

# The Status of Non-Ruminant Farm Animal Production in Uganda with Focus on Somalia: A Review

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**Abstract:** This brief report combines outcomes from empirical and online data research on non-ruminant farm animal production in Uganda, with a focus on my home district. It will help researchers design trials to develop further experimental studies to provide information for extension workers local non-ruminant farm animal breeds that are high in energy, fat and protein. This study can be divided into three main divisions. The first group, which includes poultry production in Uganda, saw a 9.6% increase in poultry population and a 9% increase in egg output between 2013 and 2017, with chicken being the most popular. Uganda is home to approximately 47.6 million birds. Pig production is the second group, which may be considered an important output among Ugandan communities. Smallholder mixed crop livestock producers, of which over 80% are located in rural areas, rear a significant share of the over 3 million pigs produced annually. The third category is Because rabbits were once regarded to be a pet and childlike companion, rabbit marketing is a relatively new phenomenon. As expected, many producers have lost money, and the rate of abandonment has been moderate to high. Needless to say, commercial rabbit production's reputation is fading. The livestock sector remains a vital component and backbone of the Somali economy; the bulk of poultry (meat and eggs) consumed in Somalia's major cities is imported. In most cases, frozen chicken slices are imported. Rabbits in Somalia, for example, necessitate professional management abilities. In Somali communities, keeping pigs is often outlawed.

**Keywords:** Non-ruminants, Uganda, Variability, Reproductive Capacity, Somalia

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## 1. Introduction

The Non-ruminant farm animal production includes (poultry, rabbit, and pig), Poultry is the most popular type of livestock kept in east Africa. Between 2013 and 2017, the poultry population in Uganda grew by 9.6% and egg production grew by 9% with chicken being predominant. Uganda has about 47.6 million birds (indigenous-41.7 m, exotic -5.85) [7].

According to Byarugaba [2] In Uganda, chickens are the most common poultry, but turkeys, guinea fowls, ducks, pigeons, geese, and ostriches are also reared. Pig rearing as a business in Uganda offers smallholder farmers an apparent potential to boost their household income. The majority of pig farmers maintain one to five pigs confined around their house. Kitchen scraps, food remnants, and crop residues are the

primary sources of nourishment. A few commercial growers with 10-20 sows operate on a small to medium scale.

Some farmers let their pigs to roam freely in search of food. [6].

Rabbits are simple to raise opposed to other animals, and their production level is increased since they reproduce quickly. Rabbit feed is frequently available and inexpensive in Ugandan Societies. Rabbit meat is becoming increasingly popular in Ugandan communities since it is classified as white meat, which is healthier. Rabbits are ideal for enterprise mixing since they provide farmers with natural manure. [12].

Somalia boasts one of Africa's largest animal inventories, with camels, cattle, sheep, and goats accounting for 7.1 million, 4.9 million, 12.3 million sheep, and 11.6 million goats, respectively, as well as 4.89 million poultry, 0.96 million horses, 0.37 million mules, and 6.4 million donkeys. [13]. In Somalia, the intensive commercial poultry industry has made

a very little contribution of the chicken meat and egg supply. This sector's share of the total output is just about 2% to 3% of total production [9]. The purpose of this report was to determine the overall status of non-ruminant farm animal production in Uganda and also whether it is similar to my home district on productions and the methods extension workers use to manage production systems.

This report can be broken down into three main categories. The first class consisted of chickens production in Uganda and in particular reference to my home district may be able to figure out how that use to improve their work efficiency. Highlighting the manufacturing process methods may enable extension workers to take the steps necessary to deal with stress. By disseminating this information, they can be used to assist management in putting in place effective stress reduction strategies.

The second class that could be discussed based on this research is pig production that may be considered like an important production among Uganda communities, and the third group is Rabbit marketing is a relatively new thing because it was formerly thought to be a pet and child-like companion. Finally, researchers could use these insights as a starting point for their own research list.

