

A FACT SHEET ON THE ANIMAL GENETIC RESOURCES OF UGANDA



BY THE

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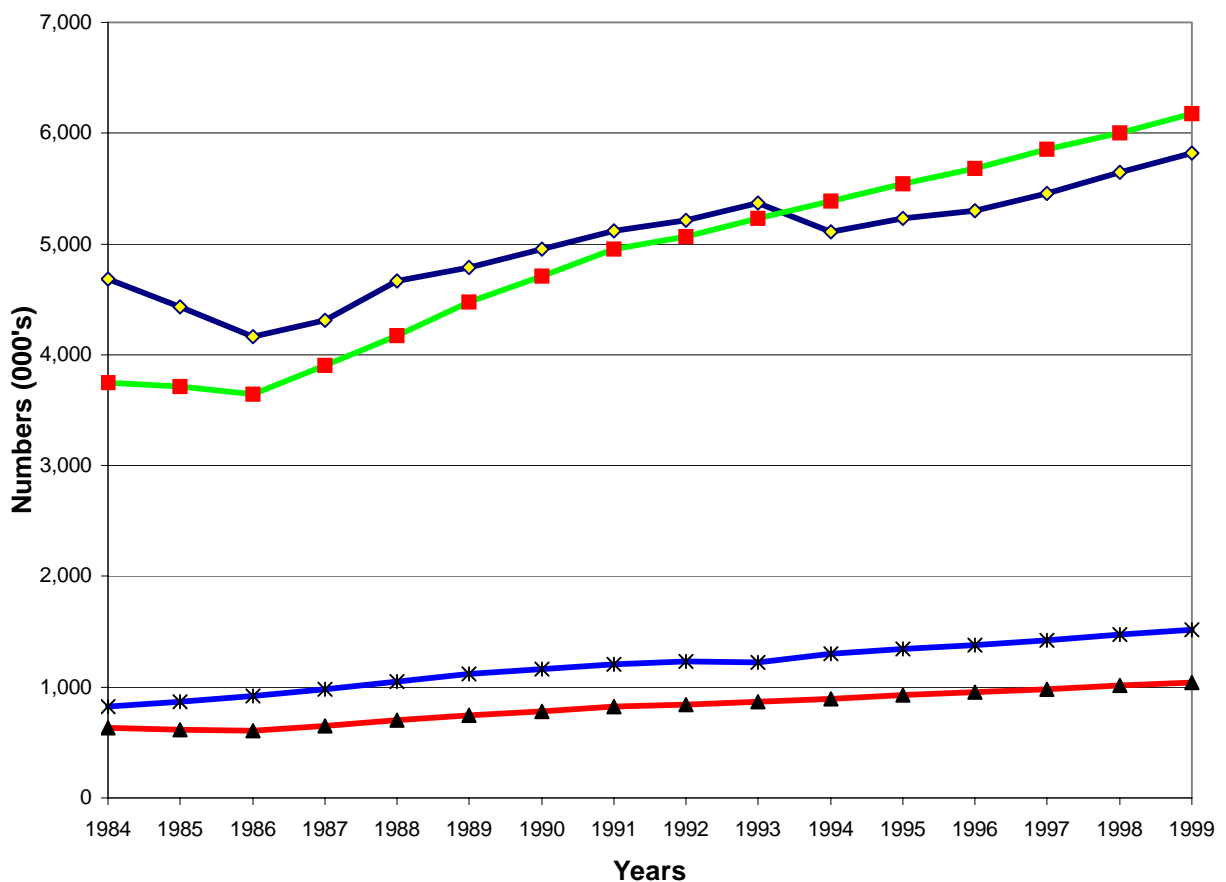
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THE FARM ANIMAL GENETIC RESOURCES FACT SHEET FOR UGANDA

1.0 Introduction

By the year 2000, the Farm Animal Genetic Resources (AnGR) in Uganda of major economic value comprised 6.1 million cattle, 6.5 million goats, 1.7 million sheep, 2.4 million pigs and 29.5 million poultry. The other species include, rabbits (estimated at 150,000), horses, donkeys camels and domestic buffaloes. Since 1987 the populations of most of these species have been on the increase (see Fig.1). The figures for the year 2001 were not readily available, however, the more accurate picture of the livestock population will be obtained from the forthcoming national population and housing census of 2002.

Fig.1: LIVESTOCK POPULATION ESTIMATES AND TRENDS IN UGANDA 1984-1999



The rate of annual increase for cattle in Uganda is much below that for the Africa and the world, however it is higher for sheep, goats, pigs, and poultry. The coefficient of variation in Uganda is much higher than its similar for Africa and the world because of the looting, rustling and massive slaughter mentioned in the period above.

The rate of annual change and the coefficients of variation for the main livestock species in Uganda compared with African and World figures is summarized in table 1.0.

Table .1.0; Rate of Annual increase and coefficient of variation for stocks of livestock In Uganda, Africa and the world for the period 1980 to 1993.

| Species | Rate of annual change (%) | | | Coefficient of variation | | |
|----------------|---------------------------|--------|-------|--------------------------|--------|--------|
| | Uganda | Africa | World | Uganda | Africa | World |
| Cattle | 0.301 | 0.873 | 0.448 | 7.619 | 3.759 | 2.236 |
| Sheep | 3.569 | 0.979 | 0.179 | 20.054 | 4.188 | 2.051 |
| Goats | 2.935 | 1.252 | 2.139 | 20.901 | 5.495 | 9.403 |
| Pigs | 11.551 | 5.427 | 0.991 | 58.524 | 25.393 | 4.432 |
| Poultry | 3.197 | 3.897 | 4.953 | 15.815 | 16.381 | 20.846 |

Source: Fintecs Ltd, (1997).

The indigenous breeds are the majority of the Farm AnGR and have unfortunately been neglected for long. Currently the Government of Uganda through the National Animal Breeding Policy that is legally backed up by the Animal Breeding Act recognizes the need for their conservation and improvement.

The main grazing management systems in Uganda have traditionally been defined as;

- Communal grazing
- Pastoral herding
- Tethering
- Enclosed ranching
- Fenced dairy farms
- Zero grazing

Several variants (particularly for fenced dairy systems) of these exist and the classification of which is mainly based on input usage, proximity to market outlets and potential for commercialization. The Livestock Policy Analysis Sub-unit of the Agricultural Secretariat of the Bank of Uganda (1994) classified livestock production systems in Uganda into:

- I Rural subsistence systems:
 - Pastoral
 - Communal / agro-pastoral
- II Small farmer dairy systems
 - Peri / intra urban

- Rural mixed farming
- III Commercial semi-intensive system
 - Rural
 - Peri / intra urban
- IV Dairy / beef ranching system
- V Large commercial system

1.1 Uganda's Domestic Animal Diversity

Uganda is signatory to the convention on Biological diversity which specifically provides for Agriculture and sustainable use of biodiversity. This country has also filled the FAO / UNEP global breed survey questionnaires, and a number of species and breeds in the country have hitherto been entered into the FAO / UNEP Global data bank for farm animal genetic resources (AnGR) and are summarized here below;

| 'Species' | Breeds / strains |
|-----------------------|--|
| a) Cattle | Ankole, Bahima, Boran, Karamajong, Kigezi, Lugware, Nganda and Nkedi |
| b) Goat | Kigezi, Mubende, Small East African |
| c) Sheep | East African Black head and Masai, East African Long tail |
| d) Chicken | Ugandan chicken |
| e) Duck | Ugandan duck |
| f) Turkey | Ugandan Turkey (considered endangered) |
| g) Pig | Ugandan pig |
| Other species | |
| h) Rabbits | |
| i) Horses | |
| j) Donkeys | |
| k) Camels | |
| l) Domestic buffaloes | |
| m) Introduced breeds | |

1.2 Economic impact of the domestic animal genetic resources in Uganda.

Of the 49% contribution of the Gross Domestic Product (GDP) by Agriculture, the livestock sector accounts for 17%. Only 33% of the food crop output is marketed compared to 66% of livestock and their products. About 56% of Agricultural G.D.P. by 1996 consisted of subsistence production for own consumption and is non- monetised. Table 1.1 summarizes the contribution of livestock Agricultural sector to the total GDP at constant 1991 prices (millions of Uganda shillings) from the fiscal year 1991/92 to 1994/95.

Table 1.1 Contribution of the livestock sector to GDP at constant 1991 prices (millions of Uganda shillings).

| Year | 1991/92 | 1992/93 | 1993/94 | 1994/95 | Av. growth rate (%) |
|---------------------|---------|---------|---------|---------|---------------------|
| Monetary | 128,737 | 133,307 | 137,211 | 130,140 | 0.8 |
| Non-monetary | 57,330 | 59,593 | 62,024 | 63,286 | 3.2 |

Source: Ministry of Finance and Economic development (MFED); Background to the budget 1995 / 1996.

The contribution of farm animal genetic resources to the overall economy is substantial. During 1997 the contribution of the livestock sector and the other Agricultural sectors to the total G.D.P is summarized in table 1.2. Livestock production accounted for 7.1% of the GDP as compared to food crops that accounted for 28.5%, Ministry of Finance, Planning and Economic development (MFP&ED) (1998).

Table 1.2: The contribution of agricultural components as a percentage to Total G.D.P. at constant 1991 prices for the fiscal year 1996 / 1997.

| Product | Monetary | Non-monetary |
|--------------|-------------|--------------|
| Food crops | 11.4 | 17.1 |
| Cash crops | 3.9 | - |
| Livestock | 5.1 | 2.0 |
| Fisheries | 2.0 | 0.2 |
| Forestry | 1.0 | 0.8 |
| Total | 23.5 | 20.5 |

Source: MFP&ED (1998); Background to the Budget.(1998).

In 1997 the livestock sector made a significant contribution of 21.7% of the monetary value to the Agricultural component. Only 40% of the food crop is marketed while that of livestock is 72%. This implies that livestock is a major source of income for the Ugandan communities and plays an important role in the agricultural commercial sub-sector. This is corroborated by the Plan for the Modernization of Agriculture (PMA) in Uganda .

2.0 METHODOLOGY

The following is the methodology by which this fact sheet was compiled: -

- Interviewing farmers, field extension staff and researchers.
- Simple breed characterization using Breed Fact Sheets from SADC Farm Animal Genetic Resource Program.
- Searching for information on the Internet
- Review of available literature related to Farm Animal Genetic Resources and their diversity.
- A review of official reports and data collected from relevant Government Ministries and Institutions.
- Consultation of Government / institution officials.
- Use of indigenous knowledge as reflected by traditional practices.
- Taking photographs of animals
- Taking Video films

3.0 BREED CONSERVATION AND IMPROVEMENT ACTIVITIES

3.1 Livestock production trends in Uganda.

Since the colonial times, livestock improvement policies have been biased towards milk and beef production for commercial purposes using mainly exotic germplasm. Conservation strategies have mainly focused on Plant Genetic Resources and rare wildlife species (Kisamba Mugerwa, 1991).

