Indian Journal of Traditional Knowledge
Vol 19(2), April 2020, pp 378-382

Participation of women in traditional pig farming in North bank plain zone of Assam

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Received 08 March 2019; revised 23 December 2019

A study was undertaken to know the socio-economic status of women pig farmers, pig rearing system, feeding management, annual income from piggery and constraints faced by women farmers and involvement and contribution of women in backyard piggery in Lakhimpur and Dhemaji district under North bank plain zone of Assam. A total of 577 women farmers involved actively in pig farming were randomly selected and interviewed with a standard questionnaire. Involvement of married (40.9%) and middle aged women (26-35 years) with formal education adopted piggery through low input traditional management practices for fattening purpose (49.04%). The management system followed was scavenging system (47.05%). Kitchen waste and leftover of local rice beer along with rice bran were the common feeds offered to pigs. The major constraints to women involvement in pig farming was found to be inadequate capital (37.43%) followed by high cost of medication and commercial ration (28.94%) and pre-occupation with household chores (17.67%). The average age at puberty of pig (16.55±0.11 months) was longer. The average weight gain (2.31±0.01 kg/month), litter size at birth (10.57±0.13) and litter size at weaning (5.76±0.14) were poor. It was found that 70% of the women farmers could generate medium level of annual income (40-50 thousand) followed by 19.5% with high level income (>50 thousand). The study recommended that easy access to credit facilities from the financial institution and improve technical skills on pig farming may increase the level of involvement and help in doubling the annual income of the women piggery farmers. Backyard piggery may act as way of women empowerment in rural areas and enhance the socio-economic status of the women in piggery.

Keywords: Farming, Feed, Women, Traditional
IPC Code: Int. Cl.[20]: A01K 61/60, A01K 5/01, A61K 36/00

Pig has been reared traditionally by the tribal people of Assam for their household consumption. Hence the districts having more tribal population dominated the pig population in Assam. Assam and other north eastern states of India have far more acceptability for pork as compared to the other parts of the country. Even pork and pork products reach the dining table of the non-tribal people. Assam has the unique advantage for marketing of pork or live pig owing to its geographic position surrounded by other north eastern states of India having predominantly non-vegetarian people.

Pig production in Assam is a small-scale backyard enterprise that serves several livelihood objectives including generating income, accumulating capital and providing a low-cost source of meat. Though the contribution of piggery to the livelihood is small but its contribution is critical to the well-being of household. Majority of the population are financially backward tribes who prefer rearing pigs as a main source of economy.

Assam possesses 15.89% of total pig population of the country[1] and 21.9% Assam population live below poverty line[2]. Among the six agro-climatic zone of the state the North bank plain zone (14421 sq.km area) comprising 6 districts, viz., Dhemaji, Lakhimpur, Biswanath Chariali, Sonitpur, Udalguri and Darrang possesses highest pig population (4.86 lakh). The eastern most district of this zone Dhemaji and Lakhimpur have comparatively higher pig population (131243 and 118913) and are primarily reared by the low input traditional management practices with

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locally available feed resources where women member of the family is mostly involved[2]. Women do not get the same as men in their access to critical farm services such as farm land, credit and improved input due to some cultural, traditional and sociological factors[3,4]. Special steps to overcome constraints to their participation in livestock farming have to be initiated[5]. The income from piggery fulfils the essential household and farming expenses and provides financial independence to the women in the family[6].

There are scanty reports available regarding women involvement in backyard piggery in Assam. The aforementioned information is needed to analyse for encouraging the participation of women in livestock production and doubling the farm income particularly piggery in the study area. Therefore the study was undertaken to know the socio-economic characteristics of women participants in pig farming, to know the traditional management and rearing system followed in pig farming, to find out the availability of locally available feeds to the pigs, to identify the constraints faced by the women in pig farming and lastly to find out the annual income obtained from pig farming.

Materials and methods

The study was conducted in Lakhimpur and Dhemaji district under North bank plain zone of Assam. Women members who were involved actively in piggery chosen as the respondent for the study. Respondents were interviewed on various identified parameters through an interview schedule to assess the status and success of backyard piggery farming, the income generation from piggery in a year. For the purpose a total of five hundred and seventy seven (327 from Lakhimpur and 250 from Dhemaji district) members of respondents were selected and interviewed with a standard questionnaire.

Besides, the sample of available feedstuffs fed to pigs were collected for analysis of proximate principles, viz., dry matter (DM), crude protein (CP), crude fibre (CF), ether extract (EE), nitrogen free extract (NFE), total ash (TA) and energy content following standard laboratory procedure to know the nutritional status of the pig. The data acquired were entered on Excel 2007 and analysed by student's t-test between the groups.

