



Health Related Management Practices at Pig Farms of North East India

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ABSTRACT

A survey was been conducted among the pig farmers in rural areas of all North East hill states of India about the management practices followed for the better income from swine farming. Parameters studied are mainly managemental practices like housing system, feed supplementation, deworming, vaccination and treatment strategies. As per the present study findings, the intensive housing system was followed by 56.22% of farms, 73.09% of animals were supplemented with nutritional supplements with either iron, minerals and vitamins or both. Deworming and vaccination practices were followed in 52.61% and 54.22% of the animals, respectively. About 23.69% of the total animals were treated with antibiotics at one or the other time. The findings of the present study stresses the need of improvement in the health related managemental practices which can play a vital role in controlling the disease outbreaks and can improve the economic status of small scale pig farmers.

KEYWORD

North East, Management, Swine, Deworming, Vaccination

INTRODUCTION

Swine is considered as one among the best meat-producing animals in the world. The biological advantages are high prolificacy, efficient mothering ability, faster growth rate, higher feed conversion efficiency, shorter generation interval and higher dressing percentage. 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. About 50% of the country's pork is consumed in the NEH region itself by the way of own production as well as procurement of live pigs from other parts of the country (Haldar *et al.*, 2017). Pig population contributed by the North Eastern hill states are Manipur (2.69%), Mizoram (2.38%), Meghalaya (5.27%), Nagaland (4.89%), Tripura (3.52%) and Sikkim (0.29%) (Anonymous, 2012).

Pork production in India is estimated at 464 thousand metric tons in 2014-15 (April-March) (GOI), which contributes approximately 8 percent of the country's animal protein sources. 5.5% share of meat production during 2015-2016 in India is by pork (Anonymous, 2016-2017). Pig farming is one of the main income avenues in NEH states which help in uplifting the rural economy. The implication of the family workforce into pig breeding can contribute positively to a reduction in production cost and improve livelihood and hence shows the importance of this activity as a source of family income. In addition to providing protein for human consumption, pigs are often one of the main sources of income in rural areas and provide manure for cropping (Kambashi *et al.*, 2014).

The present survey was undertaken with the objectives of understanding the common management practices followed by pig farms and health practices including supplementation followed in farms of NEH states.

MATERIALS AND METHODS

The survey was conducted with the help of a questionnaire and as a part of collecting serum samples for the sero-prevalence study of Porcine Circovirus2 (PCV2) in all NEH states during the period from 15/11/2017 to 15/05/2018. Samples and details were collected by following simple random sampling technique from 67 pigs from Mizoram, 66 from Manipur, 15 from Arunachal Pradesh, 12 from Meghalaya, 50 from Sikkim, 25 from Nagaland and 14 from Tripura. The randomly selected farms were visited and each response was recorded. Recorded information was tabulated, statistical analysis was done as per the standard method (SPSS, 2011) and results were interpreted.

RESULTS AND DISCUSSION

A total of 249 animals were surveyed by simple random sampling method and information was collected. Majority of the farmers in NEH are following small scale farming that involves the production of pigs on a small-piece of land without expensive technologies and is usually characterized by intensive self labour. In NEH region, pig farming constitutes the livelihood of rural poor belonging to the lowest socio-economic strata. Certain socio-economic characteristics of the farmers were found to be significantly related to improvement in livelihood because of rearing pigs and farmers felt that there was relatively large degree of improvement

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of their livelihood in terms of education and exposure, food and nutrition and health and sanitation (Shadap *et al.*, 2017).

Management system

Out of the 249 animals studied, 140 (56.22%), 93 (37.34%) and 16 (6.43%) animals were reared under intensive system, semi intensive system and extensive system, respectively (Table 1). Intensive system offers more protection to the pigs, greater control over pig intake, assessment and monitoring is easier and there will be less destruction of environment. But reciprocal aggression and fighting were significantly higher in intensive system of rearing (Velazco *et al.*, 2013). Total confinement can reduce the disease occurrence (Muhanguzi *et al.*, 2012). Ironkwe and Amefule (2008) reported that the number of weaned piglet/sow/year was found to be highest for intensive followed by semi-intensive and extensive rearing methods. Temple *et al.* (2011) observed no differences between extensive and intensive reared Iberian pigs in the expression of behaviors, such as exploratory behavior and human-animal relationship but high occurrences of negative social behaviors recorded in intensive system which are the indicators of poor welfare. Zoonotic potential of extensive system of rearing in relation with transmission of *Taenia solium* has been observed by Krecek *et al.* (2012) where they found 57% of pigs in free range system were infected.

Table 1: Management system

Management system	No.	%
Intensive system	140	56.32
Semi intensive system	93	37.34
Extensive system	16	06.43
Total	249	100

Supplementation of Iron, Minerals and Vitamins

Supplementation of both iron and minerals and vitamins were given to 41.77% of animals. But iron (Fe) alone was given to only 3.21% of animals and 26.91% of the animals were not given any supplementation. In total, 73.09% of animals were supplemented with iron, minerals and vitamins or both (Table 2). In order to prevent pre-weaning losses and support piglet health and weight performance, iron supplementation should be administered to piglets. Novais *et al.* (2016) reported that the piglets that did not receive the injectable iron dextran showed the poorest performance and hematological parameters during the pre-and post-weaning phases. Lipinski *et al.* (2010) opined that the most severe consequence of iron deficiency is Iron deficiency anaemia (IDA) which is considered as the most common nutritional deficiency worldwide.