3.1.1 The Colonial era (1900 - 1962)

Policy towards the livestock industry in Uganda was based on 3 main assumptions namely;

- a) the climate was too harsh for exotic cattle to survive
- b) disease control particularly tick borne diseases was not envisaged.
- c) no change was foreseeable in the traditional cattle keeping habits.

Research effort was initiated to improve the cattle stock based on selective breeding within the indigenous animals for resistance to tick borne diseases and increased milk yield to ensure that the calf got a good start in life and not to breed up a purely dairy type of animal. Selection on the basis of conformation for beef production and stamina for work were secondary objectives.

Improvement of the indigenous cattle was later considered best achieved through importation of exotic cattle and backcrossing to the best local stock available. This led to a change in policy in 1960 and to the institution of artificial insemination (A.I.) services and exotic dairy stock importation. An experimental program was also initiated particularly to investigate performance of the indigenous cattle and their crosses with exotics.

3.1.2 After independence (1962 to 1972)

Government policy on livestock development continued to lay emphasis on cattle for both milk and meat. The 1966 Ministerial Policy statement stated that the potential for poultry, pigs and small stock would be explored and plans made for their upgrading. The emphasis was on promoting transition to modern animal husbandry practices, encouraging the development of commercial farms in the extensive areas of the unoccupied lands and the establishment of Government and parastatal ranches and dairy farms to breed stock for private ranches, traditional producers and for slaughter (Uganda Government, 1966). This was greatly facilitated by the advances made in tick and tsetse control programs and the provision of free services (e.g. A.I.) and highly subsidized inputs to the established closed farms.

3.1.3 From 1973 to 1979

The favorable trends in economic growth maintained during the 1960s were interrupted following the military take over of 1971. Gross mismanagement after the Economic war declaration of 1972 coupled with the rule of terror completely destroyed the productive base of the economy. There was no clear and coherent procedure for implementing development policy with funding priorities and laws governing investment activities even for projects that were suitable and ready for external financing.

3.1.4 After the 1979 war

The Economy of Uganda suffered further deterioration from the vagaries of war and post-war ineffective policies of interim governments. Owing to the fragile foreign exchange earning structure of Uganda, the Government was compelled to seek most of the capital for its recovery and Ten - Year Development Plan of 1980 to 1990 (MPED, 1981) from external sources, this was largely ineffective.

3.1.5 After 1986

The Government issued the rehabilitation and development plan, 1987 - 1991, which had as a prime objective the restoration of productive capacity of the economy in key sectors. This was pursued within the framework of creating an independent, integrated and a self-sustaining national economy. Priority areas for the animal industry emphasized disease control and increased animal production.

The Way Forward II, issued in 1992 following the positive effects of development, outlined important objectives in the livestock sub-sector which included among others;

- increased self-sufficiency in meat and milk products through encouragement of improved livestock production,
- rehabilitation of extension and research services and liberalization of pricing and marketing policies.

Additionally, Government prepared a master plan for the dairy subsector, with the assistance from DANIDA. The Master Plan formulated a strategy for the development of the dairy sub-sector to include several components among which was the Cattle Breeding Project with its sub-component of drawing up the National Animal Breeding Policy.

A Beef Production Master Plan and a Small Ruminant Development Plan have hitherto been prepared.

3.2 ON-GOING ACTIVITIES

Uganda is co-signatory to the 157 nations World Convention on Biological Diversity. The convention became international law in December 1993 and specifically provides for agriculture and sustainable use of biodiversity. Thereafter, in the same month of December, 1993, the National Resistance Council (the by then Parliament) ratified the convention. Since under the convention each country has sovereignty over its genetic resources and therefore responsible for validating and maintaining current data, describing the status and characteristics of these resources, Uganda has undertaken a number of initiatives geared towards the conservation and improvement of farm animal genetic resources as enumerated here below.

3.2.1 The National Animal Breeding Policy

This policy was formulated under the auspices of the DANIDA supported Cattle Breeding Project. Along with its Action Plan, it was approved by Cabinet in April 1998 and is now fully backed up by the Animal Breeding Act

A salient specific objective of the policy is to promote optimum management, conservation and sustainable use of AnGR in harmony with stakeholder needs and aspirations while ensuring protection of the environment. Under the policy, the National Animal Improvement Programme provides, among others, guidelines to farmers, investors, researchers, extension workers and civic leaders on suitable breeds for various production systems, breeding and management systems for conservation and sustainable use of indigenous AnGR.

3.2.2 National Animal Genetic Resources Program

Under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), in the Breeding section of the department of Animal Production and Marketing, a unit specifically charged with the conservation of AnGR has been established. This was a result of Government initiative of setting up of a multidisciplinary, multisectoral National Animal Genetic Resources Steering Committee (NAGRSC) in 1994. The committee has worked out the National Animal Genetic Resources Program (NAGRP).

In March, 1995, the first workshop on AnGR was conducted and the NAGRP was launched. The main objectives of the NAGRP is to ensure the conservation and sustainable full use of diversity of the AnGR. The programme is charged with the

following;

- Developing a national AnGR conservation policy including in-situ and ex-situ conservation.
- Developing and establishing an appropriate institutional framework for the co-ordinating, regulation and monitoring of AnGR conservation activities.
- Creating awareness among the population on AnGR current initiatives.
- Characterizing and documenting all the AnGR.
- Promoting research on AnGR.

The functions of the committee have since been taken up by the National Animal Genetic Resources Centre and Databank following the changes in structure and policy in the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

3.2.3 Research

Scientific research on indigenous species is being undertaken for cattle, goats, pigs and poultry by the National Agricultural Research Organization (NARO), the Faculties of Agriculture and Forestry (FAF) and of Veterinary Medicine (FVM) at Makerere University. The National Animal Genetic Resources Centre and Data Bank (NAGRC & DB), former Animal Breeding Centre (ABC) is a collaborator in this respect and reference centre. For example the LSRP (a NARO/DANIDA programme) has two research work related to breed conservation and improvement viz.

- Performance and characterization of goats in Uganda.
- On-farm evaluation and improvement of free range chicken.

Two research projects, funded by the DANIDA supported Cattle Breeding Project have been completed. The project on the Ankole Longhorn breed aimed at identifying and characterizing 'elite' performing cattle for milk production. And the project on the East African Shorthorn Zebu (Teso type) aimed at the analysis of phenotypic and genetic trends of growth traits using data collected between 1950 and 1974 at the Serere Agricultural and Animal Production Research Institute (S.A.A.R.I.).

3.2.4 Breed characterization

A collaborative research study with the International Livestock Research Institute (ILRI), on genetic distancing of cattle breeds in Uganda is underway was done. In their presentation, ILRI were able to provide evidence in support of the origin and spread of sanga cattle in Africa. This was by use of Y-specific microsatellite polymorphism to illustrate the geographical distribution and extent and extent of indicine and taurine Y-haplotype in indigenous cattle in sub-saharan Africa

3.2.5 Mobilization

Efforts to sensitize the stakeholders on conservation and improvement of farm AnGR

have been through workshops and newsletters, notably;

- A workshop on AnGR was held in Mbarara town between the 20th and 22nd March, 1995 under the theme 'Conservation and Utilization of Animal Genetic resources for humanity beyond the year 2000'.
- Articles focusing on the present and future conservation strategies have been published.
- Sensitization of stakeholders especially farmers during the training activities of the NAGRC & DB

3.2.6 Ecosystem sustenance

One of the top priorities in Agricultural development strategies is the provision of water to crops and livestock alike. Currently there is an on going programme of construction and / or rehabilitation of old dams / tanks in the cattle corridor stretching from North East Uganda (Karamoja) to south west (Ntungamo). There has been extensive community mobilization to solicit their involvement linking the provision of these facilities to the prevention of environmental degradation and survival of the animal species and communities that depend on them.

3.2.7 Breed multiplication

Besides the National Animal Breeding Policy (NABP), plans for further breed conservation and multiplication are equally emphasized by the Meat Production Master Plan (MPM). The Plan highlights the importance of indigenous animals and their contribution to the national economy and has identified the necessary investment program including the need to conserve farm AnGR for sustainable production.

Similarly the small ruminant and rabbits study is expected to lead to systematic development of the small stocks that have been neglected for far too long.

3.2.8 Capacity building

Formal courses, seminars and workshops are some of the avenues through which capacity of staff is enhanced for conservation and improvement of livestock. Specialist areas in which staff are being trained include;

- Multiple Ovulation and Embryo Transfer (MOET).
- Issues and research methods in conservation of indigenous AnGR.
- Livestock and environment interaction.
- Environment impact assessment.
- Management of gene banks.
- Management of data banks and Information Communication Technologies (ICTs).

3.2.9 Preparation of a National Biodiversity strategy and action plan.

The National Environment Management Authority (NEMA) has embarked upon the preparation of A National Biodiversity strategy and Action plan. Nine thematic areas are to be covered and they will include; Forestry, Wildlife, Wetlands, Biotechnology and Biosafety, Plant Genetic Resources, **Animal Genetic Resources**, Aquatic resources, Soil Biodiversity and Policy/Legal and Institutional issues. Consequently NEMA has appointed 9 task forces which have respectively been charged with the preparation of background documents.

The task force on Domestic Animal Diversity (DAD) ;

- critically analyzed the present status of Uganda's DAD.
- developed broad strategies and action plans to address the root causes of biodiversity loss in the livestock subsector.

The background document for DAD was prepared and presented in August, 1998. The action plan is yet to be received.

3.3 Planned activities

The main thrust by the Uganda Government on the conservation and improvement of Farm AnGR is embroiled in the aspirations of the National Animal Breeding Policy, which focuses on the provision of guidelines to all stakeholders.

The implementation plan emphasizes that;

- True stakeholder participation will mainly depend on identification of leaders and groups who are capable of influencing the rest of the participants.
- Participation must be based on an understanding of the intended responsibilities and the benefits each party will receive through the process. Participation without tangible results and benefits slows action.
- Respective capacity and demands of the various stakeholders be assessed and supported in form of capital infusion and human resource training at all levels.
- Strong and visible political commitment is necessary to provide additional authority to effectively coordinate the new measures.

The plan specifies the process of logical progression identifying the functions and tools necessary for handling issues of critical concern as they emerge and the appropriate management levels where rational decisions could best be expected.

The National Animal Breeding Policy Implementation Plan is comprised of five main strategy components namely;

- a) Rationalizing public and private sector roles.
- b) Strengthening technology and generation transfer process.
- c) Breed zoning and stratification of production enterprises.
- d) Dealing in animal genetic materials.
- e) National program for conservation and sustainable utilization of Farm Animal Genetic Resources.

3.3.1 Action steps of the National Program for the Conservation and Sustainable Utilization of Farm Animal Genetic Resources.

3.3.1.1 Identify, characterize and monitor existing species, breeds and strains of local and introduced animal populations. This will involve the following activities:-

3.3.1.1.1 compile the national inventory of the farm AnGR

3.3.1.1.2 monitor the population status of the AnGR for effective conservation and management.

3.3.1.1.3 compile information on unique qualities of the breeds through comparative evaluation and molecular descriptors.

3.3.1.1.4 obtain descriptive data on adaptation and production characteristics, details of the farming systems or agro-systems in which they are found.

