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Overview of the feeding system for pigs raised in Kalehe territory, South Kivu, Democratic Republic of Congo

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ABSTRACT: This work focuses on the status of the feeding system for pigs reared in the Mbinga-Sud group, Kalehe territory, in South Kivu. He made use of a survey questionnaire with a section of questions to collect the raw data then encoding them finally to produce graphs to produce.

The results show that 96% of breeders find that the feeding system of pigs reared in the Mbinga-South group is dominated by conventional feed that pigs pick up during scavenging. Regarding the types of simple food available in the Mbinga-Sud group to feed pigs semi-intensively, 44% of farmers show that green fodder and particularly cassava leaves (sombe) are the most used, 30% affirm that tubers and roots occupy second place, 17% of respondents distribute waste cereal flour and cassava; finally, the 9% indicates the banana constitutes for them a food to provide energy to the pigs.

As for the breeding system resulting from a feeding system, the results show that in pig breeding in the Mbinga-Sud group, only 9% of breeders say that breeding is practiced in pigsties or cages; the 61% show that rearing on ties or stakes in a semi-intensive breading system but with the level of rudimentary technicality for the production of pigs; 28% of breeders opt for the supply of food from agricultural residues and remains and 2% practice semi-industrial breeding.

KEYWORDS: System, feed, pig, Kalehe, South Kivu.

1 INTRODUCTION

Pig farming is practised all over the world under a variety of different farming systems, each resulting in a different level of intensification, which is directly correlated with the economic income of pig producers [1].

Intensive or industrial production systems in developing countries use a wide range of pig rearing techniques [2, 3]. The timid, extensive systems characteristic of substance farming are practised in small village production units, with an average of three or four pigs per herd [9]. Breeding conditions are often mediocre, and farmers devote a minimum of investment and intervention to maintain and increase yields [11].

The breeds used are mostly indigenous, and the herds are free-range for most of the year. Constantly on the lookout for food, given its digestive tract, the pig behaves largely as an intermediate type, while the distribution of concentrated feed is limited and highly irregular [23].

In the Democratic Republic of Congo, pig farming remains a traditional subsistence activity in many regions, dominated by a rudimentary breeding system characterized by a total absence of innovation and underproduction [7, 9].

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Once marginalized by many, pig farming is now gaining prominence in many parts of the province of Sud-Kivu, in the east of the DRC, with consumers of its meat numbering in the thousands these days [8, 12]. This type of farming is a guarantee of food security and family economic emergence, which is why enthusiasts of this activity call it an organic cooperative [23].

In South Kivu in general, and Kalehe territory in particular, there are a variety of feedstuffs that can be used for rational feeding in different pig rearing systems, such as cassava, bananas, maize, sorghum, sweet potatoes, taro, various forages and by-products with agricultural waste [16, 19]. These food sources require bromatological studies as a basis for valorizing the local knowledge of breeders [18].

The aim of this work is to analyse the current state of the feeding system for pigs reared in Kalehe territory, South Kivu.

2 ENVIRONMENT AND METHOD

2.1 MIDDLE

This work was carried out in the Mbinga-Sud groupement, Buhavu chiefdom, Kalehe territory, South Kivu province, Democratic Republic of Congo, with a surface area of 396 km2. It is bordered to the north by the Mbinga-Nord grouping with the NDINDI/Lushebere river, to the south by the Kalehe territory across the Nyawaronga river, to the east by Lake Kivu and to the west by the Ziralo and Mubuku groupings. Its latitude is between 1°45° and 2°10 and its longitude between 23°4 and 28° East. The Mbinga-Sud cluster is subject to the climatic influences of the equatorial zone. Winds blowing in from the ocean reach the eastern part of Mutumba, which is still humid, resulting in rainfall ranging from 1,500 mm to 1,800 mm/year. The average isotherm of 15° is located at around 2200 m altitude and marks the extreme limit of cultivation, i.e. plant growth becomes too slow at this altitude. In terms of season, the climate influences two seasons:

- The rainy season runs from September to May, i.e. 9 months;
- The dry season runs from June to August, i.e. 3 months.

Figure 1 shows the mapping of the study environments.

