

Swine Feeding and Rearing Practices in the Khowai District of Tripura, India

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ABSTRACT

Pig is an important meat animal which plays a significant role in socio-economic and nutritional security of rural mass. Scientific management practices improve the economics of piggery through improving growth performance and simultaneously reducing morbidity and mortality. The production system in the villages of Tripura is very traditional, mainly based on indigenous local pigs with feeding systems primarily based on jungle forages and kitchen waste. The surveys were conducted throughout the Khowai district of Tripura covering all the Sub-divisions to understand the prevailing production and management practices followed by the farmers of Tripura. Randomly a total of 120 farmers were selected. Data collection was done from 20 farmers in each sub-division on various feeding and management aspect and analyzing the problems faced by the farmers in each aspect. In conclusion, it has been observed that the pigs are primarily reared for household consumption without following scientific management practices on low input low output system in Khowai district of Tripura. There is need of strengthening of marketing facilities and extensive dissemination of scientific management practices among farmers to trap the economic potential of pig for meat production and income generation on commercial scale in the state.

HIGHLIGHTS

- Pig is an important meat animal constitutes around 15% of Tripura livestock population and plays a significant role in socio-economic and nutritional security of rural population.
- To trap the economic potential of pig, there is a need of strengthening of marketing facilities and extensive dissemination of scientific management practices for pig husbandry.

Keywords: Swine, feeding, rearing, Tripura

Tripura is second most populous landlocked state in northeast India, spread over 10,491.69 km² (4,050.86 sq mi) and extends from 22°56'N to 24°32'N, and 91°09'E to 92°20'E. The state is bordered to the west, north and south by the country of Bangladesh and to the north east by Assam and to the east by Mizoram. The state has a tropical savanna climate. The undulating landscape leads to local variations, mostly in the hill ranges. The main seasons which are followed are winter, pre-monsoon or summer, monsoon, and post-monsoon. Tripura hosts different types of ecosystems which are mostly mountain, forest and freshwater. The landscape,

climate and socio-economic conditions of the people of Tripura makes the people dependent on Animal Husbandry activities mainly because of traditional agriculture in hilly areas of Tripura allows only about 30% of the land.

Agriculture is the backbone of state economy, provides employment to 52 per cent of total work force (Anonymous, 2011). Among the north eastern

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hilly states, Tripura is populated by 20 communities (Tribal's and Non-Tribal's) which are mostly non-vegetarian and hence, the demand for animal protein is much more compared to other parts of the country. In Tripura only about 27% of the total geographical area is available for cultivation and rest 60% is high land, in which livestock sector is an important and integral part of agricultural system (Pig Breeding policy, 2017). As per 20th Livestock census (2019) in our country, the total pig population in Tripura is about 2.06 lakh, out of which 1.05 lakh are exotic breed and 1.01 lakh are indigenous/non-descript breed.

Pig is an important meat animal constitutes around 15% of state livestock population and plays a significant role in socio-economic and nutritional security of rural mass (Talukdar *et al.* 2019a). Scientific management practices improve the economics of livestock production through improving growth performance and simultaneously reducing morbidity and mortality (Roy *et al.* 2021).

Out of the various livestock species, pig has a great potential to contribute to faster economic return to the farmers, because of certain inherent traits like high fecundity, better-feed conversion efficiency, early maturity and short generation interval (Talukdar *et al.* 2019b). So, piggery finds a significant place as it being reared by socio-economically weaker sections of the social order (Kalita *et al.* 2016). Hence, pig farming requires small investment on buildings and equipments, so it has immense potential to ensure nutritional and economic security for the weaker sections of the society (Talukdar *et al.* 2023).

The pig breeds presently available in the Tripura are the result of indiscriminate breeding within and between various breeds such as Large White Yorkshire, Landrace, Hampshire, indigenous breed like Mali and non-descript breeds etc. (Pig Breeding policy, 2017). These breeds/crossbreeds have been developed without following any systematic and scientific breeding programme (Kalita *et al.* 2018). The meat of pig contributes 30-35% of the total meat production in Tripura. Traditionally, the tribal populations are rearing pigs. Besides, the non-tribal has now been taken up pig farming as primary source of income. The majority of households rear pigs (mostly 1 or 2 pigs), mainly for fattening purposes as a good source of animal origin protein

(Pig Breeding policy, 2017). Recently with the help of various government schemes and self finance few large pig breeding farms are coming up in the state as a primary source of income and livelihood purpose.