3.3.1.2 Foster the use of a wider spectrum of breeds as a cost-effective methodology for ensuring survival of the gene pool. This involves the following activities;

3.3.1.2.1 develop and encourage use and conservation of breeds that are not presently of interest to farmers.

3.3.1.2.2 develop guidelines for a national animal genetic improvement programme, in particular the use of crossbreeding and establishing open and closed nucleus-breeding schemes.

3.3.1.3 Document the traditional knowledge that has helped produce and conserve the indigenous AnGR.

3.3.1.4 Establish complementary *in situ* and *ex situ* conservation schemes and promote activities and technologies that encourage cost-effective management of the breed resources and maintenance of genetic diversity.

3.3.1.5 Participate in the global coordination and policy formulation process for AnGR

management strategies and accelerated programs of research and training in areas related to farm AnGR.

3.3.1.6 Actively implement other activities and recommendations of the National Animal Genetic Resources Program already adopted (mentioned in section 3.2.2).

4.0 CATTLE GENETIC RESOURCES - STATISTICS, ATTRIBUTES AND USES

For the year 2000 the cattle population of Uganda was projected at 6.1 million (MAAIF, 1997). Indigenous breeds comprise 95.6% of this population while the exotic breeds and their crossbreds comprise the remaining 4.4%. The cattle population estimate of 1978 was 5.3 million but due to the civil strife of 1980 to 1986 and rampant epidemic diseases, the population declined by 21.5% to 4.16 million in 1986: However, since 1987 this trend was reversed and the cattle population is now on the increase.

The National Animal Breeding Policy (MAAIF, 1997) has put the indigenous breeds as comprising 50% Longhorn Ankole, 30% Zebu and 16% the Nganda and the related breed types.

In the 1960s / 70s the predominant cattle breed type was the East African Shorthorn Zebu which accounted for 60% of the total cattle population, while the Longhorn Ankole constituted 30% and the Nganda less than 10%. This change in the indigenous breed composition interpreted in the Ankole:Zebu ratio has drastically changed from 1:2.1 by 1960 to become 1.5:1 by 1991 (Mbuza 1995).

4.1 Indigenous breed types

There are 3 main indigenous cattle breed types in Uganda namely;

1. The Longhorn Ankole cattle which is an intermediate *Bos indicus* / *Bos taurus* breed type with a small cervicothoracic hump. It has relatively large body frame and a characteristically long and large horns
2. The East African Shorthorn Zebu which is a *Bos indicus* breed type with a small body frame, shorthorns and a large muscular thoracic hump.
3. The Nganda is an intermediate breed type of the above two breeds.

Table 4.1 below gives a summary of the indigenous cattle according to breed, type, categories, common names and areas where these breeds are common in the country in relatively large numbers.

Table 4.1; Breeds, types, categories, and areas of predominance of the indigenous

cattle

| Breed | Common names | Category | Type | Areas of predominance |
|----------------------------------|---------------------|-----------------|-----------------------------------|--|
| East African Shorthorn | Zebu | Small type | Nkedi Lugwere Usuku | Tororo, Palisa, Kumi |
| | | Large type | Karamajong Boran | Northern region, mainly Moroto and Kotido |
| Longhorn Ankole | Sanga Nsagalla | | Bahima | South western region i.e. Mbarara, Ntungamo, Rakai and parts of Mpigi. |
| | | | Kigezi | Kabale and Kisoro |
| Intermediate non-descript | Nganda | | Nganda Nyoro Nsoga Kyoga | Buganda, Bunyoro and areas of L.Kyoga. |

Source: Fintecs, (1997).

4.1.1 Main attributes of indigenous cattle in Uganda.

4.1.2 Main uses of indigenous cattle

In Uganda, like in most parts of Africa, it is estimated that over 90% of the national herd is owned by mixed farming smallholders and postoralists. The indigenous cattle breed types play a very important role in the lives of many rural Ugandan communities. These breeds traditionally provide a number of food commodities, draught power, clothing / bedding materials, building materials and perform various traditional functions. At a national level these breeds contribute 75% of the domestic milk supply and more than 95% of all the total beef production in the country (Mbuza et al, 1998).

Table 4.2 summarizes, in ranked form, the functions of indigenous cattle according to breed types in the country. Milk is the main commodity for which cattle are traditionally kept in Uganda. It is evident from, the table, that indigenous cattle have significant role to play in provision of incomes to the communities. Draught power is used by the people of Eastern Uganda who keep the Zebu cattle.

Table 4.2 The traditional uses of indigenous cattle genetic resources in Uganda.

| Commodity | Relative importance (score 0 - 100) of breed | | |
|---------------------------|--|------|--------|
| | Ankole | Zebu | Nganda |
| Food | | | |
| Milk | 90 | 60 | 70 |
| Meat | 40 | 40 | 20 |
| Blood | 5 | 5 | 0 |
| Ghee | 60 | 10 | 0 |
| Urine | 0 | 5 | 0 |
| Commercial sales | 40 | 50 | 90 |
| Draught power | 0 | 60 | 0 |
| Hides | | | |
| Sales | 60 | 60 | 80 |
| clothing, carpet, bedding | 20 | 5 | 7 |
| Food | 5 | 10 | 0 |
| Musical gadgets | 20 | 20 | 20 |
| Cow dung | | | |
| Manure | 30 | 30 | 80 |
| Building material | 20 | 20 | 10 |
| Social function | | | |
| Dowry | 80 | 80 | 2 |
| Exchange | 30 | 5 | 2 |
| Sacrifice | 10 | 2 | 0 |
| Hobby farming | 10 | - | 5 |
| Security | 40 | 40 | 60 |

Source: Mbuza (1995)

The social function of dowry payment is highly rated for the Ankole and Zebu cattle, this reflects cultural obligation traditionally practiced by the peoples in the western, Southern, Eastern and Northern regions of the country.

4.1.3 The sex structure of the indigenous cattle breed population

Despite the variety of uses / functions of cattle as presented in table 4.2 above, the high rating confirms that, traditionally the tendency for keeping cattle is to ensure a constant supply of milk. This is in agreement with a study by de Leeuw and Wilson (1987) which showed that there is a very close link between this tendency and the sex structure with the indigenous cattle herds. The study showed that most African traditional cattle owners deliberately manipulated the sex herd structure in favour of the female in order to assure a constant supply of milk. Table 4.3 summarizes the different breeding female to breeding male ratios of indigenous cattle in Uganda.

Table 4.3: The breeding structure of indigenous cattle in Uganda.

| Cattle breeds | Zebu | Ankole | Nganda |
|---|-------------|---------------|---------------|
| Herd component | | | |
| Breeding females (%) | 38.3 | 42.1 | 39.7 |
| Breeding males (%) | 7.8 | 4.8 | 4.9 |
| Breeding males: Breeding females | 1:4.9 | 1:8.8 | 1:8.1 |

Source: Mbuza (1995)

It should also be noted that for the once transhumant ethnic Bahima who are the majority owners of the Ankole cattle, milk forms a main component of their diets. This dietary traditional practice is supported by table 4.3 which shows a significantly different breeding-males-to-breeding-females ratios, due to sex structure manipulation of the herds, where the breeding males as a percentage of the breeding females 11.4% in the higher yielding Ankole cattle breed as compared to 20.4% breeding males of breeding females in the Zebu.

4.1.4 Performance of indigenous cattle breeds in Uganda

A summary of the production, reproductive and growth performance of the Ankole, Zebu and Nganda cattle are shown in Table 4.4.

Table 4.4 Production, reproductive and growth performance of indigenous cattle in Uganda.

| Breed | Dairy characteristics (1) | | | | | Growth characteristics (2) | | | |
|---------------|---------------------------|-----------------------|---------------------|-------------------|-------------------------|----------------------------|---------------------|------------------|----------------|
| | Age at first calving (Mo) | Lact. milk yield (kg) | lact. length (days) | Dry period (days) | Calving interval (days) | Birth wt (kg) | wt at 6 months (kg) | Yearling wt (kg) | Mature wt (kg) |
| Zebu | 43 | 693 | 239 | 123 | 362 | F:20.9 M: na | 94.8 na | 195.5 na | 298.5 na |
| Ankole | 51 | 1,106 | 211 | 161 | 379 | F: 21.4 M: 22.3 | 91.8 104.8 | na na | 339 410 |
| Nganda | 42 | 859 | 267 | 153 | 420 | F: 19.1 M: 19.5 | 91.2 102.5 | 181.0 217.3 | 296 453 |

Legend: *na - not available; F - Female; M - Male*

Sources: (1) Zebu: Galukande et al, (1962), Ankole: Sacker and Trail (1996), Kiwuwa (1995), Ndumu (2000). Nganda: Mahadevan and Marples (1961).

(2) National Animal Breeding Policy, (MAAIF, 1997), Ndumu (2000).

4.1.5 Attributes of indigenous cattle in Uganda.

Based on previous studies by different workers it has been shown that indigenous cattle in Uganda possess adaptive attributes of indigenous tropical cattle which include; Heat tolerance, disease tolerance and parasite resistance.

4.1.5.1 Heat tolerance of Ankole and Zebu cattle

By a study undertaken to compare the heat tolerance of exotic and indigenous cattle at Mpwapwa, Tanzania (cited from FAO Agric. Studies No.1) it was observed that thick coats were a factor in heat regulating ability and that exotic germplasm compromised this ability among the tropical indigenous stocks, the rate of hair growth was determined for Zebu, Ankole, 3/4 Ayrshire, 1/4 Zebu, 3/4 Holstein. The slowest growth was observed on the Zebu and Ankole while the 3/4 temperate breeds had the fastest rates.

Similar results were obtained with respect to sweating ability. Microscopic sections (measuring about 0.8 square mm) were examined for each breed. An average 9.33 sweat glands were found in the skins of 1/2 Zebu crossbreds and an average of 5.25 glands in the same area of skin of 1/4 Zebu crossbreds while in the Hostein Freisian there were only a few glands and these were difficult to find (cited by FAO Agric. Studies No.1).

There is evidence to suggest that anatomical structures unique to tropical breeds, such as the extra skin of the dewlap and the penile sheath may provide a greater amount of surface area per unit body weight thus providing a greater opportunity for the loss of heat from the body, hence the ability of these breeds to withstand the intense tropical heat.

4.1.5.2 Typanotolerance in the East African Zebu

There is evidence to show that the East African Zebu possess some degree of Typanotolerance and this is indicated by studies to show a graded series of breeds showing increasing degree of trypanotolerance worked out by Soller (1994) and they are as follows; The hypersusceptible Ayrshire < Temperate exotic cattle x indigenous cattle crossbreds < West African Zebu < East African Zebu < West African Shorthorn (Baoule) < West African Longhorn (N'dama) < wild ruminants.

