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RESEARCH ARTICLE

Exploring Knowledge Level of Tribal Farmers on Pig Farming

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ABSTRACT

Livestock has been a fundamental aspect of the Indian lifestyle since ancient times. Among many other livelihood sectors, the piggery sector sustains the livelihoods of two-thirds of the rural community. Among the meat-producing animals in the North-East (NE) region, pigs hold a distinct position. They are the preferred choice for meat consumption, particularly among the tribal population. The North-East (NE) Region of India is home to 38.42 per cent of the total pig population, with Assam alone possessing the highest number of pigs at 1.63 million, which accounts for 15.89 per cent of India's total pig population of 10.29 million. The study was conducted in Assam, located in the northeastern part of India. Four districts in Assam, chosen purposefully from a total of 35 districts spanning four agro-climatic zones, were selected for this study with an objective to access the knowledge level of tribal farmers on pig farming. Twenty tribal households were then randomly chosen from each village, resulting in a total of 160 households being included in the study. From each household, a pair comprising both husband and wife was selected as respondents. Thus, the final sample for the study comprised 320 tribal women and men farmers. In case of women farmers a great extent of knowledge (90.63%) was found on scavenging rearing system, 71.87 per cent of the women had a lesser extent of knowledge on the appropriate cooking of feed, 94.37 per cent of the women farmers do not know about the castration of piglets at right age as well as proper record keeping and regular inspection of farm. 6.87 per cent of men had a great extent of knowledge regarding the scavenging rearing system.

***Key words** : Knowledge level; Tribal farmers; Pig farming; North-East (NE) region.*

Agriculture in India constitutes a vast industry, spanning field crops, horticultural crops, plantation crops, animal husbandry, fishery, sericulture, forestry, and more. Gender participation has been integral to farming activities for generations, with both men and women equally involved in this occupation over the years. Approximately 20.5 million individuals rely on livestock for their livelihoods, with livestock contributing 16 per cent to the income of small farm households. This contrasts with an average of 14 per cent for all rural households (*Channappa et al. 2022*). Livestock has been a fundamental aspect of the Indian lifestyle since ancient times. India boasts one of the world's largest livestock populations, which has increased by 4.6 per cent from 512 million in 2012 to approximately 536 million in 2019, according to the Livestock Census of 2019 (*Anusha et al. 2022*). Investing in the livestock sector is poised to significantly contribute to economic growth, poverty reduction, and the attainment of India's Millennium Development Goals. Youth, representing the transitional phase in personality development between childhood and adulthood, plays a pivotal role during this period (*D, Souza, 1970*).

Among many other livelihood sectors, the piggery sector sustains the livelihoods of two-thirds of the rural community. Among the meat-producing animals in the North-East (NE) region, pigs hold a distinct position. They are the preferred choice for meat consumption, particularly among the tribal population. Due to the perception that pig rearing is the most conducive and suitable livestock enterprise to meet the demand for animal meat in the region, it provides employment to approximately 8.8 per cent of the population in India. According to the 19th Livestock Census, India's pig population stands at 10.29 million, which accounts for

1.05 per cent of the global pig population of 977.02 million. The North-East (NE) Region of India is home to 38.42 per cent of the total pig population, with Assam alone possessing the highest number of pigs at 1.63 million, which accounts for 15.89 per cent of India's total pig population of 10.29 million (*20th Livestock Census of 2019*). Pig farming stands out as a highly appealing occupation within the livestock sector, high feed conversion efficiency, low initial investment requirements, quick and early returns, and lower risks compared to layer production (*Bharti, 2022*). The majority of the population in India's North-Eastern (NE) region are non-vegetarian, with a significant number consuming pork, as noted by *Kumaresan et al. (2007).* This preference can be attributed to the region's high proportion of tribal inhabitants, for whom pig rearing has been a longstanding tradition, as highlighted by *Payeng et al. (2013).* Pig farming in India is predominantly a small-scale, decentralized rural activity, integrated into diversified agriculture. In the North-Eastern states, pig farming not only ensures the livelihood security of rural communities but also contributes to improving the socio-economic status of tribal populations and the weaker sections of society, according to *Naskar and Das (2007).*

