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Full length paper

EXOTIC PIGS RECEIVE DIFFERENT FATTENING PERIODS FROM BHUTANESE FARMERS

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ABSTRACT: The objectives of the study were to assess the fattening period followed by Bhutanese pig farmers for exotic breeds of pig and estimate the final carcass weight at village level. A close ended questionnaire was used for the field survey. In total, 274 households were interviewed between February to April, 2017. Respondents either owned pigs at the time of interview or had fresh experience of rearing pigs. About 77% of respondents owned exotic breeds of pigs and the remaining 23% reared local breeds of pigs, including the crosses. About 63% of respondents fattened exotic pigs for duration more than 11 months before slaughter, while about 37% of respondents fattened for more than 12 months. Over 68% of respondents achieved carcass weight of more than 70 kg per pig. Generally, about 42% of respondents achieved carcass weight of more than 70 kg per pig within the fattening duration of 8-11 months. About 82% of respondents practiced wet feeding comprising thin stillage (waste from a distillery of Army Welfare Project) and kitchen wastes mixed with other locally available feed resources. However, such feeding practices appear to have not met the nutritional requirement of pigs, which likely contributed to slow growth and prolonged fattening period. To achieve more carcass weight in short duration, farmers need to adopt proper feeding management with balanced ration.

Keywords: Carcass weight; exotic breed; farming; fattening duration; pig.

1. INTRODUCTION

Livestock production is an important component of agricultural economy of developing countries (Sugiyama et al. 2003). The contribution of livestock to Gross Domestic Product is 24% (MoAF 2013). Among livestock, pig production plays an important role in alleviating rural poverty. In South East Asia, pig constitutes 48% of the total livestock population (FAO 2011). Pigs have fast growth rates and good feed-to-meat conversion ratios; are relatively easy to raise, and do not require much space; have prolific breeding potential; and are docile. These factors not only lead to increased profitability but also help in meeting the growing demand for meat. These attributes make pig farming a viable and profitable enterprise that can be easily taken up by poor farmers.

Pigs have ability to convert inedible food into meat and are often fed with household food waste when pigs are kept near homestead. Pig farming adds value to local food waste and crop residue, which otherwise would be unsuitable for

food production. In this way, pig production contributes to sustainable local agriculture by local mineral cycle and removing waste (Oosting et al. 2014).

Market weight is considered as an important economic factor in pig farming as it influences profit (Kim et al. 2005). Profitability of pig enterprise is judged mainly by the length of fattening period. Generally, exotic pig breeds are known for better growth within a year. However, to date, no attention was given to evaluate the exact fattening duration for pigs under Bhutanese farming condition. Moreover, there are no established scientific evidences on the economical fattening period of pigs in the country. One of the main targets of pig sector development in 11th plan was to achieve carcass weight of about 80 kg within nine months of fattening duration. Although, exotic pigs are reared by farmers, there is lack of scientific evidence on the actual fattening period followed by pig farmers. This information is important in designing future interventions. Therefore, a questionnaire survey was conducted in the selected pig farming areas. The study objective was to gain better understanding on fattening duration followed by farmers for exotic pig breeds and estimate the final carcass weight under farmers' management condition.

2. MATERIALS AND METHODS

2.1 Study areas

A survey was conducted in eight purposively selected districts covering 22 subdistricts (Figure 1). The selected districts were mostly from southern Bhutan as pig farming in this region has minimal social stigma attached to the rearing and slaughter of pigs (Timsina and Sherpa 2005).

2.2 Data collection

A close-ended questionnaire was used to collect information from the respondents. The questionnaire was pre-tested with four pig farmers in Sarpang district and changes were made where necessary. The survey was conducted between February to April, 2017. Face to face interview was conducted with 274 respondents in the study areas. The questionnaire consisted of 15 closed ended questions, excluding respondents' details. The questionnaire broadly covered areas such as fattening duration and carcass weight of exotic pig breeds. Besides, the information on pig breeds, sex, production system, feed types, farm size and animal health services were also collected.