4.1.5.3 Tolerance to theileriasis by the Ankole cattle

A study to compare the levels of tolerance to theileriasis by exotic and Ankole cattle was assessed by exposure of the Longhorn Ankole breed and the Ankole x Jersey crossbred cattle to theileriasis (Paling et al, 1991). Based on correlated phenotypic observations namely, the Macroschizont Index (MSI) and Mortality rate it was shown that the mean MSI level of infected crossbred animals was three time higher than that of infected Ankole cattle and that the mortality following infection with *T. parva* was twice as high in the crossbreds (64%) than in the Ankole cattle (32%). By this study, it has been shown that the partial tolerance of the Ankole cattle to theileriasis has a genetic basis and that this lies in the ability of the Ankole to limit the explosive multiplication of macroschizonts resulting in less severe damage to the lymphoid tissue during the acute phase of the disease.

4.1.5.4 Tick resistance in the Sanga breed type

Available evidence on tick resistance of the Sanga breeds e.g. the Ankole, was reported by Norval (1992) from field observations based on non-immunological factors, namely morphology and behavior of the host, which seems to play a role in the different levels of tick resistance exhibited by temperate and tropical breeds. He noted that when ticks are detected by cattle with previous tick experiences, the animals remain continuously alert and do not lie down. They prevent ticks from climbing on their legs by kicking, stamping and licking their feet. The indigenous Sanga cattle were observed to have a better developed tick avoidance response than the *Bos taurus* types and their crossbreds. The Sanga breed was also noted to have a more effective tail in removing walking ticks. And since it has a higher heat tolerance than the *Bos taurus* and the crossbreds it is not stressed on hot days and does not lie down frequently in the shade to become tick infested. Further more, it was observed that the short haired and thick skinned Sanga show a more intense "flickering" of the skin to remove walking ticks than the more hairy and thin skinned *Bos taurus*.

4.2 Major Exotic breeds introduced to Uganda.

4.2.1 Types of exotic breeds

Exotic cattle were first introduced in Uganda in the late 1950s, this was followed by the institution of Artificial Insemination services in 1960. As a result there was crossbreeding coupled with continued importation of exotic cattle. Table 5.5 below gives the breeds introduced in the country which comprise dairy, beef and dual purpose animals. All but 3 breeds, namely; Boran, Sahiwal and Beef Shorthorn which are *Bos indicus* the rest of the breeds are *Bos taurus*.

Table 4.5 Major breeds introduced in Uganda

| Dairy type | Beef type | Dual purpose type |
|---|--|----------------------|
| Jersey Guernsey Ayrshire Brown Swiss Friesian | Hereford Aberdeen Angus Charolais Large E. African Zebu (Boran) Red poll | Simmental Sahiwal |
| | Beef Shorthorn | |

Source: Fintecs Ltd, (1997).

4.2.2 Population trends among exotic cattle and their grades.

The population estimates of exotic cattle and their crossbreds was 247,871 in 1997. Table 4.6 below attempts to give a summary of the population trends of exotic cattle and their grades between 1964 and 1997.

Between 1964 and 1982 the total cattle population in the country increased by 27.5% while that of exotics and grades increased almost 10 fold from 6,900 to 73,961 cattle. After 1982 to 1987 the pure exotic cattle population decreased by 8% although the grade cattle increase more than two fold. During this period the National herd was undergoing a decline, by 1987 the total population had dropped by 10.6% as a result of the vagaries of civil strife during that period.

Table 4.6 Number of exotic cattle and their grades compared with the total cattle population. 1964 to 1997.

| Year | Exotics | Grades | Exotics and grades | Total |
|-------------|--------------------------|--------|--------------------|-----------|
| 1964 | 4,600 | 2,300 | 6,900 | 3,496,797 |
| 1982 | 40,988 | 32,973 | 73,961 | 4,821,100 |
| 1987 | 37,229 | 72,229 | 109,932 | 4,310,000 |
| 1991 | | | 139,545 | 5,121,000 |
| 1994 | (included in the grades) | | 208,117 | 5,106,000 |
| 1995 | | | 220,604 | 5,265,423 |
| 1996 | | | 233,841 | 5,430,005 |
| 1997 | | | 247,871 | 5,599,920 |

Sources: Annual reports of the Department of Veterinary Services and Animal industry (1965); Census of Agriculture and Livestock (revised figures) (1994); MFED Background to the budget, (1995/96); MAAIF reports.

The two fold increase in the grade cattle population during the period of general cattle population decline was due to the level of crossbreeding in the country using both exotic bulls and Artificial Insemination.

4.2.3 Main uses and attributes of exotic cattle and their grades in Uganda.

The exotic cattle and their grades are valued for their potential for high milk / butterfat production and their potential for high growth rates and meat production.

The crossbreeds are valued for their ability to exhibit hybrid vigor and / or complementarily of parental breeds. Exotics and grades are kept for specialized purposes i.e. milk or beef production.

The production by exotics and their grades has not met with positive attributes alone but a number of disadvantages have been noted and they include the following;

- high susceptibility to endemic diseases
- high feed requisite
- high input and management requirements
- poor tolerance to tropical temperatures

4.3 BREED PHYSICAL CHARACTERISTICS

4.3.1 Ankole Longhorn

Breed Reference Name: Ankole Longhorn
Type: Bahima
Local synonyms: Watusi, Sanga, Nsagalla



Mayenje – cow
Kayenje – heifer
Ruhenje – bull



Widely spaced small spots
Predominant color (in this case dark brown) with
some few spots (in this case white)



Ngabo – cow
Kagabo – heifer
Rugabo – bull



Big patches of two
colours.



Bihogo – cow
Kahogo – heifer
Ruhogo – bull



Dark red with no white spots



Kyozi – cow
Kozi – heifer
Rwozi – bull



Entirely black



Kyasha – cow
Kasha – heifer
Rwasha – bull



Pronounced
white patch
the forehead



Mpuga –cow
Kahuga – heifer
Ruhuga –bull

} white spot on the sides
 and around the stifle



Ngobe-cow
Kagobe –heifer
Rugobe - bull

} Strips of colors



Bugondo –cow
Kagondo –heifer
Rugondo – bull

} Evenly spaced spots



Kiremba
Karemba
Ruremba

} White on the ventral side



| | | |
|-----------------|---|-----|
| Siina – cow | } | Red |
| Kasiina –heifer | | |
| Rusiina - bull | | |

Breed physical characteristics:

| | | | |
|------|-------------------|--|--|
| COAT | Colour: | Multi-color, either solid or spotted known by different names according to the colour patterns and sex. Names for heifers usually start with K , for the bull with R and varies with the cow | |
| | Hair type: | Straight | |
| | Hair length: | Short | |
| HEAD | | Medium long | |
| | Face Profile: | Flat, dished (shallow dish) | |
| | • Muzzle colour: | Pigmented (black), not pigmented (brown) | |
| | Horns: | present with ~ 2% polled | |
| | Horns shape: | Lyre (Curve outward and upward and finally inwards) curved, straight & symmetrical | |
| | Horn length: | Long, Large diameter | |
| | Horn base: | Large & proportional to horn length | |
| | Horn spacing: | <i>Medium</i> | |
| | Horn orientation: | <i>Upwards, but can be lateral, forwards or pendulous</i> | |

Ear size

| | | |
|--------------|-------------------------|-----------------------------|
| | <i>Colour of tips:</i> | <i>No particular colour</i> |
| | Ear shape: | Straight-edged |
| | Ear orientation: | Lateral |
| NECK | | short neck with deep dewlap |
| CHEST | | Narrow |

BODY

| | |
|--------------------------|---------------------------|
| Body Frame: | Medium to Large |
| Back profile: | Straight |
| Rump profile: | Sloping |
| Hump: | barely visible on the cow |
| Hump size | small |
| Hump orientation: | erect |
| Hump location | cervicothoracic |
| Dewlap | small to medium |
| Naval flap | small to medium |
| Udder | small |
| Legs | long |
| Hoofs | dark |

TAIL

| | |
|------------------------------|-----------------------------------|
| Length | long |
| Thickness at the base | medium to wide |
| Colour of tail switch | uniform (brown, black, white etc) |

The figures above show the color variations, which are a criterion for the local nomenclature, presented in the table below.

4.3.1.1 Identification of animals according to color patterns

Color identification starts with the whole body (for solid coloration), if multicolored then identification starts by looking at the forehead, if there is nothing peculiar then one looks at the eyes, ears, sides, hindquarter and finally the ventral side in that order. This identification is for single animals but in a herd the identification of the young animals changes according to the colour of the mother. For example a dark red female calf (kahogo) born to black dam (Kyozi) will be called Kahogo ka Kyozi (dark red female calf born to a black dam).

| Main color and patterns of coat | Local nomenclature according to color and patterns | | |
|---|--|---------------------------|----------|
| | Heifer | Males (Young or adult) | Cow |
| Dark red | Kahogo | Ruhogo | Bihogo |
| Red | Kasiina | Rusiina | Siina |
| Light brown/ | Kagaju | Rugaju | Gaju |
| Black | Kozi | Rwozi | Kyozi |
| Light brown | Kasa | Rusa | Kisa |
| Evenly spaced small spots | Kagondo | Rugondo | Bugondo |
| Widely spaced white spots | Kayenje | Ruyenje | Mayenje |
| With Patches | Kagabo | Rugabo | Ngabo |
| With white or black hairs on the eyes and / or ears | Kabarasi | Rubarasi | Barasi |
| With a white head (rare) | Kahinda | Ruhinda | Hinda |
| Strips of colour | Kagobe | Rugobe | Ngobe |
| White ventral side | Karemba | Ruremba | Kiremba |
| White patch on the flanks | Kahuga | Ruhuga | Mpuga |
| White spot on the flanks | Kashamaitu | Rushamaitu | Shamaitu |
| Brownish gray | Kashama | Rushama | Nshama |
| Strips of white | Kabamba | Rubamba | Ibamba |
| Roan | Kahura | Ruhura | Ruhuzumu |
| Mainly white | Kajeru | Rujeru | Njeru |
| White patch on forehead | Kasha | Rwasha | Kyasha |

4.3.1.2 Natural production environment

The breed is indigenous to the open and wooded Savannah grassland of western and south-western Uganda. Presently, the breed can be found in three main agro-ecological zones, namely; the southern and western tall grassland zone, the pastoral dry and semi-arid rangeland zone and the high altitude zone of Kigezi. This type of cattle is mostly kept by the

pastoral communities in the Central (Mpigi) western and southwestern parts of Uganda. Many are also found in the districts south and southwest to lake kyoga (Kayunga, Luwero, Nakasongola ,Masindi and Kiboga). The highest concentration is Mbarara and Ntugammo districts. This is a long horned sanga and is similar but smaller to the Watusi of Rwanda. The animal has long and curly horns used to clear obstacles during feeding but which are a hindrance to movement in thickets.

These area have fair to high soil productivity with mean annual rainfall ranging from 900 – 1,500 mm; temperature from 17 – 27 °C. The natural pastures in these areas are of moderate to low nutritive value.