### **1.1. The Concept of Ruminant Farm Animals**

Farm animals play an important part in the development of sustainable agroecosystems. The rumen serves as a pool for the enhanced microorganism cellulose, and it's the only enzymatic capable of digesting cellulose utmost widely available plant product [4]. Cattle, sheep, and goats are very beneficial for transforming huge sustainable assets such as grassland, pasture, crop leftovers, into food, as well as other by-products.

Soil that is either too poor or too easily degraded to farm gets fruitful with ruminants. Furthermore, By-product micronutrients are optimized rather than becoming a waste disposal issue. [11].

### **1.2. The Concept of Non-ruminant Farm Animals**

Animals with a simple stomach are classified as non-ruminant. They don't have a rumen, reticulum, or omasum. The only actual gut they have is the abomasum. Poultry, rabbits, and pigs are types. [19].

## **2. Research Methodology**

This study investigated literature reviews from Uganda and Somalia as appropriate examples of underdeveloped countries that adopted various approaches to handle non-ruminant animal concerns. The option was made because, despite differing scientific approaches to address the lack of importance of non-ruminant animals, both faced similar animal production issues. Data was collected using narrative and literature review methods, and then evaluated using narrative analysis and content analysis.

## **3. Findings**

### **3.1. The Ruminant Farm Animals in Uganda**

Uganda's beef industry is the country's most important ruminant farm animal. The "cattle corridor," which runs from South-Western Uganda to North-Eastern Uganda, has the highest number of animals [17]. Smallholder cattle farmers constitute the bulk of cattle farmers, who breed cattle mainly for milk production (the bulk of this is used at home) and, to a smaller extent, beef production. The idea that the majority of Uganda's cattle are local and female attests to this. In the situation of beef production, cattle ranchers purchase their livestock to retailers or processors on a one-time basis. The production of industrial ranching, rural, agribusiness, and semi-intensive beef sub-systems exist in Uganda. Beef production in the country is 185 709 metric tons of beef per year, with per capita consumption of roughly 9 kg. Kampala has the highest rate of consumption of any town or district in Uganda, contributing for 7% of total national consumption [5].

### **3.2. The Ruminant Farm Animals in My Home District**

Somalia's largest export earner is livestock [10]. The cattle of Somalia are mainly the East African Zebu type of which the following types are recognized, the Somali Boran, Gasara, Dauara and Surqo [21]. In Somalia, the Somali Blackhead sheep is the most common breed. It's worth noting that this breed was the ancestor of the Blackhead Persian breed [18], and further that the Dorper breed (found in southern and eastern Africa) resulted from a cross of the Blackhead Persian breed with the Dorset Horn breed. The main types of goats found in Somalia, are the Long-eared Somali goat, the Short-eared Somali goat, and, to a lesser extent, the Somali Arab goat. The Somali Long-eared goat is supposed to be a descendant of the Somali Arab goats that were brought to Somalia from Arabia [22]. The Somali Arab goat, as the name implies, was introduced into Africa by Arabian traders [23].

### **3.3. The Non-ruminant Farm Animals in Uganda**

#### **3.3.1. Poultry Sector in Uganda**

##### **(i). Overview Poultry Sector**

Uganda's entire poultry population was estimated In 2006/7, there were around 32.6 million birds, up from 23.5 million in 2002. About 80percent of that will be composed of local free-range types, the rest 20percentage consists of improved varieties, predominantly exotics. Chickens are the most common poultry, but certain places also keep turkeys, ducks, geese, pigeons, and ostriches. The Eastern State has the highest percentage of free-range fowl (37.3%), next by the Central Region. In contrast, the central region indicates the maximum percentage of exotic birds. [2].

Below are the common poultry breeds in Uganda.

Table 1. Common poultry breeds in Uganda.

