

## An overview of swine production and marketing in Africa – Mini review

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### SUMMARY

*Pigs are the oldest domesticated animals, though their ancestry is still uncertain because of a lack of archaeological and genetic evidence. Pigs serve a vital role in reducing the demand for livestock and livestock products in most parts of the world. Especially in the African continent, pigs serve as mobile cash implying how easily they can be converted into cash to sort pressing family needs. Pig production in Africa is different from advanced systems of production in temperate countries, however, it has similarities with most of the tropical low and middle-income nations. Pig production in Africa requires attention to enable it to contribute effectively to the growing African population. However, it has been orchestrated with a myriad of challenges including market access. This mini-review is designed in a manner to provide an overview of pig production contribution to livelihoods in Africa and associated challenges with possible appropriate solutions.*

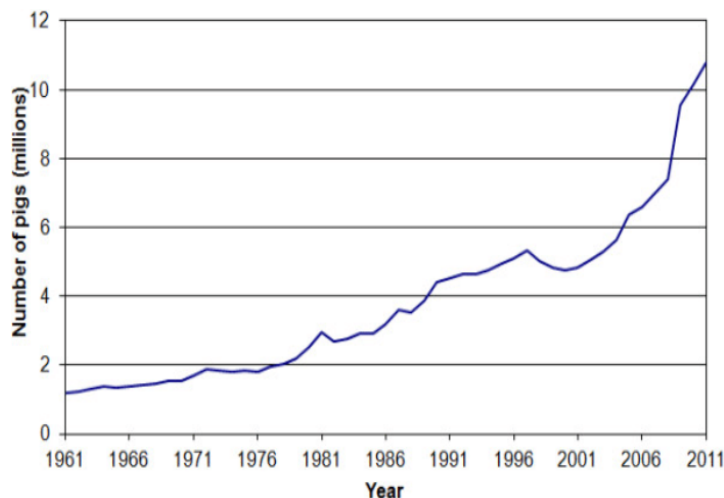
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### INTRODUCTION

Pigs evolved from smaller mammals two million years ago (Carr, 2016). From this point, pigs dispersed across Eurasia and Africa. Today, the pig is widely distributed across various regions of Africa. General production, consumption, and distribution of pigs are on the rise in the continent (*Figure 1*), but lower as compared to other countries in the world (AU-IBAR, 2015), as seen in *Table 1*. Native African pigs share similar features in all countries where they are found. The literature describes it as having a small size, short forehead, straight tail, long snout, floppy ears, and narrow body supported by long legs (AU-IBAR, 2015). Some scholars say *Sus Scrofa* is the

source of domestic pigs in Africa, but lack the evidence to prove this (Epstein, 1971). Furthermore, there has been little to no research regarding the genetic diversity of native African pigs (Amills et al., 2010). Colonization and trade have led to uncertainty regarding the history of native pig breeds in Africa (Amills et al., 2012). As a result, present-day African pigs exhibit a highly diverse genetic ancestry. The spread of Islam across much of Africa has influenced the distribution and consumption of pigs and pig products throughout the continent. Religion results in further loss of pig breeds in some parts of the continent (Amills et al., 2012). This review therefore is designed to shed light on the status of pig production in Africa and the potential improvement.

*Figure 1. Estimated number of pigs in the East African countries of Burundi, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Reunion, Rwanda, Seychelles, Somalia, Uganda, Tanzania, Zambia, and Zimbabwe, 1961–2011*



according to FAOSTAT online database [<http://faostat.fao.org>]

Table 1. Pig demographics in West and Central Africa

| Country                      | Estimated pig population | Source        |
|------------------------------|--------------------------|---------------|
| Benin                        | 520,805                  | FAOSTAT, 2019 |
| Burkina Faso                 | 2,587,862                | FAOSTAT, 2019 |
| Cabo Verde                   | 68,907                   | FAOSTAT, 2019 |
| Cameroun                     | 1,960,026                | FAOSTAT, 2019 |
| Central African Republic     | 1,125,637                | FAOSTAT, 2019 |
| Chad                         | 117,171                  | FAOSTAT, 2019 |
| Congo                        | 112,025                  | FAOSTAT, 2019 |
| Cote d'Ivoire                | 349,626                  | FAOSTAT, 2019 |
| Democratic Republic of Congo | 995,584                  | FAOSTAT, 2019 |
| Equatorial Guinea            | 7,005                    | FAOSTAT, 2019 |
| Gabon                        | 222,792                  | FAOSTAT, 2019 |
| Gambia                       | 14,500                   | FAOSTAT, 2019 |
| Ghana                        | 768,000                  | FAOSTAT, 2019 |
| Guinea                       | 147,209                  | FAOSTAT, 2019 |
| Guinea Bissau                | 417,564                  | FAOSTAT, 2019 |
| Liberia                      | 396,617                  | FAOSTAT, 2019 |
| Mali                         | 86,182                   | FAOSTAT, 2019 |
| Niger                        | 43,147                   | FAOSTAT, 2019 |
| Nigeria                      | 8,001,217                | FAOSTAT, 2019 |
| Sao Tome                     | 38,560                   | FAOSTAT, 2019 |
| Senegal                      | 465,543                  | FAOSTAT, 2019 |
| Sierra Leone                 | 251,345                  | FAOSTAT, 2019 |
| Togo                         | 1,085,484                | FAOSTAT, 2019 |

according to FAOSTAT online database [<http://faostat.fao.org>]

