

## Characteristics of Pig Farms in Côte D'Ivoire

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| Received: 17.06.2025 | Accepted: 20.08.2025 | Published: 05.09.2025

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### Abstract

### Original Research Article

The purpose of this study is to describe the structure of pig farms in Côte d'Ivoire, the infrastructure and equipment of pigs, as well as feed. This study was carried out from February 2017 to October 2018, about 21 months and involved 301 pig farms in 16 departments and 1 autonomous district of Côte d'Ivoire. The sampling method used is the empirical, non-probabilistic method. Data was collected from pig farmers through a questionnaire that focuses on herd structure, feed and infrastructure. The survey took the form of visits to pig farms followed, interviews with the various actors involved in the work. The study reveals that pig farming is predominantly performed by men and is considered an important source of income. The pigs present on the farms visited are mostly of the Large White breed with the exception of the northern area where the Korhogo breed predominates. Overall, breeders have a pigsty built of good quality equipment. The food raw materials used by pig farmers in Côte d'Ivoire are very varied. The main sources of protein used in most farms are soybean meal, fishmeal, palm kernel meal and copra meal.

**Keywords:** breeding, pigs, characteristics, Ivory Coast.

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## I- INTRODUCTION

Côte d'Ivoire has significant agricultural potential to ensure significant food production for an estimated population of 23 million (INS, 2014). However, there is a significant gap between animal protein production and demand. According to the results of food assessments conducted in 2018, 10.9% of rural households are food insecure, including 20.8% of the poorest households (MINADER, 2018).

According to MIRAH (2016), Côte d'Ivoire relies heavily on imports of animal and animal products, apart from eggs. The dependency ratio is 58%, 32% and 46% respectively in 2011 for cattle, small ruminants, and pigs. Fish accounts for more than 60% of Ivorian households' consumption of animal protein. Per capita consumption is between 11 kg on average per year against an average of 17 kg per capita worldwide. For milk and dairy products, Côte d'Ivoire's dependency ratio was 83% in 2011.

The production of meat from ruminants and poultry alone cannot fill the growing protein deficit, given the current and especially future constraints related to these farms (Ndébil *et al.*, 2009). The implementation of a strategy for the development of the pig sector can be

an alternative to the problems of protein feeding. It can play an important role in improving the nutritional status of the population. However, the structure of farms, production infrastructure and equipment, as well as pig feeding are not yet well controlled.

The objective of this work is to determine the characteristics of pig farming in Côte d'Ivoire.

## II- EQUIPMENT AND METHODS

### 2.1- EQUIPMENT

The material used for the survey of pig farmers consists of a questionnaire for collecting information, boxes for collecting samples of raw materials and pig feed. In addition, a digital camera for shooting, as well as a map of the road and administrative network of Côte d'Ivoire for orientation, helped to carry out this survey.

### 2.1- METHODS

The survey was carried out in pig farms in Côte d'Ivoire, more specifically, in the district of Abidjan and its surroundings (Autonomous District of Abidjan, Grand-Bassam, Dabou and Agboville) for the south, the region of poro (Korhogo) for the north, the regions of Gontougo (Bondoukou, Tanda and Koun-fao) and Indenié-Djuablin (Abengourou, Bettié and Agnibilekro)

for the East, the regions of Hautassandra (Daloa), Marahoué (Bouaflé) and Tonpki (Man) for the West and finally the Aries region (Tiébissou, Toumodi and Didiévi) for the center (Figure 1). This study took place from February 2017 to October 2018, or about 21 months and involved 301 pig farms. The sampling method used is the empirical, non-probabilistic method. Data was collected from pig farmers through a questionnaire that focuses on herd structure, feeding, livestock infrastructure and management, sanitary measures and herd operation. First, there was a pre-survey that lasted about three weeks and allowed the questionnaires to be tested in the field. At the end of this phase, adjustments were made to the questionnaires. A timetable for the conduct of the investigation was drawn up and contacts

were made on the ground, either in writing or by telephone, to inform the various actors concerned. The actual investigation took place over a period of approximately 21 months. It took the form of visits to pig farms and interviews with the various actors involved in the work. The trips on the ground were made by cars, motorcycles and on foot. The data were obtained by having each farmer fill in the questionnaire concerning him. In some farms, the interview took place immediately from the first visit, while in others it took place a few days later depending on the availability of the respondent. The input mass was done by Access software and the data processing was done using Excel software and Statistical Package for the Social Sciences Personal Computer (SPSS/PC) software.