4.3.2 East African Shorthorn Zebu

Breed Reference Name: East African Shorthorn Zebu

Strain Teso (small Zebu type);



Breed physical characteristics:

| | | |
|-------------|---------------|--|
| COAT | Color: | Solid or spotted; multi-colored – black, black & white (predominant) gray, roan, brindle |
|-------------|---------------|--|

| | | |
|------------------------|---------------------------------|--|
| | Hair type: | Straight |
| | Hair length: | Short |
| HEAD | | Medium long |
| | Face Profile: | Flat |
| | • Muzzle colour: | Pigmented |
| | Horns: | polledness fairly common particularly in females |
| | Horns shape: | Straight |
| | Horn length: | Short |
| | Horn base: | |
| | <i>Horn spacing:</i> | <i>narrow</i> |
| | <i>Horn orientation:</i> | <i>Upward and a few lateral</i> |
| <i>Ear size</i> | | |
| | <i>Colour of tips:</i> | <i>coloured</i> |
| | Ear shape: | straight-edged |
| | Ear orientation: | lateral |
| BODY | | |
| | Body Frame: | small to medium |
| | Back profile: | straight |
| | Rump profile: | roofy |
| | Hump: | |
| | Hump size | small in females and big in males |
| | Hump orientation: | erect in females and floppy in males |
| | Hump location | thoracic |
| | Dewlap | small |
| | Naval flap | medium to large |
| | Udder | small |
| | Legs | short and stout |
| | Hoofs | pigmented |
| TAIL | | |
| | Length | long |
| | Thickness at the base | not wide |

Color of tail switch

uniform

4.3.2 Natural production environment

In Uganda these are found mostly in the East and North East of the country. Between the extreme types (large and small), there are numerous gradations in size, which are a reflection of the nutritional environment. The Ngisu are a strain of the breed found around Mt. Elgon. They are large, have long hair along the backline, highly susceptible to tick born diseases particularly ECF and are not tolerant to hot and dry weather. The large type is believed to have originated from an arid hot environment and the small from the higher rainfall areas. These animals are kept by traditional cattle keepers who depend on both livestock and crop production (with the exception of the Karamajong who do very little crop production). The animals, particularly the males, are used to provide draft power in ploughing the land, carrying produce and fetching water. These animals are robust with good temperament. The live weight could vary from 150 to 450 kg for adult animals. They are not good milkers producing about 1-2 litres per day. The inter-calving interval is shorter in these than in the Ankole. This may be due to management practices where the males among the Ankole are castrated and in the Teso farming system these are left intact for ploughing purposes. The owners claim that intact males plough better than castrates.

4.3.3 Nganda cattle

Breed Reference Name: Nganda
Type: large type



Breed physical characteristics:

COAT **Color:** Usually solid – light brown, black, roan, black & white, white & brown

Hair type: Straight

Hair length: Short

HEAD Medium long

Face Profile: Flat

Muzzle color: Pigmented

Horns: polledness fairly common particularly in females

Horns shape: curved but can also be straight

Horn length: medium

Horn spacing: wide

Horn orientation: Upward, forward

Ear size

Colour of tips: coloured

Ear shape: straight-edged

Ear orientation: lateral

BODY

| | |
|--------------------------|--------------------------------------|
| Body Frame: | small to large |
| Back profile: | straight |
| Rump profile: | roofy |
| Hump: | |
| Hump size | small in females and big in males |
| Hump orientation: | erect in females and floppy in males |
| Hump location | thoracic |
| Dewlap | small to medium |
| Naval flap | small to medium |
| Udder | small |
| Legs | short to medium |
| Hoofs | pigmented |

TAIL

| | |
|------------------------------|---------|
| Length | long |
| Thickness at the base | wide |
| Color of tail switch | uniform |

4.3.3.1 Natural production environment

These are kept in areas around Lake Victoria with High rain fall above 1500mm per year and temperatures not exceeding 27° C. The natural pasture in these areas is of high Nutritive value and available throughout the year in most parts. The animals are believed to be intermediate between the Ankole and the Short East African Zebus.

5.0 SMALL RUMINANTS

5.1 GOATS

5.1.1 Population trends

The goat population in Uganda was estimated at 6.5 million in the year 2000. Over the years the goat population has been characterized by fluctuations. From 1945 to 1959 the goat population increased by 29% This trend was reversed in 1960 and by 1963 the population had dropped by 28% Between 1964 and 1968 the population remained relatively stable. Between 1980 and 1984 the population increased by 47.4% Thereafter the population remained stable until 1987. Since then there has been a steady increase in population of 8.6% per annum. **It should be noted that this increase in population has occurred without significant boost in terms of investment and care geared towards increased production.**

5.1.2 Indigenous goat breed types

Over 99% of the population comprises the indigenous breeds. There are 3 main breed types namely; the Small East African (SEA) goat which comprise 42% of the total population; the Mubende goat breed type comprise 33%, while the Kigezi goat breed type comprise 25%.

5.1.2.1 Characteristics, main use and location of indigenous goats in the country

Indigenous goats are kept by subsistence small holder farmers, postoralists and subsidiary enterprises on large commercial cattle ranches. Their characteristics, main use and location are summarized in table 5.1.

The SEA goat is a relatively smaller breed and is kept primarily for meat. The Mubende goat is the larger of the indigenous breed types and is kept for meat. **Its hide is highly rated in terms of quality on international standards.** The Kigezi goat is intermediate in size, besides meat and skin the breed is used to provide milk for sick children from very poor homes. Traditionally especially among the Bakiga and Banyankole, there are beliefs that goats milk cures measles. Other functions include payment of dowry, gifts and a ready source of cash (Mbuza et al 1998).

Table 5.1 Breed, size coat characteristics, use and location of indigenous goat breed types.

| Breed | Size (kg) | Predominant coat color | Coat hair characteristics | Main uses | Area of predominance |
|--------------------------------------|---|-------------------------------|----------------------------------|--|--|
| Small East African (SEA) goat | 20 - 30 mature wt | Various | Short fine hair | - Meat - Skin - Dowry - Ready cash | Especially Northern & Eastern Savannah & drier ecological areas. |
| Mubende goat | M: 30 - 35 F: 25 - 30 | Black | Short hair giving a glossy coat | - Meat - Skin - Ready cash | Mainly central region |
| Kigezi goat | Intermediate between the above 2 breeds | Black and gray | Thicker hair coat | - Meat - Skin - Milk - Dowry - Gifts - Ready cash | Highland ecological niches of Kabale, Kisoro & Rukungiri districts |

Source: Mason and Moule, (1960).

5.1.3 Introduced goat breeds

The introduced goat breeds and their crosses are estimated at not more than 5,000 in number in the country. They include the Toggenburg, Anglonubian and the Saneen breeds.

A crossbreeding program with indigenous breeds to enhance milk and meat yield was began in the early 1960s but was later abandoned following the period of civil strife of the 1970s and early 1980s. Currently the exercise has been reactivated and another recently introduced Boer goat breed from South Africa is being multiplied at Buyana Makerere University farm for meat production. The Boer goat is increasingly becoming popular and is likely to lead to significant changes in breed ratios with time (Mbuza, 1998).

5.1.4 Breed Physical Characteristics

5.1.4.1 The Small East African Goat

Breed reference name: Small East African.
Strain: Ugandan.



Breed physical characteristics:

Generally small but not dwarfed.

Coat : Many different colors
Color : Patterns are variable including red and white, but gray is predominant

Coat Description:

Fiber type : hair
Hair type : straight
Hair length : short

Males have mane covering the full length of the back

Horns : Have relatively small light horns
Are common both to male and female

Beards are a common feature in males.

Ears : Vary in type
. Size : short
Orientation : prick; horizontal

Height at withers: averaging 50cm

Live weight : 20-25kg

Population : 2.3 million

Primary value: meat

Sexual maturity : before 4 months

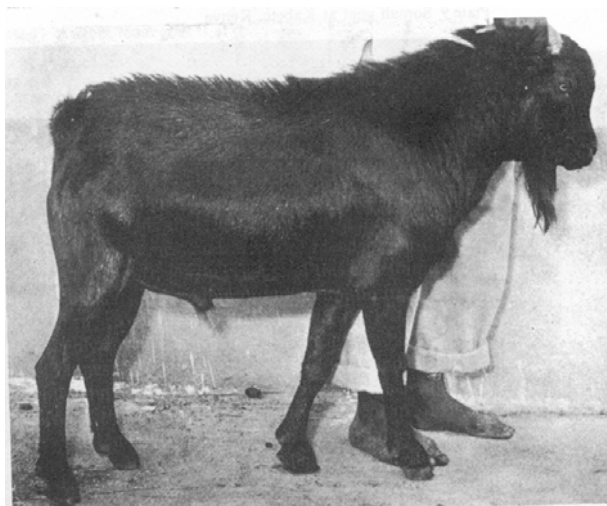
5.1.4.1.1 Natural Production Environment

These goats are kept in the northern and eastern parts of the country. These areas are characteristic of short grassland savannas. The rainfall ranges between 500-750mm. They are found in other drier ecological zones. These areas are 10% arable and 90% rangelands. The areas are sparsely populated. They constitute 42% of the goat population in Uganda.

5.1.4.2 Mubende goat

Breed Reference Name: Mubende

Strain: Ugandan



Breed physical characteristics

COAT **Colour:** Predominantly solid black, but may have shades of white, grey and spotted
Skin: Glossy (high quality)

Coat description

Fiber type: hair
Hair type: straight
Hair length: short & fine

HEAD Medium to long
Males have mane, but commonly polled

Face Profile: concave at the top and flattens out towards the mouth
• **Muzzle colour:** pigmented

Horns:

Horns shape: curved
Horn length: short

Horn orientation: *backwards*

Ear size

Ear shape: medium
Ear orientation: lateral

BODY

Body Frame: small to large
Back profile: straight
Height at Withers: average 60-65 cm
Live weight : . Males: 30-35kg
Females: 25-30kg

5.1.4.2.1 Natural production environment

These are mainly kept in Mubende district and north west of Lake Victoria. But they are also found in Mpigi, Bushenyi, Ntungamo and Bunyoro. This area is characterized by western and southern tall grassland zone producing perennial and annual crops in a mixed farming system. The rainfall distribution is above 700mm. The area is also known as the western-banana-cattle farming system. The population is 1.8-2 million.

5.1.4.3 Kigezi goat

Breed Reference Name: Kigezi
Strain: Ugandan

(Pictures not included)

Breed physical characteristics

Generally small, compact and short legged

Coat : Thicker hairy coat than the Small East African Goat and Mubende
Sparse long hair around the hind legs

| | | |
|-------------|---|------|
| Fiber type | : | hair |
| Hair type | : | long |
| Hair length | : | long |

Colour : Predominantly brown but other colours also exist like black
gray

Horns are small, partially upright and bending backwards

Ear size: small to medium

Live weight: 25-30kg

Population: 1.5million; 25% of the goat population

Distribution:

These goats are kept in highlands (montane) areas of Uganda particularly Kabale and Kisoro. But surrounding districts of Rukungiri and Kanungu also keep them. These areas grow annual and perennial crops. The Kigezi breed type is kept among the high human populations of southern Uganda.

5.2 SHEEP

5.2.1 Population trends

According to projections of the National Animal Breeding Policy (NABP) (MAAIF,1997), the sheep population was estimated at 1.7 million. Between 1955 and 1968 the sheep population dropped by 28%.(from 1.1 to 0.8 million). Despite the Economic war of the 1970s the sheep population recovered and by 1981 there were an estimated 1.4 million sheep. This can partly be explained by the fact that the by then regime favored a certain religion which uses sheep at certain of their ceremonies. Indeed once that regime had been ousted, the sheep population succumbed to the general livestock population decline of the early 1980s due to the by then prevailing civil strife. However since 1987 there was a reversal of this decline in trend.

