

Ministry of Agriculture, Livestock, Fisheries and Cooperatives

State Department of Livestock



Kenya Livestock Breeds Catalogue



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FOREWORD



This is the first National Livestock Breeds Catalogue for Kenya. It has been developed through a consultative process involving key stakeholders in the livestock industry. It highlights the diversity of animal genetic resources (AnGR) in Kenya covering the various species and breeds that are used for food and agriculture. They include cattle, goats, sheep, camel, poultry, pigs, donkeys, rabbits and honey bees.

This catalogue provides consolidated information on livestock diversity available in Kenya, including their distribution, utilization, current status and associated risks.

It will also create awareness of breeds that are currently underutilized, but are of great importance. In addition, it is envisaged to create an opportunity for developing breeding interventions and strategies for well-structured and implementable breeding programmes.

Livestock keeping contributes to household food and nutrition security, income, job creation and social-cultural values. The diverse range of animal genetic resources is a vital asset for the livestock sector as it responds well to challenges of climate change, emerging diseases and changing market demands for animal products.

Over the years the country has lost some of the important animals adapted to the harsh environment of feed shortage, high temperatures and diseases. This has been occasioned by indiscriminate crossbreeding with exotic breeds, inadequate breeding and conservation programmes, coupled with inadequate policies and legislation.

Kenya is a signatory to the UN-FAO 2007 Global Plan of Action (GPA) for Animal Genetic Resources and the Interlaken Declaration, which forms the first internationally agreed instrument that seeks to promote the wise management of the world's livestock diversity. Further, Kenya contributed to the preparation of The state of the Farm Animal Genetic Resources (AnGR) in Africa which provides detailed information on the status of animal genetic diversity in Africa, the threats, existing policy, legal and institutional environment, the best practices and the lessons learnt from various genetic improvement initiatives in Africa.

In an effort to prudently manage her Animal Genetic Resources, Kenya has developed the National Strategy and Action Plan (NSAP) for the management of Animal Genetic Resources which addresses four key pillars of the GPA.

The catalogue is therefore envisaged to inform livestock keepers, the Government, researchers, development partners, and other industry stakeholders on Kenya's Animal Genetic Resources, their characteristics and where they are found.

A handwritten signature in black ink, appearing to read 'Harry Kimtai'.

Harry Kimtai, CBS
Principal Secretary

ACKNOWLEDGEMENT



We welcome the development of the first National Breeds Catalogue for Kenya. This is a useful document which is expected to provide information on the country's Animal Genetic Resources for food and Agriculture, their utilization and distribution. I wish to express my gratitude to the members of the National Technical Committee on Management of Animal Genetic Resources (AnGR) for their commitment towards the preparation of the first national breeds catalogue for Kenya.

I also wish to thank the Regional Pastoral Livelihood Resilience Project for the financial support during the initial stages of the preparation of this catalogue.

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Finally I want to appreciate all the Farmers and other Key Stakeholders who made valuable contribution towards the production of this catalogue.



Julius Kiptarus, OGW

DIRECTOR OF LIVESTOCK PRODUCTION

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LIST OF ACRONYMS

AnGR:	Animal Genetic Resources for food and agriculture
ASAL:	Arid and Semi-Arid Lands
AU-IBAR:	African Union-InterAfrican Bureau for Animal Resources
ADC:	Agricultural Development Corporation
AV:	Average
BCBS:	Boran Cattle Breeders Society
CM:	Centimeters
DAD-IS:	Domestic Animal Diversity Information System
DAGRIS:	Domestic Animal Genetic Resources Information System
DGAK:	Dairy Goats Association of Kenya
FAO:	Food and Agriculture Organization of the United Nations
HFBSK:	Hostein-Friesian Breeders Society of Kenya
GTZ:	Germany International Development Corporation
KES:	Kenyan Shilling
MOALFI:	Ministry of Agriculture, Livestock, Fisheries and co-opreatives
NFD:	Northern Frontier District
NSAP:	National Strategy and Action Plan for management of AnGR
RM:	Red Maasai sheep breed
SEAG:	Small East African Goat
SEAZ:	Small East African Zebu cattle
TAP:	Tatton Agricultural Park

1. INTRODUCTION

Kenya is endowed with a rich diversity of livestock species and breeds which are of great economic, social and cultural importance. These include cattle, sheep, goats, camels, donkeys, poultry, rabbits, pigs and bees which are either indigenous or exotic. Kenya's animals resources based is estimated at 20,529,191 cattle, 26,745,916 goats, 18,983,760 sheep, 3,222,593 camels, 44,624,453 domestic birds, and 1,965,632 donkeys, (MOALFI, 2018 NSAP On management of ANGR). They are exploited in diverse climatic conditions namely; Hyper Arid, Arid, Semi-Arid, Sub-Humid, Humid, and Afro-Alpine environments, and production systems that range from low input extensive to high input intensive systems. Whereas the indigenous livestock breeds are adapted to a variety of production environments under low input production systems, the exotics have been developed for increased production per unit under high input production systems. Each species used for food and agriculture comprises of several breeds, groups, genotypes and strains, with considerable diversity existing within species and breeds/ecotypes, therefore it becomes necessary to have a livestock breeds' catalogue. Development of this catalogue is envisaged in the National Strategy and Action Plan for management of Animal Genetic Resources.

2. METHODOLOGY

National livestock breeds catalogue framework was developed by a technical team guided by existing global and regional frameworks including DAD-IS and DAGRIS. Data and information in the catalogue on physical description of the breeds, production and reproduction were sourced from grey and published literature, personal communication and expert judgment. Field surveys were conducted to capture images of breeds' representatives and farmers' opinions in various regions within the country. All breeds, ecotypes and/or strains, with an effective population were enlisted and included in the catalogue.

3. CATTLE

Kenya is endowed with a diverse range of cattle breeds and ecotypes. There are 20.6 million heads distributed across all ecological zone (MOALFI, 2018 NSAP On management of ANGR). Generally, cattle population is composed of indigenous and exotic breeds and ecotypes, and their crosses.

Indigenous cattle population in Kenya is dominated by short-horned zebu types with thoracic hump. These cattle are distributed throughout the country and have developed adaptive features and characteristics through selection under varied environmental conditions. They are mainly categorized in two main groups. These are: The Boran and the Small East African Zebu (SEAZ). The Boran group is further categorized in three, thus, the Improved Kenya Boran, the Borana/NFD and the Orma Boran while SEAZ (which are believed to have originated from Asia), are further categorized in various groups mainly based on communities that keep them as well as the geographical location and or production environments in which they are found. They are mostly found in pastoral communities within low input production systems.

Exotic breeds were introduced mostly from Europe but have been developed to become adapted to local production environments. Among the exotics, there are those specifically developed for milk production, meat production and dual purpose. In addition to meat and milk, cattle are used as

financial and social security, social-cultural functions, source of manure, raw materials for industrial development and employment.

3.1. INDIGENOUS CATTLE BREEDS

3.1.1. Maasai Zebu

Maasai Zebu is predominantly found in southern Kenya extending to north-east Tanzania with close association with the Maasai community. Comparatively, it is the largest of all SEAZ types in Kenya. It is mainly kept for milk and only slaughtered during special social ceremonies.



Figure 1: Maasai Zebu bull



Figure 2: Maasai Zebu cow

Breed Characteristics		
Physical description	Coat colour	The type exhibits varied coat colour and conformation but black and white patterns are predominantly evident
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Black
	Height at withers (cm)	Females: 110 – 135 Males: 118 – 140
	Horns	Short horned while some are polled
	Ear orientation	Lateral
Production	Milk (kg/day)	1 - 2
	Mature live body Weight (kg)	Females: 275 – 385 Males: 300 – 445
Reproduction	Fertility	Above 87%
	Age at attaining mature weight (months)	24 - 36
	Age at first service (months)	30 - 36
	Age at first calving (months)	36 - 45

3.1.2. Kamasia/Samburu zebu

Kamasia zebu is predominantly found in central Kenya plains within Samburu County. It has long been kept by the Samburu community. Few populations are also found in Laikipia and Baringo counties. It has a cervical-thoracic hump. Tolerant to tick-borne diseases, drought and can walk long distances in search of water and pasture. Mainly kept for milk and meat.



Figure 3: Kamasia Zebu bull



Figure 4: Kamasia Zebu cow

Breed Characteristics		
Physical description	Coat colour	Varied with red/brown being predominant in most of the herds with spotted patterns
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Black and/or brown
	Horns	Short horned while some are polled
	Ear orientation	Drooping
Production	Milk (kg/day)	1 – 1.5
	Mature live body Weight (kg)	Females: 120 - 200 Males: 150 - 250
Reproduction	Fertility	Above 80%
	Age at attaining mature weight (months)	24 - 36
	Age at first service (months)	36 - 48
	Age at first calving (months)	30 -36

3.1.3. Winam or Kavirondo Zebu

Winam Zebu is mainly found in western Kenya in the lowlands of the Lake Victoria basin, kept by the Luo and Luhya communities. It is comparatively, the smallest of all SEAZ with varied horn shapes, sizes and orientation. There is a notable variance in hump size and position. It is tolerant to tick-borne diseases and helminthes. Kept for draft (tillage), milk and sporting.



Figure 5: Winam Zebu bull



Figure 6: Winam Zebu Cow

Breed Characteristics		
Physical description	Coat colour	Predominant black and white colour
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Black or brown
	Height at withers (cm)	Females: 94-125
		Males: 195 – 365
	Horns	Short horned while some are Polled
Ear orientation	Lateral and medium size	
Production	Milk (kg/day)	2 - 3
	Mature live body Weight (kg)	Females: 215 - 419
		Males: 200 - 365
Reproduction	Fertility	
	Age at attaining mature weight (months)	18 - 24
	Age at first service (months)	24 - 30
	Age at first calving (months)	32 - 40

3.1.4. Nandi Zebu

Nandi zebu is predominantly found in north rift region, with the Nandi community. The breed is endangered due breed replacement, upgrading and crossbreeding. It is small in size and fine-boned. It is the dairy type of the SEAZ comparatively producing more milk than other zebu types. It has a thoracic hump varying in size and shape; round front and back hangs backwards in bulls. Moderately developed udders with small closely placed teats.



Figure 7: Nandi Zebu bull



Figure 8: Nandi Zebu cow

Breed Characteristics		
Physical description	Coat colour	Variable, but many animals are plain black, red, fawn or grey
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Black
	Height at withers (cm)	Females (Av): 152.7
		Males (Av): 162.3
	Horns	Short horned
Some Polled		
Ear orientation	lateral and medium sized	
Production	Milk (kg/day)	2 - 3
	Mature live body Weight (kg)	Females: 200 – 320
		Males: 215 – 420
Reproduction	Fertility	
	Age at attaining mature weight (months)	18 - 24
	Age at first service (months)	24 - 30
	Age at first calving (months)	32 - 40

3.1.5. Watende Zebu

The Watende zebu are found to the south of Lake Victoria basin in Migori (Kuria) county. It is named after the Watende (Kuria) community. It is tolerant to many diseases and kept for draft, milk and meat. Mature body frames are thin, shallow but long with relatively long horns.



Figure 9: Watende Zebu bull



Figure 10: Watende Zebu cow

Breed Characteristics		
Physical description	Coat colour	Usually black, brown, fawn and a mixture of these colours.
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Black or brown
	Height at withers (cm)	Females: Males:
	Horns	Short horned and Some Polled
	Ear orientation	Medium-sized and lateral
Production	Milk (kg/day)	1.5 – 2
	Mature live body Weight (kg)	Females: 150 - 220
		Males: 200 - 280
Reproduction	Fertility	85
	Age at attaining mature weight (months)	24 - 30
	Age at first service (months)	30 - 36
	Age at first calving (months)	42 - 45

3.1.6. Low land or Coastal Zebu

Mainly found to the south-west and east of Kenya. Its is comprised of four distinguishable types: the Taita Taveta, Giriama (Tuni), Duruma and Kamba zebu-types. The Kamba zebu is kept by Kambas in Eastern Kenya. It has large irregular humps pyramid- shaped, some have cervico-thoracic humps. Taita-Taveta, Duruma and Giriama (Tuni) zebu-types are kept in the coastal counties of Kenya (Taita Taveta, Kwale and Kilifi). They have varoius horn shapes and hump sizes but some are polled. They all have pendulous dewlap. They are mainly kept for draft (tillage and transport), milk and meat.



