PRODUCTION SYSTEMS OF SWINE IN THE RURAL AREA OF KHAGRACHARI SADAR UPAZILA, KHAGRACHARI DISTRICT

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Abstract

The study was undertaken for a period of 20 days during UVH placement to investigate the production systems of swine at Upper perachara, Khagrachari Sadar upazila, Khagrachari district, Bangladesh. During the study period production systems, particularly housing, feeding, breeding, disease prevalence, bio-security, marketing, socio-economic condition and constraints of pig production were investigated. Pigs were mostly reared by poor and landless peoples (50%) followed by marginal(35%) and medium(15%). Rearing systems were also different and mean figures were 55% for free range, 25% for tin shed housing, 15% for fencing and 5% for girth tethering systems. Prevalence of disease were FMD 23.3%, Hemorrhagic septicemia 20%, Pneumonia 20%, Diarrhoea 20%, Scabies 13.6% and Coccidiosis 6.7%. The economic benefits generated from farming were selling of piglets.

Keywords:
Swine, rearing system, productive performance, disease prevalence.

CHAPTER-I

INTRODUCTION

Pigs in Bangladesh have received little attention to date. Since a great majority of population is Muslim they do not keep pigs for religious reason. The cobbler, sweeper, Christian, nomadic people and tribal community people of the country raise non-descript domesticated pigs. They keep pigs for their livelihood and also to maintain their social value. Though, out of 590 million pigs in the world, about 34% are raised in tropical countries. Due to the religious point of view and for the limited number of pork consumers, the pig population is not large compared to other ruminants and birds in Bangladesh. Bangladesh is one of the most densely populated countries in the world (BBS, 2009). Demand for meat and dairy products has been increasing rapidly in Bangladesh as in other developing countries, propelled by income and population growth and urbanization. Although nearly 40% of the population live below the poverty line, reasonably good economic growth during the past few years has also created an expanding middle and high income population, especially in the urban areas, where dietary patterns have been changing rapidly toward higher levels of consumption of high value products like milk, meat, eggs, fish, fruits and vegetables. Per capita daily consumption of milk increased from 22 gms in 1983–84 to 32 gms in 2005 and that of meat and eggs from 10 gms to 18 gms during the same period (Hossain and Deb 2009). Small scale home based pig farming is an important livelihood source for pig farmers. In 2017, there were approximately 769.05 million pigs worldwide, where China has been produced about 51.85 million metric tons (USDA, 2018). Pig production has also been seen as a source of protein. Their first growth rate which is only slightly exceeded by the best, carefully managed broilers, their prolification which is unsurpassed by that of any other animal species except the birds, their very good efficiency of feed utilization which brings better returns per units of inputs than most animals and quality of their meat which is both tender and more nutritive in terms of the contents of protein and the B-vitamins than those of their animals (Ogunniyi and Omosteso, 2011). Despite these attributes, pig production in Bangladesh has remained low due to Muslim population who constitute the majority of most areas of the country. But it is one of the most important livestock for the cobbler, sweeper, Christian, nomadic people and tribal community of the country who keep them for their livelihood and animal protein and also to maintain their social value. The killing of pigs is important to celebrate their main occasion of communally such as cremation, marriage and initiation rites. In addition, a pig farm contributes in many ways by providing high value of animal protein and additional income. Dietze (2011) stated that pigs provide income for women, strengthening their role in families as well as in local communities. It often requires high investment and can easily be raised within home yard areas. Pig farming increases easily household income and nutritional status of women and

