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Farmers' Knowledge of Breeding Practices and Ectoparasites Control in Runner Pigs in the Poro Region (Northern Côte d'Ivoire)

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Abstract **Original Research Article**

This study aims to assess farmers' knowledge of husbandry practices and ectoparasite control in free-range pigs in the Poro region, northern Côte d'Ivoire. Surveys were conducted among 87 farmers in three departments: Sinématiali, Korhogo, and Dikodougou. The results indicate that most farmers are male (81.61 %), predominantly aged between 31 and 50 years (70.11 %), and 68.96 % are illiterate. Pig farming remains a secondary activity for 78.16 % of farmers, with agriculture being their main occupation. The pig population is concentrated in Sinématiali (40.35 %) and Dikodougou (37.72 %). However, only 21.96 % of farmers practice external deworming, and 65.52 % clean their pigsties, often with inadequate frequency. Ivermectin is the most used product (47.37 %), mainly applied through self-medication (78.95 %). The rainy season is identified as the most critical period for parasite infestations (94.25 %). These findings reveal significant gaps in ectoparasite management practices, exacerbated by limited access to veterinary services and low awareness levels. They highlight the need to enhance training, improve hygiene practices, and promote tailored solutions to sustainably develop pig farming in the Poro region.

Keywords: Farmers' Knowledge, Breeding, Practices, Ectoparasites Control, Côte d'Ivoire.

INTRODUCTION

Livestock play a crucial role in improving household incomes, both economically and in terms of food security. Around 675 million of the world's rural poor, including nearly 170 million in sub-Saharan Africa, depend partly or wholly on livestock to meet their food and cash needs [1]. In Africa, poverty reduction is closely linked to the promotion of income-generating activities, particularly those practised by small-scale farmers.

Pig farming is one such activity, offering significant opportunities thanks to its short reproductive cycle, abundant litters, ability to transform agricultural by-products into high-quality meat, and adaptation to a variety of ecosystems. These characteristics make the pig an animal of choice for providing additional income for many socio-professional groups in Africa [2]. Pig farming therefore appears to be an effective solution in the fight against poverty.

In Côte d'Ivoire, the pork sector is a key pillar of the national poverty reduction strategy. Thanks to its potential, it could make a significant contribution to meeting national demand for animal protein [3]. Support policies, such as the creation of SODEPRA in the 1970s, have led to a significant increase in pig production. However, African swine fever (ASF) in 1996 and the socio-political crisis of 2002-2011 in Côte d'Ivoire severely hampered this development [4]. Despite these challenges, the industry has seen a revival thanks to the creation of the INTERPORCI inter profession in 2011 under the aegis of the Ministry of Animal and Fisheries Resources (MIRAH) [3].

In the north of Côte d'Ivoire, the department of Korhogo is characterised by high pigmeat production and consumption [5]. In this region, traditional pig farming, practised mainly by men (72%), remains a widespread activity among small-scale rural farmers [6]. Despite support from projects such as PRODEMIR and PROFIAB-Nord, the sector still faces constraints,

including the persistence of parasitic diseases, particularly those caused by ectoparasites, whose impact on productivity remains little studied.

Ectoparasites, particularly mites and insects, although not direct causes of mortality, induce sub-clinical parasitism that affects pig production and productivity [7]. Unlike infectious diseases, which can often be controlled by therapeutic and prophylactic measures, parasitic diseases, particularly those linked to ectoparasites, are difficult to manage. In the Poro region, data on the control of ectoparasites in pigs is still very limited.

Thus, a better understanding of husbandry practices and ectoparasite control strategies in this region is essential to develop appropriate and effective control methods. This study aimed to assess farmers' knowledge of breeding practices and ectoparasite management in pig racers in the Poro region of Côte d'Ivoire.

MATERIALS AND METHODS

Study Site

The study was carried out in the north of Côte d'Ivoire, more specifically in the Poro region. The region has four (04) departments: Korhogo, Sinématiali, Dikodougou and M'Bengué. The study covered three departments: Sinématiali (latitude 9°35'00‘ N, longitude 5°23'00’ W), Korhogo (latitude 9°27'28‘ N, longitude 5°37'46’ W) and Dikodougou (latitude 9°04'00‘ N, longitude 5°46'00’ W). The various villages visited in these departments are shown in Figure 1. The Poro region is headed by the commune of Korhogo. It is bordered to the north by the Republic of Mali, to the south by the Béré region, to the east by the Tchologo and Hambol regions and to the west by the Bagoué region. Like all the regions of Côte d'Ivoire, Poro's economy is essentially based on agriculture. The region's tropical climate is conducive to a variety of crops, as well as pig, cattle and sheep farming.

Methods

A survey form was drawn up to assess farmers' knowledge, attitudes and practices regarding ectoparasites and control methods. The questionnaire covered identification of the farmer, description of the farm, farmers' knowledge of ectoparasites and practices for controlling the parasites or diseases they cause. The data collected were entered and organised using Microsoft Excel software for initial storage. Qualitative variables (gender, level of education, husbandry practices) were presented in the form of frequencies and percentages.

