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PIG FARMING AT KINSHASA IN THE DEMOCRATIC REPUBLIC OF THE CONGO

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ABSTRACT Pig farming has been gaining attention in recent years in African countries south of the Sahara as a source of urban farmers' cash income. This study was undertaken to explain what types of pigs are raised, how and where they are raised, and how pork is distributed in Kinshasa of the DRC. The results indicated that six households had begun pig farming in the past 14 years, two of which had nonetheless lost their pigs to disease. All of the pig farmers surveyed raised their animals in pigpens for marketing. Some spent grain from commercial bakeries was also used as a supplemental feed food resource for pigs. This case of using waste is likely to provide useful options when considering the sustainable use of resources in large cities in the African tropics.

Key Words: Pig; Rearing; Distribution; Market; Pork; Sustainable use; Protein.

INTRODUCTION

Pig farming has been gaining attention in recent years in African countries south of the Sahara as a source of farmers' cash income (Twinamasiko, 2001; Nsoso et al., 2006; Katongole et al., 2012; Chivangulula et al., 2013; Kambashi et al., 2014). In Uganda, for instance, the number of reared pigs has been increasing, reaching 1,710,000 by 2002 (FAO, 2005a). A factor contributing to this continuing trend has been the rapid increase in demand for pork as a source of protein by urban residents, whose population continues to grow.

In and near Kinshasa, the capital of the Democratic Republic of the Congo (DRC) and an extremely large city in central Africa, pig farming conditions have been little investigated until recently. Research conducted during July–September 2010, however, produced important results. A survey was administered to 319 pig farmers in the Western Provinces of the DRC, including the outskirts of Kinshasa (Kambashi et al., 2014). The report quantitatively explained the feed resources needed for pig rearing and the income derived from pig farming. The report also mentions issues such as diseases suffered by pigs. Although results of that study partially overlap details in this report, their purpose is to elucidate the reality of pig farming and pork distribution in Kinshasa, aiming to find new ways to acquire protein in tropical areas of Africa. In other words, this study was undertaken to explain what types of pigs are raised, how and where they are raised, and how pork is distributed.

The author conducted fieldwork to assess pork production and distribution for 14 days in Kinshasa, predominantly in December 2010 and as a supplemental study in March 2014. Through research of production, the author identified the

residences of the pig's producers in Kinshasa, and studied the attributes of the laborers, feeding methods, types of pigs, their diseases, and other factors. In the study of pork distribution, the author surveyed the presence and non-presence of brokers, markets in the city, conditions of meat sales in supermarkets, and other aspects through direct observation and interviews.

Kinshasa is located along the left bank of the downstream Congo River, which is at the western end of the DRC (Fig. 1). Its population in 2006 was approximately 8 million. The population was stable at several hundred thousand in the 1960s, but it began increasing during the 1960s–1980s. Its growth, which began accelerating in the 1990s, has continued to the present (Fig. 2). That growth is causing the housing area in the suburbs of Kinshasa to expand. A new housing area has been developed in the Kinsuka District in the western area, for instance, where pig farming is also conducted.

Economic assistance provided by other nations is also an important factor in elucidating pig farming in modern Kinshasa. The Japanese government provided one million yen as grassroots assistance and rented young pigs to people in a District in Kinshasa in 2002, which reportedly helped approximately 20 households start pig rearing activities. Additionally, the Canadian government in 1991 and the FAO in 2003 provided some aid for pig farmers. The subsequent development of such pig rearing, however, has not been identified.