Figure 1: Map of Côte d'Ivoire showing the localities visited during the survey

### III- RESULTS

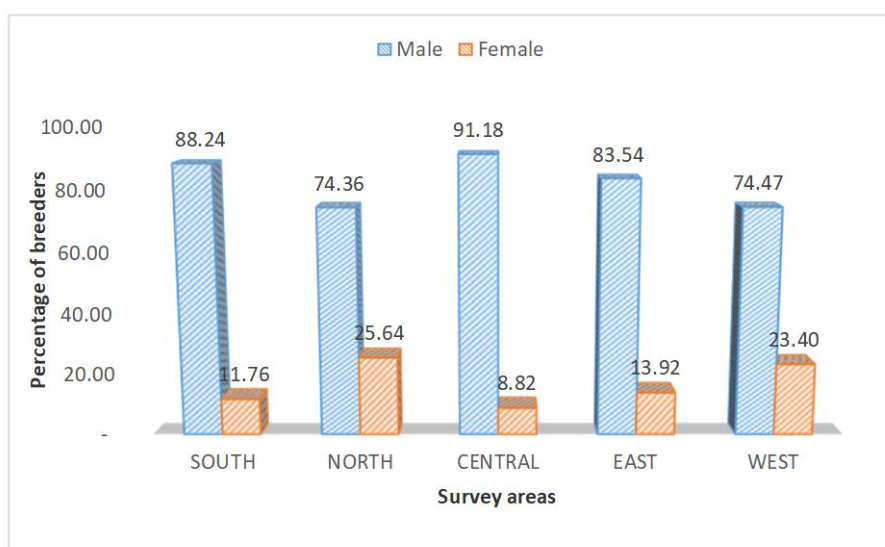
#### 3.1- STRUCTURE OF PIG FARMS IN IVORY COAST

##### 3.1.1- Distribution by sex and religion of the breeders encountered

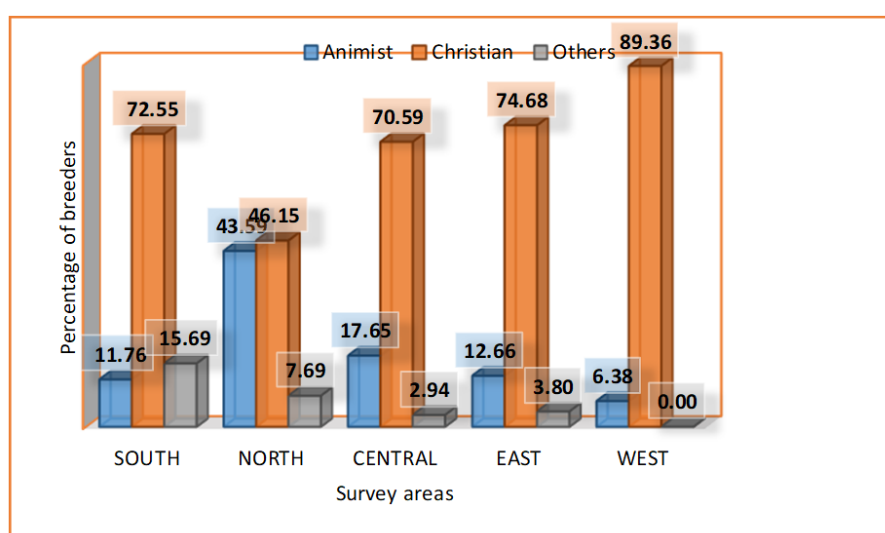
According to Figure 2, pig farming is predominantly practised by men for all the localities visited (74.36% to 91.18%). Pig farmers are mostly Christians in the south (72.55%), centre (70.59%), east (74.68%) and west (89.36%) of Côte d'Ivoire. In the North, the proportion of animist herders (43.59%) is lower than that of Christian herders (46.15%). The other herders are Muslims and herders who have not agreed to specify their religion (Figure 3).

