs were scavenging, but they were still treated whenever the fell sick.

- The chicken was the most abundant of all the livestock in this study. Many of them were housed (56.7%), while many were protected in some sort of make shift shelters, but not in the same housing as is recommended for grade chickens.

- Many of them were treated while sick (61.7%), while only 34.1% were vaccinated.

- Overall, virtually all livestock were given water by their keepers (Table 6) by various methods like taking them to rivers, by watering troughs, and the scavenging animals obtained their water by various means.

2.3 Reasons for keeping Livestock in the city of Kisumu.

The livestock keepers in more urban and more rural urban areas of Kisumu city gave many reasons for keeping livestock. These reasons are summarized in Table 7 below.

Table 7. Reasons for keeping Livestock in the city of Kisumu

Number of families studied	**Reason why farmers keep livestock**								
	Commercial	**Savings For cash sale or other uses**	**Subsis tence**	**Paying Dowry**	**Slaughter for**			**Rituals**	**Others**
					Family food	Fune rals	Cere monies		
615	**209**	**458**	**286**	**57**	**219**	**47**	**21**	**2**	**7**
%	**34.0**	**74.5**	**46.5**	**9.3**	**35.6**	**7.6**	**3.4**	**0.3**	**1.1**
121	**15**	**88**	**36**	**17**	**62**	**19**	**12**	**0**	**0**
%	**12.4**	**72.7**	**29.8**	**14.0**	**51.2**	**15.7**	**9.9**	**0.0**	**0.0**

Results presented in Table 7 show that:

- The most important reason why farmers keep livestock in the city of Kisumu is for savings (74.5%) for the 615 samples in the more urban city centre, while it was 72.7% in the rural urban areas. Savings of livestock can be used for all the other reasons why farmers keep livestock. This shows that both areas of the city have the same priority for using livestock as savings.

- The second most important reason for keeping livestock is for slaughter for family food much more in the more rural urban areas (51.2%) than in the more urban areas (35.6%).

- The third most important reason why people keep livestock is for subsistence where livestock farmers in the more urban areas of the city subsist more on livestock (46.5%) while those in the more rural urban areas subsist on livestock much less (29.8%).

- The fourth most important reason why farmers keep livestock is for commercial reasons in the more urban areas (34.0%) and 12.4% for the more rural areas.

- The other reasons like paying dowry (14.0%) in the more rural urban areas, while it is less important in the more urban areas (9.3%). Slaughtering for funerals is more important in the more rural areas (15.7%) as compared to 7.6% in the more urban areas. Similarly, slaughtering for ceremonies is more important in the more rural urban areas (9.9%) as compared to the more urban areas (3.4%). Rituals and others that include hobbies, adventure and transport are considered to be minor.

2.4 Contribution to household and family food security by Livestock in Kisumu city.

Livestock keeping contributes significantly to household and family food security and economic welfare of the keeping households.

2.4.1 Contribution by livestock to household and family food security by providing food and cash.

Livestock keeping significantly contributes to family food security and cash as is shown in Table 8a below.

Table 8a. Contribution of Livestock to food security for households.

Number of families studied	For food			For family use	
	Meat	Milk	Eggs	Manure	Draft power
615	382	414	294	327	32
%	62.1	67.3	47.8	53.1	5.2
121	76	78	54	55	9
%	62.8	64.5	44.6	45.5	7.4

***Farmers responded with more than one reason of how livestock contributed to the food security of the household**

Table 8a shows that farmers who keep livestock in Kisumu city for food and other family uses that contribute to family food security share the uses as follows:

- For food, for the more urban areas, meat (62.1%), milk (67.3%) and for eggs (47.8%), these uses are almost equal in importance with the same products in the more rural urban areas.

- The other family uses that directly contribute to family food security and cash in the more urban areas are animal manure (53.1%) while in the more rural urban areas; it is not used as much (45.5%). This is because animal manure is very bulky and the farmers in these areas often lack means of carrying it.

- And animal draft power for transport and land preparations had equal importance in both areas, with a difference (2.2%) between them.

- As Table 8a shows, for most of the more urban areas, most of the manure was used by the households for growing crops and other uses (53.1%), while only a small portion (8.8%) was sold (Table 8b). However, in the more rural urban areas, more manure was sold (36.4%).

Farmers who keep livestock for selling their various products and services are indicated in Table 8b.

Table 8b. Contribution of Livestock to household's food security through cash sales.

Number of families studied	For cash sale							
	Meat	**Milk**	**Eggs**	**Manure**	**Skin**	**Honey**	**Wax**	**Bones**
615	**203**	**332**	**183**	**54**	**1**	**2**	**0**	**0**
%	**33.0**	**54.0**	**29.8**	**8.8**	**0.2**	**0.3**	**0**	**0**
121	**49**	**60**	**46**	**44**	**1**	**0**	**0**	**0**
%	**40.5**	**49.6**	**38.0**	**36.4**	**0.8**	**0.0**	**0.0**	**0.0**
% Difference	**7.5**	**4.4**	**8.2**	**27.6**	**0.6**	**0.3**	**0.0**	**0.0**

***Farmers responded with more than one reason for of how livestock contributed to the food security of the household**

Results presented in Table 8b indicate that a number of livestock products significantly contribute to household cash security though sales of several livestock products including:

- The most important livestock product sold in this study was milk (54.0%) for the more urban areas and 49.6% for the more rural urban areas.

- The second most important livestock product sold by farmers was meat (33.0%) for the more urban areas, and 40.5% for the more rural areas.
- The third most important sold product was eggs (29.8%) for the more urban areas, and 38.0% for the more rural urban areas.

- The other products like skin and honey were sold in negligible quantities, while wax and bones were not sold at all.

2.4.2 Economic value of livestock and livestock assets in the city of Kisumu.

Table 9. Economic value of livestock and livestock assets in the city of Kisumu.

