

UNIVERSITY OF NAIROBI

PROJECT REPORT

**TITLE: EVALUATION OF THE MANAGEMENT PRACTICES IN
RELATIONSHIP TO THE PRODUCTION LEVELS IN
SELECTED PIG FARMS AROUND KABETE**

INVESTIGATOR: SAMUEL GACHAU MUGO

J30/36216/2010

**PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD
OF DEGREE OF BACHELOR IN VETERINARY MEDICINE OF THE UNIVERSITY
OF NAIROBI**

COLLEGE OF AGRICULTURE AND VETERINARY SCIENCES

FACULTY OF VETERINARY MEDICINE

DEPARTMENT OF CLINICAL STUDIES

APRIL, 2015

DECLARATION

I declare that this research is my original work and has not been presented elsewhere for academic purposes.

í í í í í í í í í

MUGO SAMUEL GACHAU

í í í í í í í í í í í ..

DATE

This project report has been presented for examination with my approval as a university supervisor.

í í í í í í í í í í í ..

Dr. SAMUEL GITHIGIA, BVM, MSC, PHD.

í í í í

DATE

ACKNOWLEDGEMENT

I wish to pass my sincere gratitude to the almighty God for giving me life, grace, wisdom and spiritual support throughout this exercise

My indebt gratitude is extended to my lecturer Dr. S. Githigia for his support, advice and tireless effort to equip me with useful materials and information in process of preparing this project.

Special thanks are also extended to all those pig farmers in Kabete for the assistance and information they provided to make it a success.

Finally, I wish to thank my family i.e. father, mother, brothers and sister for their support both moral and financially and may God bless them.

Once again to all the parties mentioned above, may you prosper in your undertakings.

TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	v
LIST OF FIGURES	vi
ABSTRACT	vii
INTRODUCTION	1
OBJECTIVES OF THE STUDY	3
JUSTIFICATION	4
LITERATURE REVIEW	5
RESULTS	12
DISCUSSION	23
CONCLUSIONS AND RECOMMENDATIONS	26
CONCLUSION	26
RECOMMENDATION	26
REFERENCES	27

LIST OF TABLES

Table 1. Sources of breeding sows í í í í í í í í ..15

Table 2. Herd sizes í í í í í í í í í í í í í í ...19

LIST OF FIGURES

- Fig. 1: Level of education í í í í í í í í í í í .13
- Fig. 2: Years in practice í í í í í í í í í í í ...14
- Fig. 3: Sources of breeding sows í í í í í í í í í .15
- Fig. 4: Sources of breeding boars í í í í í í í í 16
- Fig. 5: Feeding frequencies í í í í í í í í í í ...17
- Fig.6: Routine management í í í í í í í í í í .18
- Fig. 7: Average at first service of gilts í í í í í .21

ABSTRACT

The purposes of this study was to assess the managerial practices of the pig farmers in Kabete. Improvement of managerial practices through creating awareness to farmers is paramount to effective production and profit to farmers. On the other hand farmers need to be educated to improve their pig production for short time without creating losses.

Routine managements practiced by twenty farmers were studied by use of a questionnaire and interview and results were analyzed. All farmers who were interviewed kept their pigs for commercial purposes i.e. for income generation. About 80% of the farmers had secondary school and below in education.

About 70% had been in pig production for more than 5 years, all of them kept pigs for commercial purposes, most of them breed sow in their farm and most shared the boars with neighbors, all farmers fed their pigs with swill/kitchen wastes and purchased feeds with most of them were feeding their pigs twice a day. Also they were not emphasizing on issues like farrowing rates and frequency, age at first service, duration from farrowing to the next service, age and weight at market price. Also the farmers never emphasized on record keeping

In conclusion pig farming in Kabete was substandard; awareness in pig production was the major challenge, and all this lead to low pig production.

The recommendation is that, farmers need to modernize their farming systems through farmersø sensitization and education.

INTRODUCTION

Pig production in Kenya dates back to the beginning of the twentieth century. It started in 1904 when the first pigs were imported into the country from Seychelles. In 1905 the Colonial government imported Berkshire and large black pigs from Britain and an abattoir was built at Uplands Limuru in 1907. The industry continued to grow despite various setbacks such as the outbreak of African swine fever in 1905, the marketing of its products among others.

The production of surplus cereals and skimmed milk provided the basis for pig-keeping as a subsidiary activity for British settlers in Kenya who operated large-scale commercial farms. After independence, small-scale farmers with between two and twenty sows entered the market alongside large-scale producers. Since then pig rearing has been in the hands of small scale farmers who now constitute up to 70% of the total pig farmers.

Domesticated pigs are commonly raised as livestock by farmers for meat (generally called pork, hams, gammon or bacon), as well as for leather. Their bristly hairs are also used for brushes. Some breeds of pig, such as the Asian pot-bellied pig, are kept as pets.

The ancestor of the domesticated pig is the wild boar, which is one of the most numerous and widespread large mammals. Pigs are omnivores, consuming both plants and animals. In the wild, they are foraging animals, primarily eating leaves, grasses, roots, fruits and flowers. In confinement pigs are fed mostly on corn and soybean meal with a mixture of vitamins and minerals added to the diet.

To moderate prices and provide market facilities, the Pig Producers Association and Pig Industry Board was formed in 1940 and in 1953 a pig breeding station was opened in Naivasha by white settlers to provide breeding stock. The pig producers association was dissolved in 1959 paving way for the Uplands Bacon Factory which became a parastatal. The Uplands Bacon Factory expanded and began large-scale production and marketing of pig products in 1972. Later the Bacon Factory started to have some financial and managerial difficulties in the late 1970's.