children. It is not an easy task of farming but also takes a lot of time for rearing. It needs to have a large area with a lot of grass and soil. It is therefore, pig production is very significant and may favor profitable for their religious belief. Although it is difficult to get the exact number of pigs population in Bangladesh, but they become an enjoyable business and increasing day by day in tribal areas (Hossain *et al*., 2011). Regarding this, Patr *et al*. (2014) reported that the tribal population of North-Eastern region rear pigs as integral part of their livelihood, the majority of pig enterprises belong to lower income groups, and have small and medium land holding capacity because of zero to minimum inputs involvement and low remuneration. Due to unemployment, inadequate nutrition and poverty, scarcity of cultivable land in the tribal society (Hossain, 2002), pig farming is getting importance in tribal regions for improving their economic status. It is relatively easy and profitable farm to reduce poverty also. In study areas, some tribal communities are rearing pigs by receiving financial and technical support from local non-government organization (NGOs). Thus the pig farming continues to be primitive scavenging in nature because they are raised by tribal women who are educationally, economically and socially most backward. Most of the tribal women are involved in pig farming under the poverty alleviation program of direct local. For this purpose, local NGOs provide financial and training facilities on pig rearing to tribal women for meeting their basic needs. An important way of helping is to reduce their production cost, so that the prices of locally reared pig become more competitive and profitable. If pig farming is profitable and better livelihood option for tribal people, it will be easy to take a decision for further improvement. 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 Upper perachara under Khagrachari Sadar Upazilla of Khagrachari district, those poor people, who neither have means nor know how to improve production, rear swine (Hossain *et al*., 2011). Depending upon this, in Upper perachara, 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, Landrace, Hampshire and Poland China are gaining popularity due to high growth potential (Johnson et al., 2001). Nearly all pigs in Bangladesh are indigenous type and are kept under nomadic or grazing condition though rising in confined and tethering form is not uncommon. They are characterized as the pig of typical Short-ear type found in the mountainous areas of Southeast Asia and China having straight face with erect ears. Coat colors showed a remarkable diversity. Especially the patterns of self-black and black with white belly were predominant (Riedel *et al*., 2012). There is only one government pig farm in the Rangamati district of in Bangladesh. Wild relatives of indigenous pigs are reported to be seen in the forest areas (Rangamati and Hill Tracts) of the country (Ritchil *et al*., 2013). 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 Upper perachara, Khagrachari sadar in Khagrachari district of Bangladesh.

1.1 Study Objectives

To investigate production performance of swines in Upper perachara.

To estimate the profitability of swine rearing.

To identify constraints of swine rearing.

CHAPTER- II

MATERIALS AND METHODES

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

2.1 Period of study

This study was done for a period of 20 days dated from 1 November 2019 to 20 November 2019. Upper perachara is hilly area with sloppy land and green vegetation. This particular region has a temperature between 13-35ºC and average humidity of 75%.

.2.2 Area of Study

This study was conducted at Upper perachara, Khagrachari Sadar Upazilla under Khagrachari District of Bangladesh which located in between 23º00’ and 23º 21’ North Latitude and in between 91º55’ and 92º 00’ East Longitudes. This particular region has a temperature between 13-35ºC and average humidity of 75%.