No. of families studied	Type of livestock	No. of adult livestock	Value of adult livestock (Kshs)	No. of young livestock	Value of young livestock (Kshs)	Total value of livestock (Kshs)	Total value of livestock assets (Kshs)
736	**Cattle:** Grade Local	1,115 2,215	39,025,000 17,720,000	353 699	3,530,000 2,796,000	42,555,000 20,516,000	
736	**Goats:** Grade Local	34 1,483	153,000 1,853,750	10 468	20,000 234,000	173,000 2,087,750	
736	**Sheep:** Grade Local	16 908	48,000 1,089,600	4 287	4,000 143,500	52,000 1,233,100	
736	**Pigs:** Grade Local	870 442	3,480,000 1,989,000	275 140	550,000 210,000	4,030,000 2,199,000	
736	**Chicken**: Grade Local	20,170 7,237	7,059,500 1,809,250	6,370 2,285	1,592,500 205,650	8,652,000 2,014,900	
736	**Ducks:** Grade Local	30 926	9,000 185,200	10 293	700 14,650	9,700 199,850	
736	**Turkeys:** Grade Local	217 123	434,000 123,000	69 39	103,500 19,500	537,500 142,500	
736	**Gees:** Grade Local	22 13	38,500 19,500	7 3	5,600 1,500	44,100 21,000	
736	**Pigeons:** Grade Local	7 147	350 4,410	2 46	40 690	390 5,100	
736	Guinea fowls	28	14,000	8	800	14,800	
736	**Rabbits:** Grade Local	17 65	2,040 5,850	5 20	250 600	2,290 6,450	
736	Bee hives	13	5,200	-	-	5,200	
736	Fish in ponds	4,509	67,635	-	-	67,635	
							26,385,568
Totals			**75,135,785**		**9,433,480**	**84,569,265**	**84,569,265**
Grand Total							**110,954,833**

The economic value of the livestock for the 736 families studied (this figure excludes the 51 families interviewed in PRAs) was calculated based on the current market prices of each livestock type, and the value of the livestock assets were estimated during the surveys. These results are presented in Table 9 above.

The money value of each livestock makes it possible to compare them across board and their contribution to economic security of each household. Several observations may be made from Table 9.

- The value of all livestock and livestock assets for the 736 families studied (in the more urban and more rural urban areas) was Kshs 110,954,833 (Sterling pounds 1,008,680).

- The information in Table 9 further indicates that the economic value of livestock and livestock assets per household studied is approximately Kshs 150,754 (Sterling Pounds 1,371). This is arrived at by dividing the grand total revenue (Kshs 110.954,833) by the total number of families studied (736), all of whom kept some type of livestock.

- The economic value of cattle and their assets on the studied families was Kshs 63,071,000 (Pounds 573,373). Cattle form 56.8% of the total economic value of all the livestock and their assets for the 736 families studied. As indicated earlier, richer members of the society generally own cattle.

- The second most important livestock and its assets were chicken with a cash value of Kshs 10,666,900 (Pounds 96,972). The chicken economic value constituted 9.6% of all the livestock studied. The chickens were mainly made up of grade types in the urban and peri-urban area (layers and broilers). However, in the more rural urban areas, the local chicken are by far the majority, and they form the most important livestock for the poor families.

- The third most important type of livestock was pigs, with an economic value of Kshs 6,229,000 (Pounds 56,627). The economic value of the pigs was 5.6% of the total economic value of all livestock studied. As mentioned earlier, pigs were the livestock of the poor families living in slums. The pigs must have therefore immensely contributed to the economic welfare of the poor households in the urban and peri-urban areas of Kisumu City.

- Goats and sheep were a poor fourth and fifth, constituting 2.0% and 1.2% respectively of the total economic value (Table 9). All the other types of livestock had inconsequential economic value to the studied families in general.

2.5 Production Levels and returns of various types of Livestock in Kisumu city.

There were difficulties with many respondent farmers who could not answer many of the check questions on productions matters of their livestock. The only answers that they were sure about were production, home consumption and sale of milk and eggs. The other questions like the numbers of chicken, goats, sheep and other livestock that they consumed over a given period of time were not answered satisfactorily. Therefore these will be left out in the analysis in Table 10.

The data presented in Table 10 highlights the following information:

- The milk production figures show that 2 litres and 6 litres consumed and sold per day respectively can easily be produced by one grade or crossed cow.

Table 10. Production Levels and returns of various types of Livestock in Kisumu city.

No.Families	Type of livestock	Breed	No.	Product	Mean price KShs/egg KShs/Lt	Mean amount for home consumption per day	Mean amount of product sold per day	Mean value of product consumed per day in KShs.	Mean value of product sold per day	Mean daily Total value in Ksh	Mean value in Kshs/Yr. (365-days)
615	Cattle	Grade	1392	Milk	30	2lts	6lts	60	180	240	87600
		Local	2142								
	Chicken	Grade	25333	Eggs	5	5eggs	90eggs	25	450	475	173375
		Local	6890								
121	Cattle	Grade	31	Milk	30	2lts	7lts	60	210	270	98550
		Local	597								
	Chicken	Grade	723	Eggs	5	5eggs	52eggs	25	260	285	104025
		Local	1538								

- This amount of daily production of milk (8 litres/day) is sold at a price of Kshs 30.00/litre (Sterling pounds 0.27) will produce a gross revenue of Kshs 87,600 per annum (Sterling pounds 796) when we consider the lower production levels. This is equivalent to Kshs 7,300 per month. This is approximately the basic salary of a low ranking officer in the civil service.

- The statistics on egg production is assuming a flock of 100 layers (hens) kept by a farmer. Similarly, the gross value of eggs produced per year is approximately Kshs 173,375 (Sterling pounds 1,576) per year for the intra-urban chicken keepers. This revenue is equivalent to Kshs 14,448 (Sterling pounds 131). This is now equivalent to a gross salary of a medium ranking civil servant.

- It is therefore clear that a livestock farmer who keeps one lactating dairy cow and 100 layers can receive a monthly income similar to that of a medium or higher ranking civil servant.

2.6 How long the Livestock keepers have been keeping them in Kisumu city, and how they acquired the livestock.

The study shows that the farmers have been keeping livestock in the city of Kisumu for many years. Some of them have had livestock for over 50 years. Table 11 indicates the ranges of years the farmers have kept livestock in the city of Kisumu.

Table 11 indicates that most of the farmers in Kisumu city acquired their livestock in the last 10 years. This is because the Dairy Development Livestock Project funded by the European Union started operating 10 years ago, and this project covered the whole of Winam Division (Kisumu City). The results can be summarized as follows:

Table 11. How long the farmers have been keeping livestock in the city of Kisumu.

Number of families studied	Length of time the farmers have kept their livestock (years)								
	1 - 5	**6 - 10**	**11- 15**	**16- 20**	**21-25**	**26-30**	**31-40**	**41-50**	**>50**
615	211	133	67	39	19	19	9	17	37
%	**34.3***	**21.6**	**10.9**	**6.3**	**3.1**	**3.1**	**1.5**	**2.8**	**6.0**
121	34	29	20	5	10	3	5	8	7
%	**28.1**	**24.0**	**16.5**	**4.1**	**8.3**	**2.5**	**4.1**	**6.6**	**5.8**

- The total percentage is not adding to 100% because some of the farmers did not answer the question.

- Those who have kept livestock between 1 – 5 years were the majority (34.3%) for the more urban areas, and 28.1% for the more rural urban areas.

- Those who have kept livestock between 6 – 10 years (21.6%) for the more urban areas, and 24.0% for the more rural urban areas constituted the largest number.

- The third largest group has kept livestock between 11 – 15 years (10.9%) for the more urban areas, and 16.5% for the more rural urban areas.