##### 3.1.2- Exploited breeds

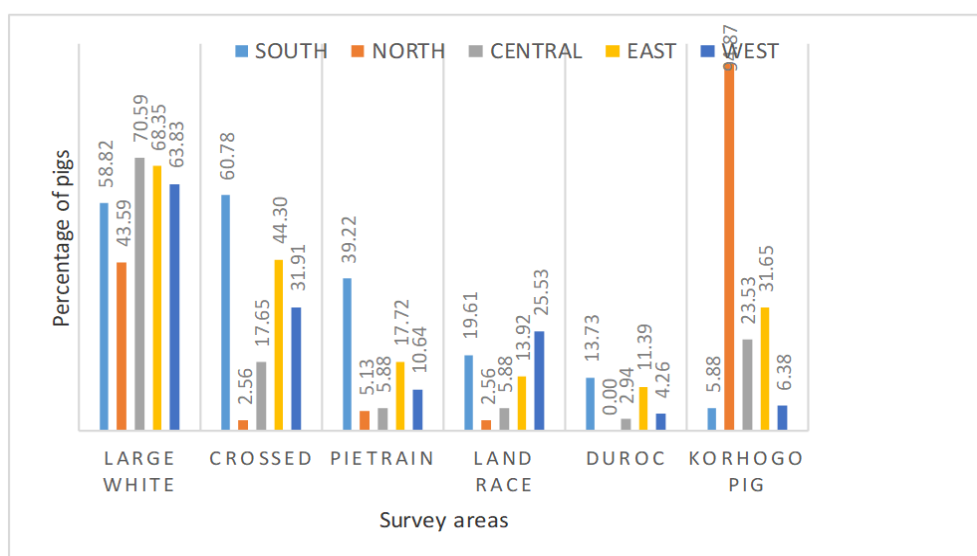
According to Figure 4, in the South, the breeds exploited are mainly crossbred pigs (60.78%) and Large white pigs (58.82%). In the North, the pigs raised are mostly Korhogo pigs (94.87%), followed by Large White pigs (43.59%). In the Centre, most pigs raised are Large White (70.59%). In the East, the dominant breeds are Large White (68.35%), crossbred pigs (44.30%) and Korhogo pigs (31.65%). In the West, the most exploited breeds are the Large White breed (63.83%), the cross breed (31.91%) and the Land Race (25.53%). It appears that the pigs present on the farms visited are mostly of the Large White breed, with the exception of the northern area where the Korhogo breed predominates (94.87%).



**Figure 2: Distribution of breeders interviewed by sex and survey area**



**Figure 3: Distribution of breeders by religion and survey area**



**Figure 4: Pig breeds operated by geographic region**

### 3.1.3- Livestock and frequency of pig farms in Côte d'Ivoire

According to Figure 5, the majority of pastoralists in the South (30%) have between 50 and 100

individuals. In the North, most producers (77%) have a pig population that ranges from 20 to 50 head. In the centre, east and west, the numbers are essentially less than 20 head.