Figure 11: Kamba Zebu Bull



Figure 12: Kamba Zebu cow

Breed Characteristics		
Physical description	Coat colour	Coat colour is often plain white or black, and some have patchy pattern.
	Coat hair	Short, fine and smooth
	Pigmentation	Black
	Height at withers (cm)	Short horned while some are polled
	Ear orientation	Lateral medium sized
Production	Milk (kg/day)	1.5 – 2.5
	Mature live body Weight (kg)	Females: 125 – 360 Males: 194 – 405
Reproduction	Fertility	72 - 81
	Age at attaining mature weight (months)	36 - 48
	Age at first service (months)	36 - 48
	Age at first calving (months)	45 -54

3.1.7. Teso Zebu

The Teso zebu is found in western Kenya, Busia county. They come in various coat colours with black, black/white being common. They are relatively big in body size with deep chest and pendulous ears. The dewlap is present in varying sizes. It is mainly used for draft (tillage), milk and meat. Tolerant to tick-borne diseases and adapted to a range of environmental conditions and terrains.



Figure 13: Teso Zebu bull



Figure 14: Teso Zebu cow

3.1.8. Turkana and Karapokot Zebu

Found in North-western region of Kenya with the Turkana tribe. Comes with varying coat shades brown/red to darkish brown. It is the most adapted of all zebu-types in east Africa. The animals are able to walk through rugged terrains under high temperatures in search of water and pastures. Karapokot are closely related to Turkana zebu only that they are kept by the Pokot (West Pokot and Baringo) and Karamoja community in Uganda.

Mature males have large dome-shaped humps. They have large dewlap, umbilical fold and pendulous sheath. They are kept for milk and meat.



Figure 15: Karapokot Zebu Bull



Figure 16: Karapokot zebu cow

3.1.9. Kikuyu Zebu

Also called the Highland zebu. This was originally bred by the kikuyu tribe in central Kenya. It is one of the zebu-type that is greatly endangered due to upgrading with exotic, breed replacement and cross-breeding. Its kept for draft power (tillage and transport) and meat in Muranga, Kirinyaga and Embu counties. Comes with varying coat shades black, grey, fawn, brown and a mixture of either two or more colours.

3.1.10. Jiddu Zebu

This relatively large transboundary zebu with well-developed masculine heavy frame. It is common in north-eastern region of the country bordering the republic of Somalia. The breed has generally a spotted coat of red/brown with white all over the body. Males tend to be dark-red while females have light shade.



Figure 17: Jiddu Zebu bull



Figure 18: Jiddu Zebu cow

3.1.11. Orma Boran

The Orma Boran is kept by communities to the south and west of Tana River county with few populations in neighbouring counties such as Garissa, Lamu, Kitui, Taita Taveta and Kilifi. It is adapted to hot and dry climatic conditions and tolerant to trypanosomiasis.



Figure 19: Orma Boran Bull



Figure 20: Orma Boran Cow

Breed Characteristics		
Physical description	Coat colour	Its coat colour ranges from white to fawn with a uniform pattern
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Non-pigmented
Production	Milk (kg/day)	2 – 3
	Mature live body Weight (kg)	Females: 130 - 200
		Males: 250 – 350
Reproduction	Fertility	80 – 85%
	Age at attaining mature weight (months)	36 – 48
	Age at first service (months)	36 – 48
	Age at first calving (months)	45 – 60

3.1.12. Somali Boran

Somali Boran type is mainly found in North-eastern region counties (Garissa, Wajir, Mandera and Marsabit) with some spill-over in the neighbourhood. Almost similar to Orma Boran because they share the same origin. It is highly adaptable to hot and dry climatic conditions. Mainly kept for financial security, milk, meat and prestige. They mature at 36 to 48 months of age within pastoral systems.



Figure 21: Somali Boran bull



Figure 22: Somali Boran cow

Breed Characteristics		
Physical description	Coat colour	Predominantly white coat colour with a uniform pattern but with a pigmented skin
	Coat hair	Short, fine, shiny and smooth
	Pigmentation	Brown
	Horns	Short horned and Some Polled
Production	Milk (kg/day)	1 – 3
	Mature live body Weight (kg)	Females: 150 – 250
		Males: 200 – 400
Reproduction	Fertility	Above 80%
	Age at attaining mature weight (months)	36 – 48
	Age at first service (months)	36 – 48
	Age at first calving (months)	45 – 60

3.1.13. Kenyan Boran

Kenyan Boran was developed by the European ranchers in the early 20th century from 3 native breeds; the Ethiopian Boran, Somali Boran and the Orma Boran and exotic taurine breeds. It is also referred to as the improved Kenya Boran and is a beef breed with a dressing percentage of about 55%. The Boran Cattle Breeders' Society (BCBS) developed the breed as a commercial beef breed and are custodians of the breed standards.

The Kenyan Boran is predominantly found in Laikipia, Nakuru, Machakos, Taita taveta and Narok Counties. It is predominantly reared under ranching systems and has the ability to survive in harsh dry lands walking long distances in search of water and pasture. The superior herding instincts of the Kenya Boran make it easy to manage and survive in the range lands where predators exist. The Kenya Boran is a large sized Zebu with a short head, loose dewlap, short strong legs and a large hump above the shoulders.



Figure 23: Kenyan Improved Boran bull



Figure 24: Kenyan Improved Boran cow

Breed Characteristics		
Physical description	Coat colour	They are predominantly white, grey with various shades of brown. Other ranges of colour are acceptable except brindle and solid black
	Coat hair	Fine short hair with loose and pliable skin which also has many sweat glands per unit area
	Pigmentation	dark
	Height at withers (cm)	114 cm - 147 cm
	Horns	horned or polled
	Ear orientation	Lateral medium sized
	Production	Average daily gain yearlings (g/day)
Average Weaning weight (kg)		240
Mature weight of female (kg)		380 - 450
Mature weight of bulls (kg)		500 - 850
Reproduction	Fertility	90%
	Age at first calving (months)	27
	Age at first calving (months)	

3.1.14. Kenyan Sahiwal

Sahiwal cattle are indigenous to Pakistan and India, and were imported to Kenya in 1930s and 1940s. The breed has been developed as a dual-purpose breed for milk and meat. It is used for cross-breeding with exotic breeds to improve on milk and meat production. It is found in Southern and Central rift valley regions especially Kajiado, Narok, Nakuru and Laikipia Counties.

The Sahiwal breed is reared in smallholder farming systems, beef and dairy ranching in marginal areas found in Southern parts of Kenya. It is heat and drought tolerant, as well as to internal and external parasites. It has the ability to survive in harsh drylands and walk long distances in search of water and pastures, but are vulnerable to extreme weather conditions.



Figure 25: Sahiwal Bull



Figure 26: Sahiwal cow

Breed Characteristics		
Physical description	Conformation	The Sahiwals are heavily built with straight and long face, The hump is in the cervico-thoracic position
	Coat colour	Reddish brown to chestnut
	Coat hair	Short, straight and smooth
	Skin pigmentation	Black
	Height at withers, cm	120-136
	Horns	Straight and lateral
	Ear orientation	long and drooping
Production	Average daily gain yearlings (g/day)	490
	Weaning weight (kg)	160-180
	Body weight at 12 months of age (kg)	180 - 220
Reproduction	Mature weight of females (kg)	400 - 550
	Mature weight of bulls (kg)	450 - 600
	Age at first calving (months)	36 - 45
	Fertility (%)	89
	Milk production (Kg)	1574 in 293 days
	Butter fat %	4.0 -5.3

3.2. EXOTIC CATTLE BREEDS

3.2.1. Friesian (Holstein-Friesian)

The breed originated from Holland and was imported to Kenya in 1908. Several bloodlines have been imported from Europe, America and Israel. The Kenya Holstein-Friesian, through adaptation overtime and crossing with local lines, produces a fair amount of milk. The Holstein-Friesian is the largest and most populous dairy cattle breed in Kenya predominantly found in the highlands. The breed has been crossed with the Sahiwal and Improved Kenyan Boran to produce excellent dual-purpose crosses that are suitable for the lowlands and semi-arid areas.

The breed is continuously being improved using local and imported semen and is promoted by the Hosten-Friesian Breeders' Society of Kenya (HFBSK) which is the custodian of the breed standards. The breed is raised under various production systems ranging from high input zero-grazing to semi-zero systems.



Figure 27: Friesian Bull



Figure 28: Friesian cow

Breed Characteristics		
Physical description	Coat colour	Black and white but there is a strain of red and white 1% population. Has a white triangular patch on the forehead and white socks from the knee joint to the hooves on all four legs
	Coat	Short, fine and smooth
	Pigmentation	Black and pink
	Height at withers (m)	1.5 - 1.8
	Horns	Short horned or Polled
	Ear orientation	prick ears of moderate size
	Milk per lactation (Kg)	3,000 – 8,000 in 305 days with 3.1% - 3.8% fat and 3.3% - 3.6% protein
Production	Mature body Weight (Kg)	Male: 450-650 Female: 400 - 600
	Fertility	75%
Reproduction	Age at first service (months)	15 – 18
	Age at first calving (months)	24 – 32

3.2.2. Ayrshire

The breed was introduced to Kenya in 1908 from South Africa. It has been developed over the last century through introduction of bloodlines from Europe and America. The Ayrshire cattle Breed society is the custodian of the breed standards and promotes the breed.

Ayrshire is the second largest and populous of the dairy cattle breeds in Kenya and widely distributed in medium to high rainfall regions. The breed is raised under various production systems ranging from high input zero-grazing to semi-zero and free-range systems. The breed is fairly hardy with high feed conversion efficiency, and adaptable to varied agro-ecological zones, relatively tolerant to most tropical diseases and adapted to solar radiation while exhibiting minimal congenital diseases.



Figure 29: Ayrshire Bull



Figure 30: Ayrshire cow

Breed Characteristics		
Physical description	Coat colour	Brown and white patches in almost equal amounts with some cows tending to dark mahogany
	Coat	Shiny, Short and fine hair
	Pigmentation	Black to pink
	Height at withers (m)	1.4 – 1.6
	Horns	Mostly short-horned with few Polled
	Ear orientation	Horizontal or semi-pendulous
	Milk per Lactation (Kg)	3000 – 6000 in 305 days with
Production	Mature Weight (Kg)	Males 450 - 550
		Female 380 – 500
	Fertility	Above 85%
Reproduction	Age at first service	15 – 24 months
	Age at first calving	24 – 30 months

3.2.3. Guernsey

The Guernsey originated on the small Isle of Guernsey, situated in the English Channel just off the coast of France. It was introduced to Kenya in 1930's and has been developed for milk production. The breed is mainly found in central highlands and parts of Rift Valley with a fair population domiciled at ADC and Mukumu farms. Guernsey population in Kenya has been reducing over years because of low utilization. The Guernsey breed society is the custodian of the breed standards and promotes uptake of the breed. The breed's attributes include moderate daily feed requirements, good feed conversion efficiency, early reproductive maturity, good calving ease and temperament.

The breed is known to perform well under various production systems ranging from high input zero-grazing to semi zero-grazing system. It is more tolerant to heat stress and diseases than other dairy breeds in the country.

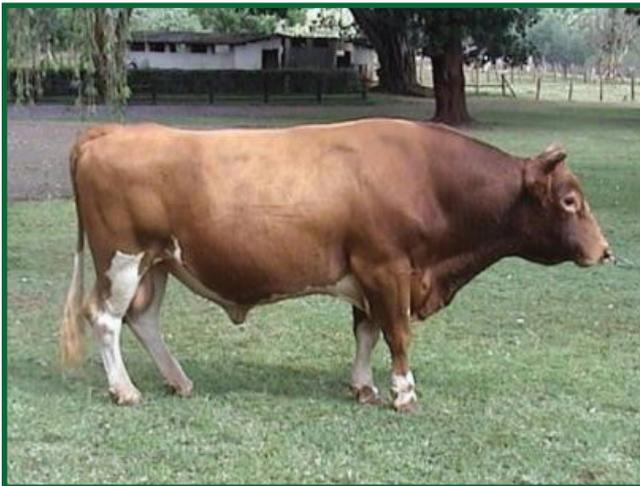


Figure 31: Guernsey Bull



Figure 32: Guernsey Cow

Breed Characteristics		
Physical description	Coat colour	Fawn brown, yellow to reddish-brown with white patches
	Coat	Shiny, Short and fine hair
	Pigmentation	Pink
	Height at withers	1.3 – 1.5m
	Horns	Mostly short-horned, Few Polled
	Ear orientation	Horizontal or semi-pendulous
	Face	Concave
Production	Milk (Kg) per Lactation	From 2000 – 5000 in 305 days with 4.2% - 4.6%Fat and 3.8–4.3%Protein
	Mature live Weight (Kg)	Females 320 – 500 Males 500-700
Reproduction	Fertility	Above 80%
	Age at first service	13 – 18 months
	Age at first calving	22 – 27 months

3.2.4. Jersey

The breed originated from the Jersey Island of the coast of France. It was introduced to Kenya in 1920 by the white settlers. Jersey breed is the third largest among the four exotic dairy cattle populations in Kenya. The herds are found mostly in Nairobi area, coastal region, Kiambu and Nakuru counties. The Jersey Breed Society of the Kenya is the custodian of the breed standards and its promotion. The breed is ideal for small-holder dairy producers where land parcels are small.