Type	breed	Local breeds
1. Chicken-local	Uganda black and red breeds	Nganda, Nsoga, Nkore
	Ugandan short legged	Nyoro
	Uganda brown	Nganda, Nsoga, Nkore
	Nsesere	
	Teso chicken	
	Ugandan red	Nkooki, Nganda, Nsoga, Nkore
2. chicken-dual purpose (improved breeds)	Ugandan white	
	Kroilers	
	Rainbow	
3. chicken-exotic -broilers	Sasso	
	Cobb500	
	hubbard	
Chicken –exotic- layers	Ross	
	Issa brown	
	issex	
	Bovan brown	
	shaver	
4. turkey –local	hubbard	
	Ugandan black turkey (broad breasted bronze)	teso
5. turkeys-exotic	White meat turkey	
	Belts-ville tiny white, broad breasted white, White Holland,	
	bourbon red.	
6. ducks-local	Ugandan duck (muscovy)	Teso, Nganda, Nsoga, Nyoro, Nkore.

Source: [7].

(ii). Poultry Management Systems in Uganda

There are three types of poultry management in Uganda.

1. Extensive systems

The birds are exposed to an unlimited amount of land. under this system capital investment and productivity are low with no disease control measures. There are two types of extensive

management systems.

- a) The traditional free-range scavenging system: birds are free to fly around the village.
- b) The free-range commercial system: birds are fed and wander within fenced land and are housed during the night.

Table 2. Shows the benefits and drawbacks of a free-range system.

Benefits	Drawbacks
It's cheap	Extreme weather, theft, sickness, and predators are all threats to birds.
Birds exercise and are fit.	Eggs laid in bushes can be damaged, stolen and are hard to collect, birds are not secure, few small-sized eggs, and little meat.
Birds have access to fresh green Vegetation for vitamin and minerals.	Poor production.

Source: [7].

2. Semi-intensive system:

In this scheme, birds are housed properly but are free to roam the grassland. There are two types of semi-intensive systems:

- A. Run system: a section of grassland is fenced in; an egg nest, food, and water are kept in the house.
- B. Fold unit system: fowl are maintained in a compact housing constructed of wire mesh with space for them to run that is moved to a new position in the lawn on a daily basis.

3. Intensive system:

In this technique, birds are kept and fed within a house. There are three different varieties.

- a) Deep litter system- chickens are raised on concrete floors but are covered in litter such as sawdust or wooden shavings to keep them comfortable.



Figure 1. Deep litter system Source= [8]).

*Table 3. shows the benefits and drawbacks of a deep litter system.*

Benefits	Drawbacks
Good management of flocks	High initial costs
Increased production	All nutritious feeds must be provided
Reduced labor costs	High risk of diseases, e.g. coccidiosis and worms
Relatively hygienic	Birds develop bad habits like pecking

Source= [8].

b) Slatted floor system – similar to deep litter but no litter used. It has a raised floor fitted with slats of woods, strong mesh or plastic. The dung from the chickens makes its way to the ground between the slats.

*Table 4. Shows the benefits and drawbacks of slated floor system.*

Benefits	Drawbacks
Good management of flocks	High initial costs
Increased production	All nutritious feeds must be provided
Reduced labor costs	Birds develop bad habits like pecking
Cleaner and more hygienic	
Because chicks do not get into interface with feces, the risk of infection is reduced.	

Source= [7].

c) The birds are kept in battery cages that are stacked in tiers with feed and water.

*Table 5. Advantages and disadvantages of a battery cage system.*

Advantages	Disadvantages
Good management of flocks	All nutritious feeds must be provided
Reduced labor costs	High equipment and maintenance costs
Cleaner and more hygienic	No exercise for birds that means poor health
Less chance of infectious because the birds not in contact with fecal matter	Equipment is specific and not flexible in use
In a tiny space, you can have a high number of birds.	More damaged eggs
Less feed wastage	High risk of breakdown of the automated equipment
Easy to monitor	
Control broodiness in chicken	

Source= [7].