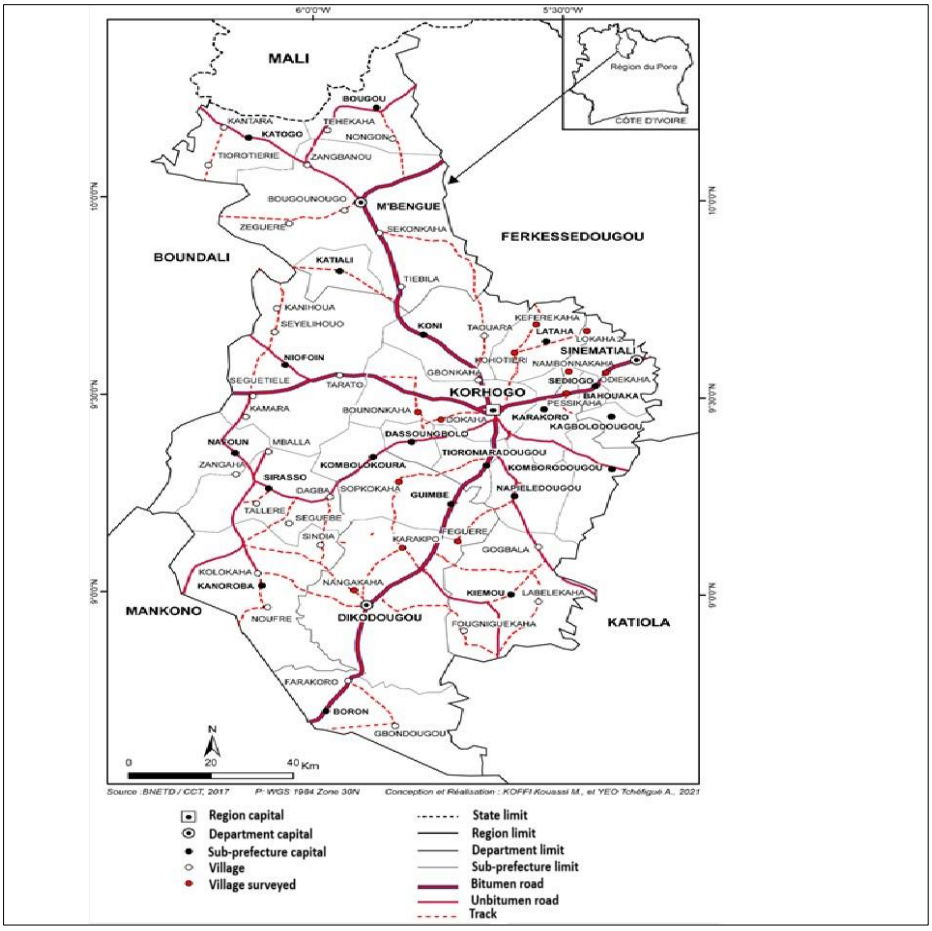

Figure 1: Map of Côte d'Ivoire showing the localities surveyed

RESULTS

Distribution of Farmers by Locality

A total of 87 runner pig farmers were interviewed in the three study departments (Table 1). The results showed a higher concentration of farmers in the departments of Dikodougou (42.53%) and Sinématiali (35.63%) than in Korhogo (21.84%).

Pig Population

A total of 570 pigs were registered for ectoparasite collection. The overall distribution of these pigs by locality is shown in Table 2. The pig herd is mainly concentrated in Sinématiali (40.35%) and Dikodougou (37.72%), with less representation in Korhogo (21.93%).

Table 1: Distribution of farmers according to locality

Departments	Farmers	
	Workforce	Frequencies (%)
Sinématiali	31	35.63
Korhogo	19	21.84
Dikodougou	37	42.53
Total	87	100

Table 2: Pig population

Departements	Pigs	
	Numbers	Frequencies (%)
Sinématiali	230	40.35
Korhogo	125	21.93
Dikodougou	215	37.72
Total	570	100

Socio-Demographic Characteristics

The majority of breeders surveyed were men (81.61%) compared with women (18.39%) (Table 3). The age groups most involved in pig farming were 31 to 40 years old (33.33%) and 41 to 50 years old (36.78%). However, a low level of education was observed, with 68.96% being illiterate. Of these farmers, 42.53% had between 6 and 10 years ‘experience and 31.03% more than 10 years’ experience in pig farming. The majority of farmers (78.16%) have farming as their main activity, while only 17.24% consider pig farming as their main activity.