Around the same time, other processors such as Farmers Choice Ltd and Nairobi Airport Services entered the pig industry in 1984 in competition with UBF for pigs this led to its collapse in 1987.

The National Animal Husbandry Research Station (NAHRS), Naivasha was opened in 1953 to breed and supply breeding animals to the farmers but suspended pig breeding in 2008 due to management challenges and lack of market. The pig industry has been underperforming and dominated by Farmer's Choice Ltd processing well over 70% of the pork produced in the country over the years.

One of the major constraints singled out by commercial farmers is the erratic market which is not always readily available. Further investment in value-added processing facilities in rural areas as an alternative outlet for the finished pigs is lacking. Some of the efforts towards improved marketing include the registration of Kenya Pig Farmers Association (KENPIFA) in 2009. This association also provides opportunities for credit and training for profitable pig production. (Ministry of agriculture livestock and fisheries, state department of livestock, National pig development strategy 2013-2018)

Economic Significance of the Industry

It is established that the pig industry has potential to contribute to household incomes, food security and employment. The National Livestock policy 2008 recognizes this fact and gives policy direction towards the development of the industry. The Vision 2030 and the agricultural sector Development Strategy (ASDS) provide the overall policy for development of the livestock sector: to increase production and commercialize the sector.

In terms of household income, the industry plays a major role in the entire production systems important role in household income in all the production systems. The pig's short breeding cycle leads many farmers to the view that smallholder pig- keeping is the livestock equivalent to cash crops and has potential to improve rural livelihoods. According to IGAD LPI Working Paper No. 03 -11, pig off take was valued at Ksh. 1,506 billion in 2009.

In terms of contribution to the national food security and nutrition statistics show that pig meat consumption was 10,041 metric tons with per capita consumption of 260gms in 2009. Pork meat has higher calorie levels as compared to other meat therefore being useful especially for those with high calorie requirements. It is a major meat product consumed by the tourism market forming part of the menus in the tourist hotels across the country. Moreover, close to 20% of farmers' choice processed pork products find their way to export markets such as the Middle East earning the country some foreign exchange.

The local pork market has increased during the last 10 years with demand sometimes exceeding supply. It is now common to come across pork butcheries serving roast or fried pork and also retailing fresh pork cuts in most urban centres. Apart from offering ready market for finished pigs, these butcheries have created employment opportunities and increased incomes. Regional markets cannot be forgotten as Kenya supplies the neighbouring countries with breeding stock. (Ministry of agriculture livestock and fisheries, state department of livestock, National pig development strategy 2013-2018)

Social Cultural Issues

Pig production has also had some influences from social cultural issues. Among some Kenyan communities, it is believed that the presence of a pig in a homestead will guard against witchcraft and social ills and act as a security guard besides providing farmyard manure. In other communities, pigs are slaughtered when families come together for various celebrations, and further pig bones carried in purses are associated with protection and prosperity. In other communities, pigs are kept to be readily available to give as a gift to young boys. However, pig farming is not practiced in some regions due to religious beliefs and perception of being dirty animals. (Ministry of agriculture livestock and fisheries, state department of livestock , National pig development strategy 2013-2018)

OBJECTIVES OF THE STUDY

The overall objective of this project was to establish the existing constraints in the pig management practices, and how they influence productivity in pig herds.

The specific objectives were:

1. To establish existing management practices in the selected farms.
2. To identify constraints in these farms.
3. To establish the pig production levels and fertility indices.

JUSTIFICATION

The pig industry in Kenya has been of great reliance to some farmers, and has been suffering under productivity, i.e. has not been doing as expected, or has not reached the maximum levels of production.

Consequently, the pig industry has incurred serious losses in terms of poor managerial and other constrains facing pig industry hence low pig production.

These has necessitated this study to evaluate the management practices in relation to the production levels in some of the pig farms in Kenya (Kabete), and constrains facing this farmers, and try to explain the appropriate manage mental practices.

LITERATURE REVIEW

Various researches have been done/carried out in pig industries which has made it one of the important branches of agriculture in Kenya. This has classified the management aspects of different classes of pigs differently, i.e. from piglet to finisher. Management aspects are based on different farming systems, breeds, housing, pig herd improvement, piglets rearing, young stock management, sow management, boar management, health and diseases management. All this signifies the final production and returns of a farm.

Recorded domestication appears in biblical accounts as early as 2000B.c despite some ancient cultural and religious taboos for bidding the consumption of pork, the domestication of the pig as a source of human food has persisted and the continued increases in numbers of swine throughout the world up to the present time provide evidence of the contribution of the pig to human nutrition through the ages. (Pond/ Maner 1974)

The pig industry has great potential to increase household incomes and food security, and create employment thereby contributing to attainment of Kenya's Vision 2030. However the growth of the industry has been constrained by various factors such a poor animal husbandly practices, inadequate extension and animal health services, low value addition, market access, among others. (Egessa J.O. 2013)

The level of education for the majority of farmers in a research done at Homabay district was low with 67.7% of the farmers having only gone to primary school, 9.4% secondary school, and only 1.0% obtained post secondary education. Mostly pigs were kept for income generation (83.2%) with majority of the farmers keeping non descriptive types of pigs (98%) (Obonyo et.al. 2013).

