

Status of the smallholder pig farming sector in Gauteng Province of South Africa

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Abstract

Pig farming is an important area of pig production among smallholder farmers in Gauteng Province. The objectives of the study were to identify the demographics, farm infrastructure, type of feed, animal health, management and marketing channels within the smallholder pig sector in Gauteng Province. The population was divided into four strata, namely the four district municipalities. A simple random sampling within each strata was done to select the 71 smallholder pig farmers at West Rand, Sedibeng, Tshwane and Ekurhuleni district municipalities. Descriptive statistics was performed using SAS software. The results demonstrated that the majority of the pig farmers were males (67%) and were above 50 years of age (67%), while 56% of the smallholder pig farmers had high school education. Moreover, majority of the pig farmers privately own the farms (62%) and the farm infrastructure had facilities with low cost housing and modern facilities. Moreover, 47% of the farmers feed their pigs with feed swill. A large proportion of the farmers did not vaccinate their pigs (81%). Additionally, majority of farmers were found to not identify their pig herds (63%). Noteworthy, majority of the pig farmers did not have breeding boars (73%) and sold their pigs at auctions (70%). In general, there was lack of information about basic pig management and husbandry.

Keywords: Survey, Smallholder pig farmers, Gauteng Province

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Introduction

There is a need for increased animal protein especially in developing countries thus leading to animal production coming under pressure to meet the demand from the rapidly increasing human population. Pigs are genetically superior at converting feed to meat when compared to ruminant livestock (Mpofu & Makuza, 2003). Furthermore, pigs contribute towards human nutrition, food security, poverty alleviation, enhanced livelihood and creation of employment for rural communities (Antwi & Seahlodi 2011; Dietze 2011). Although South Africa has the highest pig population in southern Africa (Phiri *et al.*, 2003), 25% are free ranging in the resource poor areas (Krecek *et al.*, 2004). Gauteng Province dominated pork exports from 2002 to 2011 followed by Western Cape and Kwa Zulu Natal Provinces. This was due to the fact that these provinces are the main exit points and have requisite infrastructure that facilitate trade (Department of Agriculture, Forestry and Fisheries, 2012).

According to Department of Agriculture, Forestry and Fisheries (2013), South African commercial pig farmers were estimated at 4000 and stud farmers at 19 with the remaining being non-registered, medium scale and smallholder pig farms. Although these smallholder pig farmers contribute towards the national herds, the smallholder pig farming sector is faced with challenges that include inaccessibility to superior breeding stock and markets, low quality feed, insufficient veterinary services and breeding services (Lekule & Kyvsgaard, 2003; Lemke & Zárate, 2008). Hence, the objectives of the study were to identify the demographics, farm infrastructure, type of feed, animal health, management and marketing channels within the smallholder pig sector in Gauteng Province.

Materials and methods

The study was conducted in four district municipalities of the Gauteng Province which were considered to have significant pig production activity, namely: West Rand, Sedibeng, Tshwane and Ekurhuleni district municipalities. A total of 71 smallholder pig farmers as indicated in Table 1 were selected with the assistance of extension officers from Gauteng Department of Agriculture and Rural Development (GDARD). The population was divided into four strata, namely the four district municipalities. A simple random sampling was conducted within each strata. Selection of farmers from each district municipality was not uniform due to the variability of the number of smallholder pig farmers at the different districts. The 50% proportional sample size from each strata was considered representative to provide acceptable results. Face-to-face interviews were conducted using a semi-structured questionnaire composed mainly of closed ended, and few open questions. The survey focused on identifying the demographics, farm infrastructure, type of feed, animal health, management and marketing channels within the smallholder pig sector in Gauteng Province.

Table 1 Number of smallholder pig farmers interviewed at Gauteng Province

District municipalities	Number of smallholder pig farmers	Proportional sample size (50% of the smallholder pig farmers)
West Rand	51	26
Sedibeng	28	14
Tshwane	56	28
Ekurhuleni	5	3
Total	137	68

The data from completed questionnaires was captured and filtered using a Microsoft Excel® (Microsoft, USA) spreadsheet. Descriptive statistics was performed using SAS software. The analyses performed included: proportional percentages; percentiles and graphs of farm characteristics; production parameters; management and health parameters.