2.3 Data analysis

The survey data were entered in Microsoft Excel sheet after coding questions and responses.

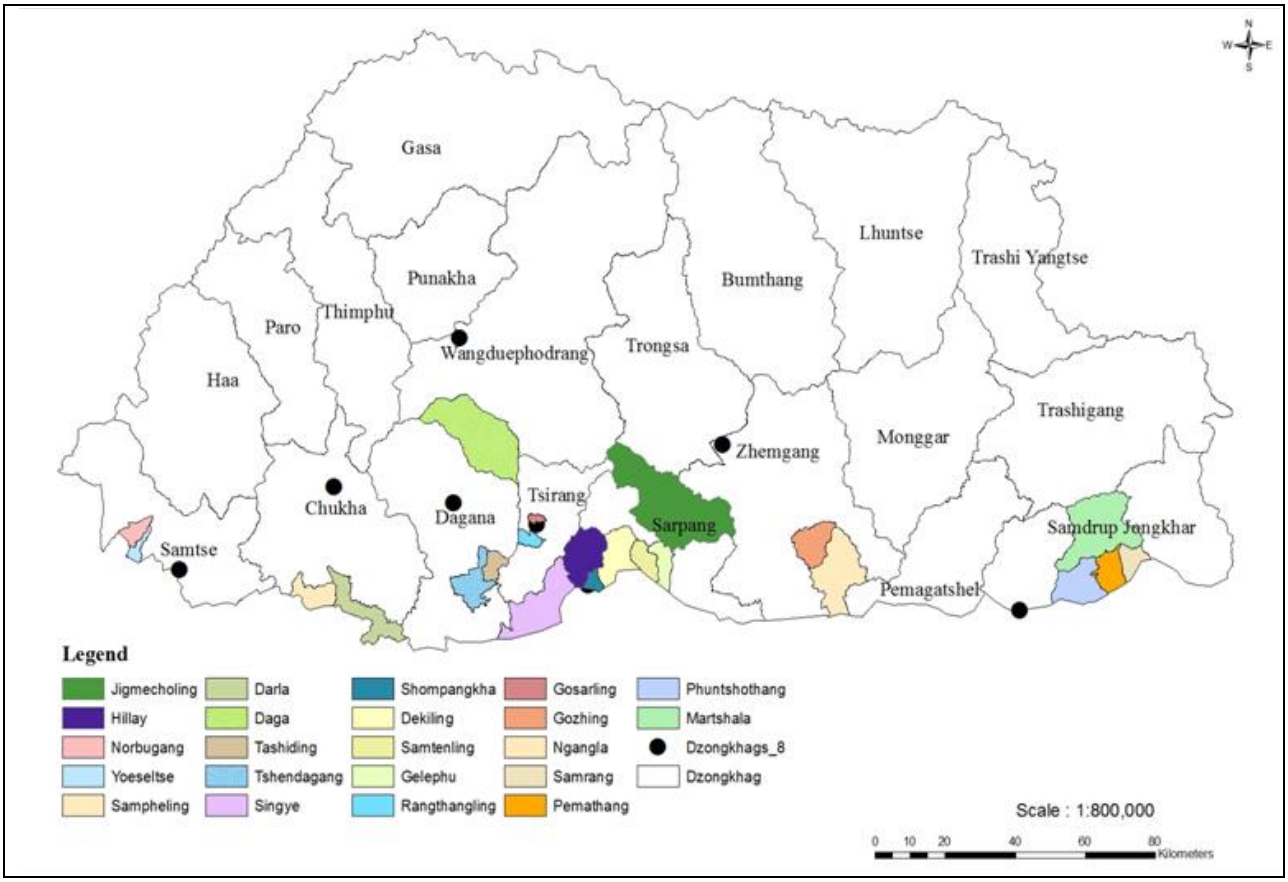

Figure 1: Study areas.

Descriptive statistics was used to analyze the dataset and the results were presented in percentages. Graphs and tables were generated using Microsoft Excel. Cross tabulation was carried out to determine carcass weight at different fattening duration. The data were statistically analyzed using SPSS version 23.

