Research Article

CONSTRAINTS AND PROSPECTS OF TRADITIONAL PIG HUSBANDRY FOR TRIBAL LIVELIHOOD IN JHARKHAND

Satish Kumar[1*], Ritesh Dube[2] and Neeraj[3]

[1,2] GVT- Krishi Vigyan Kendra, Godda, Jharkhand- 814133, INDIA

[3]Sundaresan School of Animal Husbandry and Dairying, SHIATS, Uttar Pradesh- 211007, INDIA

**Corresponding author's E-mail id: drskumar2009@yahoo.in*

KEY WORDS:
Pig farming, Livelihood, Socio-economic

ARTICLE INFO
Received on:
27.01.2017
Revised on:
21.04.2017
Accepted on:
24.04.2017

ABSTRACT

In India there is tremendous increase in pig farming due to high demand of animal product for human consumption. A study has been undertaken to appraise the in depth scenario of traditional pig production systems and to identify the problems where scientific intervention would be initiated for further improvement in production. Survey was conducted with designed questionnaire in selected villages of five different districts of Jharkhand. A Total of 400 respondents were interviewed on different aspects of socio – economic status, routine management, health care practices and market linkage associated with pig husbandry. Majority of pig farmers belongs to lower income group, small and medium land holding capacity, Low educational level with average family size of 4 to 10 members, small scale low input pig farming at intensive system prevails in Jharkhand. The major constraints included high cost of concentrate feed (90.28%), non-availability of medicine vaccine and veterinary health care (86.67%), high cost of initial investment in housing and piglets procurements (73.56%), frequent disease outbreak and mortality of piglets and adult stock (48.89%) lack of availability of good breeding boar(49.27%), availability of market linkage (54.46%), etc. Scientific interventions in utilization of non-conventional feed resources', capacity building, market linkage for inputs and pig produce, extension of health care services, making availability of quality pig germplasm, making availability of quality feed ingredients and insure availability to improved crossbred piglets at village level could transform the traditional pig farming to a profitable enterprises.

INTRODUCTION

Pigs being the most prolific and efficient meat producing animals are very popular among the poor people of the society with tribesof Jharkhand state (Kumar *et al*., 2008). Jharkhand falls under the Tropical Monsoon climatic region, is inhabited by tribal communities which are mostly non- vegetarian and hence, the demand for animal protein is much more compared to other community. Pig is one of the most important livestock which play an important role in improving the economic status of the tribal and weaker section of the society. Genetically pigs are superior to ruminants in converting feed to meat. Efficiency of the pigs in is recorded to as twice of ruminants (Mpofu and Makuza, 2003). The small scale pig sector has seemingly greater potential to reduce poverty (Lanada *et al.,* 2005). Pig rearing occupies an important position in farming system as it is closely interlinked with the other agricultural operation performed by the tribal people for livelihood. Pigs can be raised for their entire lifetime in enclosure as they do not contribute to loss of grazing lands (Mpofu and Makuza, 2003). Pig alone accounts for 23.19 percent of the total livestock population in Jharkhand, but still a wide gap exists between the demand and availability of pork mainly due to traditional production system. Families usually keep an average of 1-2 indigenous or crossbred pigs for fattening with zero to minimum inputs in terms of family labour and feeding.

Due to remoteness and inaccessibility, the rural farmers of this region has evolved a self-sustainable local resource based production system, in which pigs are mainly dependent on local vegetation's, crop residues and kitchen waste (Kumaresan *et al.,* 2007, Moanaro *et*

al., 2011). Although, this system has been followed generation after generation, further improvement is required to augment the productivity. Several reports highlighted that the main purpose of keeping pigs was to obtain emergency cash and/or meeting the home consumption. It appeared as potential source of animal proteins and avenues for additional income and employment that can improve the livelihood in a sustainable manner (Petrus *et al.,* 2011). In spite of several opportunities in pig based entrepreneur, the pig farmer's faces several challenges due to high feed cost, lack of quality germplasm and health care service in daily operation. An in-depth investigation of the views, believes, perception and constraints in traditional pig farming is essential for introducing any scientific intervention for further improvement in existing production system for transforming the subsistence production to a profitable enterprise. The present study was conducted to appraise the scenario of traditional pig production and its impact on rural livelihood in Jharkhand.