Tribal communities form an integral component of Assamese society, maintaining a longstanding tradition in farming. Assam, home to over 90 diverse ethnic groups, comprises 12.44 per cent of the state's population as scheduled tribes. The state officially recognizes 29 tribes, with the Bodo tribe being the largest at 35.05 per cent, alongside others like Mishing, Mikir, Rabha, Sonowal-Kachari, Tiwa, Dimasa, and Deuri, which collectively represent the tribal diversity in Assam. Over 90 per cent of the tribal population resides in rural areas and relies on agriculture for their livelihoods. The society, primarily inhabited by tribal populations, follows an agrarian lifestyle with farming systems tailored to specific ecosystems, cultivating both crops and animals. Pig rearing is prevalent in nearly all tribal households, with pork being identified as a preferred meat source (*Johari et al., 2017*). In addition to their various roles, tribal women play a significant role in pig farming, actively engaging in tasks such as feeding, breeding, management, and healthcare for the animals. Typically, women take on decisive responsibilities related to livestock activities alongside their other household duties.

The prevalent mono-cropping system underscores the significance of animal husbandry in the region's socio-economic development (*Pegu et al., 2014*). Additionally, pig farming contributes significantly to enhancing the socio-economic status of marginalized rural communities and provides employment opportunities for unemployed youth (*Rahman et al., 2008*).

As knowledge plays important role in increasing the production and productivity of pig farming, similarly it also helps to determine the farmers behaviour Therefore it is essential on the part of researcher to understand whether the tribal farmers possess suitable knowledge on pig farming. *Bloom (1956)* defines knowledge as "that part of behaviour and test situations which emphasizes either by recognition or recall of ideas, material, or phenomena."

Keeping in view the above facts the present study has been designed with the objective to explore knowledge level of tribal farmers on pig farming.

METHODOLOGY

The study was conducted in Assam, located in the northeastern part of India, across latitudes 24º to 28º18' north and longitudes 89º50' to 97º4' east. Four districts in Assam, chosen purposefully from a total of 35 districts spanning four agro-climatic zones, were selected for this study. One district from each of the selected zones was chosen based on the district's highest proportion of Scheduled Tribe (ST) population compared to the total tribal population of the state. Additionally, the presence and participation of tribal men and women farmers in piggery components influenced the district selection. Consequently, the study focused on four districts: Jorhat, Morigaon, Baksa, and Dhemaji, representing the Upper Brahmaputra Valley Zone (UBVZ), Central Brahmaputra Valley Zone (CBVZ), Lower Brahmaputra Valley Zone (LBVZ), and North Bank Plain Zone (NBPZ), respectively. These districts collectively provide a comprehensive representation for the research study.Two tribal-dominated villages were randomly selected from each RD Block for the investigation, with input from Panchayat members and agricultural professionals. Consequently, a total of 8 villages—PanikhetiMising Gaon, Natun Chereli Mising Gaon, Holongbari, Balabari, Garangkuchi, Kuthori, Lama Pale, and Solokhoni—were chosen for the study. Twenty tribal households were then randomly chosen from each village, resulting in a total of 160 households being included in the study. From each household, a pair comprising both husband and wife was selected

as respondents. Thus, the final sample for the study comprised 320 tribal women and men farmers.

For the present study, the ex-post-facto research design was followed which was by and large a descriptive research study. The present study employed a multistage purposive cum random sampling design for selection of the respondents.

The study operationalizes the level of knowledge as the extent to which tribal farm women and men are familiar with proper pig farming production technologies. This knowledge level was assessed through respondents' familiarity with various pig farming practices, as indicated by their responses to nineteen statements developed in consultation with the AHD of AAU and referenced documents. Respondents rated their familiarity with each practice on a scale of "to a greater extent," "to a lesser extent," or "do not know," with corresponding scores of 3, 2, and 1 assigned, respectively, resulting in scores ranging from 19 to 57 for each respondent. The level of knowledge was categorized based on the mean and standard deviation of these scores.

