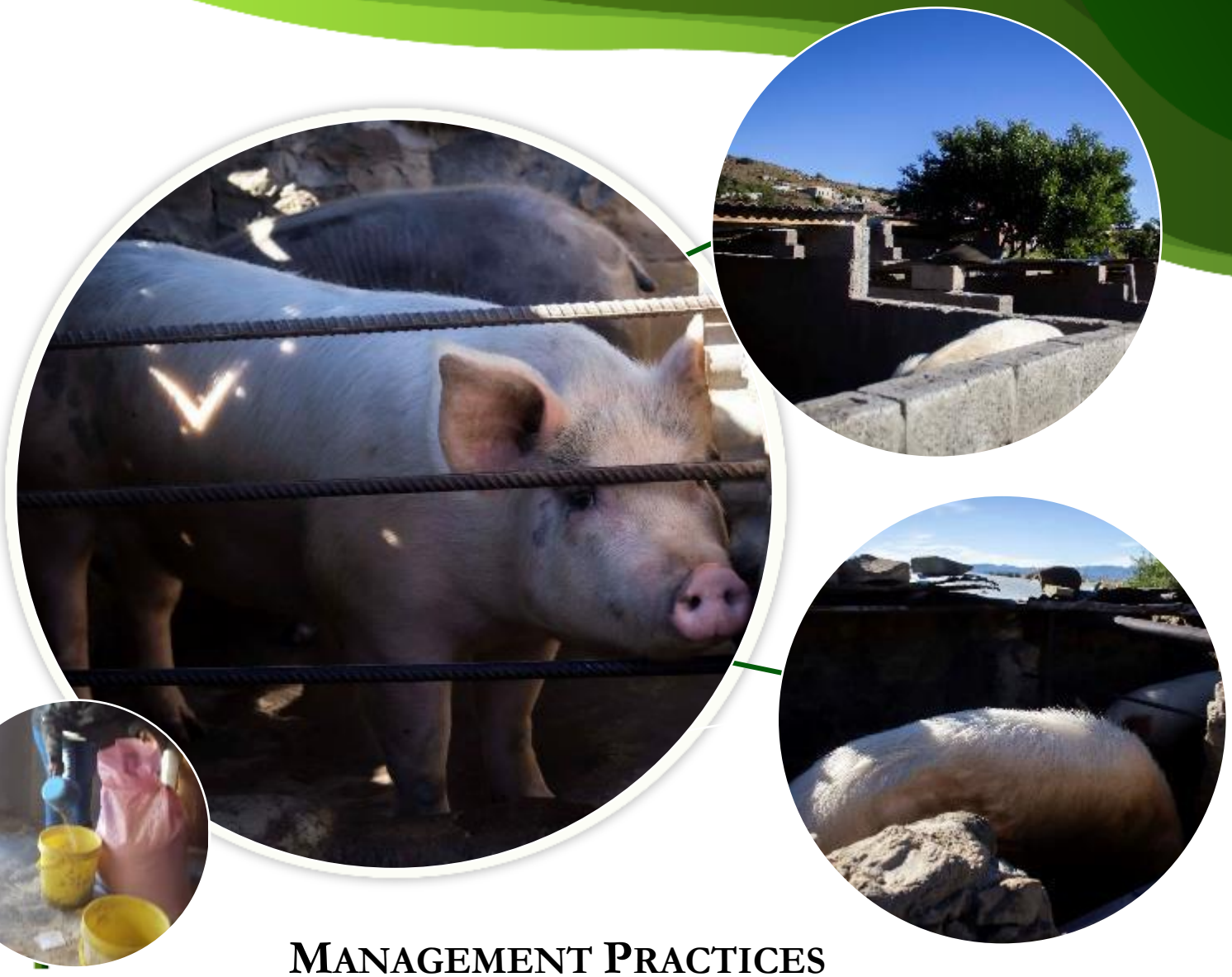

MANAGEMENT PRACTICES
PIGGERY PRODUCTION

MOHALE'S HOEK DISTRICT IN LESOTHO

Produced through FO4ACP project that is supported by EU, ACP and IFAD.