The breed is known to perform well under various production systems ranging from high input zero-grazing to semi-zero system. A Jersey cow in milk is able to sustain itself without losing body condition throughout the lactation period. The Jersey is hardy and adapted to varied Agro-Ecological Zones. It has hard black feet that are less prone to lameness. They are well-known for their high feed conversion efficiency and produce high quality milk rich in fat, protein, minerals and trace elements and has relatively low feed requirements. The breed is suitable for cross breeding/ improving local breeds due to its small size.



Figure 33: Jersey Bull



Figure 34: Jersey Cow

Breed Characteristics		
Physical description	Coat colour	Typically light brown though this can range from almost grey to dull black
	Coat hair	Shiny, short and fine
	Pigmentation	Black nose and a white band around the muzzle
	Height at withers (cm)	130 – 150
	Horns	Mostly short-horned
	Shape of ears	Lateral and straight
	Face	Short, concave shape from the side with black muzzle and protruding black eyes
Production	Milk (Kg) per lactation	2000 – 5000 in 305 days with fat of 5.0% - 6.5% and 3.8 – 4.5% Protein
	Mature live Weight (Kg)	Females 250 – 350 Males 300 – 400
Reproduction	Fertility	Above 85%
	Age at first service (months)	12 – 18
	Age at first calving(months)	21 – 27

4. GOATS

The majority of goats in Kenya are indigenous and naturally adapted to various climatic conditions and are referred to as the Small East African Goat (SEAG). These animals play an important role in provision of food, livelihoods as well as for socio-cultural practices in most communities in marginal areas of the country. The local goats contribute immensely during drought recovery amongst the pastoralists. There are an estimated 26,170,371 indigenous goats, while exotics, mostly introduced for milk production in high rainfall and agro-pastoral areas, are estimated to be 575,545 head. (MOALFI, 2018 NSAP On management of ANGR)

4.1. INDIGENOUS GOAT BREEDS

4.1.1. Small East African Goat

The SEAG is a diverse group of goats with variable type, conformation and body size. According to DAGRIS (2018), the SEAG is called different local names depending on the rearing community, like the East African dwarf, Sebei, Karamoja etc. The breed group belongs to the short-eared and small-horned goats. The breed is distributed throughout a wide and diverse range of environments in Kenya, Tanzania, Uganda and southwards through central Africa as far as Zaire, Angola and the north of Namibia. The breed is mainly reared under extensive production system. They are hardy animals generally used for meat rather than milk. It expresses a number of variants in different ecozones.



Figure 35: SEAG Buck



Figure 36: SEAG Doe

Breed Characteristics			
Physical description	Coat colour	Variable in colour and patterns	
	Coat hair	Short, fine and smooth	
	Skin pigmentation	Black	
	Height at withers (cm)	60 -65	
	Horns	Predominant Short Horned	
		Few Polled	
Shape and size of ears	Variable with prick ears of moderate size		

Breed Characteristics		
Production	Average daily gain (g/day)	67 - 70
	Weaning weight (kg)	8 - 10
	Age at weaning (month)	3 - 4
	Yearling weight (kg)	15.8
	Mature weight of does (kg)	32 - 36
	Mature weight of bucks (kg)	36 - 42
	Average milk daily yield (ml/day)	200 - 300
Reproduction	Age of doe at first kidding (months)	20 - 24
	Fertility (%) (number of parturitions per annum)	89

4.1.2. Galla goat

Galla goat is indigenous to northern Kenya and it is utilized by the communities for milk, meat, skin, manure and socio-cultural practices. The Galla is also known by other names such as Larger-white-Somali, Digodi, Marebo, Borana, Benadir and Gigwain. The breed has two sub-types known as the Degyir for meat and the Degeun reared for milk production. The Galla goat originated from Arabian peninsula and is widely distributed in the ASAL's of Kenya, Ethiopia, Djibout, Eritrea and Somalia. It is mostly reared by communities under extensive and semi zero-grazing pastoral to agro-pastoral production systems. It has very strong jaws and teeth that makes it an excellent browser and also has long strong legs that enable it to walk long distances. Its characteristic glossy white colour makes it heat tolerant.



Figure 37: Galla Goat Buck



Figure 38: Galla Goat Doe

Breed Characteristics		
Physical description	Coat colour	Predominantly white
	Coat hair	Short, fine and smooth
	Skin pigmentation	Black
	Height at withers, (cm)	Buck 70-75
	Doe 60	
	Horns	Horned, Polled
	Shape of ears	Horizontal or semi-pendulous

Breed Characteristics		
Production	Face	Straight
	Birth weight (kg)	3.0 – 3.5
	Weaning weight (kg)	18.0 – 24.0
	Yearling weight (kg)	28.0 – 32.0
	Mature weight of does (kg)	45-55
	Mature weight of bucks (kg)	70 - 75
	Average milk daily yield (ml/day)	1000
Reproduction	Age of doe at first kidding (months)	20 - 24
	Fertility (%)	75

4.2. EXOTIC GOAT BREEDS

4.2.1. Kenyan Alpine Goat

The Alpine is a medium sized dairy goat which is popular in Central and Western Kenya due to its high milk production and adaptability to different climatic conditions. It originated from the Alps mountain regions of Europe in France, Switzerland and Germany. The breed was introduced in Kenya from Germany in the early 1980s to central Kenya where it is being promoted by Dairy Goats Association of Kenya (DGAK). Today, Kenya Alpine is predominantly found in Nyeri, Murang'a, Kirinyaga, Embu, Nakuru, Kiambu and Vihiga counties. At Egerton University Farm, Tatton Agricultural Park (TAP), a flock of British Alpine has been introduced for research purpose. The breed is reared under intensive and semi intensive production system. It is a hardy goat and thrives in a wide range of climatic conditions, but preferably the high rainfall areas of Kenya.



Figure 39: Kenyan Alpine buck



Figure 40: Kenyan Alpine Doe

Breed Characteristics			
Physical description	Coat color	Mainly brown with shades of grey, or black and a black topline	
	Coat hair	Short on body but long on the chest, thigh and mane	
	Skin pigment	Black	
	Height at withers (cm)	Buck	80 - 90
		Does	70 - 76
Horns	Horned or polled		

Breed Characteristics		
	Shape of ears	Erect and medium
Production	Birth weight (kg)	2.0 – 3.5
	Weaning weight	15.0 – 18.0
	Weaning age (Months)	3 - 4
	Yearling weight (kg)	28.0 - 32.0
	Weight of mature does (kg)	50 - 60
	Weight of mature buck (kg)	70 - 76
	Milk yield (Kg) per day	2.5 – 4.0
Reproduction	Age of doe at first kidding (months)	18 – 24

4.2.2. Saanen Goat

Saanen is a large dairy goat breed that has been extensively crossbred with other dairy goats due to its high milk production. The breed is prone to photo sensitivity due to its pink pigmentation. Saanen originated from Germany. It was introduced in Kenya in 1990s by Heifer International in South Nyanza and it is being promoted by South Nyanza Goat Breeders Association, based at Rongo. There are small populations of the breed in Central Rift Region specifically in Njoro and Egerton University Farm, (Tatton Agricultural Park). It is mainly reared under intensive and semi intensive systems. Farmers are advised to rear the goat in sheds during sunny weather.



Figure 41: Saanen Buck

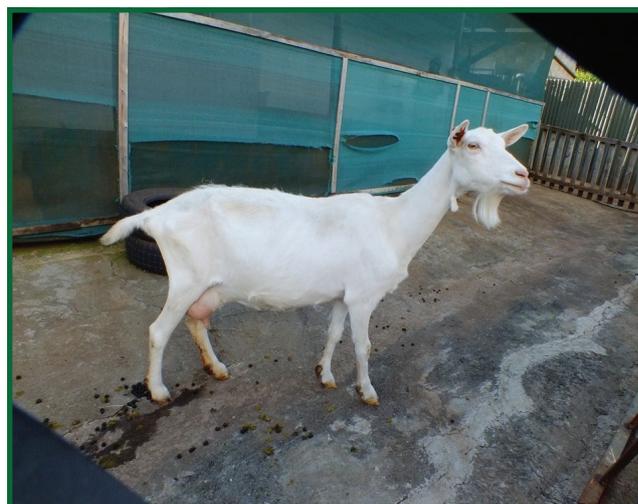


Figure 42: Saanen Doe

Breed Characteristics			
Physical description	Coat color	White or cream	
	Coat hair	Short, fine and smooth	
	Skin pigment	Pink	
	Height at withers (cm)	Buck	81-92
		Doe	74-80
	Ears orientation	Erect and point upwards	
	Horns	Horned or polled	
Production	Birth weight (Kg)	2 - 3	
	Weaning weight (Kg)	15 - 20	
	Body weight at 12 months (Kg)	25 - 27	

Breed Characteristics		
	Weight of mature does (Kg)	50-70
	Weight of mature buck (Kg)	70-100
	Milk yield per day (LT)	3-5
Reproduction	Age of doe at first kidding (months)	18-20

4.2.3. Toggenburg

This is a dairy goat that is suited to the Kenya highlands where heat stress is not a problem and fodder is of good quality. The breed originated from Switzerland and spread to other parts of the world. The Toggenburg goats in Kenya are reared in large numbers in the following counties where it is currently promoted by breed associations after it was introduced by Farm-Africa in 1996; Meru (Meru Dairy Goat Breeders Association), Tharaka-Nithi (Tharaka Nithi Dairy Goat Breeders Association), 2003, Kitui (Kitui Mwingi Dairy Goats Breeders Association) and Makueni (Utheu wa Aka Women SHG, Kibwezi). In Nakuru County Toggenburg goats are also reared in some good numbers by farmers who formed Nakuru Sheep and Goats Breeders Association. In Central Kenya, especially Kiambu and Nairobi Counties, there is some good flocks of Toggenburg goats. The breed is reared under both intensive and semi intensive systems. Toggenburg goats have proved to be well adapted and large flocks are found in the highlands and agro-pastoral areas of Kenya for milk production. It is known to be of good temperament.



Figure 43: Toggenburg Buck



Figure 44: Toggenburg Doe

Breed Characteristics			
Physical description	Coat color	Brown or greyish brown with distinct white stripes on the face and legs	
	Coat hair	Short in females, fine and smooth	
	Skin pigmentation	Brown	
	Height at withers (cm)	Buck	81-92
		Doe	74-80
	Ear orientation	Erect	
Horns	Horned or polled		
Production	Birth weight (Kg)	2.2 – 2.5	
	Weaning weight (Kg)	15 - 18	
	Body weight at 12 (months)	24 - 26	

Breed Characteristics		
	Weight of mature Buck (Kg)	65 - 70
	Weight of mature Doe (Kg)	50 - 60
	Milk yield per day (LT)	1-3
Reproduction	Age of doe at first kidding (months)	18-20

4.2.4. Anglo Nubian

The Anglo-Nubian is a British goat. It was developed from cross-breeding of the native British goats and a mixed population of large lop-eared goats from India, the Middle East and North Africa. The Anglo-Nubian goat is large in size with characteristic long and pendulous ears, and a “Roman” nose. Its milk has a high average butter fat content (4%-5%). It is well adapted to hot climatic conditions. The Anglo Nubian is a dual-purpose goat and therefore it is used in cross breeding programmes to increase milk and meat production of indigenous goat breeds. They are mainly reared under extensive production systems. Other farmers import them and rear them under intensive system, together with other dairy goats to improve butter fat content in milk.