## LOCAL PIG BREEDS IN AFRICA

The African Union Inter African Bureau for Animal Resources (2015) has provided a concise depiction of indigenous African pigs as compact, dark-hued creatures with diminutive ears, a concise forehead, a straight tail, and a prolonged snout. They typically possess a slender body supported by comparatively long limbs. Their coat coloration varies and may occasionally feature long, rough hairs and a noticeable crest running along the spine (*Figure 2* and *3*). Though the ancestry of these pigs is uncertain, certain genes and

alleles found in the pigs suggest they originated from the Middle East through trades across the Indian Ocean (Ramírez et al., 2009). Local pigs have different names in every country where they exist, but they all share a common phenotype (Alenyorege et al., 2015). They are greatly appreciated by rural farmers for their hardiness and disease resistance (Agbokounou et al., 2016). However, they have low reproductive performance and low body weight, weighing 19.2 kg at 180 days old (Darfour-Oduro et al., 2009), 51 kg at 365 days old (Abdul-Rahman et al., 2016), and more than 51 kg above 365 days old (Karnuah et al., 2018).

Figure 2. Local sow



Photo by Folorunso Fasina

Figure 3. Local boar



Photo by Folorunso Fasina

### CONTRIBUTION OF PIG PRODUCTION TO AFRICA'S ECONOMY

Agriculture contributes massively to most African countries' GDP (Chauvin et al., 2012). Livestock production plays a crucial role in poverty alleviation by generating employment, offering income to farmers, and ensuring a stable food supply. Livestock is also one of the factors for social integration (Faye, 2001). In numerous rural areas across Africa, pig production serves as a livelihood, commonly seen to generate income and produce food (Fasina et al., 2009). Though native breeds are being replaced by exotic breeds in production systems, indigenous breeds are still widely produced in most rural areas, serving as a means of livelihood (Kimbi et al., 2016). They are mostly preferred because of their hardiness and low veterinary care (Madzimure et al., 2012). Over the past two decades, countries like Nigeria, Uganda, South Africa, Cameroon, and the Democratic Republic of Congo have witnessed growth in pig production (FAO, 2018). The pig population exceeds forty million in the African continent as of 2018 statistics (FAO, 2018). Most tropical African countries keep pigs in smallholders usually in rural areas (Ouma et al., 2015). Production of pigs is considered profitable by farmers, and they usually encourage venturing into the business (Obayelu et al., 2017). During periods of celebrations, pigs are slaughtered for home consumption (Mashatise et al., 2005). Reasons for pig production vary from country to country. In Congo, it is done for money (Kambashi et al., 2014), in Ghana, it is for wealth building and savings (Adjei et al., 2015), in South Africa, it is done as an alternative to saving (Meissner et al., 2013), in Namibia and Kenya, it is done for consumption and income (Petrus et al., 2011). Africa has yet to export pig and pig products outside the continent but there is trade between African countries (Lichoti et al., 2017).

### FACTORS AFFECTING PIG PRODUCTION IN AFRICA

#### General production associated factors

Farmers in Africa aiming to shift from backyard to commercial pig farming face challenges like elevated feed expenses and limited education levels. Also, certain religion's perceptions of the consumption of pork are affecting the industry (Mutua et al., 2010). However, to ensure the growth of the industry, there must be collaborative efforts between the government and stakeholders.

Disease occurrence is one of the biggest constraints to pig farmers as it affects income and livelihood. According to Ikwap et al. (2014), there is high piglet and pig mortality in most countries in Africa. This can be attributed to low birth weight and the occurrence of diseases that affect both indigenous and exotic breeds (Moreki et al., 2011). Also, stress and starvation are a cause of pre-weaning mortality (Moreki et al., 2011). A preventive strategy for this is the implementation of proper neonatal health and initiatives for the proper growth of pigs (Igbokwe et al., 2018).