LESOTHO NATIONAL FARMERS UNION

Disclaimer

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1.0 INTRODUCTION

Agricultural Best Management Practices are an industry driven effort to maintain agricultural production in a profitable, environmentally sensitive and sustainable manner. Best Management Practices (BMPs) are site specific, economically feasible practices that are applied by farmers while accounting for environmental and public health impacts. BMPs are not meant to be regulatory as every farm operation and site is different and may require special practices. But BMPs are meant to provide guidance as to practices that farmers can strive towards implementing on their farms. BMPs can be classified as source, structural, cultural, or managerial controls.

- Source controls include restriction or removal of a particular pesticide or nutrient source.
- Structural controls are physical measures designed to prevent water and sediment movement or to prevent the exposure of pigs to disease causing organisms by reducing introduction and spread of pathogens into and between the farms.
- Cultural controls are cropping and tillage practices that minimize pest problems and maximize nutrient use efficiency by soil conservation and crop rotations.
- Managerial controls are strategies and tools adopted by growers that consider both environmental and economic impacts.

2.0 METHODOLOGY

Piggery farms were visited and the implementation of BMPs was assessed using face to face interview using open and closed ended questions. Observations were also recorded.

2.1 Scoring

The Best Management Practices in piggery were scored using the criteria below.

1 Poor or Unacceptable Implementation of Best Practice

2 Average Implementation of Best Practices

3 Good Implementation of Best Practices

2.2 Criteria

Piggery Best Management Practices were evaluated based on the following standard criteria.

- Biosecurity & Fencing

- Housing
- Breeds
- Watering
- Feeding
- Production & Productivity
- Diseases and Metabolic disorders
- Record keeping
- In-house environmental regulation
- Litter material Management & Disposal
- Disposal of Dead birds

2.3 Visited farms

2.3.1 Nthabiseng George

Nthabiseng George is piggery production farmer and she started this business in 2019 with indigenous pigs followed by two Landrace. She reiterated that she did not know anything about the pigs at that time. Later she attended training on pig management. She then reared three Camborough pigs for meat. She sold the meat on credit because she was struggling with the market. From Camborough pigs her mentor recommended Topics breed which is very expensive because she obtained one piglet for M2500.00. She is currently rearing five Topics pigs.

Figure 1: Nthabiseng George

2.3.2 Mampolokeng Mokoqo

Mrs 'Mampolokeng Mokoqo started this business with one piggery house 2009. Her love for the business increased to extent that she joined the society of farmers whose influence encouraged her further. There after her production of pigs started increasing up to 18 breeding sows and boar. Each sow averaged 10 piglets per farrowing and farm produces around 100 piglets per farrowing cycle. During the visit to the farm the total number of animals was 45 made up of 18 breeding stock, 28 gilts, 8 piglets and one boar.

Figure 2: Mampolokeng Moqoko infront of her meat processing facility

2.3.3 Motsamai Senamolela

Mr Senamolela piggery farm is situated within Taung Resouce Centre, Mohale's Hoek. Mr Senamolela is a teacher by profession. He started this business with one Camborough pig bought from his work place three years ago. Same year the pig produced 14 piglets and in the subsequent year it produces 18 and 19 piglets respectively.

Figure 3: Mr Motsamai Senamolela in front of his piggery pens.

3.0 FINDINGS

3.1 Piggery Management

3.1.1 Biosecurity & Fencing

The three farms were fenced with barbed wire and the use of footbaths at the entrance of piggery pens was absent.

3.1.2 Housing

All farmers are using open pens that provide only roofed and the walled area. The houses have a provision for feeding and water. The houses also allow for separate rearing of boar, sows and piglets. The provision for farrowing pens was found only at Mokoqo's farm.

Figure 4: Farrowing pen at Mokoqo farm

3.1.3 Breeds & Breeding

Farmers are making use of improved breeds for production. Mrs George is making use of Topigs, while Mrs Mokoqo and Mr Senamolela use Camborough breed. These breeds are very productive and fast growing which is ideally for meat production. The farmers reported that they are using hand mating method for breeding their animals. Hand mating refers to supervised natural mating. Mrs George reported that her boar is too heavy for the sows and this causes farrowing difficulties. She is now considering the use of Artificial Insemination in the future.