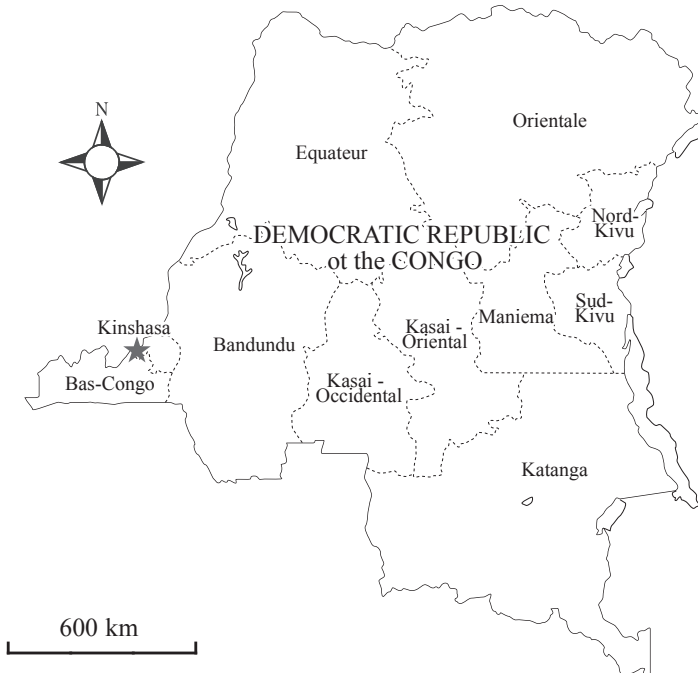


Fig. 1. Study area.

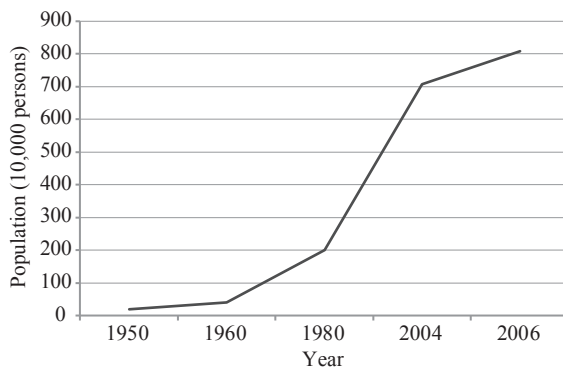


Fig. 2. Population changes in Kinshasa (1950–2006).

RESEARCH RESULTS

Types of Pigs

White pigs, black pigs, and mixed breeds of both are raised in Kinshasa, though it is difficult to identify the proportions of the different breeds of pigs in the study area (Fig. 3). The white pigs include the Tamworth and Large White Yorkshire breeds native to the UK, which are reared in confinement at farms distant from the central part of Kinshasa.⁽¹⁾ Some black pigs are local breeds that resemble Ashanti Dwarfs native to Ghana. They are transported from villages hundreds of kilometers away from Kinshasa to the city, and are seen at livestock stores at farmers' markets in the city.

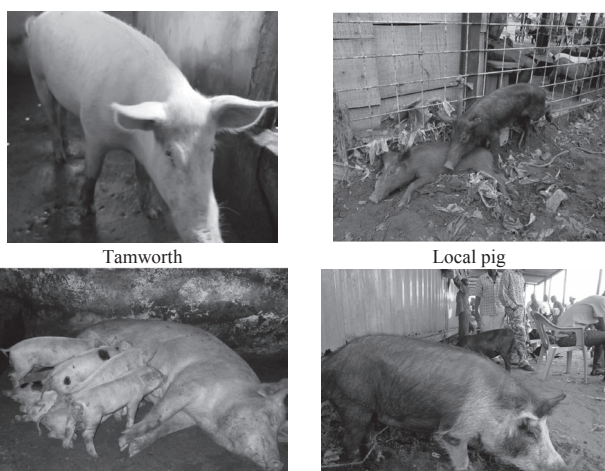


Fig. 3. Pigs in Kinshasa.