The pig has traditionally been a scavenger and in early domestication it was raised as a means of utilizing food wastes of man. In many parts of the world the pig still performs this function of a ōback yardö in habitant. Even in the developed countries some swine that are produced for commercial pork are fed kitchen wastes. However such enterprises are closely controlled by local and state government health regulations, (such as those requiring that raw garbage be cooked) to prevent the spread of diseases to man and other animals. (Pond/Maner 1974)

Feeding constitutes the greatest cost in raising pigs and affects their performance which has an impact on the sustainability of the industry. Pigs are able to survive on a variety of different feedstuffs. They mainly feed on concentrate feeds such as sow and weaner meal, pig finisher meal and creep feed for young piglets. These feeds, however, are not readily available in rural areas and quality consistency has been questioned by many producers. The accessibility of commercial feeds is greatly hampered by the prices, making pig farming expensive. Other sources of feeds include farmers' own farm mixture containing maize, cereal milling byproducts, oil seed milling by-products and fish meal including omena (*Rastrineobola argentea*).

A recent study in Busia and Kakamega Counties showed that only 40 percent of the farmers provide water to their pigs. In some small scale commercial system the pigs are fed on commercial feeds and supplemented with swill, kitchen leftovers, market by products/ waste and crop residues (Mutua F K PhD Thesis, University of Nairobi, 2010).

The performance of any pig is as a result of its genetic make-up and the environment in which it lives. In the breeding of superior livestock all the breeder can do is to select pigs for mating together. Selection of both sire and dam is important. Fortunately, it would appear that many different combinations of genes give satisfactory results. To sort out the best combinations of genes is a long slow process which demands many years of work with very often little apparent improvement. To find and develop the best strains of pigs can be an expensive exercise which

few breeders can afford, and eventually it may be necessary for state to undertake to assist in such important work. (Kenny, 1962)

Feeding is one of the most important factors in pig husbandry. Food represents something like 60% of the total cost of breeding and up to 80% with fattening pigs. Great care should be taken to ensure that pigs are fed correctly. Remember that by nature pigs are greedy, wasteful animals, yet, if properly cared for, are capable of rapid growth and are excellent food converters. Pigs need to be fed low fiber, high energy food such as cereals oil cakes, fish, milk and meat by products which are relatively expensive. The constituents of food stuffs and pig's nutritional requirements should be known how to compile a balanced ration and how to mix and feed it if you are to become proficient in pig husbandry. (Derek H. Good Win 1984)

A background of genetic principles is essential to understanding the basics of factors that influence the genetic components of the animals. The combining of genes from sire and dam becomes more complicated as science progress to the stage where individual genes are located on a chromosome. Utilizing these genetic variables in defined pure or crossbreeding programs allows breeders to enhance the occurrence of undesirable traits. The objective of applied swine breeding is to mate individuals whose off spring will possess the necessary genes to; produce the maximum amount of pork, develop the desired body type, perform at desired levels, and adapt to their environment. These pigs should be fed and managed to allow maximum phenotypic expression of their genetic potential because all animals are the product of heredity and environment. There are many factors to be considered in the selection of foundation sows, boars and replacement gilts. Visual appraisal of animals may have little worth in evaluating their genetic merit unless all pigs were raised in a contemporary group. However, some visual appearances, such as soundness, need to be evaluated visually. (Palmer J. Holder 2005)

Breeding animals are difficult to get because there are few breeding farms. Those that exist sell breeding stock at high prices. For instance, Farmerø Choice and a few established breeders sell pregnant sow for US\$ 2006250, Boar for US\$ 22562755. There are no organized breeding programmes. A boar is shared among several farmers and inbreeding is very common. A farmer buys a male and female weaner piglet from the same litter which becomes his starter stock. Neighbours share boars and there is no support for the boar keeper. The owner can sell the boar anytime he needs money. The pigs have a variety of skin colours, are small in size and take a long time to mature. Sows farrow once a year. Mature gilts and baconers are sold at two years of age, most of them underweight at between 50 and 70 kg live weight. Piglet mortality is between 50 and 60 percent owing to starvation and disease endemic to the harsh environment. These breeds nevertheless play a significant role in these areas, contributing to the livelihood of the homesteads and supplying pigs to the local butcheries. Some of these pigs are transported to an abattoir on the outskirts of Nairobi and so end up being consumed in the capital. Upcoming pig processors also buy the carcasses of these breeds from this particular slaughter facility for use in their various processed pork products (FAO 2012. Pig Sector Kenya).

There is no one right way of raising pigs, or in deed housing them but the basic principles of good housing are exactly the same whether we are using the old adapted buildings, cheaply constructed straw-bale huts or expensive controlled-environment houses. Understanding something of the anatomy and physiology of the pigs, a few elementary laws of physics, knowledge of building materials, and through understanding of pig management is important. About this period of time, specialized commercial pork operations evolved with their advent, come essential for maximum comfort and optimal performance, with their advent also come large units, indoor production, and specialized swine building for specialized systems. Today

swine producers have a multitude of choices, from which they may select the system, along with buildings and equipments, to match their management, labor, capital and environmental needs. Any other choices can be engineered and designed to provide the maximum comfort and optimal performance of the animals. (M.E Ensminger 1984)