The production system in the villages is very traditional, mainly based on indigenous local pigs with feeding systems primarily based on jungle forages and kitchen waste (Talukdar *et al.* 2015). Feeding of balanced concentrate feed to pigs is popular now a day's, the concentrates readily available in the market. Some farmers buy a couple of feed ingredients, maize, wheat bran or rice polish, from the local feed stall and fed it to pigs with any additional farm and kitchen waste. On the other hand, the farmers barely purchase any protein rich feed ingredients or mineral and vitamin mixture. This is probably because piggery farmers not have proper awareness of swine nutrition and there are financial constraints (Shyam *et al.* 2017). These conventional feeds provide insufficient nutrition to maintain satisfactory growth rates and preserve good health.

Therefore, the present study was undertaken to understand the prevailing production and management practices followed by the farmers of Tripura. The study made an assessment of the nutritional adequacy of the existing feeding practice of pigs in Tripura and reasons thereof.

MATERIALS AND METHODS

Location of the Study

The study was carried out at Khowai district of Tripura, India which is located at semi hill terrain and where tribal's and non tribal's are rearing pigs with a mix of typical conventional and adopted semi organized farming and varieties of fodder resources are available due to highly fertile soil and less leaching effect depending upon the season.

Methodology Adopted

Surveys were conducted throughout the Khowai district of Tripura covering all the Sub-divisions of the district, namely Khowai, Padmabil, Tulashikhar, Kalyanpur, Teliamura and Mungiakami. Out of these six sub-division, three sub-divisions are in hill range namely Padmabil, Tulashikhar, Mungiakami and Khowai, Kalyanpur, Teliamura are in plain region.

A total of 120 farmers were selected randomly. Data collection was done from 20 farmers in each sub-division on various feeding and management aspect and analyzing the problems faced by the farmers in each aspect. A designed questionnaire was prepared to collect the primary data through random sampling. To compare each attributes tabulated data were expressed as percentage basis. Data obtained were analyzed statistically as per procedure suggested by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

Piggery is among the prominent animal husbandry practices in the Khowai District of Tripura as a source of income for the farmers, as piggery farming is prolific with a good amount of cash availability within a limited time period. With the help of Government, local unemployed youth are getting interested in rearing pigs as a source of income for sustainable livelihood. In the hill region among the tribal's during family occasion like marriage ceremony, death anniversary, family rituals; pork is must. Hence, almost all the tribal household is rearing one or two pigs in their backyard. A considerable amount of pork is sold during the occasion in tribal's areas. Most of the farmers use local non-descript breed but now a day's Large White Yorkshire, Landrace crossbreed are also gaining popularity among the farmers (Saikia *et al.* 2019).

Feed Availability and Feeding Practices

Khowai District of Tripura is considered as agricultural District. Hence, availability of rice by product like, rice bran, rice polish is abundant. In the hill range of Khowai District, Tribals fed their pigs alcohol - rice distilling residues is popular form feed for pig which is distillery waste from rice. Recently, farmers collect poultry meat shop waste like feather, intestine, boiled in water as a source of low cost protein feed to pigs (Talukdar *et al.* 2013). Similar findings also reported in the Peren district of Nagaland and Aizawl district of Mizoram (Talukdar *et al.* 2019a; Talukdar *et al.* 2023).

Maximum pig farmers fed roughage along with kitchen waste (85%) and small amount of homemade concentrates (85%) twice a day (63%) after boiling (51%), only small number of farmers fed broiler

ration (250-500 gm per day) along with roughages (5%) to the pigs (Fig. 1 and 2). The roughages in pig diet extensively comprised tuber roots of cassava (*Manihot esculenta*) and Kachu (*Colocasia esculenta*) whereas concentrate mainly consist Broiler ration and locally made mixture of maize, wheat bran, mastered oil cake, rice polish (Haldar *et al.* 2017; Rewar *et al.* 2021). The use of feed supplements is very less in the respondents. Most of the household of Khowai District farmers rear piggery in intensive system (Table 1).