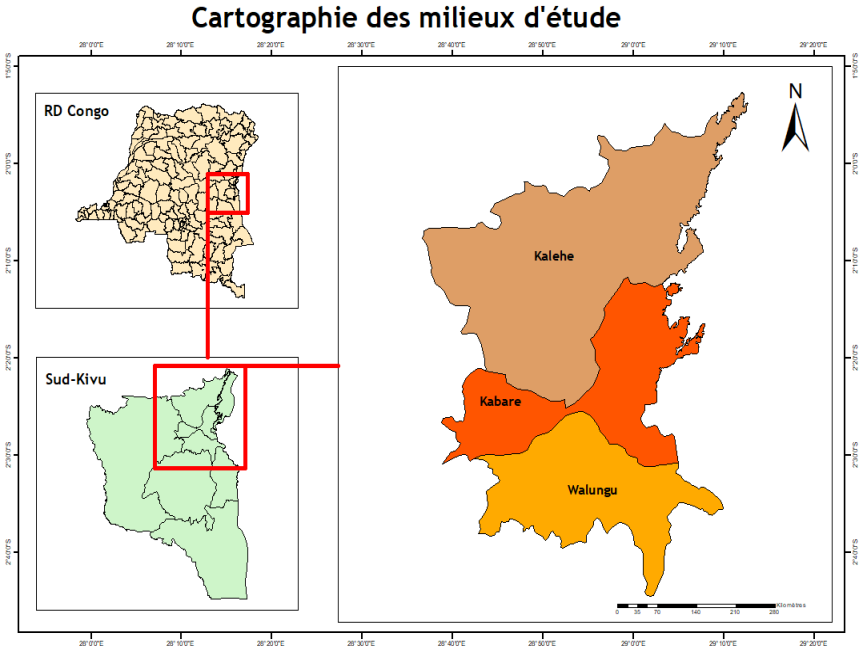

Fig. 1. Mapping of study environments

2.2 METHOD

This study makes use of a survey questionnaire with different sections of questions previously established, tested and addressed to pig producers in the Mbinga-Sud group in Kalehe territory, South Kivu.

A survey combined with observations was carried out in the Mbinga-Sud cluster running from November 2018 to July 2019. For this purpose, a survey questionnaire was developed and administered to pig producers. A representative sample of 105 pig farmers with

special consideration given to seniority in pig farming, pig herd size, range and distance between pig farmers in the Mbinga-Sud groupement was taken as a guide to select the sample. Data encoding and calculations of percentages, averages and frequencies were performed using the MS Excel package.

3 RESULTS

3.1 SENIORITY IN PIG FARMING

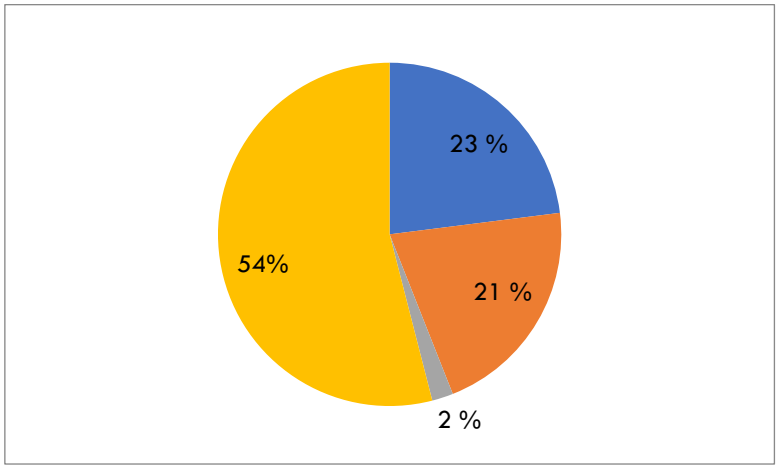

Fig. 2. Age of pig farmers

From these results, it can be seen that the duration of pig rearing in the Mbinga-Sud group is structured as follows: 54% of all respondents stated that the duration of pig rearing was less than 10 years, which shows that pig rearing is still recent in the Mbinga-Sud group, and that the pig reared is exotic. For this reason, pig breeding poses a problem, especially in terms of feeding, as the ratio between the income of the inhabitants and the cost of production is unbalanced; 23% declared more than 10 years, 21% more than 25 years, and the tiny minority of 2% declared more than 50 years as pig breeders in the Mbinga-Sud group, Kalehe territory.

