

International Journal of Agriculture Extension and Social Development

Volume 9; SP-Issue 7; July 2026; Page No. 129-134

Received: 19-05-2026

Accepted: 23-06-2026

Indexed Journal

Peer Reviewed Journal

Socio-economic profile and management practices of pig farmers in South Garo hills district of Meghalaya, India

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DOI: <https://doi.org/10.33545/26180723.2026.v9.i7Sb.3996>

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Abstract

The present study assessed the socio-economic profile and management practices of smallholder pig farmers in the South Garo Hills district of Meghalaya. A total of 200 pig farmers from ten villages under Chokpot block were surveyed using a structured questionnaire and the collected data were analysed using descriptive statistics and Chi-square tests. The study revealed that pig farming was predominantly managed by women (55%), with the majority of farmers belonging to the middle-age group (31–50 years) (80%). Most farmers had secondary or higher secondary education, lived in nuclear families (90%), and possessed marginal land holdings (78.5%). Crossbred pigs were the most commonly reared breed (75%), and tethering was the predominant rearing system (60%). Most farmers relied on locally available feed resources such as kitchen waste and vegetables (92.5%), while access to veterinary services was limited (10%). Age was found to significantly influence breed preference and rearing systems, with younger farmers showing greater adoption of intensive systems and older farmers preferring traditional practices. The study indicates that pig farming plays an important role in the livelihood of smallholder farmers in South Garo Hills. However, improved veterinary support, scientific feeding, housing, and extension services are required to enhance productivity and sustainability of pig production in the region.

Keywords: Pig farming, smallholder farmers, socio-economic profile & management practices

Introduction

Livestock sector plays an important role in livelihood generation for small & marginal. Among various livestock enterprises, pig farming is one of the most profitable and promising ventures in the North Eastern region of India, where the majority of the population consumes pork and the demand for pork is consistently high. Though India is sharing only 5.23% of total pork meat production in the world, North Eastern Hill (NEH) region of India is contributing 28.0% of India's total pig population (Haldar *et al.*, 2017) [¹]. Majority of the pig farmers in NE India are Small holder which contributes to the livelihood in many ways- income from products, insurance against drought, emergency cash requirements, household nutrition, manure for crops etc. besides direct and indirect employment potential to the farmers in the world (Lemke and Valle, 2008) [²]. Despite its significant potential, the sector continues to face several constraints, including the use of non-descript indigenous pigs, inadequate technological support, poor nutritional management, substandard housing and healthcare practices, and limited knowledge of scientific production and marketing systems [Kumaresan *et al.*, (2007); Kumaresan *et al.*, (2009)] [³, ⁴]. In view of the importance of pig farming and the challenges faced by smallholder farmers, the present study was undertaken to

assess the socio-economic profile of small-scale pig farmers and evaluate their management practices in the South Garo Hills district of Meghalaya.

Materials and Methods

The study was conducted in the South Garo Hills district, covering a total of 10 villages (Ashugre, Allagre, Bibragre, Chokpotgre, Warimagre, Budugre, Dagalpogre, Balwatgre, Jetra & Kenegre) under Chokpot C& RD block. A total of 200 farmers rearing at least two pigs each (small holder pig farmers) were selected and surveyed using a structured questionnaire. The questionnaire collected information on the respondents' socio-economic characteristics, including age, sex, educational qualification, family size, family structure, type of house, and landholding. To assess pig management practices, data were also collected on parameters such as the system of pig rearing, method of feeding, type of feed provided, and availability and utilization of veterinary services. The data were analyzed using descriptive statistics such as frequency and percentage. Chi-square tests were applied to determine associations between categorical variables.

Results and Discussion

1. Socio Economic Profile of Pig Farmers: The socio-

economic characteristics of the pig farmers are presented in Table 1.

1.1 Sex of the Farmers

The findings reveal that the majority of the respondents were female (55%), while male constituted 45% of the sample. This indicates that pig farming is predominantly managed by women playing a substantial role in pig production activities. The relatively high participation of women suggests that pig farming serves as an important livelihood activity involving both genders. Similar findings were also reported by Sayasri *et al.*, (2025) ^[5]; Singh *et al.*, (2019) ^[6] and Abigaba *et al.*, (2022) ^[7]. The active participation of women in piggery venture in the North Eastern state of Assam was also reported by Sanjib *et al.*, (2020) ^[8].

1.2 Age of the Pig Farmers

With regard to age, the majority of the respondents (80%) belonged to the middle-age group (31–50 years), followed by young farmers below 30 years (12.5%) and older farmers above 51 years (7.5%). The active participation of middle-aged farmers in small-scale piggery management is often attributed to their combination of experience, financial resources, physical capability, decision-making power, and motivation to improve household income. The findings were in agreement with the findings of Sayasri *et al.*, (2025) ^[5]; Singh *et al.*, (2019) ^[6] and Majunder *et al.*, (2020) ^[9] who reported active involvement of middle aged farmers in pig farming.