- Table 11 further indicates that the remaining 22.8% farmers for the more urban areas, and 31.4% for the more rural urban areas, have kept livestock between 16 and more than 50 years.

The livestock keepers in Kisumu city acquired their livestock in different ways as is shown in Table 12a.

Table 12a below shows that the livestock were acquired by various methods:

- The most important method used for acquiring livestock in the more urban areas in Kisumu city was by buying (77.2%), while in the more rural areas it was also by buying, but with a higher percentage (89.2%).

- The second most important method of acquiring livestock for the more rural-urban areas was dowry (17.4%), while in the more urban areas; dowry was third, (5.5%).

- The second most important method, but much less important for the more urban areas was by inheritance (8.9%), however, for the more rural-urban areas, inheritance accounted for much more (14.0%).

- The others included donations from NGOs etc (0.3%).

Table 12a. How the livestock keepers acquired their livestock in Kisumu city.

Number of families studied	How the livestock farmers acquired their livestock				
	Inheritance	**Gift**	**Bought**	**Dowry**	**Other**
615	55	19	475	34	2
%	**8.9**	**3.1**	**77.2**	**5.5**	**0.3**
121	17	2	108	21	0
%	**14.0**	**1.7**	**89.2**	**17.4**	**0.0**

Table 12b shows how many of these farmers have been harassed by the city or government authorities for keeping livestock in the city, or for infringement of any of the city by-laws.

Table 12b. The level of harassment from the authorities

Number of families studied	Harassment by authorities		Did not answer
	Yes	**No**	
615	12	506	97
%	**2.0**	**82.3**	**15.8**
121	6	115	0
%	**5.0**	**95.0**	**0**

Most farmers who were asked whether they were harassed by the city law enforcement or government officers answered as follows:

- In the more urban areas of the city, the people who were not harassed were 506 (82.3%), while in the more rural urban areas, the people not harassed were 95.0%.
- In the more urban areas, harassed people were only 2.0%, while in the more rural areas it was 5.0%. Some of the farmers harassed said the authorities impounded their livestock for being a nuisance in the city. There are areas of the city where livestock are prohibited, especially in the city centre and motor-highways.

2.7 Kenya laws and city bylaws governing the keeping and management of livestock in the city of Kisumu.

2.7.1. The National Laws that affect Livestock and Livestock Products

There are many laws in Kenya that govern livestock keeping, management, slaughtering, processing and marketing of the various livestock products. Parliament of Kenya enacted these laws for veterinary services. These laws cover the rural, more urban and more rural urban communities in Kenya. The most important ones are mentioned below:

2.7.1.1.	Cap. 336.	The Dairy Industry Act (Rev. 1984)
2.7.1.2.	Cap 356.	Meat Control Act (July 14, 1972).
2.7.1.3.	Cap 357.	The Branding of Stock Act (December 12, 1907).
2.7.1.4.	Cap 358.	The Cattle Cleansing Act (July 27, 1937).
2.7.1.5.	Cap 359.	The Hide, Skin and Leather Trade Act (December 24,1987).
2.7.1.6.	Cap 360.	Prevention of Cruelty to Animals Act (December 31, 1962).
2.7.1.7.	Cap 361	Pig Industry Act (March 15, 1966).
2.7.1.8.	Cap 364.	The Animal Disease Act (April 13, 1965).
2.7.1.9	Cap 365.	The Rabies Act (December 30, 1932).

2.7.2. Bylaws that affect Livestock keeping and Livestock Products in the City of Kisumu, Kenya.

The by-laws for Kisumu city in summary do not bar anybody from keeping livestock in the urban and peri-urban areas, as long as the livestock are kept in private homes and grazed in designated areas of the city and they are not a nuisance to residents or other city users. Such livestock keepers, according to the bylaws, should obtain a permit, which certifies that the housing for the livestock, and handling of such livestock, conform to the bylaw, and that the livestock are not a nuisance to neighbours. However, when they breach this, the city law enforcement department impounds the livestock and the owners of such livestock are taken to court and fined.

It is important to mention here that the bylaws of the city of Kisumu are very old and in many cases irrelevant since they have not revised ever since. All of them were enacted by the Municipal Council between 1925 (Notice number 460 – Public Health (Kisumu Density of Dwelling Rules). The most recent was published as Notice number 1221 0f 1951 (Kisumu Municipality (Milk and Dairies) Bylaws. It is also worth mentioning that Kenya attained her independence on December 12, 1963.

It will however, be beneficial to give a deeper look at the bylaws that affect the keeping of livestock, and handling and marketing of livestock products in the city of Kisumu. These bylaws are:

2.7.2.1 **Government Notice Number 588 of 1929:** Public Health (Kisumu Storage of Hides and Skins) Rules.

2.7.2.2. **Government Notice Number 1019 of 1948:** Kisumu Municipality (Curing of Hides and Skins) Bylaws.

2.7.2.3. Government Notice Number 556 of 1949: Kisumu Municipality (Butchers and Fishmongers) Bylaws.

2.7.2.4. Government Notice Number 554 of 1949: Kisumu Municipality (Slaughter House) Bylaws.

2.7.2.5. Government Notice Number 403 of 1950: Kisumu Municipality (Livestock) Bylaws.

2.7.2.6. Government Notice Number 1221 of 1951: Kisumu Municipality (Milk and Dairies) Bylaws.

Each of the above bylaws has detailed provisions on how the city livestock keepers, or processors and marketing of the livestock products should be conducted. However, apart from the bylaw on slaughtering of livestock that is relatively followed more closely, all the others have been flouted. For example the Milk and Dairies bylaws of 1951 stipulates that no one shall sell or process fresh milk in the Municipality of Kisumu, unless such a person obtains a license from the Dairy Board of Kenya (Cap 336 Revised in 1984). However, fresh milk hawking in Kisumu city is rampant, and large quantities of such milk are brought into the city in many trucks daily from neighbouring districts. This milk is often contained in dust-covered churns in open trucks and pickups, and handled in unhygienic manner. But no one has been arrested.

3.0 Linkages of more urban and more rural urban Livestock keepers with their rural people.

The more-urban and more-rural-urban livestock keepers have strong linkages with their relatives living in the rural areas. These findings are presented in Table 13.

Table 13. Linkages between more urban and more rural urban Livestock keepers with their rural people.