3. RESULTS AND DISCUSSION

3.1 Respondents and farming

The demographic profile of respondents is presented in Figure 2. Forty-six percent of the respondents had completed primary or non-formal education, 15% with high secondary school and 1% of the respondents completed college education. However, 38% of the respondents were illiterate. Pig farming in the sampled pockets was dominated by integrated farming system. About 80% of the respondents were involved in rearing two or more types of farm animals such as pig with poultry, pig with fish and pig with other domestic animals, besides agricultural cropping. On the contrary, 20% of the respondents were found to rear only pigs.

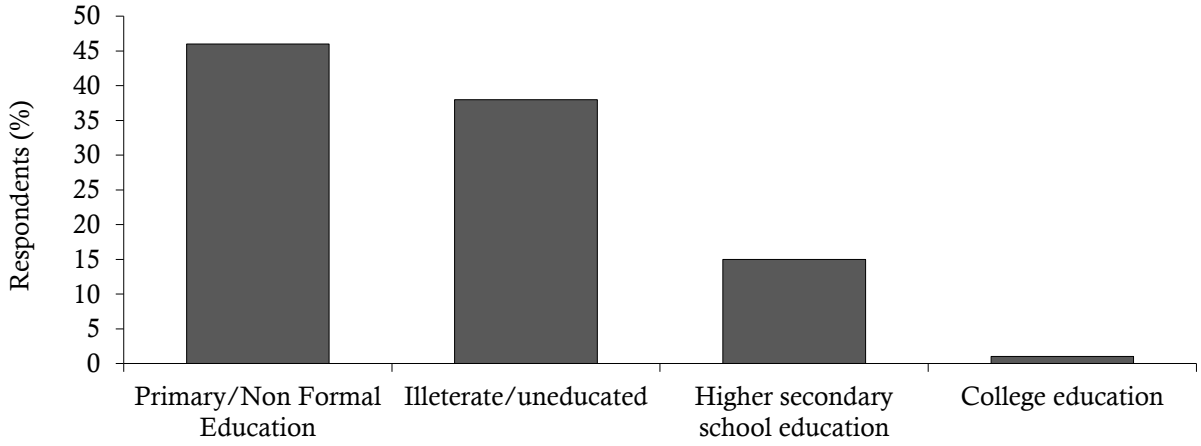

Figure 2: Demographic profile of respondents.

3.2 Category of pig farms

Figure 3 presents the category of pig farms found in the study areas. Majority (86%) of respondents practiced backyard pig farming with <10 pigs per household and the pigs were raised mainly for meat purpose. About 9% of the pig farms were semi-commercial type with 10-49 pigs per household and only 2% were commercial farms with 50-100 pigs or more per household. By and large, the pig farms were generally managed by family members regardless of farm size.

It was observed that the farm size of backyard piggery farm was about two pigs per farm. Majority of respondents practiced backyard pig farming, which could be due to less investment involved in backyard farming. It is similar to Muys and Westenbrink (2004) who reported that small farms require minimum amount of inputs and lesser time and investment. But it must be noted that backyard farms may not necessarily contribute to national pork self-sufficiency (Oosting et al. 2014), although it enhances rural livelihood situation and availability of protein to improve household nutrition.

3.3 Feeds and feeding

The backyard level pig farmers usually practiced dry and wet feeding system (Figure 4). About 82% of the respondents practiced wet form of feeding, using locally available feed resources, including thin stillage. The remaining 18% practiced dry form of feeding, using concentrates. The thin stillage used in wet feeding is a waste from distillery of Army Welfare Project, which has total solid of 2.5–3% with specific gravity of 1.002–