Results and Discussion

The results for demographics are illustrated in Figure 1. The smallholder pig farming sector within Gauteng Province was found to be dominated by males (67%) as compared to the females (33%) (Figure 1A). Similarly, the majority of the smallholder pig farmers in Limpopo Province of South Africa and various regions of Indonesia are male farmers (Mokoele *et al.*, 2014; Leslie *et al.*, 2015). In contrast, it was reported that more female farmers rear pigs compared to male farmers in the Eastern Cape Province (Madzimore *et al.*, 2013) and Etayi in Namibia (Petrus *et al.*, 2011). The gender distribution differs from region to region as some regions have higher numbers of female farmers than others. Furthermore, the majority of the farmers were older than 50 years of age (67%), which was an indication that participation of youth is limited (Figure 1B). It was also reported that the majority of smallholder pig farmers in Limpopo Province are older than 50 years of age, which is an indication that the younger generation did not to get involved in agricultural activities (Mokoele *et al.*, 2014). Okoli *et al.* (2004) also found that younger people were not actively involved in piggery or any other type of commercial livestock farming in Imo state, Nigeria. Therefore, there is a need to provide more opportunities with a critical focus on women and youth from peri-urban areas through training with a view of increasing their participation in pig farming. Fifty six percent of the smallholder pig farmers had high school education (Figure 1C). In contrast, the majority of the smallholder pig farmers at Indonesia (Leslie *et al.*, 2015) and Limpopo (Mokoele *et al.*, 2014) had primary to high school education. It is of utmost importance for the farmer to have some formal education in order to be able to access and assess important agricultural information and modern farming practices among others. Moreover, the farmers may face challenges regarding adoption of new agricultural innovations and technologies.

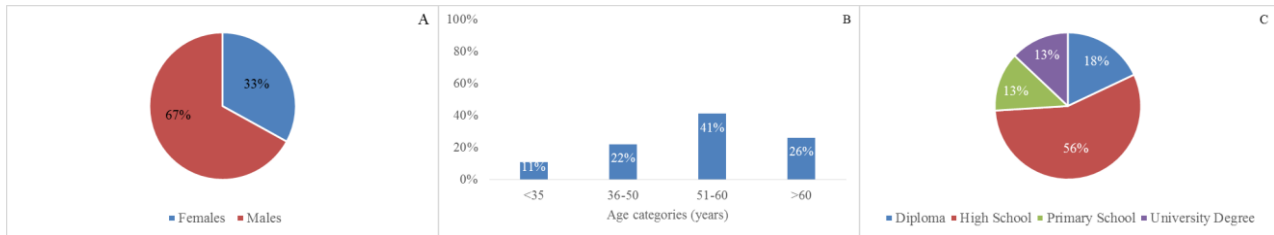


Figure 1 Gender (A), Age (B) and educational level (C) of smallholder pig farmers at Gauteng Province

Results for farm profiles are illustrated in **Table 2**. It was found that 62% of the smallholder pig farmers own land, whereas 18% of the smallholder pig farmers were renting or leasing the farms. Additionally, 10% of the smallholder pig farmers acquired the land through both land reform programs such as Land Redistribution for Agricultural Development (LRAD) and Proactive Land Acquisition Strategy (PLAS), respectively. The estimated total land size in the hands of the smallholder pig farmers in Gauteng Province was 37 560 ha (Gauteng Department of Agriculture and Rural Development strategic plan, 2010-2014). Of this figure, about 13 190 (35%) was privately owned by smallholder farmers while the remaining land (65%) is being leased (Gauteng Department of Agriculture and Rural Development strategic plan, 2010-2014).

Table 2 Farm profile characteristics for smallholder pig farmers in Gauteng Province

Characteristics	Variables	% of respondents
Production systems	Intensive	88%
	Extensive	3%
	Semi-intensive	9%
Land ownership	Private	62%
	Rent/Lease	18%
	PLAS	10%
	LRAD	10%

It was found that majority of the smallholder pig farmers practise intensive farming system (88%). Intensive production systems consisted of pig houses that are constructed to protect the pigs from the harsh weather conditions. Semi-extensive houses are constructed with fences with roofing, however the climate is not completely controlled. Extensive production systems have no housing and there is free movement of the pigs. In the present study, the pigs were found to be housed in a wide range of facilities from full earthen floors using low cost building material to more modern facilities containing cement floors and running water. The following figures (Figure 2 A-C) show typical housing and management practices and give a good indication of the infrastructure and systems utilized. It was evident in some farms that farm infrastructure still poses a serious challenge due to high capital investment. Similar results were also found at Limpopo (Manchidi, 2009). Moreover it was found that pigs in some areas had no shade. According to Manchidi (2009), pigs should not be exposed to direct sunlight and winds as this may cause stress. Consequently, when pigs are exposed to high environmental temperatures their libido, fertility and conception rates decreases.