The sheep population has undergone significant fluctuations characterized by declines and recoveries. Consequently, the population has remained fairly stable over the years, from 1.1 million in 1935 to 1.4 million in 1981 to the latest estimate of 1.3 million in 1997. Mutton and lamb are not as popular as goats meat especially in the southern and western parts of the country this may have contributed to the lack of significant increases in population due to neglect.

5.2.2 The indigenous sheep breed types

The national sheep flock is predominantly indigenous and comprises 3 main non-descript breed types namely; the Masai, the East African Black head, and the East African long tailed; their respective flock compositions are 22%, 50% and 27%. A full assessment for their impact as potential breed resource for meat production is needed and a full and detailed characterization of the 3 breed types is required for economic exploitation.

5.2.2.1 Characteristics and uses of indigenous sheep

Its a common practice to keep indigenous sheep along with cattle, unlike goats which can be kept as a monospecies in a family. Among Ugandan communities sheep are kept mainly for meat although they perform important social and traditional roles; sheep are slaughtered at important Moslem festivities and they are offered as sacrifice among traditional healers, the black and white coated animals are particularly prized. Mutton and lamb are popular in Eastern and central Uganda. It is not popular in the western and southern regions except in parts of Bushenyi i.e. Igara and Bunyaruguru (Mbuza et al, 1998).

The characteristics and areas of predominance of the indigenous sheep breed types in Uganda are summarized in table 5.2.

Table 5.2: Breed, size, coat characteristics and location of indigenous sheep.

| Breed | Size | Coat characteristics | Other characteristics | Area of predominance |
|--------------------------|-----------------------------------|--|---|---|
| Masai | - | Red / Brown | -Short legged -Fat tailed males -Seasonal breeding -1 lamb/year -Twinning; rare | Eastern and Northern Uganda, including Karamoja |
| East African black head | M - 40 kg F.- 24 - 30kg | Black or pied with coarse hairy coat | -Short legged -Fat tailed -Seasonal breeding -1 lamb/year -Twinning; common | Western region, especially Mbarara, Bushenyi and Ntungamo districts |
| East African Long tailed | Are generally small 20 - 25 kg | Of many colours, often hairy with a fine down under-coat | - | All over Uganda |

Sources: Mason and Moule, (1960); Fintecs Ltd.(1997).

5.3 Breed physical characteristics

5.3.1 Masai

Breed Reference Name: Masai

Strain: Ugandan



Breed physical characteristics:

Colour: : Red/brown

Coat description:

Fiber type : hair

Hair type : straight

Legs : short

Males :Fat tailed and horned

Seasonal breeding; 1 lamb per year

Twinning is rare

Distribution:

Eastern and northern areas of Uganda including Karamoja (north eastern)

Population: estimated at 200,000

5.3.2 East African Black Head

Breed Reference Name: East African Black
Strain: Ugandan



Breed physical characteristics:

Colour: Black/brown head
Short legged
Fat tailed
Coarse hair coat

Distribution

Western Uganda especially former Ankole district
Herded together with cattle

Live weight: 40kg male
24-30 kg female

Seasonal breeding 1 lamb a year
Twinning relatively common

Population: approximately 500,000

5.3.3 East African long tailed

Breed Reference Name: East African Long tailed
Strain: Ugandan



Colour: have many different colours

Coat : hairy with a down under coat
Population: 300,000

Distribution: All over Uganda
They are small in size
Live weight: 20-25kg

5.2.3 Introduced breeds

In the past, exotic breeds of the corriedales, Rounney Marsh and Merino were introduced for the highland zones of Kabale, Mbale and Kapchorwa districts but this programme had no significant impact. A few Merino sheep are being reared in Kabale district but their number is not Known (Mbuza et al, 1998).

5.4 Attributes of indigenous small ruminants (shoats)

The following review of shoat attributes is based on justifications put forward by Rege, (1994) for their improvement and conservation. Only those attributes applicable to Uganda's shoats are mentioned.

1. Because of their adaptability to a wide range of environments, shoats utilize a wide variety of plant species and are thus complimentary to cattle. There is no overt element of direct competition for feed.
2. The Economic enterprise models reviewed by Kiwuwa (1983) showed that goat keeping in Kenya gave significantly more returns per animal unit than keeping

sheep. The small East African goat provided 17% higher net returns than similar enterprises based on the Red Masai. Both shoat breeds are indigenous to Uganda. This study is in agreement with grazing ability of goats, in that they graze more effectively and selectively than any other domestic livestock species. In addition goats are better browsers than sheep.

3. Goats can walk longer distances in search for feed than do other domestic livestock.
4. Due to short generation intervals and high reproductive rates, shoats have a higher reproductive efficiency.
5. The small size and early maturity of the shoats give them several distinct economic advantages in smallholder situations such as;
 - They can sufficiently utilize marginal and small plots of land.
 - The risk on investment is reduced by smaller individual size allowing more production per unit of investment.
 - There is a faster turnover of capital because they sexually mature early and are younger at slaughter.
 - Their smaller carcasses are easier to market and can be consumed in a short period of time. This is important as most rural areas lack proper storage facilities.
 - Their strong flocking instinct (gregarious) makes herding by younger and older members of the family possible, allowing labour to be used more efficiently.
6. Because of their unique anatomical and physiological characteristics, small ruminants appear to withstand drought better than cattle:-
 - their anatomical features of slim trunk and slender limbs provide them with a large surface area and hence can dissipate excess heat by non-evaporative cooling more efficiently.
 - physiologically, their reparatory system has a large proportion of dead space which facilitates heat dissipation via respiratory water vaporization without the need for severe panting.
7. Small ruminants can be kept in mountainous and dry areas where cattle cannot do well, so most parts of Uganda are suitable for small ruminants.

5.5 Flock structure of indigenous shoats in Uganda

The flock sex structure of indigenous shoats is summarized in table 5.3 .

Table 5.3: Breed and sex structure among indigenous small ruminants.

| Components | Goats | | | Sheep | | |
|---|-------|---------|--------|-------|-----------------|------------------|
| | SEA | Mubende | Kigezi | Masai | E.A. Black head | E.A. long tailed |
| Breeding females (%) | 47.3 | 54.0 | 57.7 | 58.0 | 63.8 | 57.3 |
| Breeding males (%) | 14.2 | 15.3 | 12.8 | 21.5 | 12.5 | 21.0 |
| Breeding males: Breeding females ratio | 1:3.3 | 1:3.5 | 1:4.5 | 1:2.7 | 1:5.1 | 1:2.7 |

Source: Fintecs Ltd. (1997).

The males represent lower percentages among the small ruminant population. They are lower in terms of population among the Kigezi goats when compared to the SEA goats or the Mubende goats. A similar trend is observed for the East African Black head when compared to the Masai and the East African long tailed among the sheep population.

5.6 Reproductive performance and viability of indigenous small ruminants

Table 5.4 below summarizes the comparative information on sheep and goats for reproductive and viability based on data from the fat tailed sheep breed type and the Mubende goat breed type.

Goats and sheep in Uganda had comparable reproductive performance (161% lambing, Vs 151% kidding). Sheep would twin less frequently but this is made up for by a shorter interval between births (255 in sheep vs 290 in goat). In this particular experiment, because of the high kid mortality among the goats of 37.5% compared to 19.1% lamb mortality among the sheep, the latter breed weaned 1.3 lambs per year while the former weaned an average of 0.97 kids per dam.

Table 5.4 Comparison of the reproductive performance and viability of sheep and goats.

| Year | Species | Breeding females | lambs / kids born | lambling /kidding rate | lambs / kids died | lamb/kid mortality rate | Lamb/kid weaned per dam |
|----------------|----------------|-------------------------|--------------------------|-------------------------------|--------------------------|--------------------------------|--------------------------------|
| 1960 | Sheep (1) | 58 | 88 | 152% | 28 | 18.0% | 1.50 |
| | Goat (2) | 62 | 105 | 168% | 48 | 47.0% | 0.92 |
| 1961 | Sheep (1) | 34 | 60 | 176% | 13 | 31.8% | 1.02 |
| | Goat (2) | 34 | 45 | 132% | 11 | 24.4% | 1.00 |
| 1962 | Sheep (1) | 48 | 77 | 160% | 2 | 21.7% | 1.55 |
| | Goat (2) | 23 | 34 | 148% | 10 | 29.4% | 1.04 |
| 3 years | Sheep (1) | 140 | 225 | 161% | 43 | 19.1% | 1.30 |
| | Goat (2) | 119 | 184 | 155% | 69 | 37.5% | 0.97 |

Legend: (1) Fat tailed sheep, (2) Mubende goat
Fintecs Ltd. (1997)

5.7 Growth performance of small ruminants in Uganda.

The growth performance of shoats in Uganda is given by the comparative data for the fat tailed sheep the Mubende and the SEA goats summarized in table 5.5.

The respective average birth weights of the fat tail sheep, Mubende goats and the SEA goats are 2.4, 2.0 1.6. Growth rates are highest soon after birth up to 6 months and sharply decreases between 6 and 12 months. The fat tailed sheep consistently performed at higher averages for all the weight traits.

Table 5.5 Comparative Average Daily Gain (ADG).

| Sex | Species type | Birth wt (kg) | 6 month wt (kg) | 12 month wt (kg) | 18 month wt (kg) | 24 month wt (kg) | Average Daily Gain (AvGD) | | | |
|---------------|--------------|---------------|-----------------|------------------|------------------|------------------|---------------------------|-----------------|------------------|------------------|
| | | | | | | | 0 - 6 mo mo. gm | 6 - 12mo mo. gm | 12 - 18m0 mo. gm | 18 - 24mo mo. gm |
| Male | Sheep (1) | 2.4 | 5.9 | 23.0 | 28.1 | 30.3 | 74 | 38 | 35 | 19 |
| | Goat (2) | 2.0 | 13.3 | 19.3 | 25.2 | 31.5 | 62 | 35 | 32 | 35 |
| | Goat (3) | 1.6 | 9.1 | 13.5 | 17.5 | 21.6 | 41 | 22 | 22 | 22 |
| Female | Sheep (1) | 2.2 | 15.0 | 20.3 | 25.0 | 26.4 | na | na | na | na |
| | Goat (2) | 1.7 | 12.8 | 18.5 | 20.1 | 22.5 | na | na | na | na |

Legend. (1) Fat tail sheep; (2) Mubende goats; (3) SEA goat; mo - month; wt - weight.

Source: Fintecs Ltd (1997).

6.0 Pigs

The pig population was projected at 2.4 million for year 2000 (MAAIF, 1997). The majority of the pigs in Uganda comprise of non-descript indigenous breeds.

The pig population in Uganda has been growing steadily since the collapse of the regime of the 1970s that did not take kindly to pigs, bringing pig industry to almost total collapse. From over 1,000, commercial units with 150,000 sows in the 1960s it is estimated there were only 140 pigs on commercial farms in the whole country in 1980.