Number of families studied	Reasons why more urban and more rural urban livestock keepers link with their relatives in the rural areas							
	Funerals	Ceremonies	Marriages	Sports	Political activities	Fund raising	Religion	Other
615*	613	356	383	38	143	242	407	5
%	**99.7**	**57.9**	**62.3**	**6.2**	**23.3**	**39.3**	**66.2**	**0.8**
121	115	76	76	9	26	55	92	0
%	**95.0**	**62.8**	**62.8**	**7.4**	**21.5**	**45.5**	**76.0**	**0.0**

* **Respondents could give several linkages with their rural folks**

The reasons why the more-urban and more rural-urban livestock keepers have linkages with their relatives in the rural areas are provided in Table 13. These reasons include:

- The most important linkage is when relatives visit each other for funerals (99.7%) for more urban, and 95.5% for more rural-urban livestock keepers.

- The second most important linkage when the relatives share on religious activities (66.2%) for more urban, and 76.0% for the more rural-urban livestock keepers.

- The third most important linkage is during marriages (62.3%) for the more-urban livestock keepers, and it is the same for the more rural-urban livestock keepers (62.8%).

- The fourth most important reason for visits between the more urban with their rural relatives included a whole range of ceremonies, like remembrances of long dead relatives (57.9%) and it is 62.8% with the more rural-urban livestock keepers.

- The fifth most important linkage is for fund raising for various causes like for education, for paying medical bills, for schools etc (39.3%) and 45.5% for more urban and more rural urban livestock keepers respectively.

- Political activities accounted for 23.3% and 21.5%, while others like sports were very minor (6.2%) and 7.4% for more urban and more rural-urban livestock keepers respectively.

3.1 Linkages between more urban and more rural urban livestock keepers with their rural people in terms of livestock, livestock related resource flow and economic resources.

The more urban and more rural urban livestock keepers in Kisumu city have linkages with their rural relatives with respect to livestock, livestock related resources and economic resources. These linkages are presented in Table 14a below.

Table 14a. Linkages between more urban and more rural urban livestock keepers with their rural people in terms of livestock, livestock related resource flow and economic resources.

Number of families studied	Livestock related resources									
	Feed supplies	Grazing	Markets for the following resources							
			Meat	Eggs	Milk	Skins	Live animals	Expertise	Animal drugs and vaccines	Herbal Medicine
615	453*	188	190	180	271	26	267	199	412	93
%	**73.7**	**30.6**	**30.9**	**29.3**	**44.1**	**4.2**	**43.4**	**32.4**	**67.0**	**15.1**
121	55	47	26	24	50	2	72	66	94	22
%	**45.5**	**38.8**	**21.5**	**19.8**	**41.3**	**1.7**	**59.5**	**54.5**	**77.7**	**18.2**

* **Some respondents reported practicing more than one item**

Results presented in Table 14a indicate that:

- The largest linkage between the more urban and more rural urban with rural relatives is feed supplies (73.7%) for the more urban, and 45.5% for the more rural urban livestock keepers. The farmers who keep their livestock in more urban and more rural urban areas heavily rely on supplies of green feeds and crop residues from rural areas, especially during dry spells. A one tonne pick-up load of Napier grass costs approximately Kshs 1,000 (Sterling pounds 9.1). During dry season, the dairy cattle keepers in more urban and more rural urban areas rely entirely on purchased Napier grass. Similarly, there is a large flow of manufactured feeds from urban to more urban and more rural urban areas. One lactating dairy cow consumes approximately 100 kg of dairy meal per month.

- The next most important linkage is in the flow of livestock drugs and vaccines that flow from the urban and peri-urban areas to rural areas (67.0%) for more urban, and 77.7% for the more rural urban areas. This is because there are more diseases in the more rural urban areas than in the more urban areas. Housing and livestock management in the later case are much better.

- The third most important flow from the more urban and more rural urban areas is milk that flows in both directions (44.1%) for the more urban, and 41.3% for the more rural urban areas. The fresh milk flows into the more urban and the more rural urban areas from rural areas, and processed milk flows from more urban and more rural urban to the rural areas.

- The movement of live animals from rural to urban slaughterhouses is the next important flow (43.4%) for the more urban, and 59.5% for the more rural urban areas.

- Movement of livestock experts like veterinary and agricultural extension officers from more urban and more rural urban areas accounts for 32.4% for the more urban, and 54.5% for the more rural urban areas.

- The flow of meat from more urban slaughterhouses to the rural butcheries accounts for 30.9%, and from the more rural urban areas, it is 21.5%. In some cases, meat also moves from small slaughterhouses in the rural areas into the more urban and more rural urban areas.

- Movement of livestock including cattle, goats and sheep from rural areas into the more urban and more rural urban areas in search of grazing during dry seasons account for 30.6% for the more urban and 38.8% for the more rural urban areas.

- Eggs coming from rural areas into more urban areas account for 29.3%, while it is 19.8% for the more rural urban areas.

- Finally expertise on herbal medicines for both humans and livestock from rural areas to the urban and the more rural urban areas accounts for 15.1% for

the former, and 18.2% for the latter, while skins moving from rural areas into more urban and more rural urban markets accounts for a poor 4.2% for the more urban, and 1.7% for the more rural urban areas.

There are other linkages between the rural and the more urban and the more rural urban people in terms of economic resources. These are presented in Table 14b.

- The most important economic linkage between the more urban and the more rural urban relatives is cash remittances from the more urban and the more rural urban to the rural relatives (56.3%) for the former, and 69.4% for the latter.

- The second most important economic linkage is the movement of clothing from the more urban and the more rural urban to the rural areas (30.6%) for the former, and 49.6% for the latter. Majority of these are for commercial purposes, although a few go to individual relatives.

- The third, but much less important one, is the flow of vehicles from the more urban and the more rural urban areas to the rural areas, including cars (2.3%), bicycles (4.2%) and motorcycles (0.2%) for the former, and cars (9.1%), bicycles (2.5%), and motorcycles (0.8%) for the latter.

Table 14b. Linkages between more urban and more rural urban people with their rural relatives with respect to economic resources

Number of families studied	**Economic resources**				
	Clothing	**Cash remittance**	**Motor Vehicles**	**Bicycles**	**Motor cycles**
615	188	346	14	26	1
%	**30.6**	**56.3**	**2.3**	**4.2**	**0.2**
121	60	84	11	3	1
%	**49.6**	**69.4**	**9.1**	**2.5**	**0.8**

3.2 Ownership of land and property in the more urban, more rural urban and rural areas by the livestock keepers in Kisumu city.

The more urban and more rural urban livestock keepers own property in town by either purchasing a plot and developing it, or by the city spreading into what were otherwise rural areas. The respondents were therefore asked if they owned property in the more urban or more rural urban areas. Their responses are presented in Table 15a.

Table 15a. Families that own plots and other property in more urban and more rural urban areas in Kisumu city.