Conditions and Status of Pig Farming

Distribution of breeders

Figure 4 portrays a distribution of pig breeders in Kinshasa. In Kinshasa, a total of six households, including five in Kinsuka in the western area along the Congo River and one in Masina in the eastern area, were confirmed to be practicing pig farming. Although no direct observation was done, interviews with local people revealed some pig farming also conducted also in Kimwenza in the southern area. The pig farmers in these areas do not concentrate in certain districts, but rather are scattered. Some residents in Masina, neighboring the center of the city, have built a concrete pigpen behind buildings in the housing area to rear their pigs (Fig. 5a). The pig farmers in Kinsuka had built a riverside pigpen more than ten kilometers distant from their residence to carry out farming (Fig. 5b). They also

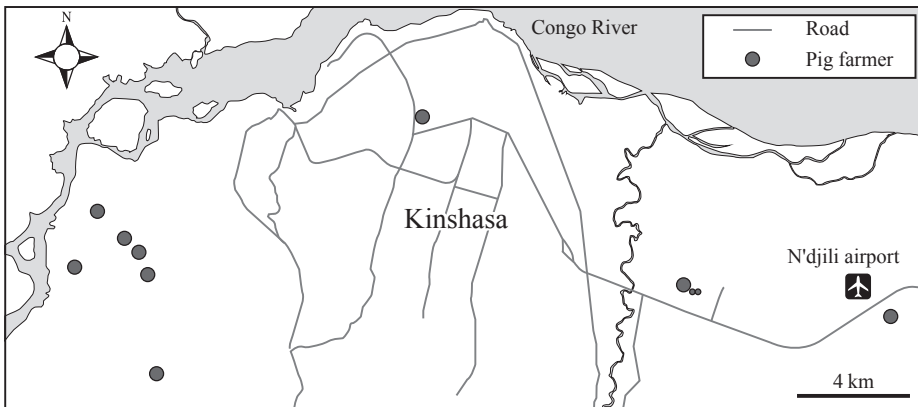


Fig. 4. Distribution of pig farmers.
Source: Author's fieldwork.

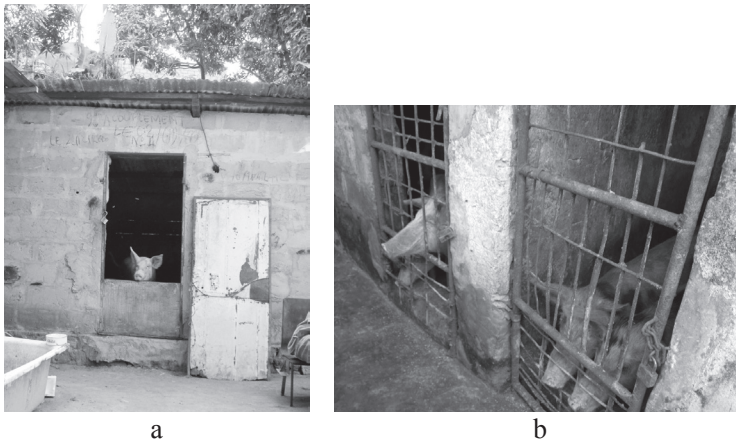


Fig. 5. The building of pig's farm.

Table 1. Pig farmers in Kinshasa

	Sex, Age	Ethnicity	Occupation	Term	Quantity	Feed	Sales contact
1	M, 59	Mongo	police officer	4 years	about 50	beer factory, bread factory	supermarket
	M, 41	Mbuza	police officer	14 years			
2	M, 51	Kikongo	farmer	8 years	about 10	beer factory	supermarket, public market
3	M, 43	Nande	police officer	10 years	about 400 (dead)	beer factory	supermarket
4	M, 38	Kikongo	missionary	7 years	about 500 (dead)	beer factory	supermarket, public market
5	M, 40	Nil	farmer	6 years	about 25	beef factory	supermarket, public market
6	M, 60	Kikongo	teacher	3years	about 8	beef factory	supermarket

built a small farm field at the same location. When the season to sell livestock came, they moved the pigs to their residence in Camp Lufungula in the center of the city where they temporarily reared the pigs.