Additionally, a reliability test was conducted using Cronbach's Alpha method. Cronbach's Alpha method is designed to measure the internal consistency of knowledge items in the schedule. The range lies in between 0 to 1. The closer the alpha to 1, the more will be the internal consistency of the items contained in the schedule.

$$X = \frac{N.\bar{C}}{\bar{V}+(N-1).\bar{C}}$$

Where,
N = the number of items
$\bar{C}$= average covariance between items pairs
$\bar{V}$=average variance

The tabulated data were analyzed using appropriate statistical technique viz., frequency, percentage, mean, S.D.

RESULTS AND DISCUSSION

An attempt was made to analyze the knowledge of the tribal farmers in pig rearing activities in which the data presented in Table 1 and Table 2 revealed that (62.50%) of women farmers had medium knowledge level in pig farming, followed by (19.38%) and

Table 1. Frequency wise distribution of respondents regarding the knowledge level of tribal farmers on pig farming

Knowledge statements	Women (No. & %)			Men (No. & %)		
	To a great extent	To a lesser extent	Do not know	To a great extent	To a lesser extent	Do not know
Knowledge on selection of suitable breeds	0 (0.00)	62 (38.75)	98 (61.25)	3 (1.87)	101 (63.13)	56 (35.00)
Knowledge on selection of gilt or boar for breeding	0 (0.00)	51 (31.87)	109 (68.13)	1 (0.625)	106 (66.25)	53 (33.13)
Do know appropriate method of breeding	3 (1.87)	43 (26.88)	114 (71.25)	7 (4.37)	123 (76.88)	30 (18.75)
Know the appropriate housing practices	7 (4.37)	31 (19.38)	122 (76.25)	6 (3.75)	118 (73.75)	36 (22.5)
Knowledge on intensive rearing system	0 (0.00)	25 (15.63)	135 (84.37)	0 (0.00)	30 (18.75)	130 (81.25)
Knowledge on semi rearing farming system	3 (1.87)	79 (49.38)	78 (48.75)	2 (1.25)	90 (56.25)	68 (42.50)
Knowledge on scavenging rearing system	145 (90.63)	15 (9.37)	0 (0.00)	155 (96.87)	5 (3.13)	0 (0.00)
Do know the feeding practices for different categories/ at different stages	36 (22.50)	83 (51.87)	41 (25.63)	05 (3.13)	99 (61.87)	56 (35.00)
Knowledge on feed type to be offered	31 (19.37)	90 (56.25)	39 (24.38)	5 (3.13)	99 (61.87)	56 (35.00)
Appropriate cooking of feed	26 (16.25)	115 (71.87)	19 (11.88)	8 (5.00)	120 (75.00)	32 (20.00)
Do know balanced feed containing all required nutrients	33 (20.62)	62 (38.75)	65 (40.63)	5 (3.13)	86 (53.75)	69 (43.12)
Do castration of piglets at right age	0 (0.00)	9 (5.63)	151 (94.37)	6 (3.75)	70 (43.75)	84 (52.50)
Do know frequency of deworming schedule of pigs in a year	8 (5.00)	99 (61.87)	53 (33.13)	0 (0.00)	55 (34.37)	105 (65.63)
Knowledge of vaccination schedule	0 (0.00)	32 (20.00)	128 (80.00)	0 (0.00)	17 (10.63)	143 (89.37)
Do know adequate care of pregnant sow and at / after farrowing	31 (19.37)	61 (38.123)	68 (42.50)	8 (5.00)	82 (51.25)	70 (43.75)
Do know adequate care of piglets immediately after birth	29 (18.12)	54 (33.75)	77 (48.13)	13 (8.12)	64 (40.00)	83 (51.87)
Do know the care and management of boar	0 (0.00)	53 (33.12)	107 (66.87)	8 (5.00)	74 (46.25)	78 (48.75)
Knowledge on marketing of pigs at right time	15 (9.37)	64 (40.00)	81 (50.63)	25 (15.63)	55 (34.37)	80 (50.00)
Proper record keeping and regular inspection of farm	0 (0.00)	9 (5.63)	151 (94.37)	0 (0.00)	13 (8.13)	147 (91.87)