Table 1: Feeding pattern of pigs

Particular	Types/Category	Percentage frequency (n=120)
System of feeding	Intensive/sty feeding	65%
	Semi intensive	35%
Types of feed offered	Concentrate feed only	4.5%
	Concentrate feed + kitchen waste	32%
	Kitchen waste + green roughages	58.5%
	Broiler ration + distillery waste from rice	5%
Feed processing methods	Boiling/Cooking	75.5%
	Soaking/Wet feeding	14%
	Grinding	9.5%
Additional supplements	Offered	15%
	Not offered	85%
Frequency of feeding	Once in a day	3.5%
	Twice in a day	91.5%
	Adlibitum	5%

Rearing Aspect of Pigs in the Khowai District of Tripura

The main purpose of rearing of piggery was for the meat i.e. pork (Table 2), constitutes about 75% farmers and only handful of farmer rear for small scale breeding purpose for the future stock (25%). Farmers get the piglets from nearby market or from small breeding farm maintained nearby. Government sector are also providing 1-2 piglets as small scale piggery development schemes to the farmers which is for the selected few beneficiaries. Local non-descript breed are mostly reared for 1-1.5 yrs with a bodyweight of about 80kg, and crossbreed LWY, Landrace, Hampshire rear for about 8-10 month containing bodyweight of about 100 kg.

Table 2: Rearing and preference pattern of pigs

Particular	Types/Category	Percentage frequency (n=120)
Number of pigs reared per family	1-2 numbers	62%
	3-5 numbers	25%
	>5 numbers	13%
Purpose of rearing	Meat purpose	75%
	Breeding stock	25%
Breed preferences	Local breed	14%
	Cross breed	86%
Stock/category	Piglet	10%
	Boar	12%
	Gilt	10%
	Lactating sow	5%
	Fattening	63%
	Sex preferences	Male
	Female	40%

Housing Pattern

Housing pattern is mostly backyard type of rearing for pig production (Fig. 1 and 2). However only 10 and 11 % farmers followed intensive and scavenging system, respectively (Table 3). The climatic conditions of Tripura is hot humid, the minimum to maximum temperature ranges from 10 °C in winter to 35 °C in summer and moderate to high annual rainfall. Therefore most of the farmers (66%) keep pig in sties under tree sheds. Only around 15 % farmers provide semi-open and 19 % farmers rear pigs in open under the trees (mostly tribal's in hill areas) without any housing facilities. Due to easy availability and cheaper price, 61 % of farmers used bamboo and wood as construction material for sties and 39% use brick for construction material for pig sty. Farmers preferred plastic sheet or tin for protection in roof. Most of the farmers prefer side corner of the house for construction of pig sty for easy assilate, monitoring and protection from predators (Sharma *et al.* 2015).

As per the survey, it was observed that maximum of the sty, the floor is made up of cement concrete material (70%) for easy cleaning and rest prefer wooden floor where cleaning is difficult as the these farmers are poor and in a single sty generally two numbers of adult pigs were kept and for pregnant and lactating sow most of the respondents (65%) have separate sty but creep area for piglets was not available in any of the sty. This is one of the

main reasons of piglet mortality in traditional rearing practices of pigs. The free range scavenging system is a traditional system predominates in large areas of the NE states, especially in the rural village (Sharma *et al.* 2015). The local pigs were scavenging for the bulk of their foodstuff more or less homesteads, kraals and nearby places and fed some form of supplementary feed later in the day, often in the form of cassava, cracked cereal grains or household scraps. The productivity of these pigs are usually low, because of low litter sizes of three to five piglets and low growth rates. The prospective of these basic production systems for wealth creation is imperfect, but it makes a significant contribution to the livelihoods of the poor peoples of NE region (Sharma *et al.* 2015).

Table 3: Housing pattern

Particular	Types/Category	Percentage frequency (N=120)
System of rearing	Intensive/sty fed	66%
	Scavenging + morning and evening ration	25%
Types of housing	Temporary	75%
	Permanent	25%
Location of pig sty	Back side	14%
	Side corner of house	86%
	Down corner of house	
Provision of pregnant or lactating sow sty	Yes	10%
	No	12%
Environment protection measures	Taken	60%
	Not taken	40%

Health Care Aspect of the Respondants

Hygiene is the major issues in backyard piggery farming as majority of the pig farmer do not clean their pig sties regularly. The feeding trough and water trough are also not cleaned properly. Mortality in piglets is very high (50%) in backyard rearing practice. This happens due to improper balanced nutrition fed to the sow during pregnancy, crushing of piglets by the mother sow, environmental stress and managemental issues etc. (Roy *et al.* 2019). So, piglet mortality is of major concern in traditional rearing of pig in Khowai district of Tripura.