Feed supplements in the form of commercially available mineral mixture were given by 28.11% of farmers. Feed supplements or additives are aimed at (1) enhancing the pig's immune response, (2) reducing pathogen load in the pig's gut, (3) stimulate establishment of beneficial gut microbes, and (4) stimulate digestive function. These additives all have the potential to improve pig productivity (Lange *et al.*, 2010). Wu (2013) reported that the dietary supplementation with several amino acids like arginine, glutamine, glutamate, leucine and proline modulates gene expression, enhances growth of small intestine and skeletal muscle and reduces excessive body fat.

Table 2: Supplementation of minerals and Vitamins

Supplementation	Animals	%
Iron (Fe)	8	3.21
Minerals and Vitamins	70	28.11
Both Iron and Minerals and Vitamins	104	41.77
Total of 1, 2 & 3	182	73.09
No supplementation	67	26.91
Total	249	

Deworming, Vaccination and Treatment practices

Deworming practice was followed in 52.61% of animals. Vaccination practice against most common diseases like classical swine fever (CSF) and foot and mouth disease (FMD) was followed in 54.22% of animals. It was recorded that 23.69% of animals were treated with antibiotic one or the other time with or without prescription (Fig. 3). All organized farms from where samples were collected are practicing deworming and vaccination regularly. In a study conducted by Kagira *et al.* (2010), it is observed that 55% of farmers are considering worm infestation as an important disease. Dione *et al.* (2014) in a study related to husbandry practices in pig farms of Uganda reported that the main constraints identified by farmers include both endoparasites and ectoparasites which lead to reduced growth rate which may impair the market value of pigs. Further, they have reported that 93% of farmers were practicing deworming practice. In the present study 54.22% of the animals were vaccinated against CSF. The farmers of this region are aware of CSF as it causes havoc in swine farming with its high morbidity and mortality rates. Swine fever is rampant in all parts of NEH states as reported by different studies. Barman *et al.* (2016) reported that CSF is endemic in wild hog in Assam and might represent a permanent virus reservoir that poses a constant threat to domestic pigs. Another study from Mizoram state revealed that CSF causes highest mortality in young animals compare to the adult animals (Barman *et al.*, 2010). The present study revealed that about 23.69% of animals were treated with antibiotic one or the other time with or without prescription. Antibiotics are used in pigs in three main ways *viz.* as growth promoters, as prophylactic or metaphylactic treatment to prevent disease and for therapeutic purposes to treat disease. An extensive range of antibiotics is used therapeutically in pigs. Generally pigs are dosed individually either orally or by injection. Therapeutic use generally requires veterinary prescriptions

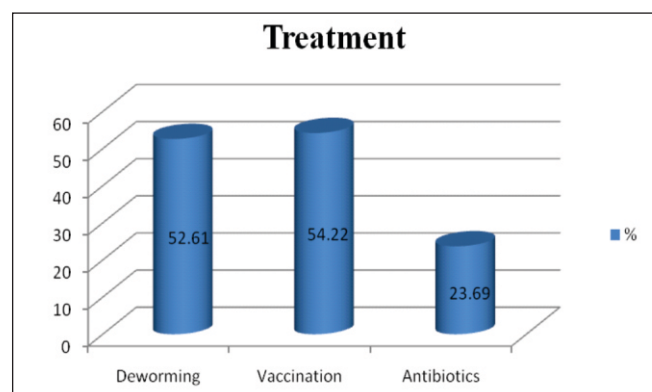


Fig. 3: Deworming, Vaccination and Treatment

where supply of antibiotics is regulated. A systematic review has concluded that oral use of antibiotics in animals increases the risk of antibiotic resistant *Escherichia coli* in treated pigs and by extension the risk of transfer of this resistance to humans (Barton, 2014). Antimicrobial resistance has emerged in zoonotic enteropathogens and bacterial pathogens of animals.

Supplementation, Deworming and Vaccination practices

If we combine all three segments of the study parameters, we can observe that only 35 animals (14.06%) were vaccinated, supplemented with iron and minerals and vitamins and also vaccinated. Twenty two animals (8.84%) were not practicing any health related managerial practices. These two groups show the statistical significance at 10% level (Table 4). Despite many advantages in pig farming, the productivity has been decreasing over the years. The occurrence of diseases and poor herd-health management practices pose significant

Table 4: Deworming, Supplementation, Vaccination practices

Practices	Animals	%
Only Dewormed animals	23	9.23
Only supplementation of Iron, Minerals and Vitamins	36	14.46
Only Vaccination given	60	24.1
Dewormed and supplemented with Fe, mineral & Vitamin	33	13.25
Dewormed and supplemented with Fe, mineral & Vitamin & vaccinated	35	14.06
Dewormed and vaccinated	40	16.06
No vaccination, deworming and supplementation	22	8.84
Total	249	

$\chi^2_{57} = 3.3481$. Significant at 10% level ($p < 0.10$)

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challenge to the efficient management and profitability of pig production (Chah et al., 2016). In general, the infection level of parasites and pathogens, the severity of infections, and the effects of infections on production and animal welfare depend on management practices. Emmanuel et al. (2015) reported that the management system imposes a major influence on performance and profitability of pig farming.

CONCLUSION

Economically weak tribal people of NEH states depend to a great extent on small scale pig farming for their livelihood. The present study emphasizes the need of improved scientific and managerial practices in the region. There is a need for developing effective management strategies to facilitate a high level of animal health and food safety in sustainable pig production.

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DECLARATION

This research work is having approval of Institutional Animal Ethics Committee.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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