

CHAPTER-1

INTRODUCTION

1.1 Introduction

Bangladesh is one of the most densely populated countries in the world (BBS, 2009). With an economy based on the development of agriculture, about two-thirds of the labor force depends on agriculture. As a result of increases in population (1.8% annually), rapid urbanization (15% annually) and rises in absolute income, the demand for animal products has been increasing rapidly in Bangladesh (Jabbar *et al.*, 2005). This condition forces about 50% of people to suffer from malnutrition. In global perspective, swine has been taken as the most palatial animal protein source which can be consumed with a very low cost by those people who consume pork. At Dongnala under KaptaiUpazilla of Rangamati district, those poor people, who neither have means nor know how to improve production, rear swines. (Hossain *et al.*, 2011). Depending upon this, in Dongnala, domestic breeds of swine are reared on garbage, kitchen waste and human excreta. Productivity of domestic breeds is low. As a result, exotic breeds specially, Yorkshire, Landreace, Hampshire and Poland China are gaining popularity due to high growth potential (Johnson *et al.*, 2001). Limited information is available regarding the rearing systems of swine here. Following this, the current study was undertaken to investigate the production systems of swine in Dongnala, Kaptai in Rangamati district of Bangladesh.

1.2 Study Objectives

- To investigate production performance of swines in Dongnala.
- To estimate the profitability of swine rearing.
- To identify constraints of swine rearing.

CHAPTER-2

MATERIALS AND METHODS

To investigate the production systems of swine, we need information of swine from Dongnala.

2.1 Period of Study

This study was done for a period of 25 days dated from 02 March 2018 to 25 March 2018. Dongnala is hilly area with sloppy land and green vegetation. This particular region has a temperature between 15-36⁰C and average humidity of 76.6%.

2.2 Area of Study

This study was conducted at Dongnala, KaptaiUpazilla under Rangamati District of Bangladesh which lies at 22⁰24'35" North Latitude and 92⁰7'12" East Longitude with an approximate area of 150 acres. This particular region has a temperature between 15-36⁰C and average humidity of 76.6%.



Figure 1: Geographical Location of Study Area

2.3 Sample Selection

As the study was to investigate the production systems of swine, Information of 30 swine from smallholding farmers was taken (Table 1).

Table 1: Study Population Statistics

Groupings	Populations
Piglets (Weaned)	15
Boar	7
Gilt	3
Sow	5
Total	30

2.4 Data Collection

A questionnaire was developed comprising of both open ended and close ended questions. Then production data of swine was collected from owner with the help of questionnaire. Data was collected following the direct interviews and frequent personal visits. Interviews were normally conducted in respondent's house. All the information was collected at the time of UVH placement.

2.5 Data analysis:

All the data collected through questionnaire were inserted in Microsoft office excel 2007 and analyzed by using data analysis tool from excel and graph pad software (<https://www.graphpad.com/scientific-software/prism/>)

CHAPTER-3

RESULTS AND DISCUSSION

3.1 Swine Management Practices in Small Holdings

Swines are predominantly managed on free range during the day time and are tethered near homestead in loose housing system at night in hill tract areas of Bangladesh. Feeding method practiced in Dongnalaisdependent on garbage, kitchen waste and human excreta. A concentrate mixer consisting of rice husk has also been observed as a practice. Swines have a high reproductive potentials being sexually matured as early as 6 months of age and giving birth on an average of 6 piglets at a time. Females can give birth twice in a year having the natural services.

3.2 Socioeconomic Condition

The social-economic condition of wine owners in study area has been mentioned in Table 2. It was found that swines were reared mostly by farmers (54.7%) followed by marginal (34%), medium (11.3%). It is also predictable that, most farmers hold the swine rearing for traditional purpose as well. Among the recorded population of swine, it was evident that, farmers reared 25% Indigenous, 65% Indigenous×Hampshire and 10% Hampshire swine.

Table 2: Socio-economic Condition of The Swine Farmers

Groupings	Frequency	Cumulative Frequency	Percentage (%)
Socioeconomic Condition*			
Landless	16	16	53.3
Marginal	10	26	33.3
Medium	4	30	13.4
Types of Swine			
Piglets (Weaned)	15	15	50
Boar	7	22	23.3
Gilt	3	25	10
Sow	5	30	16.7

*Landless, >0-0.5 acre; Marginal, >0.5-1.0 acre; Medium, >1.0-1.5 acres.