3.2 ORIGIN (PLACES OF SUPPLY) OF PIGS RAISED IN THE MBINGA-SUD GROUP

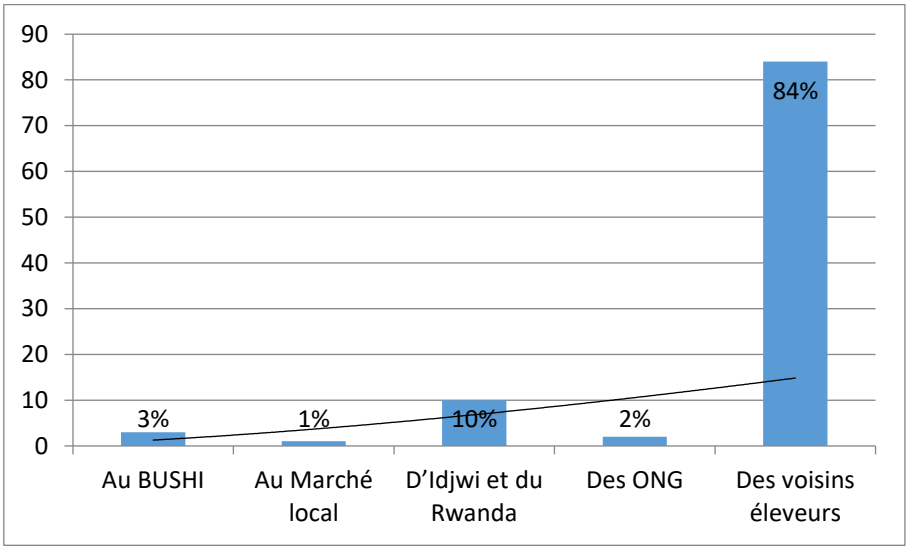

Fig. 3. Source of broodstock

The results of this graph show that 84% of all respondents obtain their pig breeding stock from neighboring breeders, 10% from Idjwi and Rwanda, 3% from Bushi, 2% from NGOs and 1% from the local market. This diversity of crosses between several strains calls for an in-depth study into the characterization of the breed bred in the Kalehe territory.

3.3 GROUP-BRED PIG IN KALEHE TERRITORY

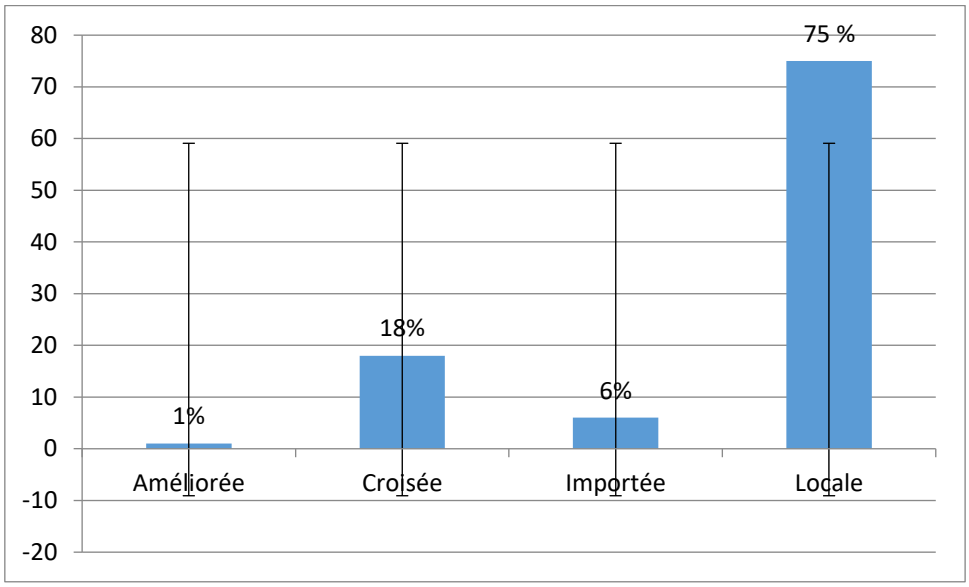

Fig. 4. High breed

The results in Fig. 3 show that 75% of all respondents said that the pigs raised in the Mbinga-Sud group, Kalehe territory, were local breeds, while 18% were the result of cross-breeding between different breeds of different origins; 6% proved that they were exotic breeds. This refers to black pigs brought in from Rwanda. Finally, 1% come from the improved breed of pigs bred in Mbinga-Sud, acquired from farms in the region.