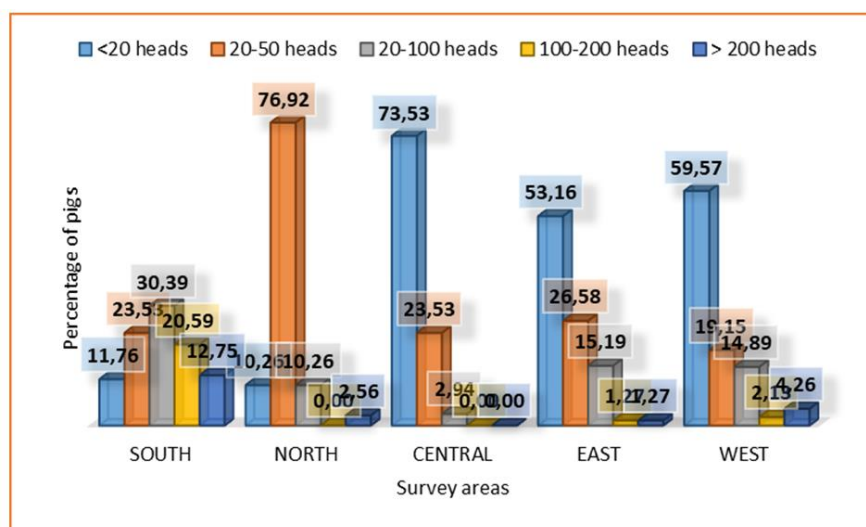


Figure 5: Pig herd by geographical area

### 3.2- INFRASTRUCTURE AND LIVESTOCK EQUIPMENT

The breeding equipment consists mainly of feeders, fixed and concrete drinkers well separated by iron bars (Figures 6, 7 and 9). Pig farms also have scales,

wheelbarrows and other equipment, including brooms, rakes, shovels, pipette drinkers (Figure 8). The quality or non-existence of certain equipment depends on the farming systems (traditional, semi-intensive or intensive).

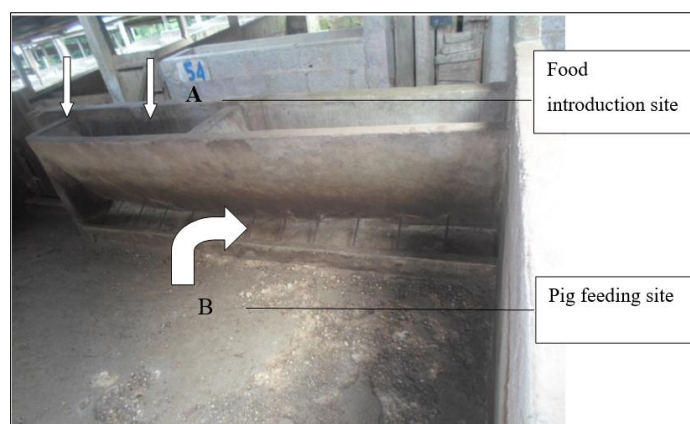
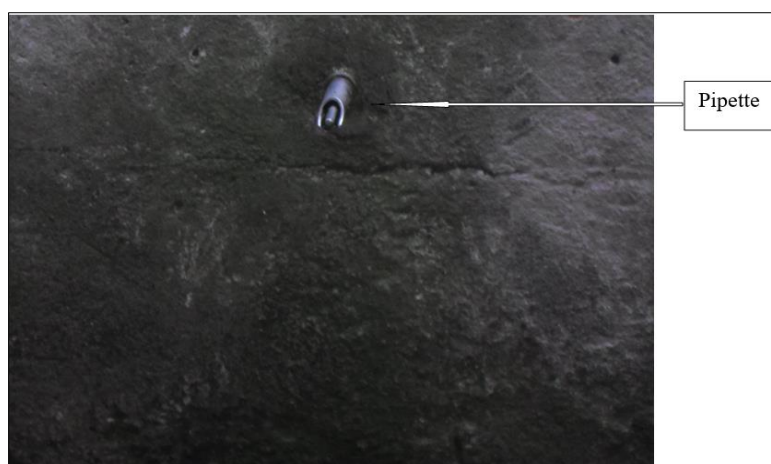


Figure 6: Modern Pig Feeder Model



Figure 7: Semi-modern feeder model for pigs





**Figure 8: Modern pipette drinking trough model for pigs**



**Figure 9: Traditional drinking trough model for pigs**

### 3.3- PIG FEED

The main sources of protein used in most farms are soybean meal, fishmeal, palm kernel meal and copra meal. In all areas, most farmers make the feed for pigs themselves. Complete feed purchased from feed mills is most often used for piglets.