Blood samples were collected randomly of 200 pigs from the area of study for hematological examination of the parameters, viz., Packed cell volume (PCV) and haemoglobin (Hb) concentration as per the method of Dacie and Lewis[7]. Mean corpuscular volumes (MCV) were calculated from RBC, Hb and PCV values as described by Jain[8]. Red blood cell (RBC) and total white blood cell (WBC) as well as the differential WBC counts, were determined using the Neubauer-haemocyto-meter after appropriate dilution.

Results and discussion

Socio-economic characteristics of the respondents

It was revealed that the involvement of age group from 26-35 years old were higher (36.04%) in the backyard piggery followed by 36-45 years (23.22%). The majority (40.9%) of the women involved in pig farming were married followed by widow (30.32%). However it was noticed that 57.70% of respondents have more than 20 years of experience in pig farming. The majority of the respondents adopted the pig farming for fattening (49.04%) rather than for breeding (27.38%) and home consumption (23.57%) (Table 1). Similarly, Simon *et al.*[9] reported the involvement of 56.7% middle aged (21-40 years) married (67.8%) women in livestock farming whose major motives of the farming was for commercial purposes.

Traditional management system in pig farming:

Analysis of records obtained from the respondents (Fig. 1) revealed highest percentage (44.07% &

Table 1 — Socio-economic characteristic of women participants in pig farming

Variables		Frequency	Percentage
	Age group (yrs)		
Upto 25		122	21.14
26-35		208	36.04
36-45		134	23.22
46 & above		113	19.58
	Marital status		
Single		166	28.76
Married		236	40.9
Widow		175	30.32
	Years of experience		
1-10		112	19.41
11-20		132	22.87
21-30		253	43.84
>30		80	13.86
Reason for keeping			
Consumption		136	23.57
Commercial	Fattening	283	49.04
	Breeding	158	27.38

50.94%) of rearing through scavenging system followed by semi-intensive system (23.73% & 28.3%) in Lakhimpur and Dhemaji district, respectively (Fig. 2,3,4, & Fig. 5). The preference for scavenging system (Fig. 5) of rearing by women farmers is due to low cost involvement as well as to reduce the daily labour.

Availability of traditional feedstuffs and their nutrient content

The availability and nutrient content of traditional feedstuffs for pig in Lakhimpur and Dhemaji districts was worked out (Table 2) on the basis of feedstuff availability at farmers door steps. It was observed that rice bran, broken rice, cooked rice, kitchen waste, fermented rice waste and colocasia were the most common feed ingredients fed to pigs of different age. The use of fish meal is occasional. The nutrient

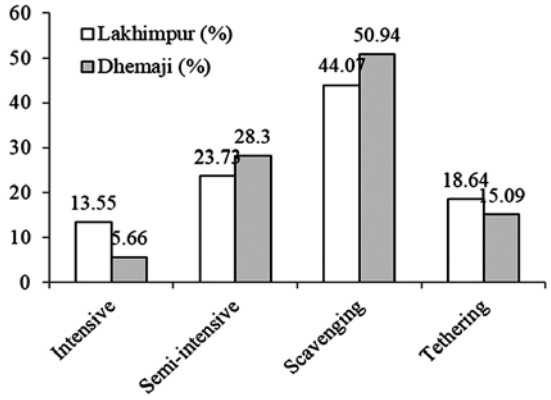

Fig. 1 — Traditional management/ rearing system of pigs followed in the area of study

Fig. 2 — Semi-intensive rearing system of pig with roof house and open area

Fig. 3 — Semi-intensive rearing system of pig without roof and open area

Fig. 4 — Pig reared by tetharing system

Table 2 — Proximate composition of feed samples collected from farmers

Ingredient	Chemical composition (%) (Mean±SE)						
	DM	CP	CF	EE	NFE	TA	Organic matter
Rice bran	89.83±0.18	8.78±0.17	5.46±0.20	1.57±0.08	63.22±0.46	20.95±0.34	79.32±0.44
Broken rice	90.02±0.29	7.19±0.16	0.57±0.02	0.58±0.02	86.10±0.34	5.53±0.24	94.46±0.24
Cooked rice	33.88±0.58	8.69±0.19	0.57±0.02	0.55±0.02	84.60±0.23	5.56±0.12	94.42±0.12
Fermented rice waste	29.38±0.38	14.92±0.28	7.64±0.30	5.62±0.17	66.77±0.28	5.03±0.26	94.96±0.26
Kitchen waste	14.28±0.44	12.6±0.80	2.67±0.38	3.97±0.39	74.48±0.84	6.25±0.45	93.74±0.45
Fish Meal	88.82±0.47	41±0.54	3.62±0.41	7.07±0.21	8.35±0.62	39.92±0.50	60.07±0.50
Colocasia	15.50±0.56	22.5±0.6	7.01±0.51	3.86±0.45	48.68±0.93	18.0±1.12	82.25±1.67

content of a particular feed ingredient collected from different respondents had little variation. The major feed ingredients in the traditional feed fed to the pigs in the study area were kitchen waste and traditional rice beer preparation along with rice bran.

