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# A REVIEW ON SWINE PRODUCTION SYSTEM AND ITS STATUS IN ETHIOPIA: CHALLENGES AND FUTURE PROSPECTIVES

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## ABSTRACT

Pigs are animals that their contribution to economic progress and as food security inputs in developing country. In this paper, the performance of the pig industry in Ethiopia is reviewed and the opportunities and challenges highlighted, community perceptions about local pig keeping and the potential impact has on productivity are discussed. Current management practices, feeding regimes, disease control strategies, sow breeding and welfare issues are highlighted. Since the goal of pig production is for income and produce pork using least costs, the potential use of local feedstuffs as cheap ingredients for pig marketing and feeding has been discussed. The role of breeding pigs in sustaining the pig sector is discussed. Opportunities for improved marketing both within and outside the villages are explored. Economics of local pork business is also presented. In Ethiopia, there are good starts in pig production in central parts of the country and it focuses on to get additional income for the household and in achieving food security at individual level, but they were against to consumption. This review initiate's sectors development for advantageous if introduced and popularized to the farmers of the country and if exported enhances per capita income and may replace the meat demand and supply of peri-urban owners and hotels of the country through popularization of pork as far as the increasing number of population, sky rocketed meat demand and its cost is concerned.

## KEYWORDS

Animal protein, Household Income, Pig production, Pork consumption and Ethiopia.

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## INTRODUCTION

Currently livestock production trends was giving attention to monogastric species such as poultry and pig production for its better production efficiency per unit area of land has lined the way for integrating pig production situation. It is noted that, the Ethiopian livestock development master plan (Moard, 2007[1])

all the pig population in Ethiopia Orthodox churches as well as Islamic faith are not support consuming pork. Hence, there is no public intervention promoted on pig production in Ethiopia (Moard, 2007[1]). The domestic pig is an animal which has been very neglected by the farmers on production case and scientific community in their new findings and publication in Ethiopia, hence there are very few publications regarding pig are available and low documentation of the commodity.

Studies indicated that pig production is increasing from time to time in many parts of the world Pig production in Ethiopia is believed to be in its infant stage. Priory investigation of production system dynamism, identification of major health constraints, is important for subsequent prevention and control of health problems, so as to improve the productivity of the sector

The performance of the pig production culture in the community is unsatisfactory, hence the need for a review for future concerns of the industry. Therefore, the objective of this review was to highlight the performance, community perception on the pig production and concerns of the pig sector in agricultural commodities in future Ethiopia.

**Pig production Status**

Pigs are liter producers have advantage over ruminants, and the species has been advanced in genetic terms second only to poultry. The production potential of swine is 5 times much more than other cattle, based on the yield obtained per tones of live weight.

**Pork consumption patterns**

Around 1.4 billion pigs are slaughtered annually for meat worldwide. The majority of pork consuming nations are East Asia, particularly China, which they produce, rear and consume over the half of the world's pig followed by the Europe, North America and Brazil. The majorities are reared for meat and a small number are kept for breeding (FAO year book, 1980[2]).

In Ethiopia, now a day there have been a number of foreigners have been living and working, who ask and consume pork. In addition there are local consumers of pork in big towns in Ethiopia. An increased demand in the international market will increase the number and production of pork consumption.

**Production objective of pig**

The source of animal protein in Ethiopia includes, beef, milk, pork, poultry, sheep, goat, fish and game animals. Pigs grow faster rate and are more prolific than cattle, sheep and goats. That makes them more portentous animals worldwide.

However, there is no information about purpose of pig production by the community and or pig producers. Pigs are more reared in Ethiopia for income generation. This in turn explains the lack of local market demand and pig production status.

**Management practices**

The challenge of pig housing is non-confined pigs can destroy household crops, threaten food security and even cause community conflicts. According to Abdu and Gashaw (2010[3]), 24% of the farms visited in central Ethiopia were managed with other livestock's and the management was entirely poor and unknown.

**Production parameters**

An average herd size of 29 swine has been reported in Ethiopia (Abdu and Gashaw 2010[3]). Pig producers were demotivated and some were making efforts to avoid the pigs to the wild. In some parts of Ethiopia, pigs were witnessed and starved to death. The average farrowing rates of pigs is twice per year and the Litter size ranged from 8 to 13 with a mean of 10 piglets per farrowing. Mean age at first farrowing were 8 months in Ethiopia. The average lactation length for pigs is 28 M$\pm$2.8 days in Ethiopia with breed variation and similarity with, Mutua *et al* (2010[4]) in western Kenya who reported that sows can farrow at least two times in a year yielding multiple piglets at each farrowing, sows were 12.1±4.5 months old when they farrowed for the first time, average litter size was 7±2.6 while piglets were weaned at 6±3.3 weeks of age (Mutua *et al* 2011[5]).