1.3 Educational Qualification

The educational status of the respondents showed that none of the farmers were illiterate. About 30.5% had completed higher secondary education, followed by high school (28%), middle school (27%), and primary education (10%). Only 3.5% were graduates and 1% were postgraduates. These findings indicate that the majority of pig farmers had attained secondary or higher secondary education, which is consistent with the findings of Madavhan *et al.*, (2022) ^[10]; Sanjib *et al.*, (2020) ^[8] & Saikia *et al.*, (2017) ^[11] who reported that most pig farmers possess middle- to high-school-level education, while relatively few are graduates.

1.4 Family Size

Regarding family size, 44% of the respondents belonged to families comprising four to six members, while 36.5% had large families with more than six members and 19.5% had fewer than four members. Medium-sized families dominate the study area, providing adequate family labour for routine pig farming activities such as feeding, cleaning, and healthcare management. Similar observation have been reported by Commanduer (2005) ^[12] & Singh *et al.*, (2019) ^[6]. The study further revealed that 90% of the respondents belonged to nuclear families, whereas only 10% lived in joint families. The predominance of nuclear families in South Garo Hills may be attributed to the Garo community's matrilineal social system, together with the influences of modernization, widespread Christianity, and changing socio-economic conditions, which have reshaped traditional family structures [(Marak & Thirumurugan, (2023) & Marak & Palkkannan, 2024)] ^[13, 14].

Table 1: Socio Economic Profile of Pig Farmers in South Garo Hills

Sl. No.	Parameters	Category	N	Frequency (%)
1.1	Sex	Male	90	45
		Female	110	55
1.2	Age	Young (<30years)	25	12.5
		Middle Age (31 to 50)	160	80
		Old (>51 years)	15	7.5
1.3	Education	Illiterate	Nil	0
		Primary	20	10
		Middle school	54	27
		High School	56	28
		Higher Secondary	61	30.5
		Graduate	7	3.5
		Post Graduate	2	1
1.4	Family Size	<4 members	39	19.5
		4 to 6 members	88	44
		Large> 6 members	73	36.5
1.5	Family Structure	Nuclear	180	90
		Joint	20	10
1.6	Type of House structure	Kuccha	145	72
		Semi Pucca	50	25
		Pucca	5	2.5
1.7	Land Holding	Marginal (<2.5 acre)	157	78.5
		Small (2.5 to 5 acre)	39	19.5
		Large (> 5acre)	4	2

1.5 Housing Structure

Housing conditions indicated that 72% of the respondents lived in kuccha houses, 25% in semi-pucca houses, and only 2.5% in pucca houses. The predominance of *kuccha* housing suggests limited financial resources despite pig farming being an important livelihood activity, consistent with findings reported in previous studies [(Food and Agriculture Organization of the United Nations, (2012) & National Sample Survey Office, (2019)]^[15, 16].

1.6 Land Holding

Landholding patterns showed that the majority of respondents (78.5%) were marginal farmers possessing less than 2.5 acres of land. Small farmers owning 2.5–5 acres constituted 19.5%, while only 2% possessed more than five acres of land. These findings indicate that pig farming is predominantly practiced by marginal and small landholders since pig farming needs less land than crop cultivation or large livestock rearing, making it a practical livelihood for resource-poor households and a valuable source of income and food security. The current findings were in agreement with Tochhawng *et al.*, (2013)^[17] who reported that 48.89% of the farmers had marginal land holding (0.1–2.5 acres) and 23.33% had small land holding (2.6–5.0 acres).

2. Management Practices

Piggery management system followed by the small scale pig farmers are presented in Table 2.

2.1 Breed Type

The distribution of pig breeds showed that crossbred pigs were the most commonly reared, accounting for 150 farmers (75%), followed by local breeds with 32 farmers (16%), while Ghunghroo pigs were reared by 18 farmers (9%). The predominance of crossbred pigs in commercial farming systems is attributed to their superior growth rate, improved feed conversion efficiency, and higher economic returns compared to indigenous breeds. (Godinho *et al.*, (2018) & Kadirvel *et al.*, (2023)]^[18, 19] However, the continued rearing of local breed indicates their adaptability to local climatic conditions, disease resistance, and lower maintenance requirements. The relatively low population of the Ghunghroo pig breed, despite its superior performance compared to crossbred and local breeds, may be attributed to the greater accessibility of crossbred piglets in the market and their ready availability from government and private breeding farms.