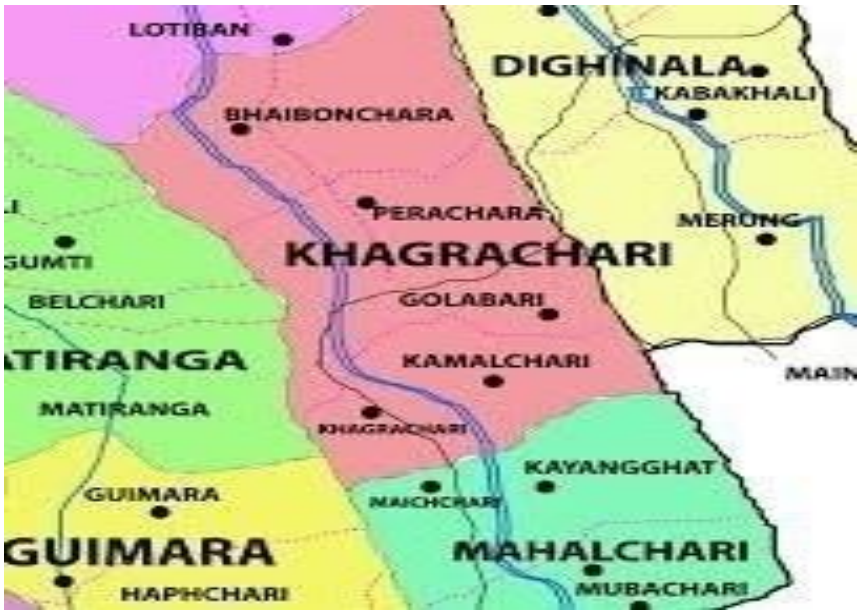

Figure: Geographical Location of Study Area

2.3 Sample Selection

As the study was to investigate the production systems of swine, Twenty small holder pig farmers were selected. Information of 30 swine was taken (Table 1).

Table 1: Study population statistics

Groupings	populations
Piglets	14
Boar	7
Gilt	4
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.

Figure 2.1

Figure 2.2

Figure 2.3

Figure 2.4

Figure 2: Rearing system of swine

CHAPTER-III

RESULTS AND DISCUSSION

3.1 Swine Management Practices in Small Holdings

Pigs 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. Most of the producers housed the boars separated from the rest of the animals whereas in contrast, sows and growing pigs were kept together, though there were some producers who provided the sows with a maternity pen(Losada *et al*., 1995). The pigs eat roots and taro stolon of arum, water lilies (shapla, shaluk), mach alu (a kind of wild potato) and other wild vegetation (DhakaTibrune, 2014). Feeding method practiced in Upper perachara is dependent on garbage, kitchen waste and human excreta. A concentrate mixer consisting of rice husk has also been observed as a practice. Pigs 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 pigs were reared mostly by poor and landless farmers (50%) followed by marginal (35%), medium (15%). 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	10	10	50
Marginal	7	16	35
Medium	3	20	15
Types of swine			
Piglet	14	14	46.7
Boar	7	21	23.3
Gilt	4	25	13.3
Sow	5	30	16.7

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

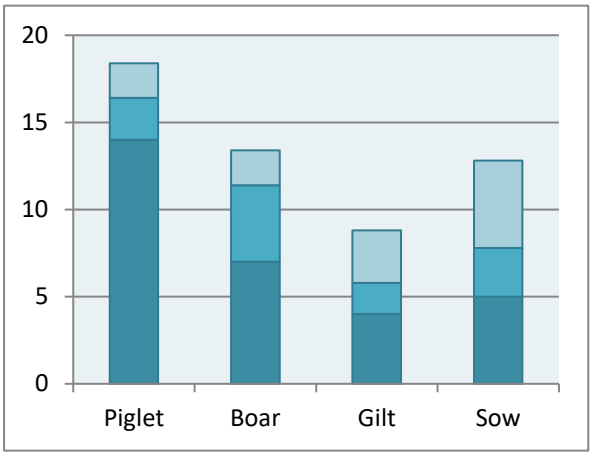

Figure 2: Types of swine reared in Upper perachara

3.3 Breed of swine

Among the recorded population of swine, it was evident that, farmers reared 25% Indigenous, 65% Indigenous×Hampshire and 10% Hampshire swine.

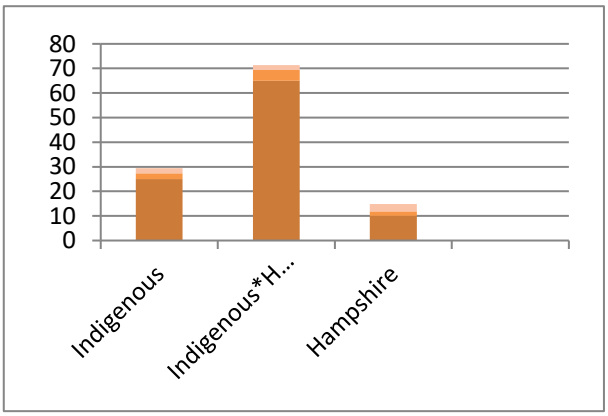

Figure 3: Breed of swine reared in Upper perachara

3.4 Rearing system

In Upper perachara, pigs are reared in free range system (55%) followed by tin shed housing (25%), fencing (15%) and girth tethering (5%) (Table3). Among all rearing systems, we have found the free range was the most popular and widely used housing system where pigs 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. Pigs 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, pigs were protected from cold by using thick cloths and gunny bags.