Traditional production has tremendously picked up, more so, in the north and Northeast of the country after decimation of their cattle during the years of civil strife and cattle rustling.

Between 1980 and 1989 the pig population in Uganda grew 5 fold at an annual rate of 50% per annum. However, between 1990 and 1997 there was a drop in rate of growth where by the population grow by only 57.6% at an annual rate of 7%.

6.1 The indigenous pig breed types.

The actual indigenous pig population and composition is unknown although they are thought to be the majority in terms of numbers. There is a need to undertake a full and detailed characterization of indigenous breed types and to undertake studies to determine their impact as a potential breed resource for pork production and disease tolerance.

6.2 Ugandan black pig

Breed Reference: Ugandan black pig

Local synonym: Nyoro



Breed Physical Characteristics

Coat colour : Black

Coat description:

. Hair type : Straight

. Hair length : Short

Face profile : Flat/Straight
Convex

Ear : Size : Medium
Orientation ; Lateral

Head Description Snout : Long
Tusks : Absent

Body

. Frame : small
. Body length : medium
. Shape : lean
. Back : straight
. Legs : short
. Hoof colour : dark
. Tail : short
. Tail presentation: straight

N.B. The Nyoro pig is believed by many to be indigenous and is commonly found in many parts of the country. Other schools of thought indicate that they may have been introduced in the country many years ago. This pig breed type is mostly kept on free range and left to scavenge for food, sometimes they are tethered and / or kept in a small sty. The litter size is between 4-8 piglets, and have got good mothering ability. In most cases all the piglets survive. This breed is also very resistant to diseases.

Breed distribution

This pig breed type is widely distributed in the country but is predominantly found in the Bunyoro region.

6.3 The introduced breeds

The exotic pig breeds in Uganda include the large white, Wessex, saddleback, and the Landrace. Their origin and characteristics are summarized in table 6.1.

Table 6.1 Introduced pig breeds, their characteristics

| Breed | Origin | Colour | Prolificacy/ litter size | minimum number of teats | mothering/ milking ability | Head features | Body features | Legs | Purpose | Unique attributes |
|----------------------|------------------------|--|-----------------------------|-------------------------------|----------------------------------|--|--|--------------------------|-----------------|--------------------------------------|
| Large White | England (Yorkshire) | White | Up to 16 | 12 | good | Moderately long -slightly dished face | Should - level Back: long & wide | -straight -wide apart | Pork | Good for crossbreeding |
| Wessex Saddleback | | Black with belt over the fore legs & shoulder | Prolific | 6 | good | Moderately long -slightly dished face -Ears: medium & pitched forward | Back: long & level Belly: straight wide ramp | -straight -wide apart | Dual Purpose | Good grazing & foraging habits |
| Landrace | Denmark | White | - | 8 | good | -Long & tapers forward -face: slightly dished -Ears: long inclined forward over the eyes | straight belly | - | Pork | Boar; good for cross breeding |

Source: Fintecs Ltd (1997).

6.4 Uses and Production system

Pigs are kept for meat only. In rural areas, they are kept in small herds (2-3) sows and they are mainly tethered and given household or farm wastes or left to scavenge on their own, on Commercial peri urban units and Government farms they are usually more than 3 breeding sows per farm and are given commercial pig feed (concentrates) and/or brewers waste or whey. The small scale rural producers rear them under unimproved conditions of management.

6.5 Productivity characteristics of introduced pig breeds in Uganda

An attempt was made during the 1960s to collect data related to characteristics of the introduced pig breeds by the department of veterinary service. Data were collected on reproductive performance and growth characteristics; the average measurements of these various characteristics are summarized in table 6.2.

Table 6.2; A summary of the average productivity characteristics of introduced pit breeds in Uganda.

| Trait | Average |
|--|----------------|
| 1. Age at mating (gilt) | 8-9 months |
| 2. Gestation period | 160-120 days |
| 3. Age at first parturition | 12-13 months |
| 4. Weight first parturition | 90-100 Kg |
| 5. Intervals between parturition | 6 months |
| 6. Fertility (a) Average litter size | 8 |
| 7. Age at slaughter | 5.6 months |
| 8. Weight at birth | 1.0-1.3 Kg |
| 9. Age at weaning | 8 weeks |
| 10. Weight at slaughter | 45 Kg |
| 11. Weight gain between birth & slaughter | 44 Kg |
| 12. Average daily gain between birth & slaughter | 244-293 g/day |
| 13. Production life-span | 4-6 years |

Source Fintecs Ltd (1997)

7.0 Poultry species

In Uganda, fowls (chickens), ducks, and Turkeys comprise the main poultry species. The National Animal Breeding Policy (MAAIF, 1997), projected the national poultry population for the year 2000 at 29.5 million birds. Of these, chickens comprise 76.2%; ducks 2.8% and Turkeys 4%. There was no adequate data available, on poultry populations prior to 1980, however the available data shows that the poultry population has been increasing over the years. Between 1980 and 1989 there was a 44% increase in the national flock although the flock increased by about 17% between 1990 & 1997.

The distribution in terms of numbers in Uganda of poultry under the different farming systems is summarized in table 7.1.

Table 7.1: Distribution of Poultry ('000') in Uganda according to Farming land use system during 1997.

| System | Chickens | | Turkeys | Duck | Total |
|---|------------|--------|---------|-------|--------|
| | Indigenous | Exotic | | | |
| Annual cropping & cattle (Teso) | 5,883 | 202 | 270 | 147 | 6,502 |
| Annual Cropping & Cattle (Northern) | 4,678 | 15 | 102 | 162 | 4957 |
| Annual cropping & Cattle (West Nile) | 1,193 | 3 | 2 | 4 | 1,202 |
| Banana Coffee | 1,298 | 2,110 | 64 | 208 | 3,680 |
| Banana, Millet, Cotton | 2,345 | 255 | 368 | 332 | 3,300 |
| Maintenance | 1,080 | 200 | 75 | 175 | 1,530 |
| Pastoral | 680 | 601 | 15 | 45 | 1,341 |
| Total | 17,257 | 3,386 | 896 | 1,073 | 22,512 |
| Percentage % | 76.2 | 15.0 | 4.0 | 2.8 | 100.0 |

Fintecs Ltd (1997)

Most chickens are kept in the Teso and Northern Annual cropping system of the Eastern and Northern region of the country, whereas duck keeping is popular in the Banana/coffee/millet/cotton growing areas of south eastern, central, western and southern region of the country. Most turkeys will be found in Banana/millet/cotton growing areas of Kamuli, Pallisa, Tororo, Masindi and Luwero districts.

Indigenous poultry genetic resources are non-descript and are yet to be identified and characterized. The need to assess their potential impact as a breed resource cannot be over-emphasised.

7.1 Chicken

7.1.1.Indigenous Chicken

Indigenous chickens are the most abundant of all the poultry species and have maintained a steady population increase similar to that for all the poultry species mentioned above. They are kept as back yard poultry by many households in the country and are raised by scavenging. They are used for meat and eggs. The hens are broody; they produce 5 clutches of 10-12 eggs per annum. Hens may weigh 2kg while male may weigh up to 4kg. The system utilizes almost zero input and almost zero management techniques, hence the minimal input production of this genetic resource.

Indigenous chickens have the ability to survive and reproduce under the harsh tropical environmental conditions characterized by endemic diseases like New Castle Disease and parasites like mange.

Distribution

Indigenous chickens are kept all over the country particularly in rural areas. They are found in all the ecological zones of Uganda. The northern parts of Uganda also keep crossbreds of indigenous poultry with exotics. This is a result of past efforts by Government to enhance productivity of indigenous chickens in this part of the country.

7.1.1.1 Ugandan black and red

Breed reference name:

Ugandan black and red

Local synonyms:

nganda, nsoga, nkore



Breed physical characteristics:

Plumage:

| | | |
|--------------|------------------------|---------------|
| Head | Colour: | Black and red |
| | Feathers Pattern: | Barred |
| | Comb type: | single comb |
| | Neck: | feathered |
| | Wattles: | present |
| Body | Earlobes: | present |
| | • Colour | red |
| | • Size | small |
| | Frame: | big |
| | Shape: | angular |
| Legs: | Skin Colour: | yellow |
| | Length | medium |
| | • Feathers | absent |
| | • Leg and Foot colour: | yellow |
| | • Number of toes: | four |
| Tail | • Spur size: | medium |
| | Length: | medium |

7.1.1.2 Ugandan short legged

Breed reference name: Ugandan short legged
Local synonym: Nyoro



Breed physical characteristics:

Plumage:

Colour: black yellowish

Feathers Pattern: pencilled

Head Comb type: pea comb

Neck: feathered

Wattles: absent

Earlobes: present

- Colour: red

- Size: small

Body Frame: small

Shape: angular

Skin Colour: yellow

Legs: Length: very short

- Feathers: absent

- Leg and Foot colour: white

- Number of toes: four

- Spur size: absent

7.1.1.3 Ugandan brown

Breed reference name: Ugandan brown
Local synonyms: Nganda, nsoga, nkore



Breed physical characteristics:

Plumage:

Colour: brownish black

Feathers Pattern: mottled

Head Comb type: pea comb

Neck: feathered

Wattles: absent

Earlobes: present

- Colour: red

- Size: small

Body Frame: medium

Shape: angular

Skin Colour: yellow

Legs: Length: short

- Feathers: absent

- Leg and Foot colour: black

- Number of toes: four

- Spur size: absent

Tail Length: short

7.1.1.4 Nsesere

Breed reference name: Nsesere



Breed physical characteristics:

Plumage:

Colour: Greyish black

Feathers Pattern: mottled

Head Comb type: pea comb

Neck: naked

Wattles: present

Earlobes: present

- Colour red

- Size small

Body Frame: small

Shape: angular

Skin Colour: yellow

Legs: Length long

- Feathers absent

- Leg and Foot colour: red-pinkish

-

Number of toes: four

- Spur size: absent

Tail Length: short

Egg Shell

- Colour: light brown

7.1.1.5 Teso chicken

Breed reference name:

Teso chicken



Breed physical characteristics:

Plumage:

Colour: White and gray

Feathers Pattern: mottled

Head

Comb type: cushion

Neck: feathered

Wattles: present

Earlobes: present

- Colour white

- Size small

Body

Frame: medium

Shape: angular

Skin Colour: yellow

Legs:

Length short

- Feathers absent

- Leg and Foot colour: black

- Number of toes: four

- Spur size: absent

Tail

Length: short

Egg Shell

- Colour: light brown

7.1.1.6 Ugandan Red

Breed reference name:

Ugandan red

Local synonyms:

Nkooki, nganda, nsoga, nkore



Breed physical characteristics:

Plumage:

| | | |
|--------------|------------------------|----------------------|
| | Colour: | Red and black |
| | Feathers Pattern: | Pencilled |
| Head | Comb type: | single comb |
| | Neck: | feathered |
| | Wattles: | present |
| | Earlobes: | present |
| | • Colour | red |
| | • Size | small |
| Body | Frame: | medium |
| | Shape: | angular |
| | Skin Colour: | yellow-white |
| Legs: | Length | medium |
| | • Feathers | absent |
| | • Leg and Foot colour: | greyish white |
| | • | Number of toes: four |
| | • Spur size: | rudimentary |
| Tail | Length: | medium |