The rapid trend towards large, intensive, confinement rearing swine production units and the emergence of herd managers with high levels of education and specialized swine experience has caused a change in the type of service required from veterinary practitioners. The hobby farmers with a few sows as a sideline enterprise may still need a veterinarian to help castrate piglets, farrow a sow, or examine a pen of ill pigs. Specialized pig farmer generally have little need for those traditional services, however, they do require assistance of professional consultants who can help them solve complex disease, management, environment and production problems. Veterinarians also work with producers to ensure pork safety and the welfare of the pigs under their care. Often the ill defined production problems on large swine farms are precipitated by such factors as poor housing, infectious diseases, or poor management of the animals or farm personnel. Education and motivating the herds men rather than concentrating on disease condition of the pig can solve many of the complex production problems. The task of helping farmers to make long term decisions, motivating them to carry these out, and demonstrating to them the cost benefit of this advice is difficult, partly because of the long time spurn involved. Good record keeping and the use of production targets are the cornerstones of such a program. Likewise, regular visits and ongoing discussions with follow-up written reports go a long way to make a health management program successful. (Jeffery J. Zimmerman 1997)

The key to good business and management is records. The historian Santayan put it this way, "those who are ignorant of the past are condemned to repeat it". Records are important to

provide profit and progress indicators i.e. a way to measure progress. To provide information from which the swine business may be analyzed, with its strong and weak points ascertained to provide a net worth statement, showing financial progress during the year. To furnish an accurate, but simple net income statement for use of filing tax returns. To keep production records on the swine operation, to aid in making a credit statement when a loan is needed, to keep a complete historical record of financial translocation for future reference. Good records, properly analyzed and used will increase net earnings and serve as a basis for sound management and husbandry (Roy farm. Com 09/04/2015).

METHODOLOGY

This study was conducted in Kabete area in Kiambu Kenya, which had several pig production farmers for local market in Kenya. Kabete is about 11km to the west of Nairobi and is in Kabete constituency.

The study included visiting the farmers in their farms, where about 20 farmers were visited for the collection of data. The study targeted all kinds of farmers i.e. small scale farmers, large scale farmers, in either free range, intensive or semi-intensive farming systems of production.

The research included developing a questionnaire form and administering it to farmers of selected pig farms. The expected data was on how they carried out their management practices and how they managed their production parameters and indices. The questionnaire entailed various management practices and indices questions, and there after the questionnaire was analyzed to establish the existed management practices and how this management practices influenced productivity in these pig farms.

RESULTS

Level of education In the visited farms, out of 20 farmers 8 had a primary level education, 8 had secondary level education and 4 had post secondary level education.

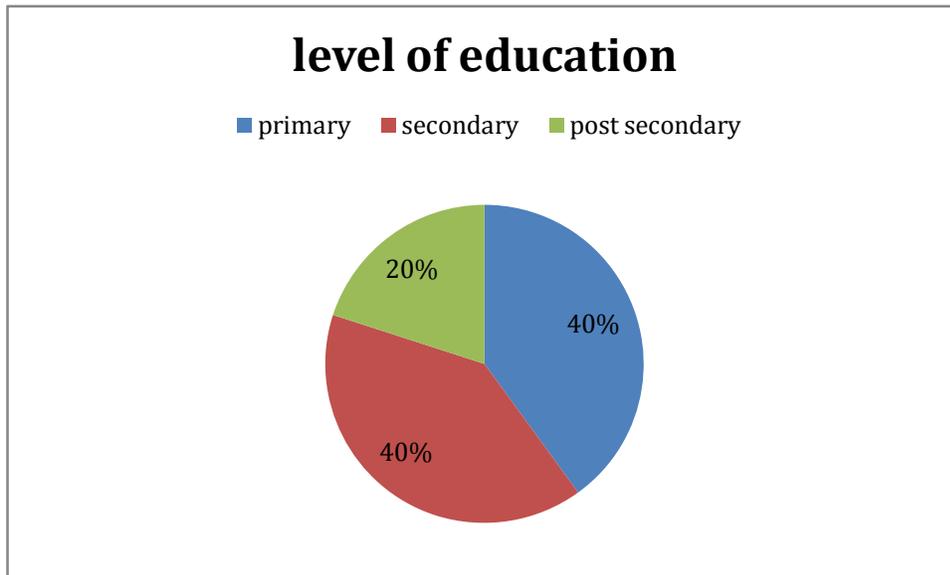


Figure 1 level of education

Years in practice

Out of 20 farmers, 6 have been in pig farming for 1 to 5 years, and 14 have been in pig farming for more than 5 years.