Figure 45: Anglo Nubian Buck



Figure 46: Anglo Nubian Doe

Breed Characteristics		
Physical description	Coat colour	Typically light brown though this can range from almost grey to dull black
	Coat hair	Shiny, short and fine
	Pigmentation	Black nose and a white band around the muzzle
	Height at withers (cm)	130 – 150
	Horns	Mostly short-horned
	Shape of ears	Lateral and straight
	Face	Short, concave shape from the side with black muzzle and protruding black eyes
Production	Milk (Kg) per lactation	2000 – 5000 in 305 days with fat of 5.0% - 6.5% and 3.8 – 4.5% Protein
	Mature live Weight (Kg)	Females 250 – 350
		Males 300 – 400

Breed Characteristics

Reproduction	Fertility	Above 85%
	Age at first service (months)	12 – 18
	Age at first calving(months)	21 – 27

4.2.5. Boer Goat

This is a medium sized breed for meat. The nose is convex shaped. The colour pattern mostly white body with red head and neck. In some instances, it can be all white or all red. Cases of white with red spots or red with white spots do occur. Ears are large and drooping while horns are curled backwards and outwards. It is a native of South African and the name Boer means farmer in Afrikaan. Its fast growth rate, high meat proportion to body weight, high fertility and adaptability to diverse environments make it a breed of choice for commercial goat meat production. Pockets of Boer goats in Kenya are as result of direct importation from Southern Africa and they are found in some ranches in Laikipia and Nakuru Counties and in smallholder farming system in Central Kenya region.



Figure 47: Boer Buck



Figure 48: Boer Doe

4.2.6. Oberhasil

Oberhasli goat is a medium sized animal. Primary color of the Oberhasli goats is chamois. Chamois is described as: Bey – ranging from light to deep red, with the later most desirable. Oberhasli goats are among the best dairy goat breeds in the world. They are mainly kept for milk production. They are suitable for commercial dairy goat farming business. The does are excellent milk producers. The Oberhasli goat was developed in the mountains of Switzerland. In Kenya, only a small number are reared for milk and hobby. The few farmers that rear this goat put them under semi-intensive



Figure 49: Oberhasil Goat Buck



Figure 50: Oberhasil Goat Doe

4.2.7. Kalahari Red

The Kalahari Red is a breed of goat originating from Southern Africa. Their name is derived from their red coat and the Kalahari Desert where they were developed. They are reared for meat production. Their meat is known to be tender. They are very hardy and their colour enhances camouflage in the desert environment where they are well adapted. In Kenya, a flock is found in ODL Ranch in Rumuruti, Laikipia County.



Figure 51: Kalahari Red Buck



Figure 52: Kalahari Red doe

5. SHEEP

Sheep are an important species of livestock in Kenya with an estimated population of 18,983,760 million heads (MOALFI, 2018 NSAP On management of ANGR) and there are about 4 identified ecotypes constituting the Small Eastern Africa sheep, while the Dorper is an adapted exotic breed imported from South Africa. The indigenous breeds exhibit a number of variants, that can be exploited for their breed improvement and conservation. These indigenous sheep have received minimal attention and some are at risk of extinction due to indiscriminate cross breeding with exotic wool sheep and the Dorper. The population of wool sheep is on the decline since the collapse of the wool market. Sheep production and productivity in the country is constrained by feed shortages, diseases, poor infrastructure, lack of market information and technical capacity, and an absence of planned breeding programs and breeding policies. Sheep breeds have evolved over the centuries in diverse, stressful, tropical environments have a range of unique adaptive traits (e.g. resistance to diseases, adaptation to heat and solar radiation, tolerance to water scarcity, ability to use low quality feed, etc.). These traits enable them to survive and be productive in harsh environments. The potential for sheep in Kenya is huge and investment in this sub-sector is largely required.

5.1. INDIGENOUS SHEEP

5.1.1. Small East Africa Sheep

This is a sheep of the humid and sub-humid environments of Eastern Africa. Small East Africa Sheep has a characteristic long S-shaped fat tail. Rams may have significantly large fat tail which can weigh up to 5Kgs. It exhibits slow growth rates. Rams matures in 3-4 years. This characteristic is co-dominant. They are mainly kept for mutton and fat (Lard). Have small rib eye muscle, thin ribs and poor marbling but very delicious meat for well-kept animals. This large S- shaped fat tail sheep was selected for many generations for cultural reasons. At the coastal region the communities know it by the name “Ng’onzi”. They are reared under smallholder low input system and it is a very hardy sheep with high tolerance to worms particularly wire worms and foot rot.



Figure 53: Small East Africa Ram



Figure 54: Small East Africa Ewe

Breed Characteristics		
Physical description	Coat color	White body and red head and neck, white body, red body, black body, mottled, pied.
	Coat hair/wool	Short hair
	Skin pigmentation	Brown to red
	Height at withers (cm)	Ram 48 - 60
		Ewe 45 - 57
Shape of ears	Medium drooping or vestigial	
Production	Horns	Polled
	Birth weight (kg)	1.8 – 2.5
	Weaning weight (kg)	10 - 20
	Body weight at 12 months (kg)	Ram 25 - 38
		Ewe 20 - 35
	Weight of mature ram (kg)	40 – 45
	Weight of mature ewe (kg)	25 – 30
	Lactation period (months)	4 – 6
Slaughter (%)	40 - 50	
Reproduction	Age of ewe at first lambing (months)	18 – 24
	Age at puberty (Months)	Male 4 - 6
		Females 5 - 7

5.1.2. Black Head Persian sheep

The Black Head Persian is an improved Somali sheep developed in South Africa. This sheep is fat rumped, white with a black head. It belongs to the fat-tail type, and both of the breed's sexes are polled. The animal is mainly reared for meat production. They are hardy; the skin quality is higher than other indigenous hair sheep and is important for mutton production.

The Black Head Persian, is also known as the Berbera Blackhead, Black headed Somali, Pecora somala a testa nera (Italian), Ogaden. They are mainly found in Somali, North Eastern Province of Kenya and Sudan where they are mainly reared under pastoral system. This breed has ability to thrive well and their potential for meat production under harsh environmental conditions is high. They are good in walking long distances in search of pasture and water.



Figure 55: Blackhead Persian Ram



Figure 56: Blackhead Persian Ewe

Breed Characteristics		
Physical description	Coat color	White body and black head dominant can be patchy, pied or plain
	Coat hair/wool	Short smooth hair
	Skin pigmentation	Black
	Height at withers (cm)	Ram 61.3 Ewe 59.9
Production	Ear orientation	Medium and drooping
	Horns	Polled
	Birth weight (kg)	1.5 – 1.8
	Weaning weight (kg)	10 - 12
	Body weight at 12 months (kg)	Ram 15 -18
		Ewe 12 - 16
	Weight of mature ram (kg)	29.5
	Weight of mature ewe (kg)	25.8
Slaughter (%)	35 - 40	
Reproduction	Age of ewe at first lambing (months)	14 -23
	Age at puberty (months)	Male 9- 18
		Females 15 – 21

5.1.3. Red Maasai sheep

The Red Maasai (RM) is an East African fat-tailed sheep characterized by short reddish brown to almost black course hair. They are sheep of the semi-arid regions of Kenya and Tanzania. It is kept for meat, lard and milk and for numerous cultural rites. They are fat-tailed and slightly fat-rumped. The Red Maasai sheep are used for their meat, milk and lard. The breed is indigenous to Kenya and Tanzania where its reared by the Maasai people under nomadic pastoralism. In Kenya, they are mostly found in the semi-arid regions of southern Kenyan rangelands, especially in Kajiado, Narok (Trans Mara), Laikipia, Samburu and West Pokot Counties of Kenya. Red Maasai sheep has the following adaptative characteristics: tolerate to water and feed stress, can walk long distances in search of water and pastures, able to run away or fight off small predators. The breed has also been shown to be tolerant to bluetongue virus infection, heamonchus challenge and a more suited to survive under high trypanosome challenge areas. Despite all this, the Red Maasai Sheep is under threat from indiscriminate crossbreeding with the Dorper and in some instances, the wool sheep. However, Red Maasai Sheep Breeders Society of Kenya (Registered in 2016) promotes improvement, utilization and conservation of the breed.



Figure 57: Red Maasai sheep Ram



Figure 58: Red Maasai Sheep ewe

Breed Characteristics		
Physical description	Coat color	Red or black sometimes with white markings
	Coat hair/wool	Mottled or greasy hair
	Skin pigmentation	Brown or Black
	Height at withers (cm)	Ram 70 - 72 Ewe 66 - 68
Production	Ear orientation	Long often drooping at an angle
	Horns	Male has twisted horns; females often lack horns
	Birth weight (kg)	2.5 – 2.7
	Lambing Interval (days)	300 - 340
	Lambing rate %	80 – 84
	Weaning weight (kg)	15-20
	Av. DWG (g)	128
	Body weight at 12 months	Ram 35-40 Ewe 25-30
	Weight of mature ram (kg)	58-80
	Weight of mature ewe (kg)	45-70
	Milk yield per day (ml)	300
Reproduction	Age of ewe at first lambing (months)	15 – 18
	Weaning rate (%)	97
	Twining rate (%)	15

5.2. EXOTIC SHEEP

5.2.1. Dorper sheep

The Dorper sheep is a composite breed of South Africa developed between 1940 to 1950, with the aim of producing lambs with good mutton qualities, in arid and extensive grazing conditions. Dorper sheep was developed through the crossing of the Blackhead Persian ewes with the Dorset Horn rams. A stabilized type was developed through inter-se mating. A Dorper breed society of South Africa was established in 1950. Dorper have a short loose white covering of mixed hair and wool with a natural clean kemp underline. The Dorper is barrel-shaped, polled or horned with short, black hair on the head and neck. Due to its productivity, hardiness, and other important positive mutton and adaptive merits, the Dorper has become one the most numerous sheep breed in Kenya, among the small holder livestock keepers, pastoralists and commercial ranchers.

The first imports of Dorper sheep to Kenya from Southern Africa was in 1956 and it was for the purpose of Range Research at Kiboko Centre. In 1970s, the Sheep and Goats Development Project (FAO-UNDP, 1974-1984), made several imports for multiplication and research. Dorper Sheep Breeders Society of Kenya (Registered in 2012) is promoting sustainable production and utilization of Dorper sheep. smallholder farmers and pastoralists, keep it under extensive and semi-intensive systems. They are non-selective grazers and fit well in range management system where they can be used to convert feed resources, which are not utilized or underutilized by other livestock. It has a long breeding season, so lambs can be dropped at any time of the year.



Figure 59: Dorper Sheep Ram



Figure 60: Dorper Sheep Ewe

Breed Characteristics		
Physical description	Coat color	White body and black head
	Coat hair/wool	Kemp with short coarse wool
	Skin pigmentation	Black
	Height at withers (cm)	Ram 62 - 67 Ewe 60 - 63
Production	Shape of ears	Medium erect ears
	Horns	Male polled or with short horns, females polled
	Birth weight (kg)	3 – 4
	Lambing Interval (months)	8
	Lambing rate %	150 - 180
	Lamb survival	90 - 96
	Fertility rate %	78 - 90
	Twining rate %	10
	Weaning weight (kg)	23 – 35
	Av. DWG (gm)	243
	Body weight at 12 months	Male 40 - 50 Female 35 - 45
	Weight of mature ram	65 - 80
	Weight of mature ewe	55 - 65
	Slaughter (%)	50 - 54
	Milk yield per day (ml)	600 - 800
	Butter fat (%)	5.5
Reproduction	Age of ewe at first lambing (months)	12 – 15

5.2.2. Corriedale sheep

Corriedale sheep is a cross between Merino and Lincoln and it was developed simultaneously in Australia and New-Zealand around 1874. Corriedale sheep is a dual-purpose sheep for mutton and wool. Both sexes are polled. They are docile, with good mothering ability and high fertility. Their Head is well-woolled, open faced which is free from wool blindness. Black or brown spots on hair or wool are un-desirable. It is found in Kenyan highlands under intensive and semi-intensive production producing quality wool and mutton. It is relatively hardy and can adapt to different environmental conditions. Well adapted to range conditions as well as high rainfall areas.



Figure 61: Corriedale Sheep Ram



Figure 62: Corriedale Sheep Ewe

Breed Characteristics		
Physical description	Coat color	White
	Coat hair/wool	Fine
	Skin pigmentation	Dark
	Height at withers (cm)	Ram 58 - 63 Ewe 57 - 59
Production	Shape of ears	Thick and point sideways
	Horns	Polled
	Birth weight (Kg)	3.5 – 4.5
	Weaning weight (Kg)	20 - 25
	Body weight at 12 months (Kg)	Ram 40 - 45 Ewe 35 - 40
	Weight of mature ram (Kg)	79-125
	Weight of mature ewe (Kg)	58-82
	Wool quality	Good
	Wool length (mm)	75-125
	Wool diameter (microns)	28-33
	Wool weight (av. Kg)	4.5 - 6.5
Reproduction	Age of ewe at first lambing (months)	10 - 12
	Lambing (%)	90-130

v

5.2.3. Hampshire Down sheep

Hampshire Down originated from United Kingdom. It was developed around 1829 by crossing Southdowns with the Hampshire breed. Hampshire Down is a prime mutton sheep. They have longer, more muscled and leaner carcasses. This breed is good for upgrading purposes due to its high growth rate. Its wool is of low quality, with black fibres on the face and neck. In Kenya, it is reared in the highland areas under extensive and semi intensive system, mainly for mutton. Pure stands are found in commercial farms in Narok County, Laikipia County, Trans Nzoia County and Nakuru County where it is reared to produce prime lambs for mutton. In the same regions, small holder farmers rear them for mutton and for upgrading their indigenous sheep. The breed is adapted to a wide range of environmental conditions.