3.4 TYPES OF FEED FOR PIGS

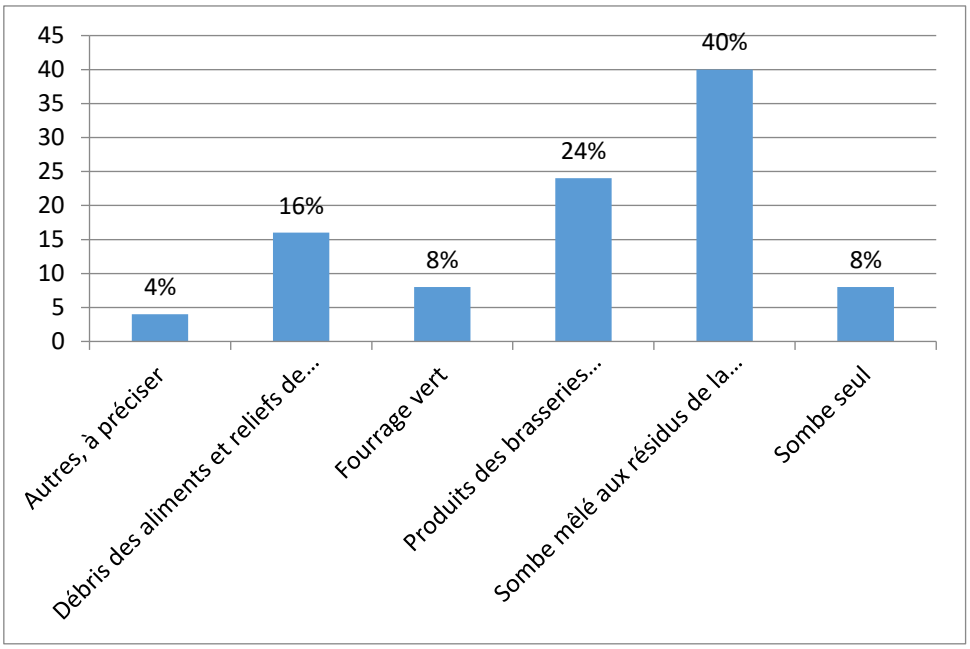

Fig. 5. Power supply types

3.5 TYPES OF FOOD

From these results, it can be seen that the highest score, 40% of all respondents, serve the ration made up of sombe (cassava leaf) accompanied by other foods, especially bananas, taro, and waste from cassava, sorghum, soya and maize mills; 24% serve products from traditional breweries to the pigs, These include banana brewing, sorghum flour residues, juice fermentation, wine filtering, local drinks known as "Kanyanga" and maize for "Mandale". 16% feed the pigs with agricultural residues and bananas as an energy source; 8% use

green fodder or Sombe alone. Lastly, the remainder of respondents use several other feeds from the agri-food industry, such as spent grain and oilcake.

3.6 REASONS FOR NOT USING CERTAIN FOOD GROUPS

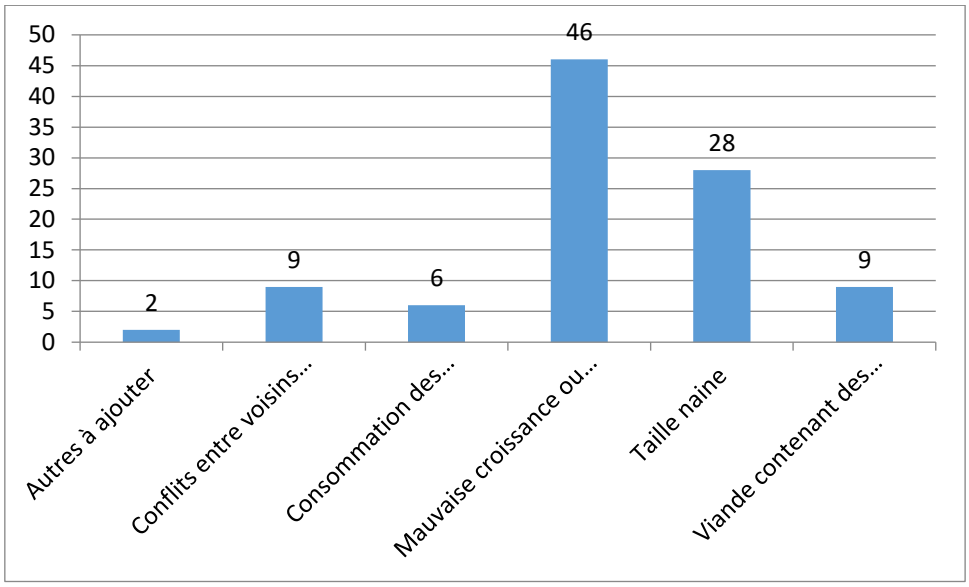

Fig. 6. Reasons for non-use of food groups

A reading of the results in this graph reveals the highest score (46%) of all respondents who declare the scarcity of sombe (cassava leaves) and other green fodder for pig feed in the Mbinga-Sud group; 30% say that they use tubers (taro, potato), roots (cassava and sweet potato) and cereals such as maize and sorghum, while 17% say that flours from these cereals and cassava are their food sources. Finally, 9% of all respondents say that bananas are planted by almost every household in the Mbinga-Sud group. Faced with such a reality and the poverty that is eating away at households in the group, let's see if there are any possibilities of exploiting these resources and ensuring a normal diet for the pigs.