Figure 5: Topigs boar at Mrs George farm

3.1.4 Feeds and Feeding

All farmers were confident and knowledgeable about phase feeding programme for pigs and they knew when to change one feed to the next such as starter, grower, lactating and breeder meal. Phase feeding is very important because nutritional needs of the animal changes with time and this ensure that animals are receiving right nutrient at the right time. Feed allocation was consistent amongst these farmers at two kilograms per adult pig per day while growing pigs are offered 3kg per pig per day. Animals are using floor feeding system which is a challenge during raining seasons. Mr Senamolela highlighted that he practiced diet dilution to reduce feed costs by mixing compound feed with hominy feed at 2:1 ratio. Feed storage was however a challenge for farmers where feeds were placed directly on the floor and moisture can penetrate to feeds.

Figure 6: Feed storage for Mrs Mokoqo and George

3.1.5 Production & Productivity

All the farmers are practicing farrow to finish production system. The stocking densities of the farms categorise production at smallholder commercial and commercial level. Based on piglet production per cycle; Mr Senamolela produces 27, Mrs George 80 while Mrs Mokoqo produces more than 100.

Figure 7: Camborough sow litter at Mokoqo farm

Farmers reported that they are applying all routine management practices to optimise production such as umbilical cord care, iron injection, docking, needle teeth clipping, castration, and identification of piglets. Mrs George indicated that she is not able to increase her stocking density because of limited housing space.

Figure 8: Well fed Topigs gilt

3.1.6 Diseases and mortality

The farmers reported that they are challenged by pig scouring, mange, lice, and lameness. High piglet mortality due to chilling and crushing by sows was also a concern. Mrs Mokoqo indicated that shortage of medication and lack of know how in animal health is a big challenge. Mr Senamolela and Mrs George explained that they use a number of control measures to combat diseases such as the use of antibiotics, multivitamins and regular vaccination. The availability of farrowing pen also minimises mortality due to crushing.

Figure 9: Medication and vaccines used by Mr Senamolela farm

3.1.7 Slaughtering & Handling of Carcass

All farmers don't have a slaughtering facility and they utilise traditional slaughter methods associated with poor hygiene. The traditional methods don't consider animal welfare issues such as stunning and this violates BMPs standards. The other challenge is the condemnation of such carcass by big retail stores which impedes its marketing and sales. With regard to processing and handling Mrs Mokoqo has a processing facility comprising of cold room, slicing machine, weighing scales and refrigerators. The meat handling facility is very clean and hygienic and it offers service to other farmers.

Figure 10: Mokoqo Farm Butchery slicing meat for their customers

3.2 Marketing of Products

Mrs Mokoqo and Mr Senamolela stated that market for piglets is erratic and sometimes they struggle to sell their products. Mrs Mokoqo is using marketing strategies like notice board and flyers to attract customers. Mrs George is making use of social media platforms such as Facebook and WhatsApp to advertise her products such as piglets and carcass. She highlighted that there is big demand for Topigs piglets because customers place orders as soon as animals are pregnant. She pointed out that she cannot satisfy the market and demand due to lack of housing to accommodate more pigs.

3.3 Records Keeping

The use of records was well implemented because all the farmers had their business records. Farmers indicated that records can be used to compare trends and business performance overtime. Mr Senamolela production records included breeding date, predicted farrowing date, number of litters and litter size, purchase records for feeds and medication.

Figure 11: Mr Senamolela with his production records

3.4 Environmental Management

3.4.1 In-house environmental regulation

Since all piggery houses are open and not fully enclosed the accumulation of gases will not be a challenge. However, such houses suffer from low temperatures in winter and rainy penetration during rainy seasons.

3.4.2 Disposal of Litter and waste material

The farmers are using recycling method as one of the ways to effectively manage piggery waste. Farmers have designed a brilliant drainage system that takes away waste from piggery house directly to the fields. The solid wastes are used as organic manure for field crops while watery part is used for irrigation of plants.