Farmers' Knowledge of Ectoparasite Control in Pigs

Of the farmers surveyed, only 21.96% practised external deworming, while 78.16% had never done so. Although 65.52% of farmers clean their barns, a significant proportion (45.61%) do so only once a week or less, which may encourage the persistence of ectoparasites. What's more, 78.95% of farmers who carry out deworming do so themselves, while 21.05% call in a farm technician. The products most commonly used were ivermectin (47.17%), mainly by subcutaneous injection, followed by amitraz (35.84%) and alphacypermethrin (15.79%), applied by spraying (Table 4).

Table 3: Variables linked to farmers according to socio-demographic characteristics

Qualitative variables	Terms	Proportion (%)
Type	Male	81.61
	Female	18.39
Age groups	Between 20-30 years	13.79
	Between 31-40 years	33.33
	Between 41- 50 years	36.78
	> 50 years	16.1
Education levels	Illiterate	68.96
	Primary	26.44
	Secondary	4.6
Year of experience in pig farming	Between 0-1 year	8.05
	Between2-5 years	18.39
	Between 6-10 years	42.53
	>10ans	31.03
Main activity	Farmer	78.16
	Breeder	17.24
	Other	4.6

Table 4 : Variables related to farmers' knowledge of ectoparasite control in pigs

Qualitative variables	Terms	Proportion (%)
Practice of external deworming	YES	21.84
	NO	78.16
Cleaning pigsties	YES	65.52
	NO	34.48
Frequency of barn cleaning	1time/day	33.33
	2time/day	8.77
	Every 7 days	12.28
	More than 7 days	45.61
Person handling pigs	Breeders	78.95
	Technicians	21.05
Products used	Alphacypermethrin 10%	15.79
	Amitraz 12.5%	36.84
	Ivermectin 1%	47.37
High infestation season	Rainy	94.25
	Dry	5.75

DISCUSSION

This study highlighted the husbandry practices and knowledge of runner pig farmers in the Poro region of Côte d'Ivoire. The results showed that only 21.96% of farmers practised external deworming, a relatively low percentage that reflects a lack of awareness or access to the necessary resources. Similar studies by Ossebi *et al.*, [8], in Senegal and Dotché *et al.*, [9], in Benin reported slightly higher proportions (30-40%), attributed to increased awareness in these regions. These results highlight the need to intensify training efforts in the Poro region to increase the adoption of pest management practices.

Furthermore, although 65.52% of farmers clean their barns, almost half (45.61%) do so with insufficient frequency (once a week or more), which is a risk factor for the proliferation of ectoparasites. In their study, Scollo *et al.*, [10], also noted that irregular hygiene practices increase the risk of parasite transmission, thereby compromising animal productivity. A daily cleaning frequency, reported as ideal by Dourmad [11], should be encouraged to limit these infestations.

In terms of products used, ivermectin was the preferred treatment (47.17%), followed by amitraz (35.84%) and alphacypermethrin (15.79%). This result is consistent with the observations of Mopate *et al.*, [2], who highlighted the efficacy of ivermectin in controlling ectoparasites on pig farms in sub-Saharan Africa. However, the preponderance of self-medication (78.95% of farmers treat their animals themselves) is a cause for concern, as it can lead to misuse of products, parasite resistance and residues in animal products, as pointed out by Djiman *et al.*, [7].

The high level of infestation during the rainy season (94.25%) reflects favourable climatic conditions for the proliferation of ectoparasites, in line with the work of Benedek *et al.*, [12], which showed an increase in parasitic infestations during periods of high humidity. This suggests the need to intensify prophylactic measures before and during the rainy season, in line with the recommendations of FAO [8].

Demographically, the majority of farmers are men (81.61%), mainly in the 31-50 age group (70.11%). This distribution is similar to that reported by Koffi [6], in Côte d'Ivoire and Djimenou *et al.*, [13], in southern Benin, who also noted a high involvement of working adults in pig farming.

However, the low level of education (68.96% illiterate) remains a major constraint to the adoption of good husbandry practices, as also highlighted by Adesehinwa *et al.*, [14], and Kambashi *et al.*, [15].

Finally, the results highlight significant geographical disparities, with a concentration of livestock farmers and livestock numbers in Sinématiali (40.35%) and Dikodougou (37.72%). These disparities could be influenced by differences in local resources, infrastructure and access to veterinary services. Vall *et al.*, [16], observed similar trends in other parts of Africa, highlighting the importance of targeted support to strengthen the pig industry in these areas.

CONCLUSION

This study revealed major shortcomings in ectoparasite control practices among racing pigs in the Poro region, including low uptake of external deworming and poor hygiene practices. These limitations, combined with a reliance on self-medication, compromise pig productivity and health. The predominant use of ivermectin highlights the need for technical support to avoid poor practices and prevent parasite resistance.

The rainy season, identified as a critical period for infestations, requires particular attention in terms of prevention and awareness-raising. In addition, the geographical disparities in the distribution of farmers and

livestock illustrate the need to adapt interventions to specific local conditions.

These results call for concrete action, such as stepping up training, improving access to veterinary services and promoting good animal husbandry practices, in order to sustainably develop this key sector for the Poro region.

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