Figure 63: Hampshire Down Ram



Figure 64: Hampshire Down ewe

Breed Characteristics		
Physical description	Coat color	White body, black face and legs
	Coat hair/wool	Fine, soft and white wool
	Skin pigmentation	Black
	Height at withers (cm)	Ram 65 -76 Ewe 62 - 67
Production	Shape of ears	Moderately long and horizontal
	Horns	Polled
	Birth weight (Kgs)	2.2 -3.6
	Weaning weight (kg)	15 - 18
	Body weight at 12 months (Kgs)	Ram 28 - 35 Ewe 25 - 32
	Weight of mature ram (Kgs)	90 – 120
	Weight of mature ewe (Kgs)	60 -90
	Wool length (cm)	5 -8
	Wool diameter (microns)	25-33
	Wool weight (Kgs)	2 – 3
Reproduction	Age of ewe at first lambing (months)	10 - 12
	Age at maturity (months)	Ram 12 - 15 Ewes 15 -18
	Lambing (%)	125-150

5.2.3. Romney Mash sheep

Romney Marsh sheep were developed on low lying land in Kent and Sussex, adjoining the English Channel. Romney Marsh sheep is a large dual-purpose breed. It has an open-face with long wool that grows over the legs at full length. Their nose and hooves are black pigmented. In Kenya the sheep was introduced by the white settlers in the highlands. Its reared under intensive and semi intensive system. They are best suited for wet environments. It is adapted to feed in marshy areas as it has very hard hooves which are resistant to foot rot. They have good resistance to foot rot disease. And it is also said that, liver fluke rarely affects these animals.



Figure 65: Romney Marsh Ram



Figure 66: Romney Marsh Ewe

Breed Characteristics		
Physical description	Coat color	White, grey
	Coat hair/wool	Fine, lustrous and locks
	Skin pigmentation	Black
	Height at withers (cm)	Ram 55 – 63 Ewe 53 – 56
Production	Shape of ears	Medium and horizontal
	Horns	Polled
	Birth weight (Kg)	2.5 – 3.5
	Weaning weight (Kg)	15 – 18
	Body weight at 12 months (Kg)	Ram 20 - 25 Ewe 18 - 25
	Weight of mature ram (Kg)	102 - 124
	Weight of mature ewe (Kg)	68 – 90
	Wool length (mm)	85 - 130
	Wool diameter (microns)	31 – 33
	Wool weight (Kg)	3.6 – 5.4
Reproduction	Age of ewe at first lambing (months)	15 - 18
	Lambing (%)	150

5.2.4. Merino Sheep

The Merino sheep is native to Spain but it has its origin from sheep of Asia Minor that came through North Africa. Merino sheep first came to Africa, in 1790, by way of a gift to the Dutch government. They did very well in the Dutch Cape Colony (South Africa). It is from South Africa that Merino sheep found their way to Australia. It is a medium breed kept primarily for very good quality wool (fine wool). In Kenya they are reared at medium and to high altitudes under intensive and semi intensive conditions, ranching and agro-pastoral management systems. The breed is adapted to high rainfall grassland regions. Animals of this breed are less susceptible to fly strike because of their smooth body in comparison to sheep with skin folds. Its hardy and has excellent mothering ability. It has good flocking instinct. It is a very hardy and strong animal, well adapted to almost all climatic conditions and they are excellent grazers. Merino sheep flocks have been diminishing over time in Kenya, from the time the wool industry collapsed. Farmers who had large flocks cross-bred them with dual purpose sheep as well as Dorper sheep for production of mutton. Currently, the remaining small flocks are in government stations and farms.



Figure 67: Merino Sheep Ram



Figure 68: Merino Sheep Ewe

Breed Characteristics		
Physical description	Coat color	white
	Coat hair/wool	Fine wool
	Skin pigmentation	Pale
	Height at withers (cm)	Ram 73 -81 Ewe 67 – 70
Production	Shape of ears	Medium and erect
	Horns	Horned or polled
	Birth weight (kg)	2.5 – 3.5
	Weaning weight (kg)	17 – 25
	Body weight at 12 months	Ram 30 - 36 Ewe 25 - 30
	Weight of mature ram (kg)	80-105
	Weight of mature ewe (kg)	55-80
	Slaughter (%)	36.8 – 38.5
	Wool weight (Ave. kg))	3.9 – 4.5
	Wool diameter (microns)	21 – 22
	Wool (staple) length (cm)	8.9 – 9. 1
	Wool texture	Fine
Reproduction	Age of ewe at first lambing	15 - 18
	Fertility %	82 – 90.7

6. CAMEL

Camels originated from North America about 50-60 million years ago and they evolved into two main types namely the Bactrian camel (two humps) and the dromedary (one-humped). Camels are used for transport, as a beast of burden, and for meat, milk and hides and, in some communities, for its blood. They can live for 40 years, but the productive lifespan is between 20 and 30 years.

In Kenya, different camel breeds are traditionally named after the ethnic communities who own and keep them. These are Somali, Rendille, Gabbra and Turkana breeds. The fifth breed of camel called Pakistani which was imported from Pakistan into Laikipia ranches in the early 1990s. However, there are no pure Pakistan camels but there exists crosses with Somali or Turkana breeds. Currently, Kenya has 3,222,593 camel population(MOALFI, 2018 NSAP On management of ANGR). Camel is the key contributor to food and nutritional security through milk and meat to human populations in ASALs. In addition, it contributes to sustainable socio-economic wellbeing through sales of live animals and its products, payment of dowries and acting as economic security. Among the pastoral community, camels are a symbol of wealth, prestige and honour.

6.1. Somali Camel

This is the breed with the highest camel population in Kenya mainly inhabiting Garissa, Mandera, Wajir, Moyale, Isiolo and Tana River counties. It is mainly kept by the Somali community in the north eastern region of Kenya. Somali camel is the largest native single-humped breed in Kenya. Due to its comparatively better performance, it has been distributed to most ASAL environments in the county. Somali camel is known for high adaptability in hot and dry environments with a strong ability to walk longer distances and going for a longer period without water in free range system of production. Its milk and meat are highly medicinal. Special products from camel include the nyiri nyiri and camel fat.

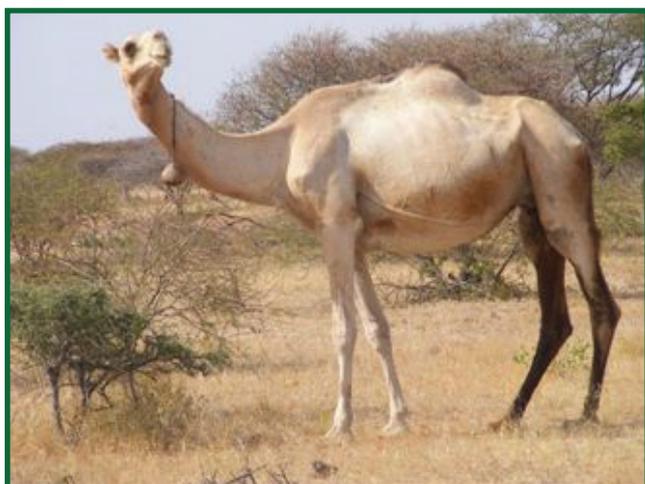


Figure 69: Somali Camel Bull



Figure 70: Somali Camel Cow

Breed Characteristics		
Physical description	Coat colour	Creamy
	Coat hair	Short with Males having a dark brown hair line from withers to hump
	Average Height at withers (m)	2
	Average Abdominal girth (m)	2.6
	Average Hump circumference	1.47 (m)

Breed Characteristics		
Production	Mature live weight (Kg)	450
	Milk Production (Kg/day)	3-5
Reproduction	Age at first calving (years)	4 - 5

6.2. Gabbra Camel

This is the second largest native camel breed. It is named after the Gabbra communities that inhabit the Marsabit county of Kenya, It is highly adapted to extreme rocky desert condition of Chalbi desert and can tolerate very severe drought than any other camel breed in Kenya. The light coat colour makes able to thrive and withstand hot and dry environmental conditions.

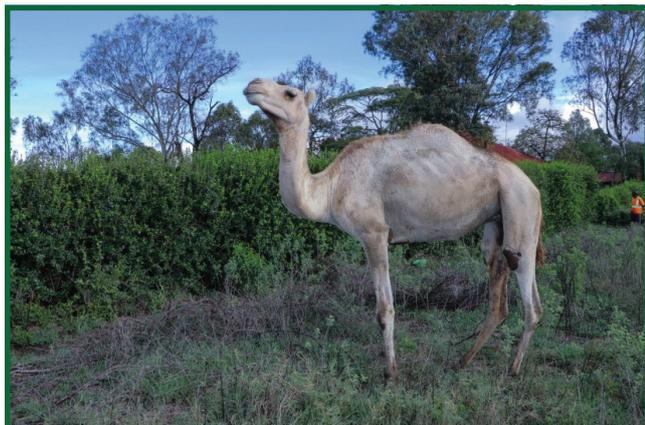


Figure 71: Gabbra camel bull



Figure 72: Gabbra camel cow

Breed Characteristics		
Physical description	Coat colour	Light Creamy to whitish
	Coat hair	Short
	Average Height at withers (m)	1.8
	Average Abdominal girth (m)	2.45
	Average Hump circumference (m)	1.27
Production	Mature live weight (Kg)	300-550
	Milk Production (Kg/day)	1-3
	Lactation length (months)	12 to 17
Reproduction	Age at first calving (years)	5 to 6

6.3. Rendille Camel

This is the third largest native camel breed. It is named after the Rendille communities that inhabit the northern counties of Kenya. It is highly adapted to extreme desert condition and tolerant to the severe drought. In addition to meat and milk, the Rendille usually use blood to improve their diet. The brown coat colour makes able to thrive and withstand dry environmental conditions.

Breed Characteristics		
Physical description	Coat colour	Brown to whitish
	Coat hair	Short
	Average Height at withers (m)	1.75

Breed Characteristics		
	Average Abdominal girth (m)	2.36
	Average Hump circumference (m)	1.19
Production	Meat: Mature live weight (Kg)	300-500
	Milk Production (Kg/day)	1- 2.5
	Lactation length (months)	12 to 17
Reproduction	Age at first calving (years)	5 - 6

6.4. Turkana Camel

This is the smallest camel breed in Kenya. It is named after the Turkana community that keeps it. It is native to eastern parts of the country specifically in Turkana County but also inhabits parts of West pokot, Baringo and Samburu counties. The breed is highly adapted to rough terrain and extreme drought. In addition to milk and meat, the Turkana community utilizes blood tapped from live animals for food for the young and elderly.

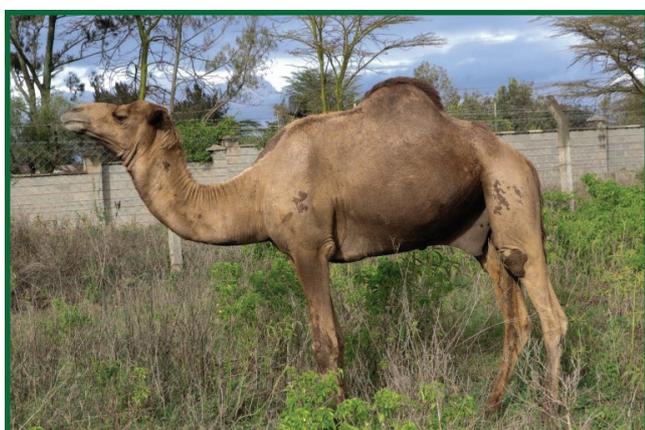


Figure 73: Turkana Camel bull

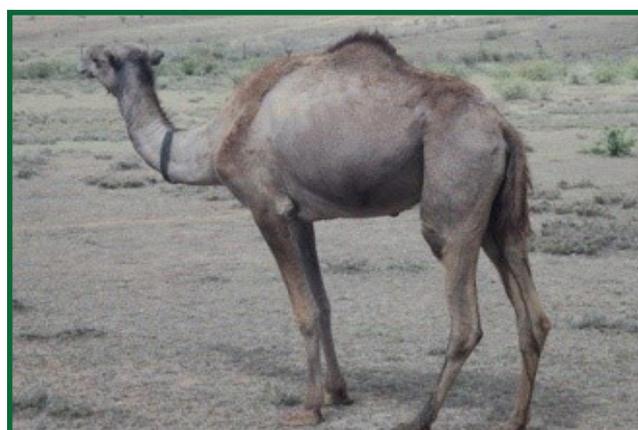


Figure 74: Turkana Camel cow

Breed Characteristics		
Physical description	Coat colour	Dark brown hairs
	Coat hair	Long hairs along the backline and the hump
	Average Height at withers (m)	1.79
	Average Abdominal girth (m)	2.25
	Average Hump circumference (m)	1.21
Production	Mature live weight (Kg)	250-500
	Milk Production (Kg/day)	1 - 2.5
Reproduction	Age at first calving (years)	5 to 6

7. DONKEYS

The estimated population of donkeys in Kenya is 1,965,632 (MOALFI, 2018 NSAP On management of ANGR). While they are found in all the counties, the Arid and Semi-Arid Lands (ASALs) support 84 percent of the population with Turkana County having the highest population of about 600,000. Out of the total donkey population, two-thirds play a major role in rural household economies.