Figure 12: Health field crops and vegetables benefitting from piggery slurry manure

3.4.3 Dead Animals Disposal

All farms use disposal pit to bury dead animals.

3.5 Support Services

3.5.1 Extension service

The farmers are under the guidance of Makhaleng and Taung RC. Farmers explained that despite working together they need regular trainings especially in the areas of animal health, administering of vaccines and artificial insemination. Mr Senamolela added that he had never had trainings on pig production.

Figure 13: During visit Mrs George was accompanied by her extension service Mrs Thoahlane

3.5.2 Financial Support

The majority of farmers agreed that there is no financial support for farmers to improve their businesses. Mrs Mokoqo conversely confirmed that funding is available even though limited since she received funding to build her meat processing facility.

3.5.3 Marketing

Majority of farmers reported that they are struggling with the sale of products due to slow and erratic market and hence need for establishment of market outlet for piggery products.

4.0 DISCUSSION

4.1 Fencing and biosecurity

Farms are fenced but the types of fencing are not strong enough to stop entrance of other animal species. Lack of disinfectant foot baths at entrance of pig pens is a biosecurity concern. Fencing of production site is essential for biosecurity. The measures that can be used to improve biosecurity can be categorized in several ways. One way is to classify measures according to three goals, namely: isolation, sanitation and traffic control. Eliminate sick animals as early as possible. Limit visitors as much as possible, and provide disinfectant foot pans at the entrance of piggery houses. The location of pig farm is a critical factor in the control of diseases. Ideally, a pig farm should be situated in an isolated area, far away from other animal farms. In high pig density areas, highly contagious diseases can spread easily.

4.2 Housing and installations

Housing should match the type of pig to be reared. Unimproved breeds can survive under harsh environmental conditions such as open pens that provide only roofed and the walled area. Improved breeds can do better under more protected pens with partial or full enclosed pens for protection from sun, wind, and rain. Cemented flooring for easy of cleaning with sloping away from sleeping area. Walls should be at least 1.2 metres high or even higher to prevent jumpers.

The farmers are using open pens that provide only roofed and the walled area and such structures are not ideal for improved breeds that they are using. Open structures do not allow fitting for environmental control such as heating and ventilating gadgets for optimized conditions. The lack of these gadgets has led to high piglet mortality as result of chilling cold temperatures. Some farmers also have no farrowing crates and this has led to crushing of piglets. The open pens plan on the other hand, is not prone to accumulation of gaseous substance.

4.3 Breeding and use of improved breeds

To be profitable, a pig production enterprise should use sows and boars from high quality animals such as improved breeds. Farmers should choose breeds that are common in their area since it eases the process of buying and selling breeding stock. Examples of improved breeds in Lesotho include PIC Camborough, Topigs, Large White, Landrace, Duroc, Hampshire and crosses between breeds.

Selection and use of improved breeds was well articulated because all the farmers are using highly productive breeds such Topigs and Camborough known for their high litter size, good mothering ability, carcass quality and prolificacy. Farmers are making use of hand mating breeding methods which is a good thing but when considering maintenance costs for boar farmers should consider the use of AI.

4.4 Feeding of pigs

Phase feeding is the strategy of feeding multiple diets during the growing to finishing period to closely meet the changing nutrient requirements of pigs and to reduce nutrient excretion to the environment. The most common feeds used during different phases include creep, weaner, grower, finisher, breeder and lactating diet.

Recommended feed allocation for different classes of pigs is as follows; Dry sows and gilts require 2.5kg a day of sow and weaner meal. Give an extra 1kg/day one week before serving gilts and sows and one week after service. Give lactating sows 2.5 kg a day of sow and weaner meal for maintenance and 0.25 kg a day extra for each piglet being suckled. Boar needs 2.0 kg a day. If the boar is regularly used increase this to 2.5 kg.

Piglets: Give creep pellets 0.5 - 1.0 kg a day from day 7 up to weaning time (21 days) per piglet. The feed should be mixed with sow and weaner meal the last one week before weaning.