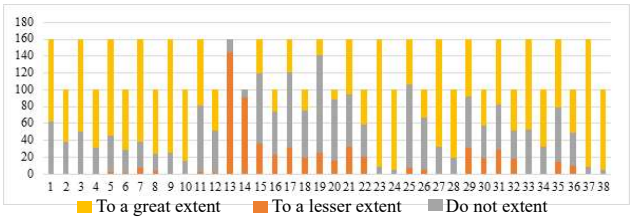

Fig.1 Knowledge level of tribal women farmers on pig farming

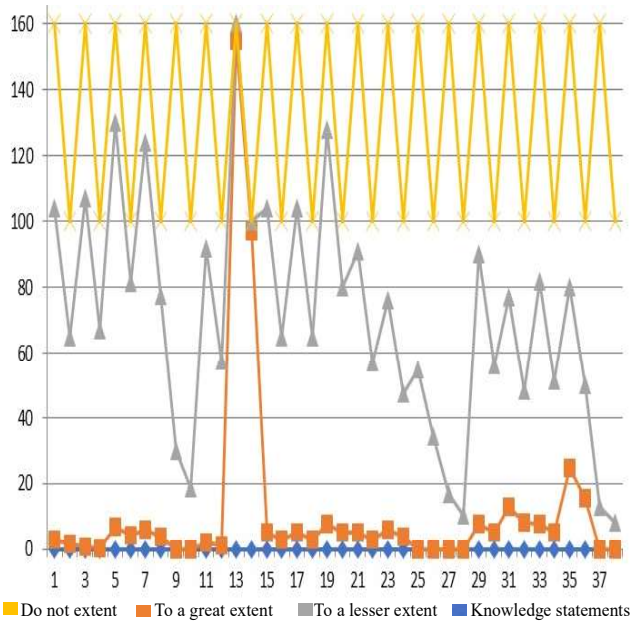

Fig. 2 Knowledge level of tribal men farmers on pig farming

(18.12%) with low and high level of knowledge. While majority (66.87%) of men farmers were found to have medium which was followed by low (20.00%) and high (13.13%) level of knowledge in pig farming practices.

An analysis of the respondents according to the category wise distribution of respondents, Table 2 and Fig. 3revealed that 62.50 per cent of the women had medium level of knowledge on pig farming, followed by 19.38 per cent and 18.12 per cent of women with low and high level of knowledge on pig farming respectively. 66.87 per cent of men had medium level

Table 2. Category wise distribution of respondents

Category	No. (%)	Mean	S.D.
Women (N=160)			
Low (Below 21.66)	31(19.38)		
Medium (21.66 to 38.05)	100 (62.50)	29.86	8.20
High (Above 38.05)	29 (18.12)		
Men (N=160)			
Category	No. (%)	Mean	S.D.
Low (Below 20.68)	32(20.00)		
Medium (20.68 to 36.28)	107(66.87)	28.48	7.80
High(Above 36.28)	21(13.13)		

Table 3: Cronbach's Alpha Reliability Test

	Cronbach's Alpha	Number of items
Piggery	0.92	19

of knowledge on pig rearing, followed by 20.00 per cent and 13.33 per cent of the respondents with low and high level of knowledge on pig farming respectively.

Moreover, a Cronbach's reliability test (Table 3) was conducted to assess the consistency and reliability of items or questions related piggery.