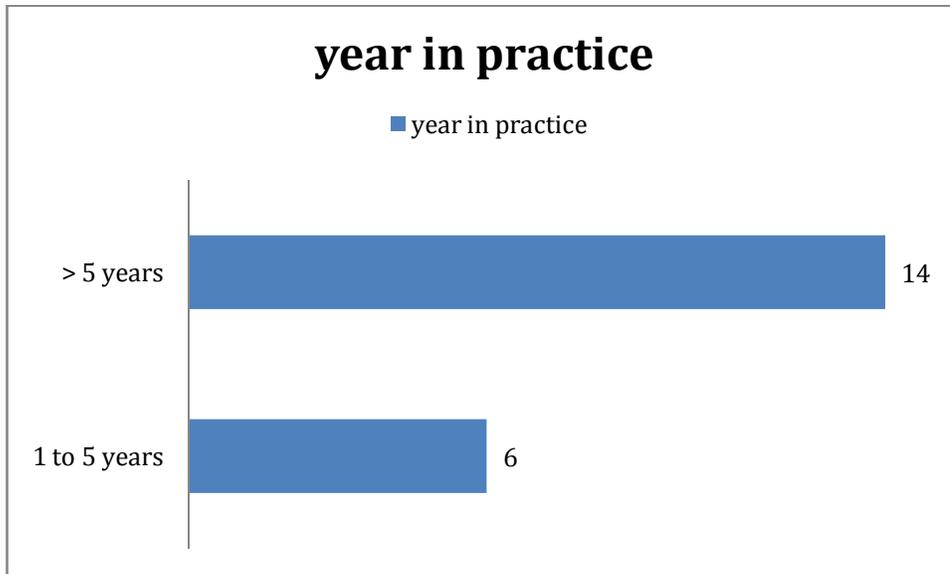


Figure 2 years in practice

Reason for keeping pigs

All the visited farmers reported to have been keeping pigs for commercial purposes to generate income.

Source of breeding sows

Most farmers bred their sows in their farms, some bought them as piglets and only one farmer reported to buy his sows as mature sows.

Table 1 source of breeding sows

	source of breeding sow	
bought as piglets	11	55
breed in the farm	14	70
bought as sows	1	5
	20	100

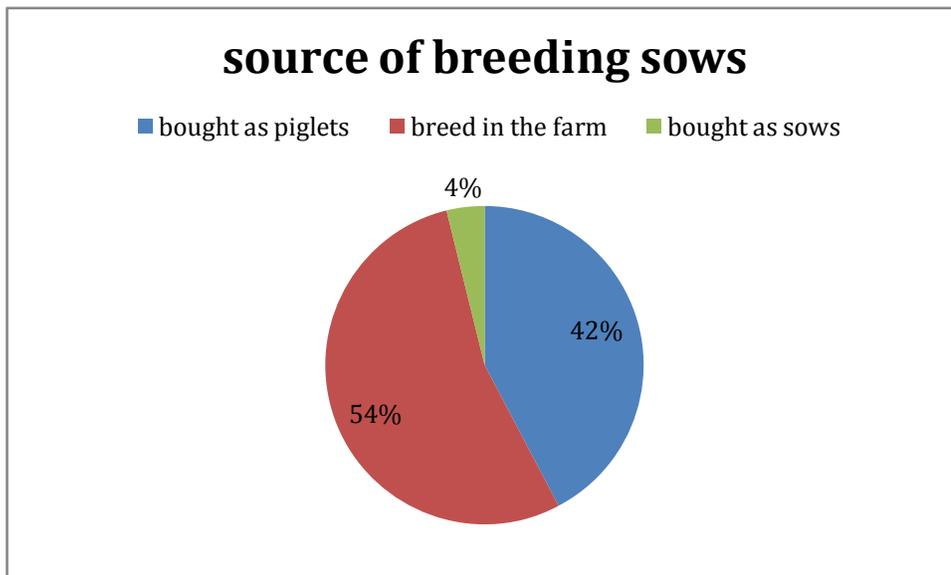


Figure 3 source of breeding sows

Source of breeding boar

Most of the farmers shared boars from their neighbors, some bought them from other farmers as piglets, while a few of the farmers bred their boars in their farms.

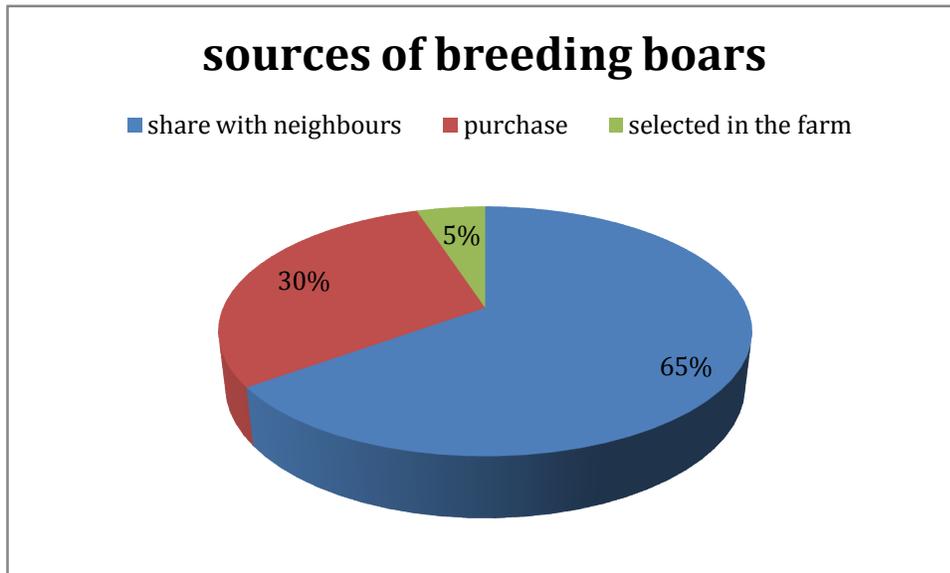


Figure 4 sources of breeding boars

Sources of pig feeds

All visited farmer reported to feed their pig with swill/kitchen wastes and purchased feeds.

Frequency of feeding

The farmers fed their pigs once or twice a day, with the majority feeding their pigs twice a day.