Number of families studied	Ownership of plots		Number of plots owned			Ownership of property		Type of property owned		
	Yes	No	1	2	3	Yes	No	House	Shop	Other*
615	217	321	193	17	7	160	370	58	42	7
%	**35.3**	**52.2**	**31.2**	**2.8**	**1.1**	**26.0**	**60.2**	**9.4**	**6.8**	**1.1**
121	73	48	35	21	17	35	86	15	8	4
%	**39.7**	**60.3**	**28.9**	**17.4**	**14.0**	**28.9**	**71.1**	**12.4**	**6.6**	**3.3**

*** Other: (615) - This included artisan shops – 4; Chemists – 1, Medical Clinic – 1; Hotel – 1**
(121) – This included Artisan shop – 1; Medical Laboratory – 1; Medical Clinic – 1; kiosk – 1

Results presented in Table 15a show that:

- Of the 615 families studied, 538 families responded to the question of whether they owned a plot(s) or not. Of the 538 families, 52.2% for the more urban and 60.3% for the more rural urban areas did not own plots.

- Of the 615 families studied for the more urban area, 217 families (35.3%) had plot. Of the 217 families that own plots 193, 17 and 7 (31.2%, 2.8% and 1.1%), own one, two and three plots respectively. This figure is higher than would be expected because of the expansion of the city boundaries into otherwise previously rural areas.

- Of the 121 families studied for the more rural urban areas, 73 families (60.3%), have plots in the city. Of the 73 families that own plots 35, 21 and 17 (28.9%, 17.4% and 14.0%), own one, two and three plots respectively.

- Of the 615 families studied, another 530 families responded to the question whether they own other property in town like houses, shops etc. A total of 370 families (60.2%) responded that they do not own such property in the city.

- Of the 615 families studied, 370 families (60.2%) responded that they do not own other property in town like houses, shops etc, therefore 160 families (26.0%) own property in town. Of the 160 families owning property in town, 58 (9.4%) own houses, 42 (6.8%) own shops and 7 (1.1%) own other properties.

- Of the 121 families studied, 86 families (71.1%) responded that they do not own other property in town like houses, shops etc, therefore 35 families (28.9%) own property in town. Of the 35 families owning property in town, 15 (12.4%) own houses, 8 (6.6%) own shops and 4 (3.3%) own other properties.

3.3 Ownership of the respondents' present residences.

The respondents were asked whether they owned their present residences or not, and their responses are presented in Table 15b as follows:

Table 15b. Ownership of the respondents' present residences.

Number of families studied	Is your present residence your own or rented?		
	Your Own	**Rented**	**Other**
615	490*	58	1
%	**79.7**	**9.4**	**0.2**
121	104	17	0
%	**86.0**	**14.0**	**0.0**

*** Sixty six (66) respondents did not answer this question**

Table 15b shows that:

- Of the 615 families studied, 490 of them (79.7%) for the more urban areas, and out of the 121 families studied in the more rural urban areas, 104 families (86.0%) live in their own residences.
- The other 58 families (9.4%) for the more urban areas, and out of the 121 families in the more rural areas 17 (14.0%) live in rented houses.
- The other residence listed in Table 15b was a church.

3.4. Ownership of land in the rural areas.

The respondents were also asked if they owned land in the rural areas. Their responses are presented in Table 15c.

Table 15c. Ownership of land in the rural areas.

Number of families studied	Do you own land in rural areas?		Total Number of acres	Mean land holding per household (ac)
	Yes	**No**		
615	367*	173	1,429.4	3.9
%	**59.6**	**28.1**		
121	74	47	346.25	4.7
%	**61.2**	**38.8**		

*** Seventy five people did not answer this question**

The data presented in Table 15c shows that:

- Of the 615 families studied, the number of respondents who own land in the rural areas was 367 families (59.6%), and for the 121 families studied 74

families (61.2%) and each family owns an average of 3.9 and 4.7 acres respectively.

- The numbers of families that do not own land in the rural areas were 173 (28.1%) for the more urban areas and 47 (38.8%) for the more rural urban areas.

3.5. The length of time livestock keepers have lived in the more urban and the more rural urban areas of the city of Kisumu.

Livestock keepers in Kisumu city have lived in the more urban and more rural urban areas for varying periods of time as are shown in Table 15d.

The data presented in Table 15d shows that:

- The period of time the livestock keepers have lived in the more urban and the more rural urban areas is widespread from one year to over 50 years.

- The majority families have lived in the more urban and the more rural urban areas of the city for between six and 20 years.

Table 15d. The length of time livestock keepers have lived in the more urban and more rural urban areas of the city of Kisumu.

Number of families studied	**Length of time in years that livestock farmers have lived in the more urban and more rural urban areas of Kisumu city.**								
	1 - 5	**6 - 10**	**11- 15**	**16-20**	**21-25**	**26-30**	**31-40**	**41-50**	**>50**
615	37	52	75	64	25	42	53	46	118
%	**6.0**	**8.5**	**12.2**	**10.4**	**4.1**	**6.8**	**8.6**	**7.5**	**19.2**
121	10	8	6	19	7	15	18	18	30
%	**8.2**	**6.6**	**4.9**	**15.7**	**5.8**	**12.4**	**14.9**	**14.9**	**24.8**

- In the more urban areas, old people (19.2%) have been keeping livestock for over 50 years, just as we find in the more rural urban areas (24.8%).

4.0 Institutions which represent the needs of Livestock keepers in these environments.

The study found several institutions in the city of Kisumu that represent the needs of livestock farmers. These include:

a) Kisumu Dairy Co-operative Society, P.O. Box 5136, Kisumu,
Phone 254- (035)-21436.

b) Nyalenda/Manyatta Pig Farmers' Association, c/o Ministry of Agriculture,
District Livestock Production Officer,
P.O. Box 1043, Kisumu,
Phone 254 -(0)35-43757. Kisumu.

c) Great Lakes Farmers' Development Group, c/o The District Livestock Production
Officer, P.O. Box 1043, Kisumu.
Phone 254-(0)35-43757, Kisumu.

d) Kenya Dairy Board, Kisumu Branch, P.O. Box 30406, Nairobi.
Phone 254-(02)-336070, Nairobi.

e) Kenya Co-operative Creameries Limited, P.O. Box 235, Kisumu.
Phone 254-(0)35-21799, Kisumu.

f) Kenya Society For Protection and Care of Animals, Kisumu Branch, P.O. Box
Phone 254-(02)-882500, Nairobi.

g) Butchers Association, Kisumu, c/o District Livestock Production Officer, P.O. Box 1043, Kisumu.
Phone 254-(035)-43757, Kisumu.

h) Lake Basin Development Authorities, P.O. Box 1516, Kisumu

During group discussions in the Focused Group meeting, these institutions came up with a number of issues and recommendations. The most important ones were:

a) **Roles:**
- To assist farmers to produce plenty of milk, eggs, meat (chicken, pork, beef, mutton etc).
- To uplift members' standards of living.
- To share risks and benefits.

b) Achievements:

- Cost reduction;
- Education for farmers
- Awareness creation.

c) Hindrances:

- Migration of labour from rural to urban areas make peri-urban livestock farming short of sufficient labour.
- Cheap imports of livestock products from neighbouring districts,
and occasionally from other countries.
- Lack of technical know how for various technical farm operations.
- Lack of sufficient interest among certain urban and peri-urban population in livestock farming.