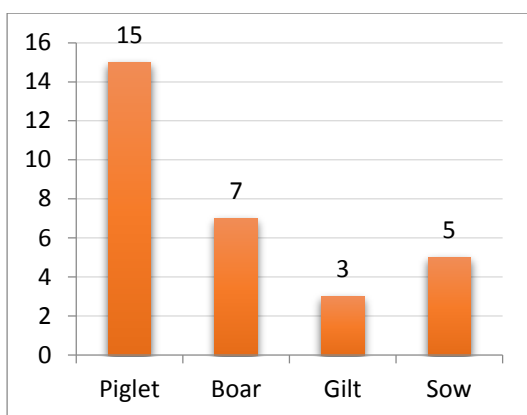


Figure 2: Breeds of Swine Reared in Dongnala

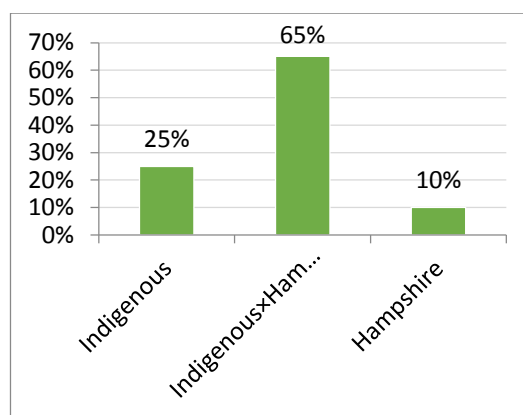


Figure 3: Types of Breed Reared in Dongnala

3.3 Rearing System

In Dongnala, swines are reared in free range system (50%) followed by tin shed housing (24.5%), fencing (20.8%) and girth tethering (11.3%) (Table 3). Among all rearing systems, we have found the free range was the most popular and widely used housing system where swines scavenged freely during day time. In backyard farm, no ideal space management is followed. The roofs of the sheds are made of chawn and tin. Heat stress was reduced by spraying water. Swines are allowed to tumble in nearby clay area during summer. The pen is located to take full advantage of prevailing winds by keeping both sides open. In winter, swines were protected from cold by using thick cloths and gunny bags.

Table 3: Rearing System of Swine in Dongnala under Backyard Farming

System of Rearing	Frequency	Cumulative Frequency	Percentage
Free ranging system	15	15	50
Tin shed housing system	8	23	26.7
Fencing system	5	28	16.5
Girth tethering system	2	30	6.8
Total	30		100

3.4 Housing System

Swines need a warm and dry home for their rest and sleep. Prevention against the wind and rain is important but swines also need shade. Swines need good ventilation but didn't like draughts. Cold is not a problem so long as there is a good straw bed

and the swines can huddle for warmth. Pigs like to nest, so a good straw bed is the order of the day. Swines do not usually urinate or void stool in their sleeping area, so cleaning out the house is very pleasant. The used straw can simply be swept out of the house to ground in front. This helps to keep the new straw clean by giving the swines somewhere to wipe their trotter before going to bed (Durranc, 2008). Swines cannot regulate their body temperature well. Therefore, a metal house could be like an oven in summer and a fridge in winter. Wood is better and there now plastic and similar houses, some with insulation to keep them cool in summer and warm in winter. Setting the house in a sheltered, shaded area will also help (Morris and Hurnik 1993; Hossain *et al.*, 2011).

3.5 Sanitation Procedure

Following the birth of piglets, owners cut the navel cords and clean the mucous from mouth and nostrils..They use clean tube well water to flush out the farrowing area to disinfect. Sometimes, bleaching powder is used for cleaning the floor. The room used for farrowing is kept clean and warm with the help of gunny bags, clothes and straw..They used to rub small and weak piglets with disinfectant. Fresh air has also the proper passage as for ventilation is observed (Hossain et al. 2011) Sanitation is important to keep the pigs disease-free. A mechanism for easy cleaning and removal of waste is necessary for any type of pig housing. Some use slotted pen floors to make waste collection easy. Keeping any housing well ventilated and removing the manure daily to reduce odor leads to a successful growth of piglets. Proper ventilation is required to remove ammonia (NH₃), methane (CH₄) and hydrogen sulfide (H₂S) gases (Moore, 2002; Johnson et al. 2001).

3.6 Feeding and Watering System

It is not wise to feed any household waste of any sort or in any form to swines. Wet feed is being preferred for swine feeding. There are two ways to do this, adding either water or surplus goat's milk to their feed. It is importantly practiced that new-born piglets receive colostrum during the first 24 hours post-farrowing. The swine

owners used to supply rice polish, boiled rice and some unconventional feeds like cauliflowers, arum and hilly grass. Occasionally they supplied vegetables like sweet guard, bottle guard, sweet potato and arum to the adult pigs at the rate of 1.0 kg per head and 750-800 g/head for the growers. Natural reservoir was the source of water for pig. Pigs rely on both grains and meat. They can also be fed with cooked table scraps and vegetables. Corn is their most common food, but they could benefit from having a diet with protein from soybeans or cooked meat. Further, they grow faster with vitamins and other supplements. Piglets have higher protein requirements than mature ones. Swines are fed twice a day. The gilt requires about 2.5 kg per day. This should be kept up until farrowing. Once the pig has produced her litter she must take enough food to keep her healthy and to provide enough good milk for the piglets. If the sow is suckling more than six piglets then she should be fed an extra 0.5kg per day per additional piglet. This can be reduced to 1.5-2kg after weaning.