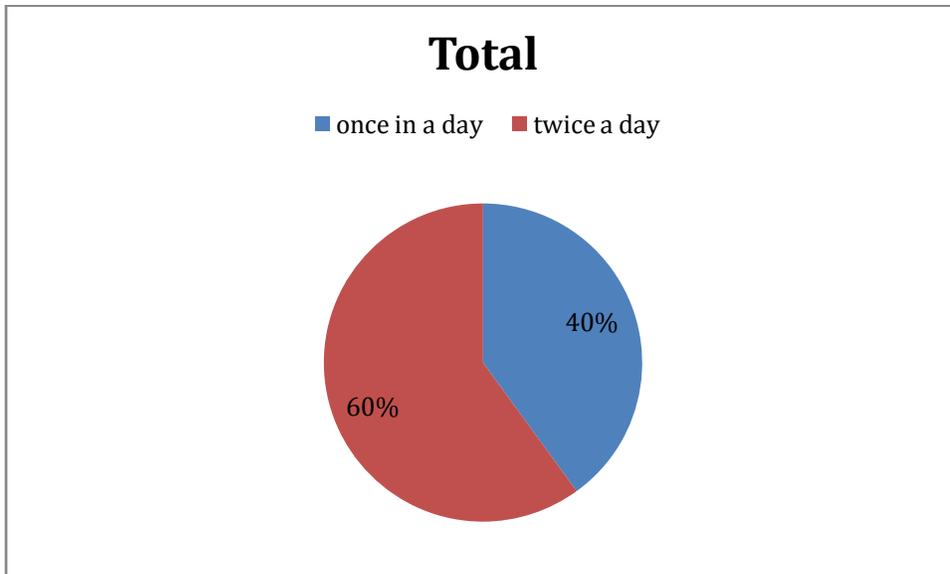


Figure 5 feeding frequencies

Routine management

On routine managements, most farmers seemed to concentrate with iron injection, deworming , and castration in that order, few did teeth clipping in piglet , few also controlled ectoparasites and none did any vaccination to the pig.

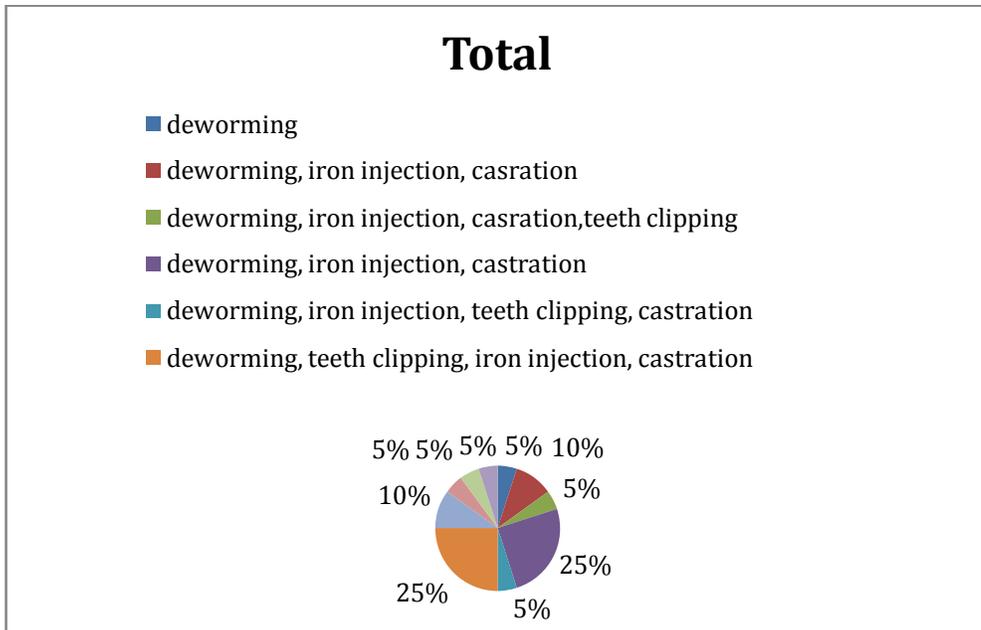


Figure 6 routine managements

Herd sizes and litter sizes

The table below shows herds composition/structures in the visited farms.

Table 2 showing herd sizes

Farm No	sows	gilts	boars	finishers	weaners	piglets	Average litter size
1	1	2	0	0	6	0	13
2	3	3	2	2	0	0	Not applicable
3	1	3	0	0	0	0	5
4	2	2	1	4	8	0	9
5	54	6	9	71	150	100	10
6	2	0	1	8	10	0	12
7	3	4	1	10	20	6	11
8	1	3	1	7	0	8	10
9	10	40	5	25	0	40	11
10	1	2	0	7	8	0	10
11	2	3	0	7	8	7	10
12	4	5	2	12	10	9	12
13	2	3	0	4	8	0	11
14	3	4	2	0	8	10	11
15	8	3	2	10	15	9	11
16	4	3	0	9	16	12	12
17	5	2	1	7	9	18	12
18	2	1	0	4	7	9	7
19	1	2	1	3	8	0	10
20	4	3	0	0	17	9	12

Farrowing frequency

In all visited farms, farrowing was twice in a year except one farmer who reported three times farrowing per sow per year.

Average age at first service

Out of 20 farmers 6 served their gilts first at an age of less 7 months, 9 served theirs at 7 months, 3 served at an age of 8 months and above and 2 were not specific on age at first service of their gilts as shown by the figure below.