7.1.1.7 Ugandan white

Breed reference name:

Ugandan white



Breed physical characteristics

Plumage:

| | | |
|--------------|------------------------|----------------------|
| | Colour: | White-red |
| | Feathers Pattern: | Barred |
| Head | Comb type: | strawberry |
| | Neck: | feathered |
| | Wattles: | present |
| | Earlobes: | present |
| | • Colour | red |
| | • Size | small |
| Body | Frame: | medium |
| | Shape: | angular |
| | Skin Colour: | yellow |
| Legs: | Length | long |
| | • Feathers | absent |
| | • Leg and Foot colour: | white |
| | • | Number of toes: four |
| | • Spur size: | short |
| Tail | Length: | medium |

7.1.2 Introduced Breeds

Exotic breeds were introduced in Uganda in the early 1960s for commercial purposes, the industry expanded to attain peak production in 1972 with an estimated population of 2.6 million birds raised on 1,811 private commercial farms supported by 7,180 backyard units. At the time local demands for broiler meat and eggs were satisfied leaving a surplus for export. The breeds that were introduced include;

- (i) **Rhode Island Red (RIR)**; from UK for both eggs and meat. (The Rhode Island Red was imported for the purpose of cross breeding with indigenous chicken under *the one-cock-ten hen programme* where one RIR cock was mated 10 indigenous hens to increase production);
- (ii) **Shaver**; from Britain for eggs;
- (iii) **Hubbard**; is currently the most popular breed in many hatcheries – two types exist, a white broiler and brown layer;
- (iv) **Isobrown**; a layer, is the latest breed to be tried, it is from USA. It is popular for its strong shelled egg and can lay up to 250 eggs per annum;
- (v) **Zambian breed**; the hens are black and are imported as day old chicks for laying purposes.

The years 1972-1980 saw the decline of the exotic poultry to almost total collapse, since the much needed foreign exchange to purchase day old chicks, eggs, parent stock, drugs and other inputs was hard to come by. In 1981 there were an estimated 176,200 birds only. The Recovery program set in motion with a new regime rejuvenated the industry and 11 years later (1992) the exotic chicken population had risen to an estimated 2.4 million birds, 31.6% of which were layers and 68.4% broilers. Because of the high costs of production, these birds are more or less confined to urban and peri urban areas especially in large towns where there is a high demand for poultry meat and eggs.

7.2 Turkeys

The data available on poultry population trends is normally given in combined totals of the 3 species, it is therefore, difficult to determine accurately the trends of the national turkey flock.

Turkeys of the Broad Breasted Bronze turkey breed were introduced in Uganda in the 1950s by the Colonial Government from America and multiplied at the Livestock Experimental Station (LES) in Entebbe and Mbarara Stock farms and the local farmers were encouraged to keep them. As a result of this, turkeys are found in many parts of Uganda although they are mainly concentrated in Soroti, Pallisa, and Kumi districts. They are moderately concentrated in Lira and Apac districts. They are raised as scavengers in the backyards of the homesteads.

The indigenous Ugandan Turkey is the only Ugandan livestock species listed as endangered on the world watch list for domestic animal diversity (2nd Edition) 1995. It was estimated that population of this breed was between 100-1000 in 1988. There is no other information about this breed type regarding local name or synonyms, population trend or range of uses. There is, therefore, urgent need to undertake conservation measures for this breed type.

7.2.1. Ugandan black turkey

Breed reference name:

Ugandan black turkey

Origin:

Broad Breasted Bronze turkey

Strain:

Ugandan

Local synonyms:

Teso



Breed physical characteristics:

Plumage:

Colour: silver black
Feathers Pattern: barred

Head

Comb type:

Neck:

Wattles:

Earlobes:

present

- Colour:

white

- Size:

medium

Body

Frame:

large

Skin Colour:

pink

Legs:

Length

long

- Feathers

absent

- Leg and Foot colour:

greyish

- Number of toes:

four

- Spur size:

medium

Tail

Length:

long

7.2.2. White meat Turkey

Breed reference name:

White meat turkey

Origin:

Introduced



Breed physical characteristics

Plumage:

Colour: white
Feathers Pattern: uniform

Head

Comb type:
Neck:
Wattles:
Earlobes:

present

- Colour
- Size

white
medium

Body

Frame:
Shape:

medium

Legs:

Skin Colour:
Length

pinkish
long

- Feathers:
- Leg and Foot colour:
- Number of toes:

pinkish
four

Tail

Length:

short

7.3 Ducks

There is no available information regarding the population trends of the current duck breed. It is not known whether pure indigenous duck breed types are existent and if so whether they are endangered.

The information available on the duck species is on the crossbreeds of the original muscovy ducks imported from Britain. They are present throughout the whole country especially in urban and peri urban areas. They have a mixture of white and black features. They are large birds, females weight up to 6kg and males up to 10 Kg. They are raised on household waste and brewer residues in the backyards. Duck meat is generally not popular, as such only a few households keep them.

7.3.1 Ugandan Duck

| | |
|------------------------------|-----------------------------------|
| Breed reference name: | Ugandan duck |
| Origin: | Muscovey duck |
| Strain: | Ugandan |
| Local synonyms: | Teso, nganda, nsoga, nyoro, nkore |



Breed physical characteristics:

Plumage:

| | | |
|------------------|------------------------|---------------------------------------|
| | Colour: | metallic blue-greyish, multi-coloured |
| | Feathers Pattern: | barred |
| Head | Comb type: | comb |
| | Neck: | feathered |
| | Wattles: | Present |
| | Earlobes: | present |
| | • Colour | red / black |
| | • Size | small |
| Body | Frame: | medium |
| | Shape: | Angular |
| | Skin Colour: | yellow |
| Legs: | Length | short |
| | • Feathers | absent |
| | • Leg and Foot colour: | Grayish white |
| | • Number of toes: | four |
| | • Spur size | none |
| Tail | Length: | medium |
| Egg Shell | | |
| | • Colour: | white to light-brown |

8.0 Rabbits

The total population is not exactly known, mainly because they have been neglected for a long time, but is estimated at 150,000 during 1999. The common breeds in Uganda are the New Zealand white, California white, Kenya white, Flemish Giant, Carolina white, Chinchilla and Black Satin. The rabbits are kept mainly by children and women in small units.

Most of the rabbits are ready for mating around 5 - 6 months and continue active production for 2 to 3 years. The average size among improved rabbits is 3 - 5 kg mature live weight. Rabbits can produce up to 8 - 9 litters of 8 - 12 kits per annum. A meat production potential of 120 to 150 kg is estimated per female breeder per year, given that it produces 6 litters of 8 weaned kits totaling 40 to 50 young.

8.1 Natural Production Environment

Rabbits management has not been emphasised in many farming systems and to a large extent have been kept in small units.

These indigenous rabbits produce 6-10 kits per litter and reproduce almost once every month giving 40-50 young ones per year.

The rabbits are mostly kept for home consumption and rarely for commercial purposes. The distribution is countrywide particularly around urban areas.

There are efforts by government to encourage an increase in the production and consumption of rabbit meat particularly in schools.

8.2 Ugandan rabbit

Breed reference name:

Ugandan rabbit

Local synonyms:

Nganda, nsoga, nyoro,



Breed Physical Characteristics

| | | | | | |
|-------------|---|---|-------------------|---|---|
| Coat | : | . | Colour | : | multicolor (brown, light brown, grey and grey white) |
| | | . | Hair type | : | straight |
| | | . | Hair length | : | short to medium |
| Head | : | . | Face profile | : | flat/convex |
| | | . | Muzzle colour | : | dark |
| | | . | Eyes | : | brown/black |
| Ears | : | . | Size | : | big |
| | | . | Orientation | : | erect |
| Body | : | . | Body frame | : | small |
| | | . | Back profile | : | straight/convex |
| | | . | Body length | : | short |
| | | . | Shape | : | lean |
| | | . | Legs | : | short |
| | | . | Toe nails | : | light |
| | | . | Tail | : | short |
| | | . | Tail presentation | : | curly |

9.0 Donkeys and Camels

The camel and donkey population is currently unknown but some estimates were once provided by the department of Veterinary Services and Animal Industry from 1963 to 1968 as given in the table 9.1 below.

Table 9.1 The Donkey and Camel population estimates (000's)

| Year | Donkeys | Camels |
|------|---------|--------|
| 1963 | 16 | 0.408 |
| 1964 | 17 | 0.440 |
| 1965 | 17 | 1.000 |
| 1966 | 17 | 1.200 |
| 1967 | 16 | 0.408 |
| 1968 | 17 | 1.500 |
| 1992 | 2 | - |

Sources: Annual Report of the Department of Veterinary Services and Animal Industry (1965); Mbuza et al (1998).

Donkeys are mainly found in Sebei and Karamoja while camels are found in the pastoral system of Karamoja. Herds graze with cattle and are left to breed randomly through out the year. Donkeys are kept mainly for transporting goods especially across bad terrain.

10.0 Horses

The horse population was estimated to be 20 in 1992 and they have now increased although the current population is not known. Horses are owned by a few individuals in Uganda and are used for recreation and sports, Mbuza *et al*, (1998).

11.0 Buffalos

In 1992 there were only 10 buffaloes although the Indian buffalo was first brought to Uganda in the 1960s. The current population in the country is unknown.

12.0 Conclusion

During the colonial and post independence era the policies for livestock improvement in Uganda did not emphasize sustainability of the industry. Besides there were no deliberate efforts to improve and conserve the indigenous AnGR. This already precarious situation was confounded by the dictatorial regimes of the 1970s and early 1980s. During that period the vagaries of war and post war effects ran down the economy and entire infrastructure as a result of ineffective policies and a fragile foreign exchange earning structure. The general lack of security for person and property, ineffective manpower and extension services led to the decimation of livestock populations through massive slaughter, rustling and frequent disease epidemics. The end to dictatorship in 1986 and the ushering in of constitutional rule led to the objective rejuvenation of productive capacity of the economy in key sectors.

Consequently the initial thrust was to reverse the harm done to the industry and this included a national investment plan in the livestock sector that was directed towards disease control and dairy development. The DANIDA supported Master Plan for the Dairy Sector (1992) recognized the need for a coherent and comprehensive policy to guide all stakeholders in the improvement and conservation of the national AnGR.

Because of their major contribution to food and Agricultural production and their role in sustainable production systems, a threat to domestic animal resources is a major threat to Uganda's food security. Therefore, the Government of Uganda in its effort of re-orientation, to promote a steady improvement in the productivity, profitability and conservation of domestic farm animals passed the Animal Breeding Act, 2001 (institutional and legal frameworks). The aspirations embodied in the National Animal Breeding Policy, its Action Plan and the Animal Breeding Act are the only systematic and comprehensive move taken by Uganda Government to address farm animal genetic resources, their conservation and improvement.

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