**Pig stocking rate**

The average stocking rates in Ethiopian sow, dry sow and farrowing paddocks were 33.1, 26.9 and 19.3 pigs/ hectare respectively. The average pre-weaning mortality was 12.1% for all hut types. Average weaning age and weight were 21.5 days and 7.1 kg.

**Water and feed allowance**

While water should always be available for free-range pigs, Pigs commonly graze on strip pastures and thereafter provided a restricted diet of 4 kg per pig per day.

**Pig Disease**

The number of parasites in the paddock varied with the season, which mainly reflects the sensitivity of parasites to temperature. Many eggs deposited during summer may die rapidly due to high temperatures and dessication. Some eggs deposited in cold months by foraging pigs cannot survive through lower temperatures, and more moisture. For example, Larsen and Roepstorff (1999[6]) found that A. Suum and T. Suis eggs, which are very resistant to environmental factors, may be subjected to a high mortality and fluctuating temperatures during a dry summer.

Oesophagostomum eggs deposited on a pasture in the winter will die (Larsen, 1996[7]) although some infective larvae do survive outdoors during winter in temperate regions (Haupt, 1999[8] cited by Roepstorff and Murrell, 1997b[7]).

**Swine production and its contribution to water management and grain production**

In a modern swine operation, pigs need quality water and these quality water for pigs and poultry varies depending on the concentration and type of contaminant. The management practices was the main reason for these water usage. These include, use of equipment's like, waterers, diet formulation of feedstuffs, use of housing and its design and management strategies for cooling and so on. Possibility of using technologies which maximise whole farm water usage efficiency as means of conserving water in the future.

Models proposed in Thailand, Southern Vietnam, Malaysia and China have focussed mainly on policy options and guidelines on effluent collection including distribution on cropping land and use of techniques for other methods of utilization of manure such as bio-gas, composting etc, (Ranald D. A, 2000[9]).

**Swine production and contribution to environmental conservation strategy**

Water is the single largest constituent of the swine body, (Kober, 1993[10, 11]). The response of pigs to these factors varies with a water quality problem. Furthermore, pig production in large scale provides abundant amounts of manure, environmental pollution and eutrophication of water bodies.

**Effect of religions on development of swine industry in Ethiopia**

Pigs are believed to have been domesticated from wild boar as early as 9000 years ago because of their adaptive and dietary nature than other wild animals. They domesticated earlier than other forms of livestock, including cattle. They are originally native to Europe and parts of Asia but have, over the centuries, been introduced to many parts of the world. Pigs are naturally omnivores and will eat both plants and animals. Throughout history, animals, including pigs, have played an important role in human lives. In China, since ancient times, Chinese people have recognized animals as their properties, and animal husbandry has played important economic roles. Animal meat, especially pork and pork products is a main source of food for Chinese people. However at beginning, the relationship between humans and animals is affected by culture and religion in china with both Islamic and Christian followers. In Ethiopia, a pork market at local level is not expected and it needs further strong awareness.

**Pig marketing status**

Now days, pig consumption and marketing demand is increasing at international market. This positive development of the sector has significant contribution in improving the provision of animal protein for household consumption and in improving the Nation's Gross domestic Product (GDP). However; there are a number of constraints including; poor infrastructure, poor performance, inadequate nutrition, poor management and husbandry practices, shortage of trained man power, cultural and religious taboo on marketing and consumption of pork and wide spread diseases are the most serious bottlenecks of the sector.

**Future perspectives and concerns**

**Constraints in pig production**

The major constraints to pig production include Traditional taboos, poor marketing opportunities, poor extension service, lack of skilled veterinarians and poor attention for its health. It is known that smallholder farmers in the developing countries face and practice poor management strategies and poor planning of pig enterprises.

The government should also work on cultural and behavioral change of the people and also formulate an appropriate policy regarding swine production without delay, and should be hold in the national agricultural extension services.

**Concerned bodies and their function in Pig production**

| S.No | Responsible stakeholders | Roles and functions |
|---|---|---|
| 1 | Swine producers | ✓ Rearing of animals (Production of pork)<br>✓ Contributing for food security<br>✓ Create job opportunity |
| 2 | Input suppliers | ✓ Supplying inputs (feed, medicaments, equipments, etc) |
| 3 | Universities | ✓ Creation of awareness on modern pig husbandry<br>✓ Conducting research activities<br>✓ Suggesting important recommendations<br>✓ Risk and opportunity analysis<br>✓ Technology innovation<br>✓ Technology transfer<br>✓ Gap analysis, training |
| 4 | Research institutes | ✓ Identify problems related to (breed, feed, heath, house…) and Conducting need based research<br>✓ Providing important recommendations<br>✓ Providing published outputs<br>✓ Strengthening producer-research-extension linkage<br>✓ Technology transfer |
| 5 | Livestock and fisher Bureaus | ✓ Provision of extension service<br>✓ Preparation of full packages<br>✓ Provision of trainings and Consultation to producers, processors, etc<br>✓ Assigning specialized experts<br>✓ Creating awareness through leaflets, publications, etc<br>✓ Input supply<br>✓ Policy issues development<br>✓ Market facilitation |
| 6 | Big Hotels, Lodges, etc | ✓ Purchasing , Processing and consumption products<br>✓ Promotion of the product ( putting pork in their menu)<br>✓ Criteria setting in the quality of the pork |
| 7 | Super-markets | ✓ Supply (utilization) of pig products<br>✓ Promotion of the product ( putting pork in their menu/advertise) |
| 8 | Regional health laboratories | ✓ Disease Surveillance and investigating outbreaks<br>✓ Supporting woreda and zonal veterinary service<br>✓ Creating awareness through leaflets, publications, etc |
| 9 | Processors | ✓ Processing of products based on public demand<br>✓ Promotion of products<br>✓ packaging |
| 10 | Transport suppliers | ✓ Transporting live animals and processed meat |
| 11 | City plan | ✓ Fulfilling processing facilities, land for production, etc |
| 12 | Quality assurance office | ✓ Preparing standards for export and local market |