MATERIALS AND METHODS

The spatial extent of Jharkhand State is approximately 21° 55' to 25° 35' North Latitude and 83° 20' to 88° 02' East Longitude. The state is land locked and it shares its boundary with Orissa on the southeast, Chattisgarh on the southwest, Bihar on the north, West Bengal on the east and Uttar Pradesh on the northwest. It comprises of the Chotanagpur Plateau, which forms a part of Deccan bio-geographic province. It is a hilly undulating plateau characterized by predominantly tropical forests and tribal settlements. The State is endowed with natural resources that need to be conserved and utilized in a sustainable manner for all-round development of the state in general and the marginalized tribal population in particular. The total geographical area of the State is 79.70 lakh hectares, out of which 23.22 lakh hectares (29.33%) are under forests; 5.66 lakh hectares (7.12%) are barren lands; 7.24 lakh hectares (9.10%) are put to non-agricultural use; 0.90 lakh hectares (1.15%) are under pastures & other grazing lands; 3.07 lakh hectares (3.86%) are cultivable wastelands; 0.88 lakh hectares (1.11%) are under miscellaneous trees and groves; 12.04 lakh hectares (15.14%) are current fallows; 8.45 lakh hectares (10.63%) are under other fallows; and 17.95 lakh hectares (22.58%) are the net sown area. The number of electrified villages is 14667 (45.0 per cent of the total villages). 26.0 per cent (8484) per cent of the total villages are connected by roads. The lengths of the National Highways and the State Highways are 1006 and 4662 kms, respectively.

Demography

According to the 2011 census, the total population of Jharkhand is 3.30 crorewith an average density is 414 per sq. km. the state is predominantly rural with 75.95 percent of the population living in villages, generally situated on hilly undulating plateau or small valleys. The tribal population comprised 26.2% of the total population. Shifting cultivation is the mainstay of the economy of tribal flock of the region since time immemorial and animal husbandry is an integral component of farming system practiced for livelihood and nutritional security. As of 2013, about 40.84% of rural population is below the poverty line, among the people living in urban areas 24.83% of them are below the poverty line. Jharkhand has a low literacy rate of 66.41 percent. Majority of the population in the state speaks local languages like Santhali, Ho, Kuduk, Khadiya, Bangla, but Hindi is the official language of the state.

Distribution of pig population

As per livestock census 2012, among various livestock, pig population stands first out of the total livestock population followed by cattle and goat. The total pig population in Jharkhand is 0.962 million of which 95.66 per cent are indigenous type (Table 1). The distribution of total pig population mostly located at rural areas (95.79%). Among the rural pig population 4.03 per cent are crossbred whereas in urban areas the crossbred population is about 11.41 per cent. In rural areas 27.67 per cent families are engaged in pig rearing however, in urban areas only 7.23 per cent families are directly involved in pig rearing. The numbers of pigs available per 1000 household is 156.

A questionnaire was prepared to conduct the survey on traditional pig production system. All together 400 farmers were interviewed for generating the primary data in the present survey study. The data were collected from 5 districts viz., Godda, Deoghar, Dumka, Sahebganj, Pakur out of total 24 districts in Jharkhand. Eight villages were selected in each district and minimum 10 farmers were interviewed from each village by using designed questionnaire through random sampling. All the data collected in present study was tabulated. The data presented in percentage scale for comparison of each attributes.

Table 1. Pig population statistics of Jharkhand

		Rural		Urban		Gross Total
	Age	Exotic CD	Indigenous	Exotic CD	Indigenous	
Male	<6 Months	10262	210022	1197	7247	228728
	>6 Months	9794	203010	1173	7311	221288
Female	<6 Months	8448	228054	990	9310	246802
	>6 Months	8621	243705	1257	11966	265549
Total		37125	884791	4617	35834	962367

Source: Livestock census data, 2012.

RESULTS AND DISCUSSION

Socio - economic status of the respondents

The majority of pig farmers interviewed in this study belong to rural areas of Jharkhand. The socio-economic status of the respondents reflected that the majority of pig farmers belong to small and medium land holding capacity with average family size of 4 to 10 members. The education background was mostly (53.17%) class 8th. Agriculture (47.76%) and Livestock farming along with agri-allied sectors (23.52%) was the mainstay of occupation in the majority of respondents. The average annual income was less than Rs. 30,000 in 40.13 per cent and less than Rs. 60,000 in 40.84 per cent respondents (Table 2).