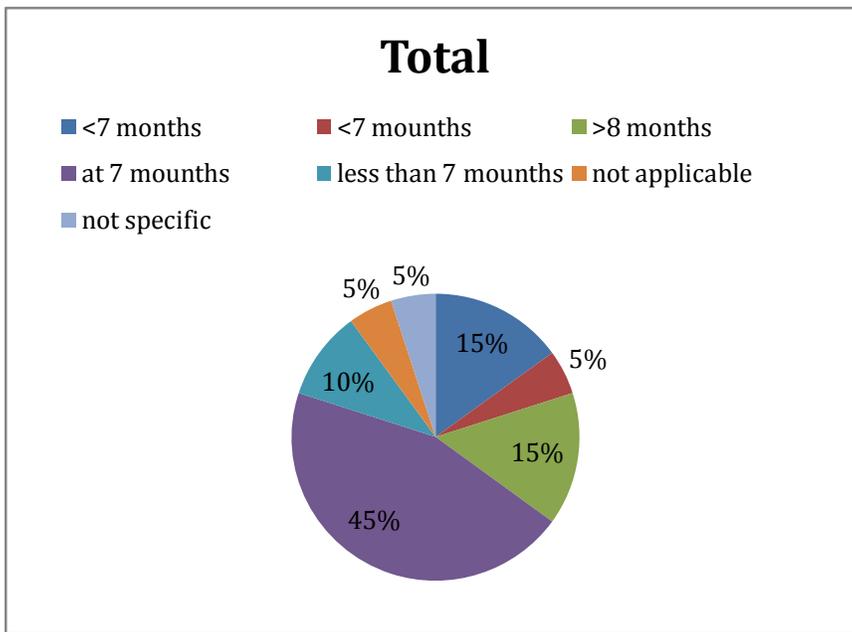


Fig 7 average age at first service of gilts

Average age at weaning

All farmers reported to wean their piglets at an age of more than six week, except one farmer who never bred his sows.

Average length from farrowing to the next service for sows

After farrowing , most farmers served their sows at a duration of more than 14 days, majority of the rest of the group served theirs between 7 to 14 days, only one farmer served his in less than 7 days and one farmer was not specific with service period after farrowing.

Source of market for the pigs

All farmers reported to sell their pigs to the Ndumbu-ini slaughter house except one farmer who was not specific.

Age and weight of pigs at market price

Farmers reported to sell their pigs at age ranging from 6 months to more than 1 year. Out of 20 visited farmers, 3 reported to sell their pigs at the age of 6 months, 1 farmer sold at the age of 7 months, 7 sold theirs at the age of 8 months, 5 sold at the age of 9 months and the rest 4 sold at the age of 1 year and above. The selling weight ranged from 56 to 100 kg.

Other practices and factors evaluated were as follow:

The farmers never weighed their piglets at farrowing and weaning, they reported no abortions in their farms, there were no deaths of piglets at farrowing, no deaths at weaning, no deaths of weaned pigs, no deaths of sows reported, and there were no deaths of growers and finishers.

Record keeping

In all the visited farms the farmers reported that they never kept any record on their pig management, except one farmer who kept records on sales.

Challenges as faced by the farmers

(a) Feeding

Most farmers had no problem with feeding as they had enough sources of feed from swells and manufactured feed i.e. out 20 farmers 8 reported feed as least problem, 8 said is a moderate problem, and for said a problem affecting them mostly.

(b) Diseases

Most farmers reported diseases as a problem not affecting them at all. Only two farmers reported diseases as a moderate problem, the rest 18 farmers said it's a least problem to them.

(c) *Cost of breeding stock*

Most of the farmers reported to have no problem with the breeding stock sources and their cost. The challenge to 13 farmers out of 20, it was a least challenge, to 5 farmers it was a moderate challenge, and to 2 farmers it was a challenge affecting them mostly.

(d) *Piglet deaths*

The farmers had no problem with the deaths of their piglets. 19 of the farmer reported this challenge as least challenge and to one farmer it was not a problem since he never farrowed his sows.

(e) *Market avenues*

Most of the farmers were satisfied with the marketing of their pigs. Half of the farmers said it's a least challenge and half termed it as a moderate challenge.

(f) *Pig production awareness*

This was a challenge to many farmers. 19 farmers out of 20 reported this challenge as a most problem to them and only one farmer said it's a moderate problem.

(g) *The pig rearing space*

This was not a problem as many farmers reported to have enough space for keeping their pigs. Only 2 farmers said it's a moderate problem and the rest said it's a least problem to them.

(h) *Veterinary services and drugs.*

This also was not a challenge to most farmers as they had enough access to veterinary services and drugs for their pigs. All farmers said it's a least problem.

DISCUSSION

Management practices in the visited farms were the reflection of the production levels the farmers got in their farming and most were small scale farmers.

Most of the farmers keeping pigs were those with low education levels having most of them i.e. 16 out of 20 with the secondary level and below in education. This may contribute to the ignorance of the farmers in searching for know how to produce pigs so as to improve their production because of illiteracy level. With most of the farmers in pig production for more than 5 years, production levels and management were expected to be improved in this case due to the gained experience, which contradicted this situation. All farmers kept pigs for commercial purposes and hence their production parameters were expected to be more improved in order to maximize in their production which was not the case, and similar results were obtained in a research done at Homabay (Obonyo F.O. et.al. 2013).

Breeding stock i.e. sows and boars were mainly bought and the boar shared from neighbors and this prevented in breeding. Also farmers avoided keeping boars because of high cost of maintenance and thus they shared the few boars from neighbors, a similar case was noticed by Muloi D.M. 2013.