Majority of farmers do not clean (63%) pig houses daily and disinfects periodically (79%). Only



Fig. 1: Pig marketing and rearing practices in the Khowai district of Tripura

50 % of pig farmers give anthelmintic drugs to the pigs against endoparasites, 55 % vaccinate against swine fever, 15% segregate and treat the sick pigs with antibiotics and 55% followed castration in unscientific way. The study revealed that 100 % farmers do not cut needle teeth of the piglets to prevent the teat injury to the sow and approximately 84 % farmers do not provide iron injection to piglets to avoid piglet anemia rather go after oral feeding of extract of Kachu (*Colocasia esculenta*) as a source of iron. In comparison to Tripura a major percentage of farmers in adjoining Mizoram followed scientific pig health care practices (Rahman *et al.* 2008).

In this region the most commonly occurring infectious disease of pig is swine fever, piglet diarrhoea, skin diseases and among the deficiency diseases include piglet anaemia, mineral related deficiency, diseases of skin and hair etc., ectoparasitic disease like mange, endo parasitic disease e.g., Taeniasis and Paramphistomiasis is most commonly observed. For treatment most of the respondents

(68%) opt for indigenous method of treatment and very few rearers inform to the veterinary services (Talukdar *et al.* 2023).

Breeding Management

Breeding is an important aspect affecting economics of pig production. Majority of farmers (84%) rear cross bred pigs due to better growth and reproductive performance of crossbred than indigenous pigs. The comparative preference for indigenous pigs in districts with hilly and undulating topography might be due to lesser availability of feed resources commensurate with comparatively lesser feed requirement of indigenous pig. Majority of farmers, (75%) rear pig for fattening while only 25% for breeding purpose. The majority of farmers (70%) bred their pig above one year of age all adopting natural service (Talukdar *et al.* 2023).



Fig. 2: Pig feeding and rearing practices in the Khowai district of Tripura

Marketing Aspects

During winter season the demand of pork increases as compare to summer season. Before most of the pork eaters were from tribal community with only few non-tribal were preferred pork but now a day's demand has increased to non-tribal community also. The preferable bodyweight of pig for pork is between 80-100 kg in Tripura. As the demand has increased, the price of pork is also high ranging from ₹ 400 - ₹ 450. The price of breeder should be 25% more than porker. Along with this, modernization of slaughter houses are very much needed to ensure public health and augment competitive market standards of meat and related by products (Sharma *et al.* 2015).

In the present study, it was observed that majority of the pig rearer were not aware of scientific rearing and feeding management practices, which results in low production performance, high piglet mortality and more prone to occurrence of disease

in pigs. The major constraints of the farmers of Khowai district of Tripura were less availability of green forages during winter period, high cost of concentrate feed, lack of AI facility and lack of breeding stock as most of the farmer's rear pigs for fattening only, lack of disease treatment facility and lack of proper marketing network (Sharma *et al.* 2015). To improve the existing condition and to achieve the goal of economic pig production it is important to determine the available feed resources of the regions and application of adequate feed storage facility for lean period besides identification of non-conventional feed resources. Further some of the costlier feed ingredients are to be replaced with locally available feed ingredients. Along with that establishment of market facilities, incentive in the form of subsidy to take up pig breeding farm, establishment of organized slaughter house, rendering proper health care measures and to train the extension workers on the latest technology developed on pig production to be transferred to



the ultimate user i.e. the farmer are the other aspect to improve pig production scenario in the Khowai district of Tripura (Sharma *et al.* 2015).

CONCLUSION

It is concluded that pigs are primarily reared for household consumption without following scientific management practices on low input low output system. There is need of strengthening of marketing facilities and extensive dissemination of scientific management practices among farmers to trap the economic potential of pig for meat production and income generation on commercial scale in the state.

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