| | | |
|---|---|---|
| 13 | NGOs | ✓ Budget and training support |
| 14 | Micro-finance(like OMI) | ✓ Saving and credit service |
| 15 | Cooperatives | ✓ Creating market linkage<br>✓ Promotion of products |
| 16 | Trade and transport office | ✓ Creating (assessing) markets |
| 17 | Brokers | ✓ Linking producers to processors |
| 18 | Customs authority | ✓ Supporting input providers (tax free)<br>✓ Facilitation |
| 19 | Exporters | ✓ Exporting products<br>✓ Promotion<br>✓ Encouraging producers Provision of hard currency |
| 20 | Foreigners (tourists) | ✓ Consumption of products<br>✓ Promotion through better price<br>✓ Provide better recommendation (price; test, etc) |
| 21 | Local abattoirs | ✓ Processing of products<br>✓ Quality assurance |
| 22 | Mass medias | ✓ Promotion of products<br>✓ Provision of information (market, production, etc) |

| S.No | Challenges | References |
|---|---|---|
| 1 | Traditional taboos and behaviors | Abdu and Gashaw, 2010[3] |
| 2 | Inadequate extension services | Piggery Annual Report 1997; 2005/06[7]; Moreki 2010[13] |
| 3 | High feed cost | Galeboe *et al* (2009[14]) |
| 4 | Pest and diseases | Galeboe *et al* (2009[14]) |
| 5 | Inadequate slaughter facilities | PSAR 2007/08[12]; Moreki 2009[13] |
| 6 | Unorganized marketing | PSAR 2007/08[12]; Moreki 2009[13] |
| 7 | Unproductive stock | Galeboe *et al* (2009[14]) |

**Table No.1: Pig sector indicators in five sub-Saharan African countries with the highest pig populations, 2007**[15]

| S.No | Country | No. of pigs in Million/ head | Pork production/ 1000t | Pork consumption /kg/person/year |
|---|---|---|---|---|
| 1 | Nigeria | 6.6 | 209 | 1.4 |
| 2 | Burkina Faso | 2.8 | 40 | 2.7 |
| 3 | Uganda | 2.1 | 105 | 3.4 |
| 4 | South Africa | 1.7 | 174 | 3.5 |
| 5 | Cameroon | 1.4 | 18 | 1.0 |

Source: FAOSTAT | © FAO Statistics Division 2010

## CONCLUSION

In general, there is need to address these for full realization of the sectors potential as integrated concerns of stakeholders to initiate this sector. Because the farmers will get well jobs, and which provides them with an opportunity to better their lives and earn a living. Local construction materials such as grass and wood are available and can be utilized in preparing simple structures for pigs. Training and creating awareness on traditional perception of farmers on pig husbandry practices and its benefit to local and livelihood economy can be addressed to observed problems of non-confinement and other related issues observed in the review.

**The way forward**

This review has highlighted a number of issues that are of in the sustainability of local pig industry; of importance are production, marketing and breeding. Priory investigation of production system dynamism identification of major health constraints is important for subsequent prevention and control of health problems, so as to improve the productivity of the sector with integration of stakeholders functioning as shown in 'Future concerns' part in this paper with regard to,

1. Investigate the productive adaptability of pig breeds under different peri-urban condition.
2. There was no established system for swine production and marketing in Ethiopia and working with this.
3. Lack of market for live pigs and pork was the most important bottleneck in the sector and facilitating in this regard will bring a change.
4. Biosecurity measures were rarely implemented and needs improvement.
5. There was close contact with others livestock's and humans which causes zoonotic disease, swine influenza.

The government should do awareness creation and made proper policy regarding to pig production and consumption for the sustainable securing of food self-sufficiency. Thus changing of the feeding habits of the community through awareness creation and extension would be the mandatory of the scientific community.

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**CONFLICT OF INTEREST**

We declare that we have no conflict of interest.

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