Purpose of rearing

In Jharkhand, major income sources were from agricultural crops, vegetables, fisheries, animal husbandry, off- farm activities and the income from pig constitutes high share of household income, which is in consonance with the finding of Epprecht (2005). About 65.25% of the farmers indicated that they reared pigs for both income generation and home consumption. Sale of pigs normally occurred in case of emergency need for cash or during celebrations in festivals, wedding ceremonies. Often, farmers slaughtered their pigs to meet up the unexpected needs or when there was nothing to feed their pigs. The purpose of pig rearing is for fattening (60.32%), breeding (15.64%) and dual purpose both fattening and breeding (24.03%). Again for fattening purposes, farmers preferred mostly male pigs (41.32%) than female pigs (22.14%).

Breed preference

Majority of the household reared pig in intensive system and most of them rear 1-2 pigs at the backyard. The farmers (63.26%) preferred to rear indigenous pigs and 26.32 % were still involve in rearing of crossbred pigs and 19.82% of them initiated rearing of exotic pigs (Table 3). Mostly farmers preferred black colour pigs (81.68%), black and white colour pigs (17.05%) and white colour pigs (1.26%) only. Reported reason for preference of black coloured pigs was that they were less affected with skin infections (Kumaresan *et al.*, 2009). The piglets (92.38%) are mostly procured from local market and just 6.40 per cent people collect the piglets from any organized farm.

Table 2. Socio-economic status of the respondents engaged in pig farming in Jharkhand

Variables	Categories	Percentage (%)
Family Size	Up to 4 members	35.62
	5 to 10 members	64.37
Land Holding Capacity	Land less farmers	8.12
	Marginal farmers	22.63
	Small farmers	25.37
	Medium farmers	29.69
	Big farmers	14.17
Education	Illiterate	30.39
	Class 8th	53.17
	Matric	7.63
	Intermediate	5.12
	Graduate & Post Graduate	3.68

Income source	Agriculture	47.76
	Agriculture and Livestock	23.52
	Service	9.00
	Business	11.71
	Other	11.71
Annual Income	Below 10,000 – 29,000	40.13
	Margin 30,000 – 59,000	40.84
	Medium 60,000 – 90,000	12.63
	Above 1,00,000	6.39
Access to veterinary care	Yes	12.65
	No	82.88

Table 3. Preference attributes of pig farmers in Jharkhand

Variables	Categories	Percentage (%)
Purpose of rearing	Breeding	15.64
	Fattening	60.32
	Both	24.03
Breed	Indigenous	63.26
	Crossbred	26.32
	Exotic	19.82
Sex preference	Male	41.32
	Female	22.14
	Both	36.53
Colour	Black	81.68
	Black and white	17.05
	White	1.26
Piglet procurement	Local market	92.38
	Organised farm	6.40
	Outside Jharkhand	1.21

Housing management

Free range of semi intensive systems was not very common in throughout Jharkhand. In old methodological farming practices respondents mostly followed the intensive housing system with temporary pig sites built with locally available resources made of wood or bamboo and the roof material is made of CGI sheet and thatch type which is quite similar with the housing pattern observed in other parts of Eastern India. Complete box type housing without any open run area was used by farmers. Majority of them rear 1-2 pigs in single pen (54.61%) and in group (12.32%). The scientific housing system with required spacing in open and covered area was practiced by none of the farmers. The floor was normally made of concrete (8.90%), Kachcha (60.28%) and with wooden/bamboo made (2.10%). The wall was made of bamboo (60.25%), wooden (30.65%) or concrete (6.77%). The roof was either made of CGI sheet in 39.25 per cent or thatch in 60.38% cases (Table 4).

Feeding Management

Like other parts of India, scavenging system is permitted in Jharkhand. Our survey revealed that most of the respondents (76.58%) were practicing scavenging feeding system, 12.80 % farmers followed scavenging along with morning and evening ration and only 10.62 % farmers were practicing stall feeding (Table 5). The feed ingredients used by farmers mainly included kitchen waste, concentrate mixture of broken rice, wheat bran, rice bran, rice husk and Maize. Besides this farmers also fed to their animal the crop like green grasses, cabbage, potato and many conventional grasses, tree leaves either cooked or as raw material which is in consonance with the findings of (Lemke *et al.,* 2006, Kumaresan *et al.,* 2009, Moanaro *et al.,* 2011, Patr *et al.,* 2014). The feeding frequency was twice daily in most of the cases (82.63%), although some farmers adopted feeding schedule for thrice (17.36%) daily. The local made wooden or spare rubber tires were used as feeder and waterier mostly by farmers.