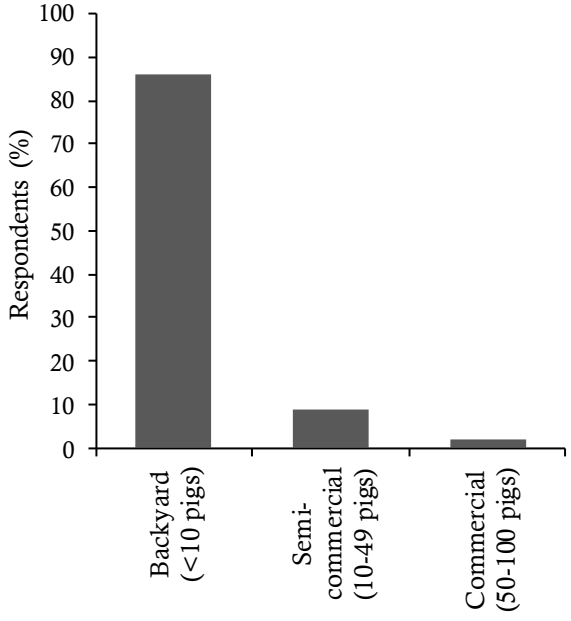

Figure 3: Category of pig farms.

1.004. Farmers practiced wet feeding, which was intended to meet optimal nutritional requirements of pig. However, through informal interviews, it was noted that pig farmers appeared not to have adequate technical knowledge on blending local feed ingredients for feeding their animals. Missotten et al. (2015) reported that the ratio of raw materials and water should ideally range from 1:1.5 to 1:4. In order to reduce the cost of production and maximize profit, most of the respondents in the sampled areas minimized production inputs through feeding locally available feed resources. The respondents are of the opinion that feeding concentrate feeds incurs huge cost. It appears true since feed accounts for about 70% of the total production cost (Huynh et al. 2007). Under backyard system, regardless of the situation, access to quality and quantity of locally available feed resources determines the protein supply to growing pigs and their slaughter weight. Njoku et al. (2015) reported that both quality and quantity of feed fed to the growing pigs have great influence on carcass weight.

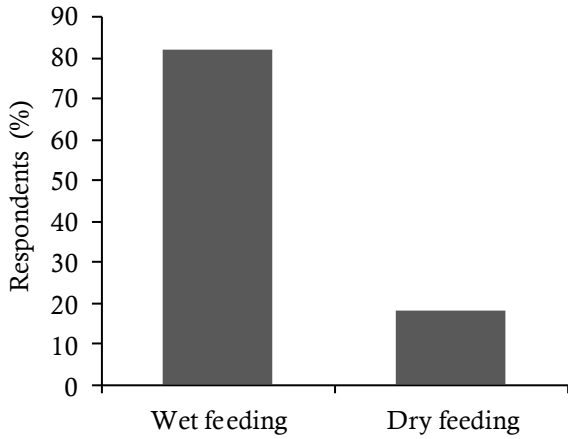

Figure 4: Type of feeding in pig farms.

3.4 Pig breeds

The pigs raised by the respondents in the sampled pockets were both exotic and local breeds (Figure 5). About 77% of the respondents reared exotic pig breeds and remaining 23% reared local pigs. Similar to the report of FAO (2011), our finding shows that farmers prefer exotic pig breeds over local pigs. It is probably because exotic breeds have higher carcass output and shorter fattening period. However, farmers with limited resources still prefer to rear local pig breeds as they have better adaptability and can thrive well under adverse climatic condition in low input production system.

3.5 Fattening duration and carcass weight

The fattening duration and the corresponding carcass weight of exotic pig breeds are presented in Table 1. Majority of the respondents (62.60%) fattened exotic pigs for duration of less than 11 months, while 37.5% of respondents fattened for more than 12 months. Regardless of fattening duration, over 68% of respondents achieved carcass weight of more than 70 kg for exotic pig. However, it was found that the remaining respondents fattened exotic pigs for a year or more to achieve the similar carcass weight.