Feeding with swills/kitchen wastes and purchased feed is ideal but may subject pigs to imbalanced diet hence low growth rate and also to feed transmitted diseases due to contamination. According to feed control Act Cap 345 there are standardization and sanitary management of animal feeds. The act also requires that animal proteins be sterilized at specified temperatures to kill all pathogens, before they are fed to animals. FAO. 2012.

Reason for high use of swill was to help in reducing the cost of feeding. These feed from waste kitchen products were sometimes collected from garbage collections with a lot of other wastes and dirt and this exposed the pigs to all kinds and sources of pathogens, this concurs with a study by Muloi D.M. 2013.

Also feeding routine was ideal but a question of quantity was not answered which may have subjected pigs to inadequate amount for ideal growth rate. This is similar to the findings of Mutua F.K.2010.

Management routines followed emphasized on deworming, iron injection, castration only. Teeth clipping was not practiced by many farmers which is a risk factor for teat injury in sows and can lead to agalactia in sows hence less milk and therefore low growth rate for the piglets. The issue of not controlling parasites may lead to low growth rate due to disturbance (stress) and absorption of nutrients from pigs. Such observations were made in a research by Ensminger et al 1990.

The herd sizes showed imbalance in herd composition e.g. some herds were not having piglets, gilts, finishers, boars and this may affect pig production due to low funds to maintain the herd when there are no sales of pigs. The population of weaners and the finishers was high compared with the other groups of the herds since weaners and finishers are crucial to the maintenance of the business in terms of income generation, similar results were observed by Muloi D.M. 2013.

Low following rates may have been contributed by late weaning of the piglets where most farmers weaned their piglets after more than six weeks, also due to prolonged interfarrowing period contributed by prolonged time from farrowing to next service. The issue of most farmers not having boars in their farms could have also contributed to poor heat detection and poor service hence missed heats. There was also the a risk of spreading fertility diseases due to sharing which could lead to poor fertility, and this concurs with results of FAO 2012. .

Though there was enough and available market for the pigs, the farmers kept their pigs for long before they attain the market price, hence incurring loss of consumed feed and time lost from one stock to another. The weights of the pigs were not corresponding to their age (under weight).

Farmers not weighing their pigs at farrowing and weaning showed that the farmers were never concerned about weight gain for the pigs. This could have given them an indication on how pigs were growing and also their feed conversion efficiency. Recording weight gain also helps in selection of breeding stock from those showing good weight gain and this concurs with a study by Wahome R.G. et.al 1992.

Record keeping was not practiced and also there was no way farmers could evaluate their production parameters to gauge whether they were doing the right thing. Upon the challenges, the issue of lack of sensitization and awareness on how to keep and produce pigs was a big challenge and this seam also to contribute to every poor management practices, hence low production due to lack of know how to do it, such observations concurs with those of research carried at Homabay district, (Obonyo F.O. et.al., 2013).

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

From the results obtained from the study, it can be concluded that:

- i) The management practices of pig farmers in Kabete were substandard thus leading to low pig production in the area.
- ii) The pig farmers in Kabete were faced by a challenge of awareness on how to keep and rear pigs
- iii) The production levels were very low and fertility in the pig herds was low.

RECOMMENDATION

From the study findings and conclusion, the following are recommendations for extension staff, veterinary services and other stakeholders:

- a) There should be concerted effort to improve management practices by adoption of modern pig production technologies for pig production farmers to exploit their potential, and reap the benefits of pig production.
- b) The farmers should be sensitized on the importance of quality management practices, i.e. proper breeding, feeding, proper housing, and market orientation of pig production farming.
- c) Record keeping should be emphasized to enable farmers to plan for the production and monitor performance.

REFERENCES

1. Pond W.G 1984. Swine production and nutrition, West Port: Maner J. H.
2. Pond W. G 1974. Swine production in temperate and tropical environment, San Fr. Freeman and Co.
3. Ensminger M.E 1990. Feeds and Nutrition, 2nd edition, Clovis(Calif): Ensminger Pub. Co.
4. Ensminger M.E 1984. Swine science, 5th edition, Danville(III): Interstate Printers.
5. Holden, Palmer J. 2005. Swine science, 7th edition, Upper Saddle River, N.J.
6. Straw, Barbara E. 2006. Diseases of swine, Ames, Iowa: Blackwell Publishing Professional.
7. Pig- farming-in Kenya <http://www.royfarm.com/pig-farming-in-kenya/>
8. Mutual, F.K. 2010. A study of opportunities for improved rural pig farming in Western Kenya: Feeding, productivity, marketing, and public health. PhD thesis University of Nairobi.
9. FAO. 2012. Pig sector Kenya. Githigia S.M, Okuthe S, Diop B. *FAO animal production and health livestock county views*. No. 3. Rome.
10. Obonyo F.O, Maingi M, Githigia S.M, and Ngũgũ C.J. Farming practices and risk factors for transmission of helminthes free range pigs in Homabay District, Kenya. *Livestock Research for Rural Development* 25(3) 2013.

11. National Pig Development Strategy 2013-2018. A Report of a Task Force of Ministry of Agriculture Livestock and Fisheries, State Department of Livestock.
12. Muloi D.M 2013. Study of the pig value chain in the less integrated pork subsector in urban and peri-urban Nairobi. Degree of bachelor of veterinary medicine of University of Nairobi.