- More urban and more rural urban livestock farmers operate at a small scale therefore do not benefit from economy of scale.

- Privatization and liberalization in marketing livestock products, like any others in Kenya, allow competing imports from other countries into the city of Kisumu, thereby reducing ease of marketing of locally produced livestock products.

- High cost of veterinary services.

d) Rules and Regulations:

- Legalizing livestock keeping in the city, since the more urban and more rural urban livestock farmers believe that livestock farming in the city is prohibited. This is from colonial by-laws.

- Provide regulations guiding the existence with relevance to rights and obligations of the livestock farmers in urban and peri-urban areas.

e) Cost Saving:

- More urban and more rural urban livestock farmers should keep high value livestock.

- The more urban and more rural urban livestock farmers should ensure quality and efficient feeding of their livestock.

- More urban and more rural urban livestock farmers should provide appropriate housing facilities and equipment for their livestock.

- The more urban and more rural urban livestock farmers should institute preventive rather than curative measures for disease control and treatment.

5.0 Policy issues associated with livestock keeping in more urban and more rural urban areas of Kisumu city.

The policy issues that were expected to be raised in this study should have been obtained from the bylaws of the city of Kisumu. Unfortunately the bylaws were not available and therefore this study could not access them. However, there were policy issues that were raised during the stakeholders and PRA discussions that have been discussed in sections 6.0, 6.1 and 6.2 below.

6.0 Current constraints and future perspectives for the development of urban livestock keeping.

These were exhaustively handled in PRA meeting with three different farmer groups from high-density population areas of the city (slums) and in the Focused Group Discussions. The findings of these meetings are summarized below.

6.1. PRA meetings held in high population density slums in Kisumu.

Three PRA meetings were held with livestock farmers from three poorest slums in Kisumu city. These slums were Nyalenda and Dunga, Manyatta, and Kondele and Obunga. The PRA for Nyalenda and Dunga was held at the Tom Mboya Labour College on March 22, 2002, and it was attended by18 people (13 men and 5 women). The Manyatta PRA was held at Kosawo Social Hall on March 23, 2002, and it was attended by 18 people (13 men and 5 women). Then the final PRA was for Kondele and Obunga slums at Kondele Pentecostal Church on March 26, 2002, and it was attended by 16 people (11men and 5 women). Issues raised by the three PRA meetings were:

1. There was an acute lack of veterinary services to attend to the farmers' livestock needs, as well as lack of agricultural extension services.

2. Lack of value for veterinary services since treating, for example, a dairy cow sick with East Coast Fever (ECF) costs Kshs 5,000.00 (Sterling Pounds 45.5), yet the cow may still die.

3. Then veterinary officers visit homes of smallholder livestock farmers, they are harsh and appear to be looking only for prosecutable mistakes, like lack of licenses and registration, for example of pig keepers against African Swine Fever.

4. Lack of credit facilities for developing livestock farming.

5. Fear of prosecution by the City Law Enforcement Authorities for keeping or herding livestock in certain parts of the city.

7. Participants informed the meetings that there were better cash returns per unit of inputs from donkeys used as transport animals than from dairy cows kept for milk production.

6.2. Focused Group Discussions with various livestock stakeholders in Kisumu City.

A focused Group Discussions were held at Tom Mboya Labour College on April 16, 2002, where a total of 21 people attended (19 men and 2 women). The stake holders included the City Planner, Feed Manufacturer, Milk Processor, Veterinary Officers, Animal Production Officers, representative from Livestock Artificial Insemination Department, an Advocate, a representative from Hides and Skins, Provincial Livestock Production Officer, Farmers, representatives from The Kenya Government Prisons, Ministry of Water, and Traders on Livestock Products.

A brief presentation of the findings of the Scoping Livestock Study was given by the study co-ordinator for the city of Kisumu. Thereafter the participants were divided into five groups. The groups included: (1) Legal and Paralegal Group; (2) Farmers' Group; (3) Institutions; (4) Livestock Products; and (5) Farm Inputs.

Each group was given between four and nine issues to discuss and thereafter, to report a summary of their deliberations to the plenary session. After presentation of the five groups, a lively discussion followed. The following issues were raised from the discussions:

1. Livestock keeping contributes significantly to household's food security and income. These include: (a) improved living standards, (b) improved social status, (c) increased provision of quality food to the family, (d) improved opportunities for investments, (e) improved family income ensures school fees for children's education, (f) enables farmers to accomplish customary requirements e.g. Payment of dowry.

2. High cost of livestock production, including the recommended housing and feeding. Cheaper and equally good alternatives should be found to make livestock production more profitable. For example on-farm feed formulation.

3. Proper planning to ensure sufficient supply of livestock throughout the year.

4. Need to legalize livestock keeping with more urban and more rural urban areas of the city of Kisumu.

5. All stakeholders to be involved in sensitizing and availing information to the livestock keepers and consumers of livestock products.

6. Poor management in Farmers' organizations e.g. Farmers' Co-operative Societies

7. Effects of liberalized markets create very stiff competition from other parts of the country and even overseas.

8. There is ready market for all livestock products in the city of Kisumu, however, there is low supply of livestock products.

9. Need for proper manure disposal and utilization.

10. Poor hygiene in handling of livestock products, resulting into low quality.

11. Poor, and sometimes total unavailability, of extension services.

12. Poor city planning and by-laws.

13. There is urgent need to encourage and involve private extension services, for example from manufacturers of livestock products to complement the diminishing government extension services.