3.7 BREEDING SYSTEM DERIVED FROM A FEEDING SYSTEM

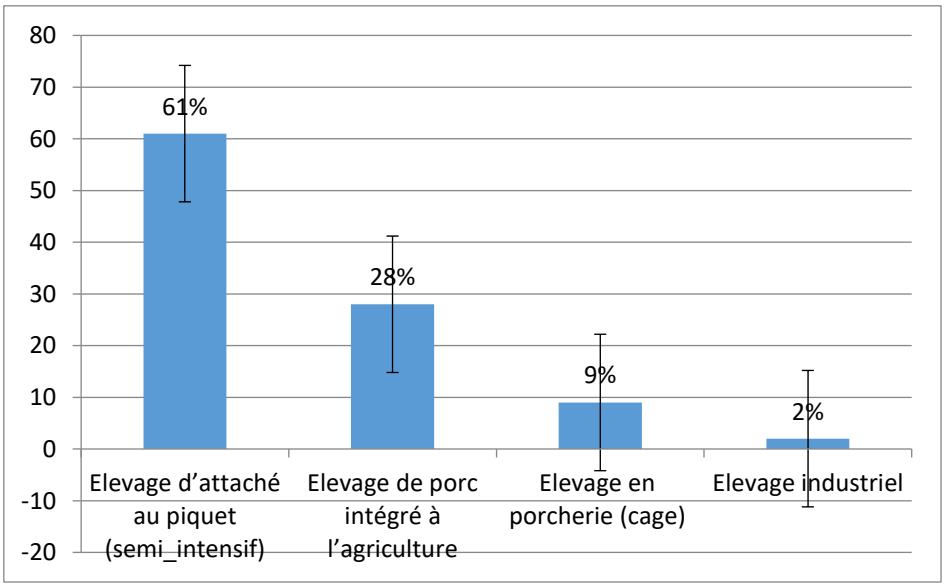

Fig. 7. Livestock farming system in the Mbinga-Sud groupement

Based on the results of this table, the Mbinga-Sud group's pig rearing system, which could provide this readily available feed and prevent the consequences of neglecting it, is as follows: 61% propose rearing pigs tied to stakes, 28% rearing pigs integrated with

agricultural feed, 9% rearing pigs in cages and 2% proposing an industrial rearing system. These proposals will serve as the basis for our recommendations and suggestions to the group's pig farmers.

4 DISCUSSION

The results relating to the identification of pig feeding systems in the Mbinga-Sud groupement show that 69% of pigs in the groupement declare that they are fed by wandering pigs on their own, compared with 31% who ration their pigs. These results confirm our hypothesis that stray pig feeding systems are the most widely practised in pig farming in the Mbinga-Sud groupement, Kalehe territory. These results are in line with those of [2, 12] in tropical regions with agroecological conditions similar to those of Kalehe;

These results do not detract from the work of authors [4, 3, 8] who demonstrate that the quantitative and qualitative improvement of pig production depends on good feeding practices combined with other effective monitoring practices.

The types of feed available for pig rearing in the Mbinga-Sud group show green fodder and Sombe at 44%, tubers and roots at 30%, cereal meal and cassava waste at 17%, and bananas at 9%. These results confirm those of authors [3, 9, 12], confirming the theme that pig rearing in tropical environments is of the extensive type, using rudimentary, low-yield techniques. As a result, 9% proposed pig breeding in cages, 61% pig rearing on stakes or semi-intensively; 28% integrated with agricultural feed and 2% industrial farming.

5 CONCLUSION

The aim of this work is to analyze the current state of the feeding system for pigs raised in the Mbinga-Sud groupement, Kalehe territory, in South Kivu.

The main results of this work show that 96% of farmers find that the feeding system for pigs raised in the Mbinga-Sud groupement is dominated by conventional feed, which the pigs collect when they wander off.

With regard to the types of simple feed available in the Mbinga-Sud group to feed pigs semi-intensively, 44% of farmers say that green fodder, particularly manioc leaves (sombe), is the most widely used, while 30% say that tubers and roots come second. 17% of respondents distribute cereal and manioc flour waste, and 9% say that bananas are used to provide energy for pigs.

As for the rearing system derived from a feeding system, the results show that in pig rearing in the Mbinga-Sud group, only 9% of farmers affirm that rearing is practiced in pigsties or cages; the 61% show that rearing on tethers or stakes in a semi-intensive rearing system, but with a rudimentary level of technical skill for pig production; 28% of farmers opt to supply feed from agricultural residues and leftovers, and 2% practice semi-industrial rearing.

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