2.2 System of Pig Rearing

Among the respondents, the tethering system was the most commonly adopted method of pig rearing, practiced by 120 (60.0%) farmers. This was followed by the intensive system, adopted by 60 (30.0%) farmers, while only 20 (10.0%) farmers practiced the extensive system. The predominance of the tethering system indicates that farmers prefer a management system that requires relatively low investment while allowing better control over animals compared to free-range rearing. The finding is in agreement with the finding of Ahmed *et al.*, (2017)^[20] who reported that

tethering is the most common pig rearing system in Assam, preferred due to low cost and ease of management compared to intensive and extensive systems.

2.3 Housing Provided for the animal

The study revealed that 42.5% of the respondents did not provide any housing for their pigs, while 27.5% used temporary sheds and 20.0% used locally made bamboo and wooden sheds, indicating that traditional housing and management practices were predominant. Only 10.0% of the respondents maintained concrete sties. Similar findings have been reported in Northeast India, where pig rearing is mainly based on extensive or semi-intensive systems using locally available materials, with limited adoption of concrete housing [Ahmed *et al.*, (2017); & Kumaresan *et al.*, (2009) & Singh *et al.*, (2023)]^[20, 4, 21].

2.3 Method of Feed Provided

Regarding the method of feeding, the majority of respondents (120; 60.0%) provided both boiled and raw feed to their pigs. About 65 (32.5%) farmers fed raw feed only, whereas only 15 (7.5%) relied exclusively on boiled feed. The preference for a combination of boiled and raw feed suggests that farmers attempt to improve feed utilization while minimizing feed preparation costs. Boiling kitchen waste is also known to reduce microbial contamination and improve digestibility Cullen *et al.*, (2024)^[22]; Urlings *et al.*, (1993)^[23]. Similar finding was also reported by Sayasri *et al.*, (2025)^[5].

2.4 Type of Feed Provided

The study revealed that 185 (92.5%) farmers depended primarily on vegetables, kitchen waste, and other locally available feed resources such as rice husks. Only 15 (7.5%) respondents supplemented these locally available feeds with concentrate feed, while none of the farmers used balanced concentrate feed alone. This finding indicates a heavy reliance on low-cost, locally available feed resources, reflecting the economic constraints of smallholder pig farmers. The finding is consistent with previous studies reporting that smallholder pig farmers in Northeast India predominantly rely on kitchen waste and locally available feed resources, with minimal use of formulated concentrate feed due to economic constraints Banik, Naskar & Barman, (2021); Ahmed, Ahmed & Kalita, (2017)^[24, 25].

2.5 Veterinary Care

Access to veterinary care was found to be very limited. Only 20 farmers (10.0%) reported receiving veterinary services, including medication and deworming, whereas 180 farmers (90.0%) had no regular access to veterinary care. The Poor use of veterinary services is often due to weak infrastructure, low awareness, long travel distances, and financial limits. This lack of support increases disease, lowers productivity, and raises pig mortality. Okello *et al.*, (2020)^[26] reported that access to veterinary services among smallholder pig farmers is limited, largely due to distance, cost, and inadequate infrastructure, which negatively affects pig health and productivity.

Table 2: Management Practice of pig adopted by the farmers

Sl. No.	Management Practice	Category	No. of farmers	Frequency%
2.1	Type of Breed	Local	32	16
		Ghungroo	18	9
		Crossbred	150	75
2.2	System of Pig Rearing	Extensive system	20	10
		Tethering system	120	60
		Intensive system	60	30
2.3	Housing provided	Never Housed	85	42.5
		Temporary shed	55	27.5
		Pig shed made with Locally available materials (Bamboo & Wood)	40	20
		Concrete Sty	20	10
2.4	Method of Feed provided	Boiled	15	7.5
		Raw	65	32.5
		Both Boiled & Raw feed	120	60
2.5	Type of Feed Provided	Balanced Concentrate Feed alone	Nil	0
		Vegetable, Kitchen waste & other locally available feed (Rice husks)	185	92.5
		Mixture of Both Concentrates & locally available feed	15	7.5
2.6	Veterinary care	Access to Veterinary services (Medication & Deworming etc.)	20	10
		No access to Veterinary services	180	90

3. Analysis of Association between Age group of pig farmers & the type of pig breed reared

The distribution of pig farmers according to age group and breed reared is presented in Table 3 which showed that out of 200 farmers, the majority belonged to the middle-age group (31–50 years) (160 farmers), followed by young (<30 years) and old (>51 years) groups with 25 and 15 farmers, respectively. Crossbred pigs were the most preferred breed (150 farmers), followed by local (32 farmers) and Ghungroo pigs (18 farmers). Middle-aged farmers showed higher adoption of crossbred pigs (128 farmers), while old-age farmers showed a significant preference for local pigs (12 farmers) with a positive deviation (6.20**). A significant negative deviation was observed for crossbred pigs among old-age farmers (-3.57**), indicating lower adoption of improved breeds. Overall, younger and middle-aged farmers preferred crossbred pigs, whereas older farmers showed greater preference for local breeds. Similar patterns have been reported in earlier studies highlighting the influence of age on adoption of improved pig production practices [FAO, (2012) ^[27]; Lalthanzara & Ghosh (2012) ^[28]]