Table 3: Rearing System of Swine in Upper perachara Backyard Farming

System of Rearing	Frequency	Cumulative frequency	Percentage(%)
Free ranging system	11	11	55
Tin shed housing system	5	16	25
Fencing system	3	19	15
Girth tethering system	1	20	5
Total	**20**		**100**

3.5 Housing System

Pigs need a warm and dry home for their sleep and rest. Prevention against the wind and rain is important but Pigs also need shade. Pigs need good ventilation but didn't like draughts. Cold is not a problem so long as there is a good straw bed and the Pigs can huddle for warmth. Pigs like to nest, so a good straw bed is the order of the day. Pigs 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 Pigs somewhere to wipe their trotter before going to bed (Durranc, 2008). Pigs 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).

3.6 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 odour 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).

3.7 Feeding and Watering System

Pig being non ruminant animal. Pigs are normally fed twice a day. 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. 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.

3.8 Reproductive Performance

Average sexual Maturity of pigs are five to six months old. Pigs 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 Pigs 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.

3.9 Disease Prevalence

The diseases, the owners have complaint us include scabies, coccidiosis, brucellosis, metritis, swine erysipelas, diarrhoea, penumonia 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 anthelminthic is Albendazol which is supplied by the Department of Livestock Services (DLS).

Table 3: Disease prevalence of swine in Upper perachara, Khagrachari Sadar

System of Rearing	Frequency	Cumulative frequency	Percentage(%)
FMD	7	7	23.3
HS	6	13	20
Pneumonia	5	18	16.6
Diarrhoea	6	24	20
Scabies	4	28	13.6
Coccidiosis	2	30	6.7
Total	**30**		**100**

3.10 Marketing System of Swine and Swine Products

Swine and swine products are primely important at Upper perachara 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 Khagrachari Bazar. This report has found the Thursday and Monday as “Hat Bar” for those Bazars respectively. Price ranges between 350 to 400 BDT per kilogram of pork. These Bazars also witnessed the selling of piglets at the rate of 500 BDT per pairs.

3.11 Constraints of Swine Production

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 swine 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 swine. 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-IV

CONCLUSION

Pigs are farmed for meat production purpose. Swine rearing methods and feeding practices were found somehow unsatisfactory in Upper perachara. Unfavourable geographical condition in hill tract put pressure to rear hardy exotic breeds of pigs which leads to lower production there. Absence of disease diagnostic laboratory leads the mortality rate high in case of contagious and infectious diseases. The upazilla veterinary hospital under Khagrachari Sadar upazilla 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.

CHAPTER-V

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CHAPTER- VI

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CHAPTER-VII

BIOGRAPHY

I am Sushama Chakma, daughter of late Hemaranjan Chakma and Mrs. Appeima Chakma. I passed my Secondary School Certificate (SSC) examination from Bharateswari Homes, Mirzapur, Tangail in 2012 and Higher Secondary Certificate (HSC) examination from Bharateswari Homes College, Mirzapur, Tangail in 2014. I enrolled for Doctor of Veterinary Medicine (DVM) degree in Chattogram Veterinary and Animal Sciences University (CVASU), Chattogram, Bangladesh in 2014-2015 sessions. At present I am doing my internship programme which is compulsory for awarding my degree of Doctor of Veterinary Medicine (DVM), from Chattogram Veterinary and Animal Sciences University. In near future I would like to work and have massive interest in pet animal medicine and like to work as a veterinary practitioner.