14. There is urgent need for quality farm inputs.

15. Need for training farm labour to become more skilled on specific farm duties.

16. Lack of knowledge in handling and utilizing of livestock by-products.

8. APPENDICES

8.1 Names and Qualifications of the Study Team for the City of Kisumu, Kenya.

Names	Employer	Professional Qualifications	Position in the Study
Dr. Moses Onim	Lagrotech	PhD in Agriculture	Co-ordinator
Mr. Esborne Baraza	Lagrotech	MSc in Agriculture	Deputy Co-ordinator
Mr. Tom Onyango	Lagrotech	BSc in Agriculture	Data Analyst
Ms Violet Lamuka	Lagrotech	BEd	Enumerator
Ms Judith Matti	Lagrotech	Diploma (Secretarial)	Data Analyst
Ms. Mary Ang'wech	Lagrotech	KCSE	Enumerator
Ms. Mercy Ouko	Lagrotech	KCSE	Enumerator
Mr. Caleb Ouko	Lagrotech	KCSE	Enumerator
Mr. James Onyango	Lagrotech	KCSE	Enumerator
Mr. Francis Ouko	Lagrotech	KCSE	Enumerator
Mr. Eric Onim	Lagrotech	KCSE	Enumerator
Mr. J. Mukhwana	Min. Agric	Diploma (An. Husba)	Resource Person
Ms Emmy Ingaiza	Min. Agric	Diploma (Dairy Tech	Resource Person
Mr. George Odeny	Min. Agric	Diploma (An. Health)	Resource Person
Mr. David Oluoch	Min. Agric	Diploma (An. Husba)	Field Co-ordinator
Mr. Ernest Nyamuok	Min. Agric	Diploma (Range Mgt	Deputy F. ,,
Mr. Isaiah Ageng'o	Min. Agric	Diploma (An. Husba)	Deputy F. ,,
Ms Beatrice Awuor	Min. Agric	Diploma (An. Husba)	Enumerator
Ms Frida Mireho	Min. Agric	Certificate (Range M	Enumerator
Mr. Walter Ogot	Min. Agric	Certificate(RangeMgt	Enumerator

8.2 SCOPING STUDY OF MORE URBAN AND MORE RURAL URBAN LIVESTOCK KEEPERS IN KISUMU, KENYA

CONTRACT NUMBER 2304
PROJECT NUMBER ZC0201

Check List for Primary Information Collection

2a. Who are the Livestock keepers in the City/Case Study

2a1 Name of Respondent: (Farmer/Institution *)
……
2a2 Age…… **2a3 Sex:** Female/Male
2a4 Marital Status: Single/Married/Widowed
2a5 Education: None/Primary/Secondary/College/Qualifications: Informal/Diploma/Degrees: First/Second/Third
2a6 Religion: Christianity/Islam/Hinduism/Buddhism/African animist
2a7 Profession: Unemployed/Petty Trader/Medium Trader/Big Trader/Civil Servant/Retired/Teacher/Lawyer/Medical/Clergy/Artisan/Other……
……..
2a8 Village/Estate: …… **2a9 Sub-Location**: ……..……..
2a10 Location: ……. **2a11 Division**: …….
2a12 District: ……... **2a13 City:** ……
2a14 Size of your family?: **Wife(ves)**…… **Sons**: …. **Daughters**…….
Total…….
2a15 Who is the head of your household? Husband/Wife/Other (Specify)……

2b. What types of livestock do you keep?:

Species of livestock	Grade	No.	Crossed	No.	Local	No.	TOTAL
Cattle: (Yes/No) If Yes							
Goats (Yes/No) If Yes							
Sheep (Yes/No) If Yes							
Pigs (Yes/No) If Yes							
Donkeys (Yes/No): If Yes							
Horses (Yes/No): If Yes							
Chicken (Yes/No): If Yes							
Cockerels for Meat/Breeding (Yes/No)							
Ducks (Yes/No): If Yes							
Turkeys							

Species of livestock	Grade	No.	Crossed	No.	Local	No.	TOTAL
(Yes/No): If Yes							
Gees (Yes/No): If Yes							
Pigeons (Yes/No): If Yes							
Quills (Yes/No): If Yes							
Guinea fowls (Yes/No): If Yes							
Rabbits (Yes/No): If Yes							
Guinea Pigs (Yes/No): If Yes							
Bees (Occupied Hives) (Yes/No): If Yes							
Fish Ponds/Dam: If Yes							
Fish Species:							

2c **Who owns the livestock in your home?** Cattle: Husband/wife/son/daughter/relative (male/female); Goats/sheep: Cattle: Husband/wife/son/daughter/relative (male/female); Poultry: : Husband/wife/son/daughter/relative (male/female)

2c1 **Who does the work on livestock?**

2c2 **Grazing/Feeding**: Husband/Wife/Adult son/Adult daughter/School age son/School age daughter/Relative (Female/Male)/Worker (Female/Male).

2c3 **Cleaning Livestock House**: Husband/Wife/Adult son/Adult daughter/School age son/School age daughter/Relative (Female/Male)/Worker (Female/Male).

2c4 **Milking**: Husband/Wife/Adult son/Adult daughter/School age son/School age daughter/Relative (Female/Male)/Worker (Female/Male).

2c5 **Disease Control (eg Spraying/Deworming**): Husband/Wife/Adult son/Adult daughter/School age son/School age daughter/Relative (Female/Male) /Worker (Female/Male)/Veterinary staff (Female/Male)

2c6 **Does the person wear protective clothing while spraying?:** Yes/No

2c7 **Disease Treatments (eg Injections):** Husband/Wife/Adult son/Adult daughter/school age son/School age daughter/Relative (Female/Male)/Worker (Female/Male) /Veterinary staff (Female/Male)

2c8 **Does the person wear gloves while treating?:** Yes/No

2c9 **Slaughtering or Dressing**: Husband/Wife/Adult son/Adult daughter/School age son/School daughter/Relative (Female/Male)/Worker (Female/Male).

2c10 **Who decides on husbandry practices?:** Husband/Wife/Adult son/Adult daughter/ School age son/School age daughter/Worker/Vet officer/Agric. Officer/Head of Institution/Other…….

2c11 **Who decides on buying/Selling?:** Husband/Wife/Adult son/Adult daughter/School age son/School age daughter/Relative (Female/ Male)Worker (Female/ Male)/Vet officer (female/Male)/Agric. Officer (Female/Male)/Head of Institution/Other…….

2c12 **Distribution of benefits:** Whole family/Husband/Wife/Adult son/Adult daughter/School age son/School age daughter/Relative/ Worker/ Institution/Other……

2c13 **Reason for keeping Livestock (Commercial/Subsistence):** Savings/Paying dowry /Cash sale later/Slaughter for family food/Slaughter for funerals/Slaughter for ceremonies/Rituals/Other……..

2c14 **Contribution to household economy and family food security (goods or services obtained); Livestock are kept for**: Food:(meat/milk/eggs/); Sale/Family use: (Manure/draft power/meat /milk /eggs/ skins/ honey/wax/bones).

*Details of a representative of the Institution will be completed as necessary

2c15 What is the economic value of your livestock?