Form of rearing, time of commencement, and number of pigs reared

All of the pig farmers surveyed raised their animals in pigpens. The farmers were all men of 38–59 years old (Table 1). Ethnically, they were Mongo, Mbuza, Kikongo, Nande, and others. Their primary occupations included only one household engaging in farming. Three others were reportedly police officers; two other persons were a missionary and a teacher. First, the commencement time of pig farming of four farming operators was found to be recent: 4–14 years ago. The number of pigs owned ranged widely: 10–500 per operator. Recent diseases suffered by their pigs, however, reduced the numbers to 400–500.⁽²⁾

Firstly, breeding methods are very similar among pig-keepers. Pig feed commonly used for rearing was spent grain (called *dreche*) from beer breweries in the city.⁽³⁾ Some spent grain from commercial bakeries was also used. Such spent grain was acquired without cost except for the transportation expenses (Fig. 6).



Fig. 6. Pig's food transported from the beer company.

Leaves of cassava and sweet potatoes given free of charge at markets were also used as pig feed. The pigs were normally fed twice a day: Once in the morning and once in late afternoon. Pigs of four to six months old weighed approximately 50 kg. According to the farmers, they would often be sold when they grew to 80–100 kg. One farmer had recently sold parts of pigs that remained after consuming the heads and internal organs in the farmer's own household. The price was 5.5 US dollars (USD) per kilogram.

Pig rearing techniques

Data of pig rearing conducted by Farmer No. 1 are detailed below. Farmer No. 1 is actually the joint effort between two pig owners, each of whom employs two male workers for 30 USD per month to engage in the actual rearing of their pigs. The pigpen of Farmer No. 1 has seven rooms in which a total of 52 pigs are raised, comprising seven sows and 45 piglets. The dates of birth and litter size of each sow can be ascertained from the farmers' records. First, five of the seven sows were born on the same day, January 17, 2010, indicating that they share the same mother (Table 2).

Sow No. 1 gave birth to eight piglets on December 7, 2010.

Sow No. 2 gave birth to seven piglets on December 2.

Sow No. 3 gave birth to eight piglets on November 17.

Sow No. 4 gave birth to eight piglets on December 6.

Sow No. 5 produced no litter.

Sow No. 6 gave birth to seven piglets on December 4.

Sow No. 7 gave birth to seven piglets on December 4.

These data suggest that each pig gave birth to seven to eight piglets in each litter. Except for Sow No. 3, the timing of litters was almost identical. Considering also that the sows were mostly all one year old when they gave birth, the number of pigs owned by the farmer increased more than sevenfold from seven sows to 52 pigs in one year. Farmer No. 1 was visited by a veterinarian every few days during November 28–December 19 for a total of six times. This attention is evidently the result of a strong impact of infectious diseases of pigs found in recent years: The two farmers lost all of their pigs to diseases the prior year.

Table 2. Pig production in one management body (No. 1 in Table 1)

Female pig	Date of birth	Date of baby's birth	Number of baby
No. 1	2010.1.17	2010.12.7	8
No. 2	2009.12.22	2010.12.2	7
No. 3	2009.12.12	2010.11.17	8
No. 4	2010.1.17	2010.12.6	8
No. 5	2010.1.17	Nil	Nil
No. 6	2010.1.17	2010.12.4	7
No. 7	2010.1.17	2010.12.4	7
		Total	45

Source: Pig owner's notebook.

Reality of Pork Distribution

Pork is sold at various places ranging from the central market and Masina market to high-end supermarkets such as Peloustore. Farmer No. 1 sells directly to the Peloustore supermarket after slaughtering the pigs independently. Farmer No. 2 sells livestock to the central market in addition to supermarkets.

Pork is priced higher at supermarkets, at 10,000 Congolese francs (FC) per kilogram, than at 7,000 FC at farmers' markets (Table 3). At supermarkets, the meat is sold as many different cuts that are priced differently. At the central market, pork is sold only by the kilogram, at 7,000 FC, without butchering into separate cuts.