Figure 2. Some pigs were housed in wire fenced houses with shade (A), cement floors (A) and outdoor pigs with no shade (C)

Feed is arguably the most important pig farming input. Consequently, smallholder pig farmers feed their pigs feed swill as an affordable feed source. It was found that 53% of smallholder pig farmers use feed swill as an affordable feed source (Figure 3A). Furthermore, majority of the feed were purchased at feed manufacturing companies (68%) (Figure 3B). Due to high feed costs, smallholder pig farmers use alternative feeds such as bran and brewers spent grains or to mix complete diets with bran as a way of reducing feeding costs (Montsho & Moreki, 2012). Additionally, some smallholder pig farmers feed their pigs commercial diets from agricultural cooperatives and supplement them with feedstuff like hominy chop and vegetables depending on availability (Mtileni *et al.*, 2006). However, feeding pigs feed swill is unacceptable at South African abattoirs as it may lead to Salmonella, Campylobacter, Foot-and-mouth disease (FMD) and Classical Swine Fever (CSF) (Beltrán-Alcrudo *et al.*, 2008).

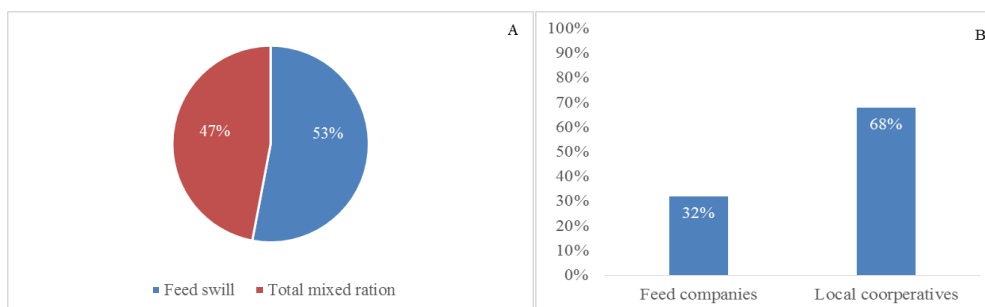


Figure 3 Type of feed used by smallholder pig farmers (A) and source of the feed (B) at Gauteng Province

Majority of the farmers do not vaccinate their pigs (81%) whereas the 19% that did vaccinate only vaccinated their pigs against *E coli* and Parvovirus (Figure 4). It is evident that knowledge regarding vaccination programs and biosecurity was limited amongst the farmers as all the farmers did not have footbaths nor had vaccination programs. Similarly, biosecurity practices were found to be limited at various regions of Indonesia, Limpopo, Mpumalanga and North West Provinces of South Africa (Mtileni *et al.*, 2006; Leslie *et al.*, 2015; Mokoelé *et al.*, 2014). In a recent report by FAO. (2010), several measures were suggested to address disease outbreaks in smallholder pig production systems. These measures mostly focused on the segregation of animals, including quarantining and controlling pig movement. Furthermore, biosecurity measures such as not trading sick animals, avoiding feed swill, disinfecting pens, proper carcass and waste disposal are key components that should also be implemented in the farm health plans (FAO 2010). According to Mokoelé *et al.* (2014), it is also recommended that a community specific farm health plan be implemented using state veterinarians and animal health technicians. Vaccinations against significant production limiting diseases in South Africa (Parvovirus, Leptospirosis and Erysepelas, as well as *Escherichia Coli*) should be included in vaccination programs (Mokoelé *et al.*, 2014). According to Perry *et al.* (2002), investing in veterinary services for smallholder pig farmers may provide support.