Donkeys are owned by pastoralists, smallholder farmers and micro-entrepreneurs in the transport sector where they serve to sustain their livelihoods. The use of donkeys for draught power and tourism has enabled the donkey owners to participate in the market economies.

According to the Household Economic Analysis Study by The Brooke (2014) in Kirinyaga County; donkey owners earn an average of KES. 300 per day from donkey related economic activities. Unlike other large livestock in the ASALs, the donkey is available to women in cultures where men usually manage livestock. It has reduced the domestic transport burden of rural and peri-urban women in terms of fetching water, ferrying animal feed, transporting building materials among others hence transferring the name “beast of burden” from women to the donkeys. In addition, other than family labor, donkeys are the only alternative to oxen as it is a cheap form of farm-power within reach to the rural population.

In Kenya, donkeys are classified as ecotypes based on where they are found. These are often referred to as breeds. These are mainly the Nubian (Maasai) and the Somali donkey which fall under the standard donkey size category

7.1. *Equus Asinus Somalisensis (Somali Ecotype)*

It is believed to have come from Somali land; it is also known as Bahathora in the Coast: It has notable leg rings (stripes) on both the hind and fore legs, the backline is thin, its colour is grayish. Its ears are large, bordered by black.



Figure 75: Somali male donkey



Figure 76: Somali female donkey

7.2. *Equus Asinus Africanus (Maasai Ecotype)*

It has a stocky body shape. It is generally short with short back, long broad ears, round hips like a drum and short legs. The colour is brownish- grey fading to white on the undersides and legs and has a thick black stripe across the withers. They are believed to have come from Ethiopia



Figure 77: Maasai male donkey



Figure 78: Maasai female donkey

8. PIGS

Pig production in Kenya dates back to the beginning of the twentieth century. The production of surplus cereals and skimmed milk provided the basis for pig-keeping as a subsidiary activity for British settlers who operated large-scale commercial farms during the colonial period from 1900 to 1963. Pig farming is fast growing and the trend is expected to continue over the coming years. Increasing demand, a shorter life cycle with higher return rates and advantageous feed efficiency are key reasons for this development.

The Kenyan pig population is about 504,395 (MOALFI, 2018 NSAP). Whereby 149,965 are in the commercial production system while the rest are under the backyard/traditional system. Western, Rift Valley, Nyanza, Eastern, Central and Nairobi are the six regions with significant pig populations while North Eastern and Coast zones have low pig populations.

Popular pig breeds in the country include Large White, Landrace and their crosses. A few Durocs are also available which are used as terminal sires by Farmer's Choice in the three-way cross-breeding with pure bred large white sows resulting in improved growth rates and carcass quality.

Most pigs in the country are highly inbred and livestock experts agree that pigs in the free range systems are the result of extensive inbreeding between exotic cross-breeds and other types of cross-breeds from neighbouring countries, especially Uganda. The inbred pigs which are often multi-coloured have adapted to the environment and feeding regimes in the free range system which are seen tethered or scavenging. The improved exotic cross-breeds which are usually sourced from commercial pig farms are often bred and reared under confinement. The small-scale, intensive pig-raising system is common in Central, Nairobi North Rift, Narok and Eastern Kenya. Additionally there are a few smallholder intensive pig-raising systems in Busia, Bungoma and parts of Kisumu in Western and Nyanza respectively.

Pigs are, from an economic perspective, an asset representing a store of wealth or safety net in times of crisis; while, from a sociological perspective, traditional ceremonies and beliefs in some places utilise the pig as an asset crucial to their belief system. With regard to gender, pigs generate incomes for women, or marginalized groups within society, in some cultures.

8.1. Duroc Pig

The Duroc pig is a breed of domestic pig originating from the United States. It is one of several red pig strains developed around 1800 in New England. One theory is that the red color of the animal came from the Berkshire pig (a breed which is now black, but was rusty brown at that time) from Britain. It is also believed that the pigs were imported from the Guinea coast of Africa during the time of the slave trade. The modern breed originated from crosses of the Jersey Red and New York's older Duroc. The breed is tolerant to both cold and warm climates.



Figure 79: Duroc Boar

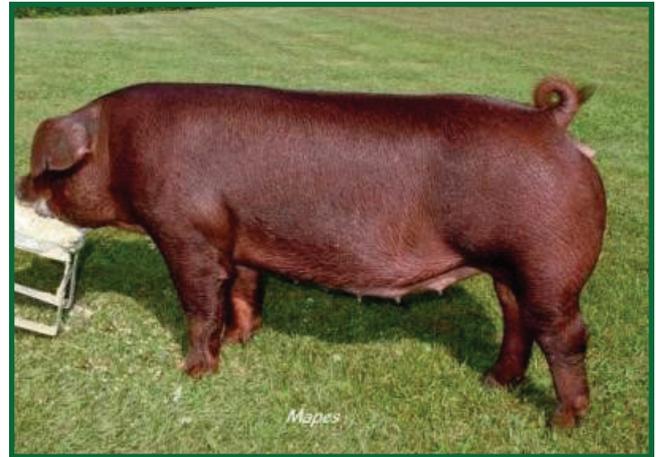


Figure 80: Duroc Sow

Breed Characteristics		
Physical description	Coat colour	Orange-Brown; light golden shade to a deep mahogany red
	Coat hair	Short and brown
	Pigmentation	red
	Ears	Drooping
	Face	Slightly dished.
	Body	Large framed, muscular
Production	Mature live weight	Boars 280 kg
		Sows 250 kg
	Dressing percentage (%)	68-77
Litter size	9	
Reproduction	Age at Maturity (months)	5-6
	Age at first farrowing (months)	9

8.2. Large white Pig

The Large white pig is a breed of domestic pig originating in Yorkshire. It is also known as the Yorkshire pig and the English Large white pig. It is one of the most popular and numerous of all the pig breeds, widely used in crossbreeding and upgrading for intensive pig farming system.



Figure 81: Large White Boar



Figure 82: Large white Sow

Breed Characteristics		
Physical description	Coat colour	white
	Coat hair	White, short
	Pigmentation	White or pink
	Ears	Erect
	Face	Dished
	Body	Large in size, picturesque bearing, excellent conformation with good hams and course boned
Production	Mature live weight (kg)	Boars weigh on average 365 while the sows weigh 280
	Dressing percentage (%)	68-77
	Litter size	12
Reproduction	Age at Maturity (months)	6-7
	Age at first farrowing (months)	9

8.3. Landrace pig

The Landrace breed was developed in Denmark by crossing the native pig with the Large White. It is one of the newest breeds of a Danish origin. Denmark did not export live pigs until World War II, when the best specimens of the breed were exported to Sweden, then progeny from these pigs eventually reached England and Ireland. In 1953, further imports of registered breeding stock were made and the breed society was formed, which amalgamated with the National Pig Breeders' Association in 1978.

It is known for good quality meat (bacon) and is thus used in crossbreeding programs to produce quality Landrace crosses.



Figure 83: Landrace Boar



Figure 84: Landrace Sow

Breed Characteristics		
Physical description	Coat colour	White
	Coat hair	White, Short
	Pigmentation	White
	Ears	Drooping, Lop eared
	Face	Slightly dished
	Body	long back, long nose, light and strong forequarters, excellent ham development
Production	Mature live weight (Kg)	Boars 355
		Sows 290
	Dressing percentage (%)	68-77
	Average litter size	11
Reproduction	Age at Maturity (months)	6
	Age at first furrowing (months)	9

9. RABBITS

Rabbit keeping in Kenya dates back to colonial days but promotion of rabbit production in Kenya was heralded by National rabbit development program of 1980 following a bilateral agreement between the government of Kenya and German international Development Agency (GTZ).

Rabbit production in many parts of Kenya is a youth enterprise. However, many farmers are showing some interest in rabbit keeping mainly due to an emerging market. The cost of production is generally low in respect to housing, feeding and disease control aspects. Rabbits are quick growing and prolific breeders. Potential of rabbit production is high considering that other sources of meat are getting more scarce and costly.

Rabbits, *Oryctolagus cuniculus* provide meat and other products (manure, pelt, fur and urine) can be quickly sold for cash. They are easy to raise but require careful attention. The society is now more health conscious, as a result more are now consuming white meat. Rabbit meat is tasty and has low fat content. This has resulted in high demand for rabbit meat from individuals and the hotel industry, an opportunity that a farmer, especially a small land holder, can take advantage of to make incomes.

Rabbit population is estimated to be 824,555, (MOALFI, 2018 NSAP On management of ANGR) with the higher populations in central, western, and rift valley regions of the country. The production system practiced in Kenya is intensive (cages or hutches).

The carcass qualities of rabbits are:- high quality protein, less fat, highly digestible hence suitable for the sick and convalescents, the meat to bone ratio is high (4:1) and has low cholesterol levels.

9.1. Kenya White Rabbit

This is the most common local rabbit breed and commonly found in central, central Rift valley and western regions of Kenya. When crossed with California or New Zealand white they are good meat producers. They are hardy and well adapted to local climatic conditions.



Figure 85: Kenya White

Breed Characteristics		
Physical description	Coat colour	Purely white
	Size of ears	Broad ears which are held firmly upright
Production	Weaning weight (kg)	0.4-0.6
	litter size (kit/doe)	6-8
	Mature weight (kg)	3-4
Reproduction	Age at maturity (months)	5-6

9.2. New Zealand White Rabbit

The New Zealand White breed originated from America. It is recommended for cross breeding with local breeds (Kenya white). They lack melanin, they have pink pigment which gives animals their skin, hair, and eye colour. The New Zealand white rabbits are by far the most popular and are bred the most often in Kenya. New Zealand white rabbits have a condition called albinism.



Figure 86: New Zealand White

Breed Characteristics		
Physical description	Coat colour	purely white in colour with pink eyes, and broad head
	Size of ears	Big ears
Production	Weaning weight (kg)	1-2
	litter size (kits/doe)	8-10
	Mature weight (kg)	5-6
Reproduction	Age at maturity (months)	5-6

9.3. California White Rabbit

Californian rabbit is a beautiful domestic breed. It is also known as California White. George West in Southern California developed this breed in the early 1920s. He developed the Californian rabbit by crossing Himalayan breeds and the Standard Chinchilla rabbit breed, and then crossed the offspring with the New Zealand Whites. The Californian white rabbit are most widely raised for their fur value and meat production. It is also recommended for upgrading local rabbits i.e. Kenya white.



Figure 87: California White

Breed Characteristics		
Physical description	Coat colour	The entire body is white with patches of black on the ears, tail, legs and nose
	Size of ears	Big ears
Production	Weaning weight (kg)	1-2
	litter size (kits /doe)	8-10.
	Mature weight of does (kg)	4-5
Reproduction	Mature weight of bucks (kg)	5-6
	Age at maturity (months)	5-6

9.4. Dutch Rabbit

The Dutch rabbit, also known as Hollander or Brabander is easily identifiable by its characteristic colour pattern, was once the most popular of all rabbit breeds. However, after dwarf rabbits were developed, the popularity of the Dutch rabbit dwindled. This breed originated from Holland. It was bred around 1850. It is the oldest domesticated rabbit breed. With good care, Dutch rabbits often live between 5 and 10 years, occasionally longer. It is fairly small and compact, hind legs are longer than the fore legs and its fur is short and dense. The head is round and full with short neck, making the head close to the shoulders.