All farmers were confident and knowledgeable about phase feeding programme for pigs and they knew when to change one feed to the next such as starter, grower, lactating and breeder meal. Feed allocation for pigs was also within recommended limits per daily offering. However, the majority were challenged by high feed costs which prompt some of them to adopt diet dilution. Farmers did not have proper feed storage and feeds were placed on the floor with potential to attract molds that cause mycotoxins. Feed mycotoxins have a detrimental effect on pig breeding with falsified pregnancy or pseudo-pregnancy. Use of wooden crates can remedy the situation.

Watering for pigs was well accomplished by majority of farmers who have installed water within their farms. However, one farmer reported that she is struggling to supply clean drinking water because she had to buy it from the neighbors.

4.5 Production & Productivity

Three types of swine production enterprises are farrow-to-finish, farrow-to-feeder, and feeder-to-finish. The number of pigs produced determines the production status such as subsistence, semi-intensive and commercial production. Productivity level of the farm was looked at in terms of the total number of pigs as well as breed production potential.

All the farmers were practicing farrow to finish meaning that they sell piglets as breeders, they also grow their weaned pigs to finishing. The farm productivity categories our farmers as smallholder commercial and commercial rearing between 10 and 50 animals and between 50 animals upwards respectively. Farmers are doing very well with implementation of routine management practices to optimize production. The use of improved with large litter size is

advantageous and contributes positively to BMPs advocating for improved and sustainable production. The major drawback affecting production is a limited space for increased stocking.

4.6 Diseases and mortality control

The common diseases affecting piggery farms includes Coccidiosis, Skin lesions, Manges, lameness and internal parasites. Ideally these diseases can be prevented by improving hygienic conditions within the pens, and clean creep areas. Improved floor design, prevent injuries and reduce conformation defects. Regular sprays such as pour-ons, injection and feed premix and use of antibiotics to control diseases are interventions that can control diseases.

Disease control was a good effort by the farmers who reiterated that they practiced regular vaccination for prevention of disease and use a number of medications such as antibiotics for control of disease. Disease control is important BMPs for pigs because it guarantees sustainability.

4.7 Slaughtering & Handling of Carcass

Slaughter and carcass handling facilities was a big challenge for all farmers who rely on traditional slaughter method. Traditional methods violate animal welfare regulation and slaughter animals and their carcass are not certified by veterinary surgeons and this lead to condemnation of the carcass by large retailers. Piggery BMPs advocates for healthy and safe products for human consumption and as such compliance to BMPs is violated. Handling of carcass was at least attained by one farm with facilities for cold storage and processing of carcass. The district needs to work hard on this aspect.

4.8 Marketing and records keeping

The criterion was well implemented by farmers who reported that they are marketing their products using marketing strategies like notice board, flyers, social media platforms like Facebook and WhatsApp. Farmers reported that marketing for pork and piglets fluctuates and there are formal markets for their products in Mohale's Hoek.

The use of records was well implemented because all the farmers keep their production records which includes; breeding date, predicted farrowing date, number of litters and litter size, purchase records for feeds and medication, records keeping facilitate management and financial control. They are used to assess the strength and weakness of a farm and to plan for future activities. Records tell a pig producer what has been achieved. They also provide valuable information for decision making in order to increase productivity and profitability of your farm

4.9 Environmental Management

In-house environmental regulation

It is important to maintain the pig within an equitable temperature range and this is called the thermo-neutral zone. It is dependent upon the type of housing, floor, its insulation properties, the air speed and temperature and the insulation of the building. Adverse temperatures have effects at the following critical times: from birth to 48 hours, from 8-14 days of age and from weaning to 7 days post-weaning. Supplementary heating is used to maintain temperature when there is a deficit of heat in a building or an area of a building. Major heating systems for pigs include creep heating for piglets and weaner accommodation. Piglets require heating from birth up to about three weeks of age.

Litter material Management & Disposal

Piggery farms, must take steps to make sure their businesses minimize their impact on the surrounding environment and community. Key issues are waste and odour management. Effluent and manure by-products generated in a piggery are valuable sources of water, nutrients and organic matter. Farmers can re-use by-products in ways that will not harm the environment. All farmers reported that they recycle piggery wastes to form organic manure evident by good vegetables in their homesteads, while liquid part is used for irrigation. The standard was well executed by all farmers.