A critical look at Table 1 revealed that in case of women farmers a great extent of knowledge (90.63%) was found on scavenging rearing system followed by 22.50 per cent with feeding practices for different stages. 20.62 per cent of the women farmers had a greater knowledge to the extent about the balanced feed containing all the required nutrients followed by 19.37 per cent of the women who had great extent of knowledge about the feed type to be offered and the adequate care of pregnant sow and at /after farrowing. 18.12 per cent of the women had a great extent of knowledge about the adequate care of piglets immediately after birth followed by 16.25 per cent of the women farmers who had great extent of knowledge about the appropriate cooking of feed. 9.37 per cent of the women farmershad great extent of knowledge about the marketing of pigs at the right time. 1.87 per cent of the respondents had a great extent of knowledge about the appropriate method of breeding and the semi rearing farming system.

71.87 per cent of the women had a lesser extent of knowledge on the appropriate cooking of feed followed by 61.87 per cent of the women who had a lesser extent of knowledge about the deworming schedule of pig in a year. 56.25 per cent of the women had lesser extent of knowledge about the type of feed to be offered to the pigs. 51.87 per cent of the women had a lesser extent of knowledge about the feeding practices for different categories/ at different stages followed by 49.38 per cent of the women respondents who had lesser extent of knowledge on semi rearing farming system. 40.00 per cent of the women farmers had knowledge on marketing of pigs at right time 38.75 per cent of the women had lesser extent of knowledge on selection of suitable breeds and balanced feed containing all required nutrients. 33.75 per cent of the women farmers had lesser extent of knowledge on adequate care of piglets immediately after birth followed by 31.87 per cent of the women who had lesser extent of knowledge

on selection of gilt or boar for breeding. 26.88 per cent of the women had lesser extent of knowledge on the appropriate method of breeding followed by 20.00 per cent who had knowledge of vaccination schedule. 19.38 per cent of the women farmers who had lesser extent of knowledge about the appropriate housing practices. 15.63 per cent and 9.37 per cent of the women respondents had lesser extent of knowledge on the intensive rearing system and knowledge on scavenging rearing system respectively. 5.63 per cent of the women farmers had lesser extent of knowledge about the castration of piglets at right age.

94.37 per cent of the women farmers do not know about the castration of piglets at right age as well as proper record keeping and regular inspection of farm. 84.37 per cent of the women do not have any knowledge on intensive rearing system followed by 80.00 per cent who does not have any knowledge of vaccination schedule. 76.25 per cent of the women do not know about the appropriate housing practices followed by 71.25 per cent of the women do not know appropriate method of breeding. 68.13 per cent of the women farmers do not have any knowledge on selection of gilt or boar for breeding followed by 61.25 per cent who do not have knowledge on the selection of suitable breeds. 50.63 per cent of women do not have any knowledge on marketing of pigs at the right time. 48.75 per cent of the women do not have knowledge about the semi rearing farming system followed by the 42.50 per cent who do not know adequate care of pregnant sow and at /after farrowing. 24.38 per cent of the women do not have knowledge about the feed type to be offered followed by 11.88 per cent of women who do not know the appropriate cooking of feed.

96.87 per cent of men had a great extent of knowledge regarding the scavenging rearing system, followed by 15.63 per cent of men who had a great extent of knowledge on the marketing of pigs at right time. 8.12 per cent of the men farmers had knowledge to a great extent regarding the adequate care of piglets immediately after birth. 5 per cent of the men had knowledge to a great extent regarding the appropriate cooking of the feed, adequate care of pregnant sow and at /after farrowing, the care and management of boar. 4.37 per cent of the men farmers had a great extent of knowledge regarding the appropriate method of breeding. 3.13 of the men respondents had a great extent of knowledge regarding the feeding practices for different categories/ at different stages and balanced feed containing all required nutrients. 1.87 per cent of the men farmers had knowledge to a great extent regarding the Knowledge on selection of suitable breeds.