Figure 88: Dutch

Breed Characteristics		
Physical description	Coat colour	The common mark is the formal attire of white band around the neck Black Dutch has dark brown eyes and Blue Dutch have blue grey eyes
	Ear orientation	Ears are stocky, well furred, erect and proportional to the size of head
Production	Weaning weight (kg)	1-2
	Litter size (kits/doe)	6-8
	Mature weight (kg)	5-6
Reproduction	Age at maturity (Months)	5-6

9.5. Flemish Giant Rabbit

The Flemish Giant rabbit is a very large breed and is normally considered to be the largest breed of all the species. It originated from England and Belgium. It was introduced to Kenya by the white settlers during the colonial era. Flemish giants are a utility breed, and are most commonly bred for fur and meat. The breed is also known for its docile nature and patience while being handled. It is a long animal with an arched back which starts from the base of the shoulders and curves towards the tail, has a broad head which is proportional to the body and its fur is thick, glossy and is the same length all over the body. They are prone to sore hock (pododermatitis), a condition caused by standing on wire floor or unsanitary conditions.



Figure 89: Flemish Giant

Breed Characteristics		
Physical description	Coat colour	Vary from solid black and brown eyes, dark blue and bluish eyes, steel grey, light grey, fawn, brown
Production	Ear orientation	Its ears are erect with heavy base and do not lop
	Weaning weight (kg)	1.5-2.5
	Litter size (kits/doe)	8-10
	Mature weight (kg)	6-7
Reproduction	Age at maturity (Months)	5-6

9.6. Checkered Giant Rabbit

The Checkered Giant is a breed of domestic rabbit that originated from France and Germany. The Checkered Giant rabbit is a large breed compared to some other domestic rabbit breeds; it is heavier than some other most popular rabbit breeds, such as the Flemish Giant and Giant Chinchilla. It is believed to be across of Flemish giant and Ear lop, have a muscular build and slender long body. They have arched back and the legs are long and powerful.



Figure 90: Checkered Giant

Breed Characteristics		
Physical description	Coat colour	White with patches of black or brown in the whole body
Production	Ear orientation	Broad ears which are held firmly upright
	Weaning weight (kg)	1-2
	litter size (kits/doe)	8-10
Reproduction	Mature weight (kg)	5-6
	Age at maturity (Months)	5-6

9.7. Chinchilla Rabbit

Chinchilla rabbit is a popular breed and mainly raised as a commercial meat rabbit.

It originated from France and it was bred to standard by M.J. Dybowski. It was introduced in Kenya by European settlers. This breed is mainly reared for meat and fur. There are three types namely; Standard chinchilla, American chinchilla and Giant chinchilla. This breed is useful for up-grading of local rabbit breeds i.e. Kenya white.



Figure 91: Chinchilla

Breed Characteristics		
Physical description	Coat colour	Dense and has a band of under coat colours such as grey with black hair, ebony, silver, black velvet and beige
Production	Ear orientation	Broad ears which are held firmly upright
	Weaning weight (kg)	0.5 - 1
	Litter size (kits /doe)	6-8
Reproduction	Mature weight (kg)	3 -3.5
	Age at maturity (Month)	5-6

10. POULTRY

Poultry plays significant roles in the economic and social life of resource-poor households, contributing to cheap sources of animal proteins and cash income. The main poultry species include domestic chicken, ducks, geese, turkeys, pigeons, quails guinea fowls and ostriches, distributed across all regions of the country. The estimated poultry population in 2018 was 44,624,453, out of which 43,796,477 million were domestic chicken (MOALFI, 2018 NSAP).

10.1. CHICKEN

General information

Both indigenous and imported chicken are present. Out of the population of 43,796,477 domestic chicken, 36,578,441 are indigenous and 7,218,035 are exotic broiler, layers and dual purpose hybrids (MOALFI, 2018 NSAP).

10.1.1. Indigenous Chicken

The indigenous chicken are commonly found wherever there are human settlement across the country. They exhibit wide phenotypic diversity due to varying environmental adaptation and low selection pressures. They are highly adapted to the harsh scavenging conditions, limited and poor feed resources, disease and parasitic challenges. They have not been classified into breeds, but are named according to their morphological features. However the Kuchi type is distinctly different morphologically and genetically and may therefore be classified as a distinct breed. The main types include; normal feathers, frizzled, naked neck, bantam, dwarf, crested and Kuchi.

10.1.1.1. Normal feathers

They are the most common found type of chicken reared by farmers, good for both egg and meat production. They are well distributed across all regions of Kenya.



Figure 92: Cock



Figure 93: Hen

10.1.1.2. Frizzled feathers

This type is characterized by frizzled plumage. The feathers are curved upwards and forward causing a unique appearance of plumage. It is a dual purpose type found mainly in hot and humid regions of Kenya.



Figure 94: Cock



Figure 95: Hen

10.1.1.3. Naked neck

This type is devoid of feathers on its neck. It is a dual purpose bird, found mainly in hot and humid regions of Kenya.

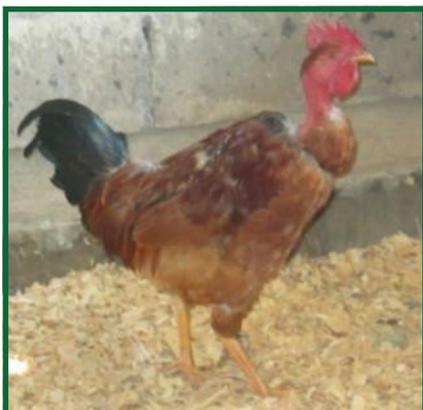


Figure 96: Naked-neck cock



Figure 97: Naked-neck hen

10.1.1.4. Crested

This type has a characteristic tuft(crest) of elongated feathers on the head. It is found almost in all regions of Kenya.



Figure 98: Cock



Figure 99: Hen

10.1.1.5. Dwarf

This is characterized by short shank length. It lays slightly more eggs and exhibits excellent mothering abilities. It is found almost in all regions.



Figure 100: Dwarf Cock



Figure 101: Dwarf Hen

10.1.1.6. Other types

Other types that exist in small numbers include; bantams, feathered shanks, muffs and beards, polydactyl/ multiple toes, feathered hock and rumples.

Breed Characteristics		
Physical description	Plumage color	Variable, ranging from red, brown, black, white, gray, wheaten, blue slate, golden, silver and mixed
	Plumage pattern	Variable ranging from plain, mottled, barred, laced, spangled, speckled, penciled, and mixed
	Feather structure	Smooth, frizzle
	Comb type	Single, pea, rose, cushion, strew berry, V-shaped, walnut and carnation

Breed Characteristics		
	Beak size	Medium, long
	Beak shape	Normal
	Eye color	Varied ranging from white, yellow, black, brown, amber, red, golden and mixed
Production	Male mature live weight (Kg)	1.5-3.0
	Female mature live weight (Kg)	1.0-2.0
	Daily gain (gm)	8-10
	Dressed carcass weight (kg)	0.7-2.0
	Eggs per year	40-60
Reproduction	Age at sexual maturity (months)	6-8

10.1.2. Kuchi

Kuchi is a relatively unique chicken type commonly found in the Coastal Lamu Archipelago. It is highly adapted to hot and humid coastal environment, relatively heavier than other types and has a characteristic upright stance which enables it fight off predators.



Figure 102: Kuchi Cock



Figure 103: Kuchi Hen

Breed Characteristics		
Physical description	Plumage color	Variable ranging from black, white, brown, grey and mixed
	Comb type	Cushion, rose
	Plumage pattern	Variable ranging from plain, mottled, speckled, penciled, and mixed.
	Feather structure	Smooth
	Beak size	Short
	Beak shape	Hooked (parrot like)
	Eye color	Red, amber
Production	Male mature live weight (Kg)	3.0-4.0
	Female mature live weight (Kg)	2.0-3.0
	Dressed carcass weight (Kg)	1.5-3.0
	Daily weight gain (gm)	10-15

Breed Characteristics		
	Carcass weight (kg)	2-3
	Eggs per year	20-30
Reproduction	Age at sexual maturity (months)	7-8

10.1.3. Hybrids

Hybrids/exotic chicken are mostly reared on a commercial scale, they are a major source of poultry meat and eggs. These include hybrid broiler, hybrid layers and dual purpose types.

10.1.3.1. Dual purpose types

This are exotic hybrids bred for both meat and egg production in extensive and semi intensive production systems. They are mainly distributed in Central, Western, Eastern, Lake Basin and Coastal regions. The major types include; Kuroilers, Rain bow, Sasso and Kenbro.

Breed Characteristics		
Physical description	Plumage color	Variable ranging from black, white, brown, grey and mixed
	Comb type	Single
	Plumage pattern	Plain, Barred
	Feather structure	Smooth
	Beak size	Medium
	Beak shape	Normal
	Eye color	Red, Brown, Amber
Production	Male mature live weight (Kg)	2.0-3.0
	Average female mature live weight (Kg)	1.5-2.5
	Average daily gain (gm)	10.0-15.0
	Average dressed carcass weight (Kg)	1.0-2.0
	Eggs per year	180
Reproduction	Age at sexual maturity (months)	5-6

10.1.3.2. Hybrid Layers

These are exotic hybrids bred for commercial egg production in intensive production systems. They are mainly distributed in Central, Western, Eastern, Lake Basin and Coastal regions. The major types include; Isa brown, Bovans, Hyline and Shavers.

Breed Characteristics		
Physical description	Plumage color	White
	Comb type	Single
	Plumage pattern	Plain
	Feather structure	Smooth
	Beak size	Medium
	Beak shape	Normal
	Eye color	Yellow, Amber

Breed Characteristics		
Production	Slaughter live weight (Kg)	1.5-2.0
	Daily weight gain (gm)	350-450
Reproduction	Age at slaughter (weeks)	4-8

10.2. TURKEYS

Turkeys are mostly kept for meat and egg production and are distributed across all regions except Arid and semi arid areas. The most common types include; black, white and spotted.

10.2.1. Black

Black turkeys are strong and hardy with a relative slow growth rate. They are characterized mainly by their black plumage.



Figure 104: Black Cock



Figure 105: Black Hen

10.2.2. White

White turkeys are known for their white plumage and are very hardy.



Figure 106: White Cock



Figure 107: White Hen

10.2.3. Speckled

Speckled turkeys has a characteristic white and black plumage and are smaller in size.



Figure 108: Speckled Cock



Figure 109: Speckled Hen

Breed Characteristics		
Physical description	Plumage color	black, white, mixed
	Plumage pattern	plain, speckled
	Feather structure	Smooth
	Eye color	Black, Pear, Brown
	Male mature live weight (Kgs)	10-15
	Female mature live weight (Kgs)	5-7
Production	Eggs per year	20-30
Reproduction	Age at sexual maturity males (months)	11-12
	Age at sexual maturity females (months)	8-10

10.3. GEESE

Geese are mostly kept for security purposes due to their exceptional eye sight, combined with their strident voices. They also provide meat and eggs and are distributed in all regions except the arid and semi arid regions. The most common type are white and grey.



Figure 110: White Type



Figure 111: Grey Type

Breed Characteristics		
Physical description	Plumage color	White, Grey
	Plumage pattern	Plain, Speckled
	Feather structure	Smooth
	Eye color	Brown
	Beak color	Yellow
	Shank color	Yellow
Production	Male mature liveweight (Kgs)	9-10
	Female mature live weight (Kgs)	8-9
	Dressed carcass weight (Kgs)	6-8
	Eggs per year	20-30
Reproduction	Age at sexual maturity males (months)	11-12
	Age at sexual maturity females (months)	8-10

10.4. DUCKS

Ducks are mostly kept for meat and egg production and are distributed across all regions of Kenya. The Muscovy ducks are most common type.



Figure 112: Cock

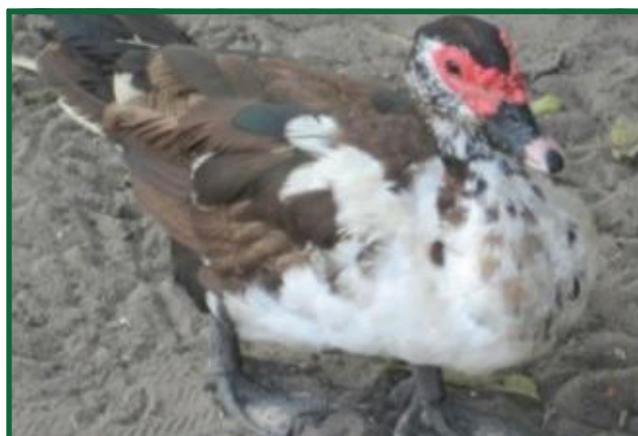


Figure 113: Hen

Breed Characteristics		
Physical description	Plumage color	White and Black
	Plumage pattern	Plain
	Feather structure	Smooth
	Eye color	Yellow, Dark
	Beak color	Black, Yellow
	Caruncle color	Red, Black
	Shank color	Black, Grey, Yellow
Production	Male mature live weight (Kgs)	2.5-3.0
	Female mature live weight (Kgs)	2.0-2.5
	Dressed carcass weight (Kgs)	1.5-2.0
	Eggs per year	220-290

Breed Characteristics		
Reproduction	Age at sexual maturity males (months)	11-12
	Age at sexual maturity females (months)	6-8

10.5. PIGEONS

Pigeons are kept mostly for meat production and ornamental purposes and are distributed across all regions of Kenya. Rock, black/grey, and white and fantail pigeons are the most common types.