*Figure 2. Battery cage system Source= [8].*



*Figure 3. Chinchilla breed type.*

**3.3.2. Rabbit Production Sector in Uganda**

Commercial rabbit farming has been extensively promoted in Uganda's Kampala municipality for barely ten years, and the "Rabbit grazing" has drawn both business people and farmers into a purported get-rich-quick scheme. The rabbit business is a new, yet superficial High-investment semi-intensive production system (breeding stock, shelter, and wire hutches), maintenance (pelleted feed and labor), expenses, and unrealized profitability. As predicted, several farmers had lost some money, as well as the ratio of desertion has been considerably high. Undoubtedly, commercial rabbit production's status is fading [24].

New Zealand white and black, chinchilla, and Dutch rabbit breeds are some of the rabbit breeds that can be raised in Uganda.

Source = <https://www.aboutuganda.com/agriculture/rabbit-farming-in-uganda>

**3.3.3. Rabbit Management in Uganda**

Whenever it comes to raising rabbits, there are a variety of approaches that are used, including the ones listed below:

**(i). The Cage Method**

This is the greatest approach for rabbit rearing if you're after commercial farming. This method is beneficial since it results in the rearing of a significant number of rabbits and the female rabbits are kept apart from the males in enclosures. until while breeding, when they are all kept in the same cage.

The total capacity of rabbits that can be housed in each cage depends upon the size of the cages. These cages are fashioned from steel plates or wires that may be purchased from a hardware store.

### **(ii). The Deep Litter Method**

This approach is most commonly used when raising a small number of rabbits, and it works best when the floor is cement. Female rabbits should be separated from male rabbits, and each chamber can hold up to 30 bunnies. For the rabbits' comfort, the floor is littered with wood shavings, straws, and husks that are roughly 4 to 5 inches deep.

This system is useful if you're short on cash, but it's easy for diseases to spread because everyone is in one location, and it's also tough to maintain.

### **3.3.3. Pig Production Sector in Uganda**

#### **(i). Pig Sector Development**

The pig sub-sector of Uganda's livestock industry is the least developed in terms of productivity per sow, pork supplies per capita, and the amount of industrially processed pig products. Pig farming as a business presents a clear possibility for small-scale subsistence farmers to boost their household income [3]. The majority of pig farmers keep one to five pigs tethered around their property. [6].

Pork consumption per capita was estimated to be 3.4 kg per individual per year, implying a tenfold increase over the previous 30 years [15]. Rural households mixed crop livestock producers, from which over 80percent are found in rural areas, raise a significant portion of the over 3 million pigs produced annually [7]. Uganda mainly imports around 7 metric tons of processed pig products to bridge the widening gap between pork supply and demand, as well as to adjust for an ineffective internal capacity to transform domestically produced swine into finished products [16]. Uganda's pig population rose from 0.19 million to 3.2 million between 1980 and 2008 [15]. As said by [3,] the central region has the biggest amount of Ugandan families raising pigs (56%) led by the western (30.1%), eastern (28.8%), and northern (14.2%) regions. Excess supply for pig meat as a result of increased urbanization and purchasing power has resulted in a rise in pig population.

#### **(ii). Pig Management Systems in Uganda**

Classification pig production methods:

##### **1. Extensive or free-range (scavengers)**

The traditional method of raising pigs in most parts of the world is the free-range approach. Each family has several (one to three) pigs that are free to scavenge or wander around and pick up food whenever and wherever they can. The method includes little investment and management, and disease control is minimal. They may be given additional feeds such as kitchen waste, farm byproducts, and so on. Indigenous breeds of pigs predominate in the free-range system because they are more adaptable.

##### **2. Semi-Intensive**

The animals in this system are confined to a small area, as

well as the farmer continues to feed them. The pigs are occasionally allowed to graze, wallow, and exercise in a larger area. The animals are raised kitchen waste and food byproducts, among other things, and some organizational skills are critical [6].

##### **3. Intensive production system**

This really is the industrial process for producing pigs.