Table 4. Types of low cost housing used for pig farming in Jharkhand

Variables	Categories	Percentage (%)
Housing: Pen type	Single	54.61
	Group	12.32
Floor	Wooden	2.10
	Bamboo	30.72
	Kachcha	60.28
	Concrete	8.90
Wall	Wooden	30.65
	CGI	2.32
	Bamboo	60.25
	Concrete	6.77
Roof	CGI	39.25
	Thatch	60.38

Table 5. Types of feeding systems and feed ingredients used for traditional pig farming

Variables	Categories	Percentage (%)
System of Feeding	Stall fed	10.62
	Scavenging	76.58
	Scavenging + Morning & evening ration	12.80
Concentrate	Maize	36.00
	Broken rice	52.25
	Rice husk	54.95
	Rice bran	25.22
	Wheat bran	35.10
Crop residue	Green grass	26.39
	Cabbage	16.38
	Potato	12.42
	Other	72.38
Kitchen waste	Local made wine extract	76.38
	Household waste material	23.62
Frequency of feeding	Once	0.00
	Twice	82.36
	Thrice	17.36

Health care management

The health care practices in remote rural areas are mostly depending on indigenous technical knowledge (ITKs) and in peri – urban region through veterinary practitioners. Mortality of young piglet was appeared as major concern in traditional pig production system. The main causes for piglets mortality were cold stress (63.32%) and piglet diarrhoea (46.38%), crushing by the mother (26.25%, services in the region . however, the commonly occurring diseases affecting the grower and adults pigs were diarrhoea (46.38 %), swine fever (63.25%), endoparasites (48.62%), mange (53.35%) and respiratory problem (22.48%). The response of the farmers towards the health condition of the pigs indicates that the farmers do not vaccinate there pigs and maximum of themselves (60.28%), by using medicine or locally available treatment for the pigs such as using some plants for deworming , using fish meal with the feed when the animals is not eating and just 5.32% of the farmer called on veterinary doctor for treatment. Our observation is similar finding with previous finding of Lemke *et al.* (2006). The sick animals were often slaughtered for home consumptions or sell in road side market. The animals which have died due to disease people used to bury (90.99%) or thrown in forest or ditches.

Table 6. Health care practices performed by the small holder pig farmers in Jharkhand

Variables	Categories	Percentage (%)
Causes of piglet mortality	Farrowing	19.64
	Cold stress	63.32
	Large Litter	6.38
	Crushing	26.25
	Diarrhoea	46.38
Major diseases noticed	Swine fever	63.25
	FMD	12.42
	Mange	53.35
	Endoparasites	48.62
	Diarrhoea	62.36
	Respiratory problems	22.48
	Anaemia	14.26
Disease occurrence	Reported to vety. Doctor	5.32
	Treated by themselves	60.28
	Indigenous method	34.40
Disposal of animal	Buried	90.99
	Thrown	7.21
	Consumed	1.8

Marketing

There is no proper market linkage exists in rural areas. The livestock produce at rural areas are mostly consumed at locally. The survey result revealed that the piglets were sold at 2-3 months aged to the farmers directly or to the local traders at Rs. 2500 – 3500 (89.32%). The castrated males fetched more price then the female at same age. The adult animals were sold at Rs. 90 to 160/kg. depending on remoteness of the locality (Table 7). Farmers used scientific method for weighing after slaughtering the animal in cases (62.38%), indigenous method for weighing (20.63%) and by visual observation (16.98%).

Table 7. Market status of Piglet and pork in Jharkhand

Variables	Categories	Percentage (%)
Selling price of live animal		
Piglet (Rs)	2,000 – 25,00	89.32
	26,00 – 28,00	6.25
	3,000 – 4,000	4.42
Adult (Rs./kg.)	90 – 100	36.32
	110 – 120	24.14
	130 – 140	20.36
	150 – 160	19.18
Method of weighing	Scientific	62.38
	Indigenous	20.63
	Visual	16.98

Constraints in pig farming

The pig farming face multiple constraints while transforming zero- input small scale backyard farming to medium scale commercial pig farming. The major constraints included high cost of concentrate feed (90.28%), non-availability of medicine vaccine and veterinary health care (86.67%), high cost of initial investment in housing and piglets procurements (73.56%), frequent disease outbreak and mortality of piglets and adult stock (48.89%) lack of availability of

good breeding boar(49.27%), availability of market linkage (54.46%).