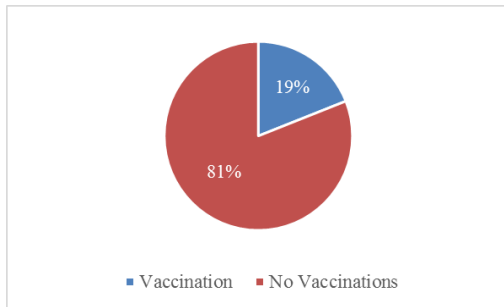


Figure 4 Health status of smallholder pig farmers' pigs within Gauteng Province

Reproductive efficiency is the main limiting factor in maximising animal production and profitability of an enterprise (Figure 5A). In the present study, majority of the farmers do not have good breeding stock (73%) as a result of purchasing breeding materials from local farms and auctions. Montsho & Moreki (2012) also observed that pigs in smallholder systems in Botswana originate from one source and as such inbreeding is common; hence poor quality of stock. Moreover, the smallholder pig farmers reported that there were high incidences of pre and post weaning mortalities. In the present study, 54% did not keep pig records (Figure 5 B and C). According to Phengsavanh *et al.* (2011), diarrhoea and lack of management were the main causes of high losses in piglets. The problem of diarrhoea in piglets was common in many smallholder pig production systems and caused considerable economic loss to pig farmers (Tuyen *et al.*, 2005). Disease and diarrhoea occurrence in smallholder pig production may have been related to the observed poor hygiene, and lack of disease preventive measures as well as poor nutrition of sow during gestation and lactation (Phengsavanh *et al.*, 2010). Hong *et al.* (2006) also reported that poor quality of feed and nutrient supply may have been a contributory factor to the high incidence of diarrhoea in piglets. Furthermore, 63% of the smallholder pig farmers do not use ear tags and notching to identify their pigs for management purposes. In the present study, 63% did not keep pig records. According to Petrus *et al.* (2011), smallholder pig farmers have limited expertise resulting in poor management and planning of pig enterprises.

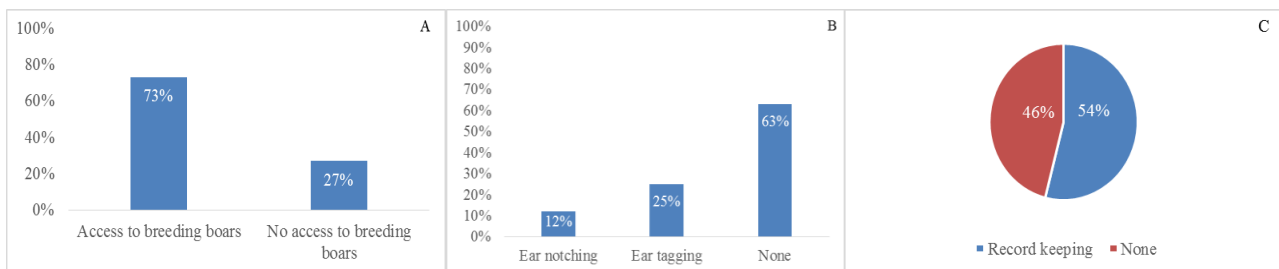


Figure 5 Availability of breeding boars (A), animal identification (B) and record keeping (C) at Gauteng Province

The results for market accessibility are illustrated in **Figure 6**. Majority of the smallholder pig farmers sold their pigs at auctions. This may be because most smallholder pig farmers did not have access to sustainable markets. This could be attributed to lack of knowledge and skills on price determination prior to the selling of pigs which puts these smallholder pig farmers at a disadvantage. This may be because most smallholder pig farmers do not have access to sustainable markets. One other important dynamic is the quality of their products and consistency of production. Mtileni *et al.* (2006) argued that auction prices vary as buyers are most of the time trying to buy pigs at a cheaper price and the prices are not linked to any classification system. There is also no specific period of selling since sales are conducted if there is a demand and availability of stock.

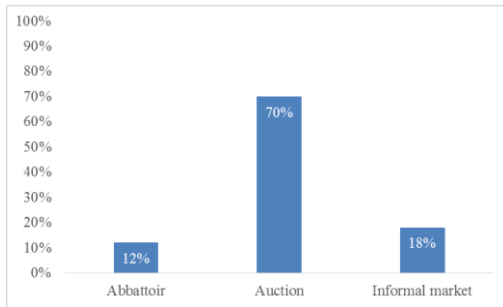


Figure 6 Market access for smallholder pig farmers at Gauteng Province

Conclusions

In conclusion, the study found that Gauteng Province smallholder pig farming sector is dominated by males, participation of the youth is limited and majority of the smallholder pig farmers have high school education. Hence, it is anticipated that as a result of age, lack of education and lack of basic skills, smallholder pig farmers are faced with increased level of constraints in terms of pig's productivity. The results of the current study also revealed that smallholder pig farmers in the studied area are still faced with nutritional, animal health and marketing constraints. It was also found that farm infrastructure still poses a serious challenge. There was also a general lack of basic pig farming management and husbandry practices in terms of nutrition, animal health, reproduction and market access thus affecting their production and overall profitability. It is thus recommended that continuous monitoring and evaluation as well as training will improve the situation of pig farming and reduce the burden of disease in smallholder pig farming sector.

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