## IV- DISCUSSION

This study shows that pig farming is mainly practiced by men. The herders are mostly Christians. The strong presence of Christians in the pork industry compared to other religions could be explained by the fact that most Muslims do not raise pigs for religious reasons. These results are at odds with those of Buldgen *et al.*, (1994) in the groundnut basin in Senegal, Missohou *et al.*, (2001) in rural Casamance and Sambou (2008) in Dakar where this activity is mainly dominated by women.

The pigs present on the farms visited are mostly of the Large White breed with the exception of the northern area where the Korhogo breed predominates. The predominance of the Korhogo breed in the North could be explained by the interest that breeders in this area have always given to this breed because of its

hardiness and zootechnical performance. According to PROFIAB (2014), the enthusiasm generated by the Korhogo pig was at the origin of the creation of the Korhogo Pig Breeding Center whose main mission was the production and dissemination of improved piglets of the said breed. However, the so-called Korhogo breed pigs do not seem to be pure specimens. Indeed, PROFIAB (2014) indicates that the technical feasibility of genetic improvement of Korhogo pigs can only be achieved if genetic analyses (phenotypic and genotypic) confirm the existence of pure specimens. These results are consistent with those obtained by Deka *et al.*, (1998), Ayssiwede (2004) in Benin and those of Umutoni (2012) where the main breed exploited is the Large White in 70% of the farms concerned. These results differ from those obtained by Abdallah (1997), Missohou *et al.*, (2001), Humbert (2006), respectively, in the Central African Republic, Senegal and Madagascar according to which the local breed was clearly predominant. The results of Agbokounou *et al.*, (2016) indicate that in the different regions of Africa, the breed most bred by the population is the local pig because it requires few inputs and is characterized by an ability to adapt to difficult breeding conditions. The absence of a local breed in this work could be explained by the fact that this study was carried out in urban and peri-urban areas where local

breeds are threatened with extinction because they are considered an important source of African Swine Fever (ASF) (MINAGRA, 2001).

The majority of breeders have a pigsty with a tin roof, a cemented side wall and a concrete floor. In most of the farms visited, the construction material for pig barns is of good quality. These results are similar to those obtained in Senegal by Sambou (2008), Bassène (2010) and Doumana (2011). These results are also consistent with those obtained in Benin by Ayssiwede *et al.*, (2008) and in Burkina Faso by Umutohi (2012) where pig habitats are mostly improved or semi-modern buildings. However, they are different from those of Ossebi *et al.*, (2018) in Casamance, Senegal which state that most breeders have small, very rudimentary pig barns. The roofs of these pigsties are made of straw or rusty zinc sheets, the side walls mainly of wood and a dirt floor. This difference could be explained by the location of the farms surveyed. Livestock farming in peri-urban and urban areas of the main economic centres is most often improved.

The food raw materials used by pig farmers in Côte d'Ivoire are very varied. The main sources of protein used in most farms are soybean meal, fishmeal, palm kernel meal and copra meal. These results are different from those of Buldgen *et al.*, (1994) in Senegal, and Agbokounou *et al.*, (2016) in Benin who report that leftover meals, millet, rice, cassava or sweet potato peelings, baobab leaf, tomato pulp or cabbage leaf are used as a basis in pig diets. The results that the feed used on most farms is formulated by the farmers themselves corroborate those of Ossebi *et al.*, (2018).

## V- CONCLUSION

An analysis of the structure and functioning of the farms surveyed reveals that pig farming is mainly carried out by men. The pigs present in the farms visited are mostly of the broad white breed with the exception of the northern area where the Korhogo breed predominates. The food raw materials used by pig farmers in Côte d'Ivoire are very varied. The main sources of protein used in most farms are soybean meal, fishmeal, palm kernel meal and copra meal. For the success of his breeding, the farmer needs to invest in infrastructure and put a particular emphasis on feeding pigs. However, the valuation of infrastructure and feed will depend on the quality of training of farm staff, a parameter that could influence mortality and livestock productivity.

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