Disposal of Dead Pigs

Proper disposal methods are especially important due to the potential for disease transfer to humans and other animals, and the pollution of soil, air and ground water. Carcass should be promptly disposed-off after death, or refrigerate or freeze. Disposal can be done by burial, composting, incineration and rendering. Optimal carcass disposal should be based on multiple criteria using a holistic assessment of economics, value and extent of resource recovery, biosecurity and risk of disease transmission, and environmental impacts. All farmers confirmed that they dispose-off dead animals by burial which is suitable for the size of their enterprises.

4.10 Support Service

Extension and Training

Farmers reported that they are receiving support from extension services in terms of training and mentoring even though not adequate.

Financial Service

Financial services were reported with mixed feeling because the majority of farmers reported that the service is not available while other reported that they benefited from such services.

Marketing Services

Farmers reported that there is abundance of informal market which is not stable and this led to erratic

products demands. Farmers suggested the need to have formal market outlet for their products in Mohale's Hoek.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Successes

- Piggery business has changed my life because I am able to meet my household needs
- Business profit had enabled me to build a house
- I am able to make some savings for future
- Installation of ground water tank for drinking and cleaning
- Building meat handling facility
- Life has changed for the better

5.2 Challenges

- Poor and inadequate piggery structure with no farrowing crates
- Lack of slaughter facility
- High feed costs & their transportation to site
- No storage for feeds and medication
- Poor marketing for products
- High piglet mortality due to chilling
- Customers buy on credits and struggles to pay their debts

5.3 Conclusion

Piggery farmers did very well in the implementation of Best Management Practices where they score 77% for using improved breeds, applying proper management techniques in feeding, breeding, disease control, environmental control, records keeping and marketing of products. Farmers were however challenged by poor housing structures that caused poor animal performance and high piglet mortality, lack of feed storage, high feed costs and lack of technical knowhow on the use of vaccines to control diseases. Unavailability of slaughter facility and erratic market for piglets and carcass cost them dearly. Finally, lack of financial support to improve their business was a concern.

5.4 Recommendations

1. Farmers to improve piggery structures and to include important installation for farrowing pans and temperature control especially for piglets.
2. District to develop slaughtering facilities to enable farmers to access big markets outlets.

3. Ministry of Agriculture to facilitate feeds subsidies for piggery farmers and promote fodder production and home mixing to reduce costs.
4. Ministry to provide regular refresher courses for piggery producers on health, nutrition and general management.
5. Ministry of Agriculture to promote piggery value chains in Mohale's Hoek to improve service delivery to support piggery enterprises.
6. Youth and women are encouraged to participate in piggery production as income generating activity.

6.0 REFERENCES

1. **FAO. 2021. Climate-smart livestock production. A practical guide for Asia and the Pacific region. Bangkok.https://doi.org/10.4060/cb3170en**
2. **FAO Animal Production and Health (1991) Guidelines for slaughtering, meat cutting and further processing, ISBN 92-5-102921-0**
3. **AWARE PROJECT (2017). Manual of Good Practices in Pig Farming. Kosovo**
4. Kuleile, NP. & Moleli, P (2014). **Comparison of own formulated and commercial pig grower on pig performance during growing phase.** BSc Research Project, National University of Lesotho
5. Kuleile, NP. & Letebele, T (2015). **The influence of diet dilution on growing pigs' performance**. BSc Research project, National University of Lesotho
6. Robert Burns (2019) **Swine Manure Storage and Handling Practices to Minimize Odors**, Iowa State University https://swine.extension.org/category/behavior-and-welfare/
7. Ron Sheffield et al. (2012). **Environmental Best Management Practices for**
8. **Louisiana Swine Production,** Sustainable Swine Production BMPs, Pub. 2835 (on-line only) Rev. 01/12
9. Smith JA, Flowers P, Larkin M. (2009) **Interpretative phenomenological analysis: theory, method and research**. SAGE, London