3.7 Reproductive Performance

8 months and 6 months are the average sexual maturity age in boar and sow respectively. Swines maintains their estrous cycle of 18-24 days. It takes 3-10 days to return into the heat following the weaning of litter. The signs of heat included restlessness, lie down and get up, swelling and reddening of the vulva, appearance of mucous, clear vaginal discharge and attempt to mount other sows and accept boars to mount on them. Heat condition in sows results in a successful natural mating with boars. Reproductive performances of indigenous swines have been studied by different researchers (Nath et al. 2002; Prakash et al. 2008; Kumari et al. 2008 and Young et al. 1976). Least squares mean gestation period obtained by Nath et al. (2002) and Prakash et al. (2008). In their study were 111.49 ± 0.34 days. Mean litter sizes were 6.78 ± 0.11 at birth and 6.22 ± 0.11 at weaning while the corresponding mean litter weights were 7.53 ± 0.12 and 60.77 ± 1.00 kg at weaning. Sows farrowing during rainy season had larger and heavier litters than those farrowing in other seasons.

3.8 Disease Prevalence

The diseases, the owners have complaint us include scabies, coccidiosis, brucellosis, metritis, swine erysipelas, diarrhea, pneumonia and haemorrhagic septicemia (Table 5). Diseased pigs are isolated and treated with Renamycin[®], SP-Vet[®], Amoxi-vet[®], Anora[®], DB Vitamin[®] etc. The two prime vaccines practiced in swine of this area are Anthrax and Foot and Mouth Disease (FMD). In case of HS, they used a booster dose after 15 days of first dose. All growers and finishers are dewormed at 5 weeks interval. Recorded anthelmintic is Albendazol which is supplied by the Department of Livestock Services (DLS).

Table 4: Disease Prevalence of Swine in Dongnala, Kaptai under Rangmati District

Diseases	Frequency	Cumulative Frequency	Percentage
FMD	8	8	26.5
HS	6	14	20
Erysipelas	5	19	16.6
Diarrhea	5	24	16.6
Scabies	4	28	13.6
Coccidiosis	2	30	6.7
Total	30		100

3.9 Marketing System of Swine and Swine Products

Swine and swine products are primarily important at Dongnala for socio-traditional purpose. Pork is famous which is demandable among indigenous people during festivals and social occasion like marriage. Following slaughter, pork is marketed in Raikhali Bazar, Bangalhalia Bazar. This report has found the Thursday and Tuesday as “Hat Bar” for those Bazars respectively. Price ranges between 100 to 200 BDT per kilogram of pork. These Bazars also witnessed the selling of piglets at the rate of 500 BDT per pairs.

3.10 Swine Production Constraints

Bangladesh is a Muslim abandoned country. Pork is regarded as HARAM in Islam. Muslims are not interested in swine farming. On the other hand, swines are omnivorous and voracious animals. They demand more feed daily. So, it is easily

determinable that poor farmers cannot meet the required feed requisite of swine time to time. This horrible condition turns the swines into malnutrition. The maximum pig population of the study area was indigenous type which has low productivity in comparison to exotic breed. Moreover, high mortality of piglets was another constraint. The farm owners have limitations in the knowledge of vaccination. Pigs in family level farming often face diseases like FMD, HS and anthrax. Moreover, lack of proper efficient veterinarians determines the fates of diseased swines. No laboratory diagnosis facility is available. And last but not least, due to religious restriction, there is no established pork marketing system which in general, hinders pork production.

CHAPTER-4
CONCLUSION

Swine rearing methods and feeding practices were found somehow unsatisfactory in Dongnala. Unfavorable geographical condition in hill tract put pressure to rear hardy exotic breeds of swines which leads to lower production there. Absence of disease diagnostic laboratory leads the mortality rate high in case of contagious and infectious diseases. Government is implying strategies to supply higher productive piglets through the only governmental pig farm, “Rangamati Pig Farm”. The upazilla veterinary hospital under Kaptaiupazilla works in hand to hand with farmers to prosper the condition. Trainings on the scientific methods of swine rearing is considered as one of them. But it is to mention, due to religious restriction, there is no established pork marketing system which in general, hinders pork production.

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The author
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BIOGRAPHY

I am Mong Sing Nu Marma, son of Mr. MuiChing Mong Marma and Mrs. MachingPrueMarma. I passed my Secondary School Certificate (SSC) examination from Bandarban Cantonment Public School and College (BCPSC), Bandarban, Chittagong Board in 2010 and Higher Secondary Certificate (HSC) examination from BandarbanCantonment Public School and College (BCPSC), Bandarban, Chittagong Board in 2012. I enrolled for Doctor of Veterinary Medicine (DVM) degree in Chittagong Veterinary and Animal Sciences University (CVASU), Chittagong, Bangladesh in 2012-13 sessions. At present I am doing my Internship program which is compulsory for awarding my degree of Doctor of Veterinary Medicine (DVM) from Chittagong Veterinary and Animal Sciences University. In the near future I would like to work and have massive interest in wildlife medicine, conservation of nature and wildlife.