The shelter is more modern and offers shade, pen space, feed, and water facilities to meet the pigs' needs. Nutrition, monitoring, and disease control have all improved. Exotic or crossbreeds are common breeds. Herd sizes can be small (5 sowherds or up to 100 stock/year), medium (10 sowherds or up to 200 stock/year), or large (10 sowherds or up to 200 stock/year) (greater than 200 stock. year) [6].

### **3.4. Non-ruminant Farm Animals in My Neighborhood Include**

#### **3.4.1. Poultry Sector in Somalia**

In the Somali industry, the livestock farming sector remains a critical component and a backbone; similarly, to other countries, poultry production in Somalia is an essential part of the livestock sub-sector component of the livestock sub-sector. The advancement of the poultry sub-sector contributes to foreign currency income, work opportunities, nutrition and health security, and rural female employment. Chicken keeping is common in poor Somali families, and commercial poultry farming is expanding, particularly in urban areas [1]. The poultry farms in somalia that are currently working on includes (The Al Naim Poultry Company in moqdisho, maandeeq poultry farm in hargeisa, soma chicken farm in putland).

As shown by [14] In Somalia's major cities, the significant proportion of poultry (meat and eggs) is imported. Chicken slices are typically imported frozen. Few poultry farms have sprouted up in recent years, owing to the fact that many are unable to compete with imported meat due to a lack of required technical skills and knowledge. imported feed and high transportation expenses result in high manufacturing costs. Poultry farming is an excellent business prospect for veterinary science graduates.

#### **3.4.2. Rabbit Management in Somalia**

From soil preparation to trading market and post-harvest processing, such as needed to store and marketing farm produce, Somalia's rabbit farms necessitate skilled management. Farm managers are in charge of supervising farm operations, such as the use of industrial equipment, the proper layout of the farm for rabbit breeds, crop rotation, and so on. Diseases, rabbits, and thievery Farm managers are also in charge of acquiring farm inputs, keeping books, and managing laborers. [14].

Pig-keeping is generally prohibited in classroom studies. Somalia's rich indigenous wild pigs makes it uniquely placed for high-quality pig production. Pig-keeping requires only a small investment to start production and income generation [25].

## 4. Conclusions

A few results about the implications have been drawn based on the findings of the status of non-ruminant farm animal production in Uganda / home district can be drawn. The report's conclusions revealed the significance of non-ruminant output in the national growth. A high rate of population expansion in Uganda, as well as increased urban migration, has raised food demand. As a result, ruminant animal production cannot be viewed solely as a solution to rising population, and reduced performance in this sector has a direct impact on human food security in general. Because of the great diversity of non-ruminant farm animals, it can be concluded from this study that non-ruminant farm animals have grasped the key to managing food security in the growing population (poultry, Pigs, and rabbits). Food availability is the most commonly recommended strategy of managing population increase among all the non-ruminant farm animal products.

## 5. Recommendations

The following recommendations are made based on the findings and conclusions of this Review:

1. Ugandans farmers should practice various rabbit production to offer adequate food security to help growth rate of population in Uganda.
2. Ugandan agriculture ministry should conduct a survey of programs they offer to discover which non-ruminant animal production that are the most effective for managing their food security among population.
3. Uganda farmers should share their ideas for managing non-ruminant farm animals with their other districts farmers in order to help increase production of non-ruminant animal production implement appropriate food security programs.
4. Researchers and other institutions should incorporate into their project planning discussions of the non-ruminant animal production and ways to increase their production.
5. Additional research should be done in the rabbit farming in Uganda. First, Breeding: Tropical Rabbits Farm is now Uganda's only New Zealand White breeding facility. Many self-proclaimed breeders lack the necessary technical knowledge and facilities, and the stock they sell may not be reliable. Second, services: Rabbit has few specialized veterinarian and advisory service providers, and much of the advice given is related to poultry, despite the fact that a rabbit is a mammal with physiological differences. The same can be said about veterinary medicinal supplies, which may be acquired from any veterinary pharmacy store that does not specialize in rabbits.

## Conflicts of Interest

We declare that no conflicts of interest regarding the

Publication of this article.

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