Table 3: Distribution of Farmers according to age group & pig breed

Age Group of the pig farmers	Type of pig breed reared			
	Local	Crossbred	Ghungroo	Total
Young (<30 years)	2 (-1.14)	20 (0.38)	3 (0.54)	25
Middle age (31–50 years)	18 (-1.50)	128 (0.73)	14 (-0.13)	160
Old (>51 years)	12 (6.20**)	2 (-3.57**)	1 (-0.30)	15
Total	32	150	18	200

NB: Values in the Parenthesis indicates standardized residuals & ** Indicates significant at 1% level of significance

4. The relationship between the age group of the pig farmers & the system of pig rearing

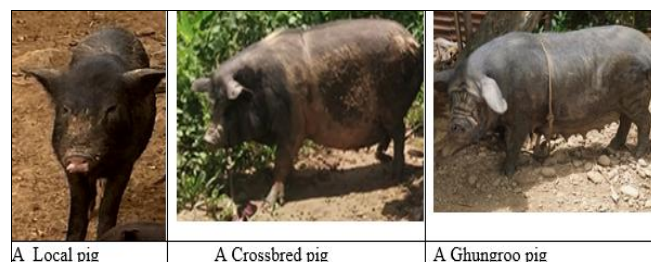
The relationship between the age group of pig farmers and their rearing system is presented in table 4 which revealed that middle-aged farmers (31–50 years) constituted the majority (160 out of 200) and predominantly practiced tethering (104 farmers). Tethering was the most common rearing system (120 farmers), followed by intensive (60

farmers) and extensive systems (20 farmers). Young farmers showed a significant positive association with intensive rearing (2.28*) and a negative association with tethering (-2.57*), indicating greater preference for intensive farming. Middle-aged farmers had a positive association with tethering (1.50) and a significant negative association with extensive rearing (-2.70*). Old farmers showed a significant positive association with extensive rearing (3.16*), suggesting their preference for traditional systems. The findings indicate that age influences the adoption of pig rearing systems, with younger farmers tending towards improved intensive practices, while older farmers continue with traditional extensive methods. Similar findings have been reported in Northeast India, where adoption of improved pig production systems was significantly influenced by farmers' age and experience, with younger farmers showing greater inclination toward intensive and semi-intensive systems compared to older farmers who preferred traditional extensive or tethering systems (Singh *et al.*, 2023). ^[21]

Table 4: Relationship between age group of pig farmers and system of pig rearing

Age Group of pig farmers	System of pig rearing			Total
	Intensive	Tethering	Extensive	
Young (<30years)	12 (2.28*)	8 (-2.57*)	5 (1.83)	25
Middle Age (31 to 50)	46 (-0.64)	104 (1.50)	10 (-2.70*)	160
Old (>51 years)	2 (-1.93)	8 (-0.41)	5 (3.16*)	15
Total	60	120	20	200

N B: Values in the parenthesis indicates Standardized Residuals. * indicates significant at 5% level of significance

**Fig 1:** Type of Pig breed reared by the farmers



Intensive Rearing System in a Locally Made Shed



Tethering System of rearing (Never Housed)



Extensive system or Free ranging (Never housed)



Intensive system of rearing in a concrete sty



Tethering system with Temporary Shed

Conclusion

Pig farming in South Garo Hills is mainly a smallholder, women-led activity practiced by marginal, moderately educated, nuclear families. It plays an important role in supporting rural livelihoods despite modest socio-economic conditions. Farmers mostly rear crossbred pigs under traditional tethering systems and depend on low-cost, locally available feed resources. Veterinary support is very limited, which affects productivity and animal health. Age significantly influences both breed choice and rearing system, with younger farmers adopting improved practices more than older farmers. Overall, pig production is an important livelihood source in the region, but its performance can be improved through better veterinary services, feeding practices, and extension support.

Acknowledgement

The authors express their sincere gratitude to the Directorate of Extension Education, Central Agricultural University (CAU), Imphal, Manipur, and Director ICAR-ATARI Zone VII, Umiam, for their precious support and guidance in conducting this study. The authors also acknowledge the cooperation and participation of the farmers of South Garo Hills, whose contribution in providing data was critical to the success of this research.

Conflict of Interest

All authors declared no conflict of interest

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