According to Huynh et al. (2007), farms in Cambodia with 2-4 pigs usually follow fattening period of 8-12 months to achieve marketable weight. Although, there is no best weight to decide at which pigs are to be marketed (Lawlor 2010; Plain 2010), the profitability of fattening farm is determined by short fattening period (Stender 2012) and higher market weight to certain point (Kim et al. 2005). In our context, owing to limited technical knowledge of farmers, the pigs in the backyard system are usually reared and fattened for more than a year, which may not be economical. It could be due to poor and imbalanced nutrition leading to prolonged fattening duration and low carcass weight of exotic pig.

According to Plain and Lawlor (2010), the slaughter weight is decided by many factors such as age, space, weight, performance, genetics, buyers' preference, expected price change and convenience. However, the target live weight of pigs at the time of slaughter could be 110 kg for the most economical strategy (Lawlor 2010). Most literatures show that pig slaughter weight differs from country to country and from region to region. Pig producers in European countries, including Denmark and Netherlands, market their pigs at 120-130 kg (NASS 2003), whereas China and Korea market their pigs at 90-105 kg and 100-110 kg, respectively (Kim et al. 2005). Relatively, slaughter

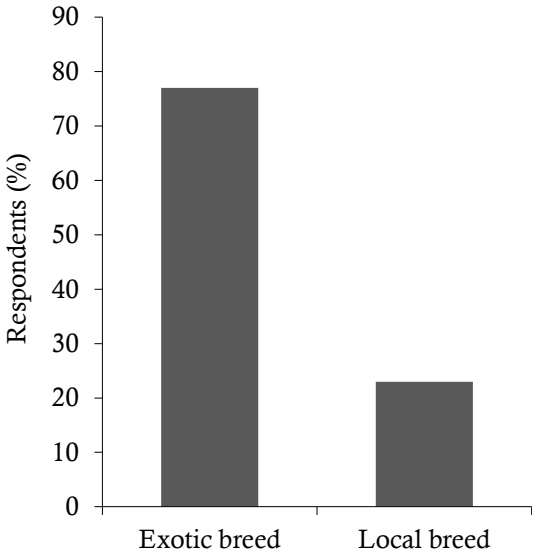

Figure 5: Exotic and local pig breeds reared by farmers.

weights in Asian countries are lower than Europe and North America (Kim et al. 2005). In this study, the respondents expressed that they raised pigs until it weighed about 90-100 kg while some sold their pigs when they were in need of money. Similar finding was reported by Plain (2010). As it was beyond the scope of the present study, we did not make comparisons between local and exotic pig breeds in terms of fattening duration and carcass weight under different feeding and management condition. The need for such study in future is imperative to establish scientific evidences on the comparative advantages of raising different breeds of pigs under Bhutanese farming conditions.

Table 1: Carcass weight of exotic breeds of pigs at different fattening period.

Fattening duration (month)	Carcass weight (kg)				Total
	50-59	60-69	70-79	≥ 80	
8-9	4.7%	7.6%	9.0%	10.0%	31.3%
10-11	1.9%	6.2%	13.3%	10.0%	31.3%
12-13	1.9%	0.9%	5.7%	6.6%	15.2%
>13	1.9%	6.2%	3.3%	10.9%	22.3%
Total	10.4%	20.9%	31.3%	37.4%	100%

4. CONCLUSION

Despite challenges confronted by farmers, the pig farming is still dominant in the study areas. It is evident that although the number of pig farmers over the years has declined, few of the sampled households have ventured into semi-commercial and commercial farming with 10-100 pigs. Besides, quite a good number of respondents have more than three pigs in their backyard farms. Most pig farmers fattened exotic pig breeds for less than a year and achieved the carcass weight of more than 70 kg. The pig production cost was minimized by locally available feed resources. Such feeding practice did not help to achieve desirable market weight within 9-12 months of fattening period, therefore, it is not economical. To encourage and promote pig farming, government must provide enabling policy support and come up with strategic interventions with better innovations. Focus should be given to commercialize pig production in the potential pockets where there is no social stigma. There is also a need to develop skills and technical capacity of farmers on improved pig feeding and management. There is a need for more scientific research to determine the economical fattening period of different pig breeds under Bhutanese farming conditions.

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