Possible solution in improvement of pig farming

From the study it is shown that there is huge potential to augment the productivity of small holder pig farming and concrete bridge the huge gap in production and demand of pork in Jharkhand. Scientific intervention in operational techniques through proper capacity building programme with the help from Government, NGOs the problem of the farmers can be minimised. Thus the pig rearing enterprises can be open in small scale at village level which can fulfil the protein supply of the state. The major steps can be taken as:

1) Market linkage for inputs and pig produce.
2) Extension of health care services.
3) Making availability of quality pig germplasm.
4) Making availability of quality feed ingredients.
5) Insure availability to improved crossbred piglets at village level.

CONCLUSION

On the basis of results it can be concluded that the pig rearing agricultural practices is still solely depend on small scale production system. The production system is traditional with low to minimum input involvement and remunerative. Considering the demand of pork in the area, immense opportunities prevailed in improvement of productivity through adopting scientific intervention with routine management and health care services with better vaccination procedures. Entrepreneurship development in major sectors like feed, formulation and supply chain, establishing pig breeding centres, artificial insemination facilities, mobile vaccination services, registered pork processing and use of pork by-products could make the enterprise a profitable one and generate employment opportunities for farmers and youth engaged in this animal husbandry sector to check the migration from villages.

ACKNOWLEDGEMENTS

The authors express gratitude to Dr. Ravi Shanker, Head, KVK, Godda, Jharkhand and ZPM, GVT-East, Ranchi for their help and guidance during the tenure of this work.

How to cite this article?
Satish Kumar, Ritesh Dube and Neeraj. 2017. Constraints and prospects of traditional pig husbandry for tribal livelihood in Jharkhand. *Innovative Farming*, **2**(2): 101-107.

REFERENCES

Epprecht, M. 2005. Geographic Dimensions of Livestock Holdings in Vietnam. Spatial relationships among poverty, infrastructure and the environment. PPLPI Working Paper, Vol. 24. FAO, Rome, Italy.

Kumar, S., N. Prasad, S. Thakur and S.K. Singh. 2008. Effect of higher levels of zinc on utilization and mineral balance in indigenous pigs. *Animal Nutrition and Feed Technology*, **8**: 285-288.

Kumaresan, A., K.M. Bujarbaruah, K.A. Pathak, A. Das and R.K. Bardoloi. 2009. Integrated resource-griven pig production systems in a mountainous area of North east India: production practices and pig performance. *Tropical Animal Health and production*, **41**: 1187-1196.

Lanada, E.B., J.A. Lee, S.J. More, S. Basito and A. Taveros. 2005. A longitudinal study of sows and boars raised by smallholder farmers in the Philippines. *Preventive Veterinary Medicine,* **70**: 95-113.

Lemke, U., B. Kaufmann, L.T. Thuy, K. Emrich and A. Valle Zarate. 2006. Evaluation of smallholder pig production system in North Vietnam. *Agricultural Systems***, 96**: 207-223.

Moanaro, E. Ngullie, I. Walling, M. Krose and B.P. Bhatt. 2011. Traditional Animal Husbandary Practices in Tribal States of Eastern Himalaya, India: A Case Study. *Indian Journal of Animal Nutrition,* **28**: 23-28.

Mpofu, I. and S.M.M. Makuza. 2003. Pig Production Science and Technology, 1st edition, Ed A. Shonhiwa, *Upfront Publishing*, UK.

Patr, M.K., Sonuwara Begum and Bidyut C. Deka. 2014. Problems and Prospects of Traditional Pig farming for Tribal Livelihood in Nagaland. *Indian Research Journal of Extension Education,***14**: 4.

Petrus, N.P., I. Mpofu, B.M. Schneider and M. Nepembe. 2011. The Constraints and potentials of pig production among communal farners in Etayi Constituency of Namibia. *Livestock Research for Rural Development,* **23**: 159.