The example of the central market and Masina market can be described as follows: The pigs are often transported from within Kinshasa while they are still alive. Some are also brought from Bandundu Province and Matadi in the Bas-Congo Province, each approximately 700 km from Kinshasa (Fig. 1). The pigs are slaughtered, roasted whole, and depilated in the markets. They are then separated into cuts of meat (Fig. 7). Workers in these operation areas are all males. In the Masina market, particularly the meat of wild river hogs and pork are sold side by side, and pork is priced lower than the other meat.

Table 3. Price of pork per 1 kg

	Peloustore (Super market)	Central market
Roti de Porc	10,000 FC	7,000 FC
Petit Sali	5,500 FC	
Jambonneau	6,000 FC	
Palette de Porc	6,870 FC	

Source: Author's fieldwork.



Fig. 7. Pork sales in the market.

DISCUSSION

This study was conducted to identify the conditions of pig farming and pork production and distribution in Kinshasa, the capital of the DRC, with the intention of seeking new ways to acquire a source of protein in the tropics. The results indicated that six households had begun pig farming in the past 14 years, two of which had nonetheless lost their pigs to disease. The following examine the results based on three themes.

1) Productivity of pig farming

Can pig farming indeed rapidly become a profitable business at Kinshasa? Pig farming generates high income if the farmer rears pigs that reproduce successfully every year, as exemplified by the previous description of Farmer No. 1. Farmer No. 1 additionally obtained most pig feed from spent grain from beer breweries by paying only the transportation expenses. The problem, however, is the threat of viral infectious diseases such as swine fever (hog cholera). The two previously described cases (Farmers No. 3 and No. 4) had lost all of their pigs as a result of such diseases. On the other hand, it is reported that the major causes of mortality of reared pigs were African swine fever (ASF) 98% at the peri-urban and rural areas in Western Provinces (Kambashi et al., 2014). The majority of farmers never called a veterinarian. It is important for pig farmers or businessmen to prevent infectious diseases by using medical care.

In Wamba, a farm village in the Equateur Province of the DRC, a swine epidemic has been reportedly spreading and killing the local pigs (Kimura et al., 2010). As of 2007, 40 pigs were raised in the Wanba area. A three-month old piglet is priced at 3,000 FC. A four month old is 4,000 FC. A large male, according to local residents, can be sold for more than 10,000 FC. Pork was sold at 500 FC per kilogram at that time (Kimura et al., 2010: 349–350). The local people use a system by which an association rents pigs to general residents, who are given one piglet born from each rental pig as compensation and return the remainder of the pigs to the association.

Pig farming is therefore considerably profitable in the short run in both urban and rural areas. However, the impact of infectious diseases cannot be neglected in the long run. At the moment, the reasons of diffusion of African swine fever are unclear.

2) Changes in urban pig rearing

This section presents a description of changes in pig rearing conducted in the city of Kinshasa. How has the use of animal protein changed since the era of the Belgian Congo to the present? In the era of the Belgian Congo, the largest source of animal protein in Kinshasa was allegedly farm animals. Whether the animals were pigs or cows, however, remains unknown. The distribution of pigs in the DRC in the 1960s reveals pig rearing in the Kinshasa area (Fig. 8). Whether this farming was conducted in the city remains an open question. As of 1971, 488,000 pigs were reared in the DRC (Pandey & Mbemba, 1976). Information from the 1990s indicates that pig farms existed only to a slight degree in Kinshasa,