Farmers lack access to proper veterinary care because most animal farms in Africa are situated in rural areas. Farmers are therefore forced to take measures such as wrong diagnosis of disease and prescription of drugs, which later cause harm to the animals (Olugasa et al., 2012). Another reason for inadequate veterinary services is the lack of proper infrastructure and road services (Tekle et al., 2020). Also, the lack, or if available, the high price of drugs, veterinary services, and labor is a significant constraint to the pig farming industry (Nwachukwu et al., 2020). Similarly, there have been reports of insufficient biosecurity on small-scale farms in certain African countries (Thutwa et al., 2020). Moreover, extension services are not available in some African countries, and in places where it is available, the staff is poorly skilled and equipped (Montsho et al., 2012). Certain parts of Africa have reported strained relations between

farmers and veterinary technicians (Kambashi et al., 2014), thus preventing them from getting proper care for their animals.

In South Africa, many farmers did not know they could contact veterinarians to assist them on their farms (Matabane et al., 2015). In Congo, some farmers did not know the importance of veterinary treatment (Kambashi et al., 2014). Also, other farmers in South Africa believed that indigenous pigs are disease-resistant and thus do not require veterinary care (Thutwa et al., 2020).

Farmers are uneducated in management practices as animals in most small-holder farms are seen roaming about or kept in poorly designed housing systems. Some farmers do this to cut down on production costs (Weka, 2020). There are conflicts generated when free-range pigs are allowed to roam as they destroy farmlands (Mutua et al., 2010). Recommendations for government extension officers could be a possible help in ensuring that farmers are easily reached for adequate information on farm husbandry practices.

Farmers in most African countries use poor-quality materials in the construction of pig housing resulting in poor infrastructure (Missouhou et al., 2001). Pigs in smallholder farms are left to roam because farmers cannot afford appropriate housing for them. This results in the pigs being exposed to parasites and diseases (Braae et al., 2016).

Quality feed which is needed by the animal for proper development is not readily available, and if available, it is usually at prices the average farmer cannot afford (Bamaiyi, 2013). In pig production, the cost of feed alone accounts for 88% of all production costs (Chabo et al., 2000). Most African countries do not produce enough raw feed materials thus feed companies import them to meet customer demands (Montho et al., 2012). This makes the finished feed expensive as the companies must also account for shipping costs and taxes. Farmers reduce production costs by replacing quality feed with kitchen leftovers due to the inflated cost of these feeds (Gcumisa, 2013). This practice is not recommended because it has been reported that feeding pigs kitchen waste causes poor growth and low weight gain (Mokoele et al., 2015), and certain diseases (Dione et al., 2014).

The pig industry in Africa relies on indigenous breeds (Muhanguzi et al., 2012), and it is a general challenge across all African countries that breeds of low quality are used in breeding programs (Ouma et al., 2015). Some pig farms lack boars, and thus borrow from surrounding farms (Ouma et al., 2015), or buy from auctions, which facilitates the spread of diseases (Ouma et al., 2015). Also, borrowing boars is a risk to biosecurity on farms and promotes the spread of parasites (Nantima et al., 2015). Some cultures, religions, and beliefs prevent people from consuming pork, making it a big constraint to the pig industry since pigs are not accepted in these places (Tekle et al., 2020).

## Diseases of economic importance

Most indigenous breeds of pigs in Africa are raised in free range and semi-intensive systems making them disease resistant, thus requiring little veterinary care. Farmers are however required to control the infestation of worms or other parasites that may affect the animal (Muys et al., 2004). In intensive systems where there are high stocking densities, disease control is important since transmission of disease is easier (Muys et al., 2004).

### African swine fever virus

African Swine Fever is the most common disease affecting pigs in Africa. It is a viral disease that is easily transmitted and has a high mortality rate (Mulumba et al., 2019). It is common in some European countries, and over twenty countries in Africa (Zimmerman et al., 2012). A pig affected by this virus first begins to show signs of high fever (40–42 °C), feed refusal, shivering, inability to stand up, and coughing. If the animal does not receive care a few days after contracting the disease, it comatose and dies (Muirhead et al., 2013). Within Africa, the African Swine Fever Virus is sustained through an intricate transmission cycle that involves some wild pig breeds and parasites (Jori and Bastos, 2009).

### Foot and mouth disease

This is an airborne disease transmitted when an animal inhales droplets containing the virus. An infected animal experiences rupturing of vesicles on the tongue, leaving the tongue bleeding. Also, there are visible blisters on the snout, and heel, between and above the claw of the animal. This disease is difficult to control because it is highly contagious, and the virus can be carried over long distances by wind. It is very severe in piglets as it leads to sudden death due to cardiac arrest (Muirhead et al., 2001).

### African animal trypanosomiasis (ATT)

This disease is caused by the parasite *Trypanosoma brucei*. It causes severe losses by making animals anemic, lose condition, and finally emaciation. The Tsetse Fly is the vector of the parasite, so cases of the disease are high in counties where the Tsetse fly is mostly present. The saliva of the tsetse fly contains parasites and is transmitted to the animal through bites. The affected animals experience signs of fever, feed refusal, and faster breathing (Muys et al., 2004).