Figure 114: Rock Type



Figure 115: White Type



Figure 116: Grey Type



Figure 117: Fantail Type

Breed Characteristics		
Physical description	Plumage color	White, Grey, Black and mixed
	Plumage pattern	Plain
	Feather structure	Smooth
	Eye color	Brown, Yellow
	Beak color	Black, Pink
	Shank color	Pink
Production	Male mature live weight (Kgs)	0.7-0.9
	Female mature live weight (Kgs)	0.2-0.4

10.6. QUAILS

Quails are kept mostly for meat and egg production and are distributed across all regions of Kenya as either wild or farm reared. The most common wild species include; common quail, African blue quail, Rain quail and African Harlequin quail. The Japanese quail is the most common farm reared quail.



Figure 118: Common Quail



Figure 119: African Quail



Figure 120: Japanese Quail



Figure 121: African Harlequin



Figure 122: Rain Quail

Breed Characteristics		
Physical description	Plumage color	Grey and Black, Yellow and BrownBlue, Cream and White
	Plumage pattern	Speckled, Mottled, Plain
	Feather structure	Smooth
	Eye color	Brown, Black
	Beak color	Black, Grey
	Shank color	Yellow, White
Production	Mature live weight (Kgs)	0.15-0.2
Reproduction	Age at first egg (weeks)	6-7
	Eggs per year	150-300

10.7. GUINEA FOWL

Guinea fowl are kept mostly for meat, egg production, feathers, insect and rodent control, security and aesthetic value. They are distributed across all regions of Kenya as either wild or domesticated. The most commonly found types are; the red wattle, blue wattle and the vulturine.



Figure 123: Blue Wattle Helmeted



Figure 124: Red Wattle White



Figure 125: Red Wattle Speckled



Figure 126: Vulturine

Breed Characteristics		
Physical description	Plumage color	Grey, Black, white, Blue and mixed
	Plumage pattern	Speckled, Mottled, Plain
	Feather structure	Smooth
	Headcap skin color	White, Red, Blue
	Wattle color	Red, Blue
	Eye color	Brown, Black
	Beak color	Black, Grey
	Shank color	Grey, Black
	Mature live weight (Kgs)	1-2
Production	Eggs per year	170 -180
Reproduction	Age at first egg (weeks)	28-32

10.8. OSTRICH

Ostrich is the biggest bird among all the bird species that are found both in the wild and reared on farms. They are kept mostly for meat, eggs, feathers, hide, aesthetic value and gaming. They are commonly found in Arid and Semi arid areas of Kenya. The commonest breeds in Kenya are; Maasai ostrich and Somali ostrich. Ostrich population in Kenya is estimated to be 5,795 (MOALFI, 2018 NSAP).

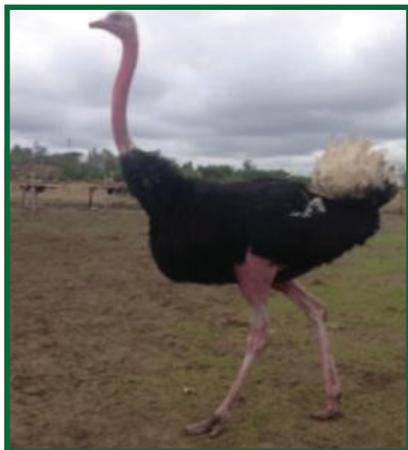


Figure 127: Maasai Male



Figure 128: Maasai Female



Figure 129: Somali Male



Figure 130: Somali Female

Breed Characteristics		
Physical description	Plumage color	Grey, Black, White, and Mixed
	Plumage pattern	Plain, Mottled
	Feather structure	Smooth
	Neck color	Pink, Red, Blue
	Thigh color	Pink, Red, Blue
	Eye color	Brown, Black
	Beak color	Black, Grey
	Shank color	Pink, Red, Grey, Black
	Number of toes	2
Production	Male mature live weight (Kgs)	120-140
	Female mature live weight (Kgs)	100-120
	Eggs per year	40-120
Reproduction	Age at sexual maturity (years)	2-4

11. BEES

Bee keeping is practised in most parts of the country. It is especially suitable in the arid and semi arid areas where other forms of land use are less suitable. It contributes to household income and food security through provision of honey, beeswax pollen, propolis, bee venom and royal jelly as food and medicine. It also contributes to improving biodiversity, seed and food production through crop pollination.

11.1. HONEY BEES

Honeybees are four winged social insects which live in a group called a colony. A honeybee colony usually has between 10,000 and 60,000 bees. A bee colony has three castes namely “the Queen which is a fertile female, hundreds of males called “Drones” and Thousands of sterile females called “Workers”. Bees are usually kept in a hive where they can be managed. There are various types of hives depending on beekeeper preferences and costs. Honey Production levels ranges from 5kgs per annum (Traditional hives) to 60kg per annum (Improved hives). However, the performance of each hive is mostly attributed to management practices and capacity. An estimated 150,000 households keep bees in Kenya.

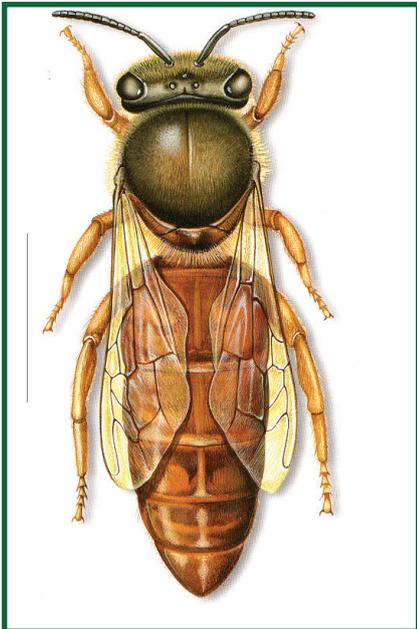


Figure 131: Queen

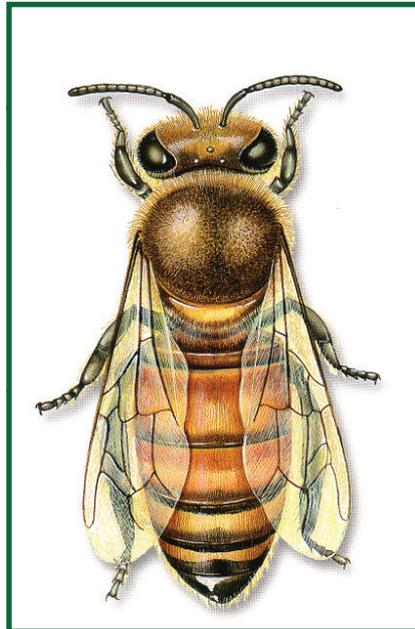


Figure 132: Worker

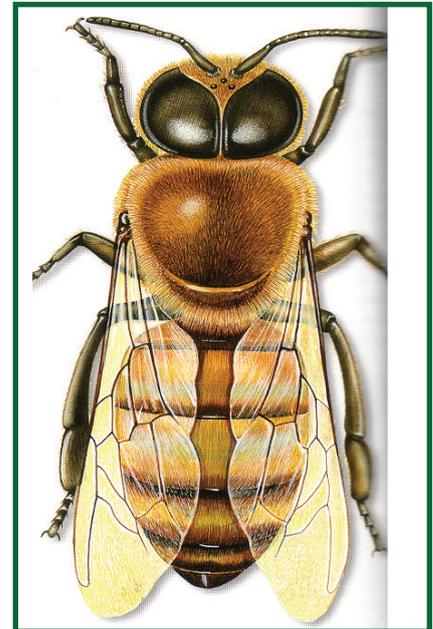


Figure 133: Drone

Breed Characteristics				
Honey Bee Races				
	<i>Figure 134: Apis mellifera yemenitca</i>	<i>Figure 135: Apis mellifera scutella</i>	<i>Figure 136: Apis mellifera littorea</i>	<i>Figure 137: Apis mellifera monticolor</i>
Physical description	It is the smallest bee race in Africa. It has a slender abdomen and the largest yellow abdominal colour band of all African races	It has a short tongue and wings. Abdomen is slender and yellow with two bands	This is a small yellow-striped bee, slender longer hairs and has a larger tongue than yeminitica	It is the largest bee in Africa. It is dark and gentle with broad abdomen

Breed Characteristics				
Geographical distribution	It is mostly found in the northern deserts of Kenya including South Sudan	It is mostly found on the savannah grassland & plains, mostly central regions of Kenya	This race inhabits the lowlands of the Kenyan coast	This bee is called the mountain bee, and it is found in Mt. Kenya, Mt. Elgon, Aberdares
Production	Generally, this species is an average producer of honey and this is highly seasonal	The Scutellata bee is the most active and productive	Littorea species are quite productive	It is less productive and less vicious
Characteristics and Reproduction	It withstands and survives drought conditions and withstands and survives drought conditions by excessive migration	The bee is highly aggressive and has great tendency to reproduce and migrate	Does not migrate as much as A.M. Scutellata	-It has a tendency to reduce brood rearing at the first sign of forage decline and may not migrate

11.2. THE STINGLESS BEES

Stingless bees are a large and diverse group comprising over 600 species in 56 named genera. However, there are only about 22 species in Africa. They mostly occur in the tropical and subtropical areas of the world, including the dry savannah between the tropics of Cancer and Capricorn in Africa. Meliponula bees are a small genus with species only found in sub-Saharan Africa.

This bee has been known in most parts of Kenya, for its sweet honey, which is highly medicinal. In the world, where farming practices are done in green houses conditions, this bee is used for pollination. Its effectiveness to penetrate in to flowers due to its size has rated it as a good pollinator. The bee inhabits underground tunnels and in barks of trees. Though its population is minute, it can produce 1 – 2 liters of honey per harvest after every three (3) months.



Figure 138: Stingless Bee

ANNEXES

ANNEX 1: KENYA LIVESTOCK BREEDS

Species	Breeds	Ecotypes/Strains/Races
Cattle	<ol style="list-style-type: none"> 1. Small East African Zebu, Maasai Zebu 2. Kamasia/Samburu zebu 3. Winam or Kavirondo Zebu 4. Nandi Zebu 5. Watende Zebu 6. Low land or Coastal Zebu 7. Teso Zebu 8. Turkana and Karapokot Zebu 9. Kikuyu Zebu 10. Jiddu Zebu 11. Orma Boran 12. Somali Boran 13. Kenyan Boran 14. Kenyan Sahiwal 15. Boran 16. Friesian 17. Ayrshire 18. Guernsey 19. Jersey 	
Goats	<ol style="list-style-type: none"> 1. Small East African Goat 2. Galla 3. Kenyan Alpine Goat 4. Saanen Goat 5. Toggenburg Goat 6. Anglo Nubian 7. Boer Goat 8. Oberhasil 9. Kalahari Red 	
Sheep	<ol style="list-style-type: none"> 1. Small East Africa Sheep 2. Black Head Persian 3. Red Maasai 4. Dorper 5. Corriedale 6. Hampshire Down 7. Romney Mash 8. Merino Sheep 	
Camel	<ol style="list-style-type: none"> 1. Somali Camel 2. Gabbra Camel 3. Rendille Camel 4. Turkana Camel 	
Donkeys		Ecotypes <ol style="list-style-type: none"> 1. <i>Equus Asinus Somalisensis</i> (Somali Ecotype) 2. <i>Equus Asinus Africanus</i> (Maasai Ecotype)
Pigs	<ol style="list-style-type: none"> 1. Duroc 2. Large White 3. Landrace 4. Hampshire 	

Species	Breeds	Ecotypes/Strains/Races
Rabbits	<ol style="list-style-type: none"> 1. Kenya White 2. New Zealand White 3. California White 4. Dutch 5. Flemish Giant 6. Checkered Giant 7. Chinchilla 	
Honey Bees		Races <ol style="list-style-type: none"> 1. <i>Apis mellifera yemenitica</i> 2. <i>Apis mellifera scutellata</i> 3. <i>Apis mellifera littorea</i> 4. <i>Apis mellifera monticolor</i> 5. The Stingless Bee (Meliponiculture)

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