Constraints faced by women in pig farming

The results (Table 3) showed that the major constraint to women involvement in pig farming was inadequate capital (37.43%) followed by high cost of medication and commercial ration (28.94%), pre-occupations with household chores (17.67%). Constraints to livestock production such as lack of capital and access to institutional credit comparing use of time, poor technical skills and lack of access to improved extension services affect women more than men and this may further limit the participation of women in livestock production[10]. Previous findings also reported the major constraints of women involvement in livestock is inadequate capital[11].

Productive and reproductive performances of pig

Analysis of the data obtained from the respondents based on their growth and reproductive performances (Table 4) revealed that the average age at puberty, weight gain, post-partum estrus interval, litter size at birth and litter size at weaning were 16.55±0.11 months, 2.31±0.01 kg per months, 2.31±0.05 months, 10.57±0.13 numbers and 5.76±0.14 numbers, respectively. It was found that the age at puberty in pigs of Dhemaji district was longer ($p<0.05$) whereas weight gain is significantly lower ($p<0.05$) in comparison to pigs of Lakhimpur district. However, the post-partum estrus interval was shorter ($p<0.05$) in pigs of Dhemaji district. The litter size at birth and weaning are similar in both the districts.

Annual income obtained from pig farming

Study revealed that the respondents from the area of the study had an average income of rupees two thousand only per month from traditional backyard piggery. Seventy percent of the women farmers (respondents) could generate medium level of income from piggery unit followed by 19.5% who could earn at higher level and 10.50% were able to generate at low level income from their existing backyard piggery unit (Table 5). The previous findings reported lower annual income[12,13] and the higher percentage[14] of annual income from pig farming to total income was reported in Kamrup district of Assam as compared to the present findings. However the involvement of women in backward piggery not considered in earlier reports[11,14]. The haematological values recorded in the present study (Table 6) were lower than the values of healthy pigs.

Fig. 5 — Pig reared by scavenging system

Table 3 — Constraints faced by women in pig farming

Constraints	Frequency	Percentage
Inadequate capital	216	37.43
Dominance by spouses	92	15.94
Pre-occupation with household chores	102	17.67
High costs of medication	167	28.94

Table 4 — Productive and reproductive performances of pigs in the area of study

Parameters	Lakhimpur	Dhemaji
Age at puberty (Month)	16.27±0.11[a]	16.92±0.13[b]
Post-partum estrus interval (Month)	2.34±0.06[a]	2.09±0.04[b]
Litter size at birth (Number)	10.43±0.08[a]	10.75±0.26[a]
Age at weaning (Months)	3.34±0.06[a]	3.38±0.06[a]
Litter size at weaning (Number)	5.75±0.11[a]	5.78±0.19[a]
Body weight gain (Kg/Month)	2.48±0.007[a]	2.09±0.01[b]

Table 5 — Level of annual income from pig farming

Level of income	Frequency	Percentage
High level (>Rs. 50,000)	112.5	19.5
Medium level(Rs. 40,000-Rs. 50,000)	403.9	70
Low level (<Rs. 40,000)	60.58	10.5

Table 6 — Haematological examination

Hemoglobin (g/dL)	PCV (%)	MCV (fl)	WBC (10^3/ µL)	RBC (10^6/µL)	Neutrophils (%)	Eosinophils (%)	Basophils (%)	Lymphocytes (%)	Monocytes (%)
10.8±0.34	31.81±0.74	58.6 ± 1.47	11.63±0.39	7.01±0.87	33.21±0.39	4.44±0.29	0.51±0.07	57.54±0.50	5.52±0.15

Conclusion

Involvement and contribution of women in traditional pig farming in the district of Lakhimpur and Dhemaji district was immense even though so many constraints and bottle neck prevailed. Easy access to credit facilities from the financial institution and improve technical skills on pig farming may double the annual income of the women piggery farmers. Backyard piggery may act as a way of women empowerment in rural areas and enhance the socio-economic status of the women pig farmers.

Acknowledgement

The article arise based on the pilot survey conducted under the DBT, Government of India funded research project entitled 'Enhancing pig productivity by optimizing biomolecular expression through nutritional intervention through nutritional intervention in the existing system of pig framing'.

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