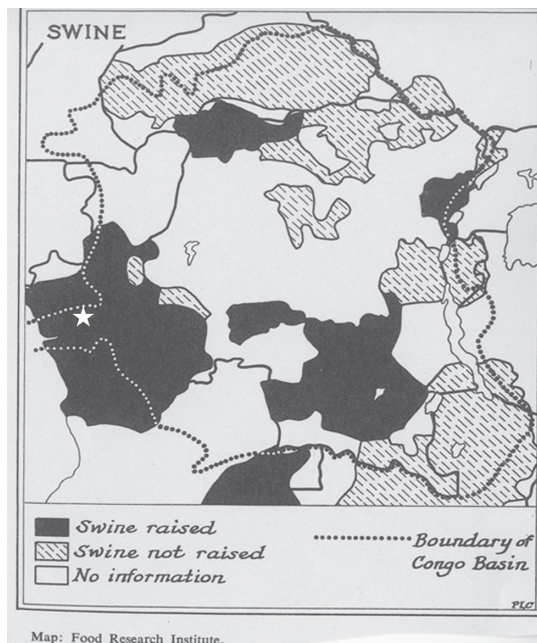


Fig. 8. Distribution of pig breeding in 1960's in DRC.
Source: Miracle, 1967: 15.

but 2–3 pigs per household had been raised in the Bas-Congo Province located west of Kinshasa (FAO, 2005b: 5). Although data indicate that approximately 953,000 pigs were reared in the country in 2002, the number reared in Kinshasa remains unknown (FAO, 2005b: 2).

These findings suggest that according to the cases in this study, pig farming is a new business that began over the past 14 years. In other words, the initiation of pig farming is likely the result of an increase in demand for meat when the supply of animal protein became more necessary in response to population growth in Kinshasa in the 1990s. This area and topic demand further research in the future, because it is reported that there is an increasing number of small- and medium-sized, semi-intensive pig keeping enterprises around cities (Kambashi et al., 2014: 10).

On the other hand, I compare this case study with the research of Kambashi in Kinshasa investigating the pig keeper's economy (Kambashi et al., 2014: 10). This research pointed out that pig breeding was the main source of income for most farmers. Though this study does not clarify the proportion of income, a few cases about combination cropping and pig production is shown in the study area.

3) Sustainable use of resources in urban areas: Expansion of pig farming in the tropical region

Pigs can adapt to various environments such as tropical rainforests and savannas, as well as urban areas. In recent years, pig farming has taken hold in tropical




Environment	Landscape	Production system
Tropical rainforest		Pig rearing, crop farming, hunting
Savanna		Pig rearing, crop farming
City		Pig rearing

Fig. 9. Model of expanding of pig rearing area.

regions around the world where pig farming never took place in the past. The author infers that the expansion of pig rearing is occurring with the strong influences of three phenomena (Fig. 9).

One is the expansion of tropical rainforest areas. The author's observations have revealed that pig rearing using cassava as the primary feed has begun in areas in the Peruvian Amazon, which have never experienced pig rearing in the past. In this case, the pigs are reared in the open. They also eat grass in the woods. Pigs are also reared in rainforests near the Pacific in Colombia (Ocampo et al., 2005).

Another phenomenon is the expansion of pig farming in savanna areas. Farmers in northern Uganda use sweet potatoes as the major feed in their pig rearing. In this case as well, pigs are released in the fields. They also eat outdoor plants.

The last phenomenon is illustrated by the case of Kinshasa. Pig rearing has just begun in response to increased demand for meat as a protein supply to accommodate the population growth attributable to urbanization.⁽⁴⁾ The pigs are raised in pigpens in such cases, which are also characterized by the use of waste materials from beer breweries, bread factories, and farmers' markets.

Although this study has not revealed all aspects of pig farming in Kinshasa, it has helped elucidate the conditions of production at pig farming households and the distribution of pigs and pork products. This is the case of using waste primarily from beer breweries as a feed resource, which is likely to provide useful options when considering the sustainable use of resources in large cities in the African tropics.

NOTES

- (1) According to the statements of breeders, there are Large Whites, Pietrain, local pork (Large Blacks), Landraces, and hybrids (Kambashi et al., 2014: 12).
- (2) The average number of pigs per farm was about 18 for all 319 farms (Kambashi et al., 2014: 12).
- (3) Ingredients used in pig diets varied with the location. Plant species were used for feed resources (Kambashi et al., 2014: 16).
- (4) Though Moula et al. (2013) describe the production of animal protein in the Congo Basin, they mainly mention cattle, sheep, goat, chicken, rabbit, guinea pig and insects except pig.

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