### Agalactia, mastitis, and metritis (MMA)

This disease occurs in sows and is characterized by the production of little colostrum shortly after it gives birth (Klopfenstein et al., 2006). Kay (2016) described mastitis as the reduction of the sow's ability to produce milk, loss of appetite, and higher body temperatures. This disease is caused by bacterial infection of the cow's udder, causing a discoloration of the part affected.

## MANAGEMENT SYSTEMS OF PIGS IN AFRICA

For stakeholders in the industry to enjoy benefits, they must ensure managing herd for pigs which involves implementing farm practices that boost productivity, support health, and prevent animal diseases, while still upholding public health, animal welfare, food safety, and environmental sustainability (LeBlanc et al., 2006). These can be achieved by ensuring the implementation of husbandry management systems, which entails breeding, nutrition management, biosecurity, environmental management, vaccination, and parasite control. These practices conform to the best farming methods in a manner that is both practical and financially viable (Shahudin et al., 2018). Farmers in Africa employ three main management types, and they include:

### The free-range system

This type of system is mostly done in rural areas and is the oldest and most traditional way of raising pigs. It is usually practiced when there is a lack of resources (feed and capital) but abundant land for the roaming animal. Few pigs are kept in this system (1 to 3) and the pigs are left to find their food by scavenging, with food being provided occasionally in the form of kitchen waste or farm byproducts (*Figure 4*). There is little to no investment in feed, shelter, and access to veterinary care in this system (Kagira et al., 2010). Since the pigs roam about without restriction, there is indiscriminate mating and high inbreeding, leading to poor offspring. Local pigs are more adapted to this system since they are hardy, disease-resistant, and can survive with low-quality feed (Afrill, 2016).

*Figure 4. Examples of free-range production systems*



Photo by Folorunso Fasina

### Semi-intensive system

Pigs are confined to a small space and provided with feed (kitchen waste and agricultural byproducts),

access to veterinary services, and water (*Figure 5*). The pigs are periodically allowed to wallow, graze, and exercise in a larger area (Moreki et al., 2011).

*Figure 5. Example of a semi-intensive pig production system*



Photo by Folorunso Fasina

### Intensive system

Pigs in this system are provided with complete shelter and high-quality feed (*Figure 6*). The pigs are

moved around from pen to pen depending on their production stage until it is ready to be slaughtered (Moreki et al., 2011). This type of system is used in

most commercial farms and is characterized by using concentrated feeds, state-of-the-art technology, superior breeds of pigs, and advanced biosecurity

(Lekule et al., 2003). In the urban part of African countries where land is a limited resource, farmers employ the use of this system (Nwanta et al., 2011).

Figure 6. Example of an intensive pig production system



Photo by Folorunso Fasina

## COMMERCIALIZATION OF PIG PRODUCTION IN AFRICA

### General information

Most pig farmers in Africa are usually in rural areas, so they allow their pigs to roam and scavenge for their food (Montsho et al., 2012). The commercialization of pigs remains one of the biggest constraints in the pig industry in Africa. Pigs are usually sold live through auction by the farmer or intermediaries (Munzhelele,

2015). The farmers lack access to high-value markets, making the sales of pigs exploitative and less profitable (Halimani et al., 2020). Only large commercial pig farms have access to the high-value market, such as supermarkets and companies, usually supplying them with pork (Atherstone et al., 2019). Also, smallholder farmers consider pigs to be single-product animals, unlike cattle, sheep, and goats, because pigs have no byproducts (Halimani et al., 2020).

Figure 7. Live animal market



Photo by Folorunso Fasina

### Market Limitations in Africa

There is little control over production and marketing decisions within the market since a limited number of traders handle most of the trade and farmers take on two roles as producers and traders (Adesehinwa, 2008), as seen in *Figure 7*. Secondly, there is no fixed price for pigs based on weight (Matabane et al., 2015), allowing intermediaries to dictate the prices for farmers (Mutua et al., 2010). The result of this is low profit and irregular income since farmers usually sell their pigs at poor prices (Kimbi et al., 2016). Thirdly, there are seasonal variations in the price of pigs because of low demand. This is because farmers find it hard to market their products during certain times of the year (Adewumi et al., 2016). Fourthly, there is inappropriate equipment, slaughterhouses, and storage facilities for pigs (Kouam et al., 2020). Farmers have no choice but to sell their products at poor prices to avoid spoilage at abattoirs (Munzhelele, 2015).

### CONCLUSIONS

It should be a top priority for the government and agricultural organizations to give these groups specialized assistance, such as financial incentives and training. Digital platforms that link farmers with customers directly will help address important barriers including lack of access to real-time market information, which will modernize Africa's pig farming industry. Finally, sporadic disease outbreaks threaten the sustainability of pig production in Africa. Biosecurity measures should be enforced. This, we believe, can improve pig production in Africa.

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