76.88 per cent of the men farmers had a lesser extent of knowledge regarding the appropriate method of breeding. 75.00 per cent of the men farmers had a lesser extent of knowledge regarding appropriate cooking of feed followed by 73.75 per cent of the men farmers had a lesser extent of knowledge regarding the appropriate housing practices. 66.25 per cent of the men farmers had lesser extent of knowledge regarding the knowledge on selection of gilt or boar for breeding followed by 63.13 per cent of the farmers who had a lesser extent of knowledge regarding the selection of suitable breeds. 61.87 per cent of the men farmers had lesser extent of knowledge regarding the feeding practices for different categories at different stages and regarding the knowledge on feed type to be offered. 56.25 per cent of the men farmers had a lesser extent of knowledge regarding the Knowledge on semi rearing farming system followed by the 53.75 who had a lesser extent of knowledge regarding the balanced feed containing all required nutrients. 43.75 per cent of the men farmers had a lesser extent of knowledge regarding the castration of piglets at right age followed by 34.37 per cent of the men farmers who had lesser extent of knowledge regarding the frequency of deworming schedule of pigs in a year and knowledge on marketing of pigs at right time, 18.75 per cent of the men farmers had lesser extent of knowledge regarding the intensive rearing system. 10.63 per cent of the men farmers had a lesser extent of knowledge regarding the vaccination schedule. Only 3.13 per cent of the men farmers had lesser extent of knowledge on the scavenging rearing system.

91.87 per cent of the men farmers do not have knowledge regarding the proper record keeping and regular inspection of farm. 89.37 per cent of the men farmers do not have knowledge of vaccination schedule. 81.25 per cent of the men farmers do not have knowledge regarding the intensive rearing system followed by 65.63 per cent of the men farmers do not know about the deworming schedule of pigs in a year. 52.50 per cent of the men farmers do not know about the castration of piglets at right age, followed by 51.87 per cent of the men farmers do not know about the adequate care of piglets immediately after birth, 48.75 per cent of the men farmers do not know about the know

the care and management of boar. 43.75 per cent of the men farmers do not know about the know adequate care of pregnant sow and at /after farrowing followed by 42.50 per cent of the men farmers do not have knowledge regarding the semi rearing farming system. 35.00 per cent of the men farmers do not have any knowledge regarding on selection of suitable breeds, feeding practices for different categories/ at different stages and the feed type to be offered. 33.13 per cent of the men farmers do not have any knowledge regarding the selection of gilt or boar for breeding. 22.50 per cent of the men farmers do not know the appropriate housing practices. 20.00 per cent of the men farmers do not know the appropriate cooking of feed.

From the Table 2 it is revealed that there are 62.50 per cent of the women farmers in the medium category which is similar to the findings reported by *Kumari et al. 2010* and *Patrick (2012)*. A total of 19.38 per cent of women farmers are found in the low category and only 18.12 per cent of the women farmers in the high-level category. In case of men farmers, it is seen that 66.87 per cent of them are in the medium category followed by 20.00 per cent in the belonging to low level and a few i.e. 13.13 per cent of the men farmers possess high knowledge level. Therefore, it can be interpreted that men farmers have better knowledge on pig farming as compared to women farmers.

The Cronbach Reliability Test was conducted to assess the reliability of items or questions related to piggery. Table 3 illustrates that the overall score of 0.92 is obtained in the knowledge level of pig farming. Cronbach's Alpha values range from 0 to 1, with values between 0.8 and 1 indicating higher reliability for the items in question. In this study, piggery yielded Cronbach's Alpha values exceeding 0.90, suggesting that the selected items effectively gauge respondents' knowledge levels and that the derived information is useful for making inferences.

CONCLUSION

Various animal husbandry practices are essential before implementation of modern technology. Tribal piggery owners are more likely to adopt new technology when they have sufficient knowledge about it. Therefore, providing access to relevant information and supporting its application among impoverished livestock owners will empower them to enhance their understanding, consequently leading to increased productivity from their livestock.

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