Livestock Species	Breed of Livestock	Number Of Adults	Value of Adults in Kshs	Number of Young Animals	Value of Young Animals in KShs	Value of Livestock Assets in Kshs	Total Value of Livestock Enterprise in Kshs
Cattle: (Yes/No) If Yes							
Goats (Yes/No) If Yes							
Sheep (Yes/No) If Yes							
Pigs (Yes/No) If Yes							
Donkeys (Yes/No)							
Horses (Yes/No)							
Chicken (Yes/No)							
Cockerels for							

Livestock Species	**Breed of Livestock**	**Number Of Adults**	**Value of Adults in Kshs**	**Number of Young Animals**	**Value of Young Animals in KShs**	**Value of Livestock Assets in Kshs**	**Total Value of Livestock Enterprise in Kshs**
Meat/Breeding (Yes/No)							
Ducks (Yes/No)							
Turkeys (Yes/No)							
Gees (Yes/No)							
Pigeons (Yes/No)							
Quails (Yes/No)							
Guinea fowls (Yes/No)							
Rabbits (Yes/No)							
Guinea Pigs (Yes/No)							
Bees (Occupied Hives) (Yes/No)							
Fish Species:							

2c16 What is the Production Level and returns of your Livestock?

Livestock Species	Breed of Livestock	Type of Product sold	Unit Price of the product Eg Shs/lit of milk	Amount of product/day For Home consumption Eg. Lit. of milk	Amount of Product sold/day	Value of Product Consumed per/day	Value of Product Sold/day In Kshs
Cattle: (Yes/No) If Yes							
Goats (Yes/No) If Yes							
Sheep (Yes/No) If Yes							
Pigs (Yes/No) If Yes							
Donkeys (Yes/No)							
Horses (Yes/No)							
Chicken (Yes/No)							
Cockerels for Meat/Breeding (Yes/No)							
Ducks (Yes/No)							
Turkeys (Yes/No)							
Gees (Yes/No)							
Pigeons (Yes/No)							
Quails (Yes/No)							
Guinea fowls (Yes/No)							
Rabbits (Yes/No)							
Guinea Pigs (Yes/No)							
Bees (Occupied Hives) (Yes/No)							
Fish Species:							

2c17 **For how long have you kept livestock?** 1 –5yrs/6 – 10/ 11 –15/16 –20/21 –25/26 – 30/ 31 –40/41 –50/More than 50yrs

2c18 **How did you acquire your livestock?:** Inherited/given as a gift/dowry/bought/other …

2c19 **Does the city or government authority harass you for keeping livestock in urban/peri-urban?** Yes/No. If Yes, give reasons……../……./……./…….

3a **See number 2 above**

3b. Livestock husbandry practices

Livestock Species	Husbandry Practiced									
	Housed		Feeding		Animal Health		Watering		Vaccination	
	Yes	No	Graz.	Scav.	Provided	Not	Provided	Not	Yes	No.
Grade Cattle										
Crossed Cattle										
Local										
Grade Goats										
Local Goats										
Grade Sheep										
Local Sheep										
Grade Pigs										
Local Pigs										
Donkeys										
Horses										
Grade Chicken										
Local Chicken										
Ducks										
Turkeys										
Gees										
Pigeons										
Quails										
Guinea Fowls										
Rabbits										
Guinea Pigs										
Fish Ponds										
Fish in the ponds										

3c **Linkages with relatives/friends in the peri-urban and rural environments:** Funerals/ceremonies/marriages/religion/ sports/political activities/ fund raising/other…….

3c1 **Do you own land/plot(s) in town?** Yes/No If Yes, How many? One/two/three/more

3c2 **Do you own property in town?** Yes/No. If Yes, what property? Plot/plots/House/houses/shop/shops/go down/factory/other……..

3c3 **Your present residence, is it**: your own/rented/living with relatives/living with a friend

3c4 **Do you own land in the rural areas?** Yes/No. If Yes, How many acres? ……..

3c5 **How long have you lived in urban/peri-urban?** 1 –5yrs/6 – 10/ 11 –15/16 –20/21 – 25/26 –30/31 –40/41 –50/More than 50yrs

3d **Urban/Peri-Urban linkages in terms of resource flow**

3d1 **Livestock related resources:** Feed supplies/grazing/markets for meat/eggs/milk/skins/live animals/expertise/animal drugs and vaccines/herbal medicines/other…….

3d2 **Economic resources:** Cash remittances/clothing/vehicles/other…….

For Focused Group Discussions and Stakeholders PRAs: Numbers 4, 5 and 6.

8.3 SCOPING STUDY OF URBAN AND PERI-URBAN LIVESTOCK KEEPERS IN KISUMU, KENYA

FOR PRAs

Check List for Primary Information Collection

2a. Who are the Livestock keepers in the City/Case Study

2a1 Name of Respondent: (Farmer/Institution *)
……
2a2 Age…… **2a3 Sex:** Female/Male
2a4 Marital Status: Single/Married/Widowed
2a5 Education: None/Primary/Secondary/College/Qualifications: Informal/Diploma/Degrees: First/Second/Third
2a6 Religion: Christianity/Islam/Hinduism/Buddhism/African animist
2a7 Profession: Unemployed/Petty Trader/Medium Trader/Big Trader/Civil Servant/Retired/Teacher/Lawyer/Medical/Clergy/Artisan/Other……
……..
2a8 Village/Estate: …… **2a9 Sub-Location**: ……..……..
2a10 Location: ……. **2a11 Division**: …….
2a12 District: ……... **2a13 City:** ……
2a14 Size of your family?: **Wife(ves)**…… **Sons**: …. **Daughters**…….
Total…….
2a15 Who is the head of your household? Husband/Wife/Other (Specify)……

2a16 Types of Livestock you keep

Types of Livestock	The numbers of the livestock you keep					
	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	More than 25
Cattle:						
Grade						
Crosses						
Local						
Goats						
Sheep						
Pigs						
Chickens:						
Grade						
Local						
Ducks						
Turkeys						
Geese						
Rabbits						
Guinea pigs						

8.4 Population, sex, number of households, area and density of Kisumu City (Winam Division), 1999 population census.

Kisumu City (Winam Division)	Males	Females	Total	House Holds	Area (Sq. Km)	Population Density
	165,438	**163,520**	**329,958**	**82,834**	**395.1**	**835**

Locations	No. of Sub-Locations	Males	Females	Total	House holds	Area in Sq Km	Population Density
Central Kisumu	2	8,308	6,642	14,950	3,380	17.2	869
Central Kolwa	2	9,481	9,906	19,387	4,608	35.7	543
East Kajulu	3	5,707	6,357	12,064	2,671	15.3	789
East Kisumu	4	14,019	13,607	27,626	7,611	32.6	847
East Kolwa	3	7,582	8,261	15,843	3,648	56.0	283
Kondele	4	34,418	35,103	69,521	17,648	4.8	14,484
North-Kisumu	3	7,853	8,484	16,337	3,477	30.3	539
S.W. Kisumu	3	9,102	9,729	18,831	4,369	50.1	376
Township	4	20,738	19,557	40,295	9,032	14.2	2,838
West Kajulu	2	8,586	8,892	17,478	4,164	21.7	805
West Kolwa	3	36,560	33,842	70,402	19,991	12.2	5,771
Miwani	4	4,084	3,140	7,224	2,235	105.0	69