



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2017; 5(5): 1437-1440

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Received: 04-07-2017

Accepted: 05-08-2017

K Sangli Vikram Kumar

M.V.Sc., Scholar, Department of
Animal Genetics and Breeding,
Madras Veterinary College,
Chennai, India

D Balasubramanyam

Professor and Section Head,
Pig Breeding Unit, Post-
Graduate Research Institute in
Animal Sciences, Kattupakkam,
India

SN Sivaselvam

Professor and Head, Department
of Animal Genetics and
Breeding, Madras Veterinary
College, Chennai, India

P Tensingh Gnanaraj

Professor and Head,
Instructional Livestock Farm
Complex, Madhavaram Milk
Colony, Chennai, India

Phenotypic attributes of indigenous pigs in Tamil Nadu

K Sangli Vikram Kumar, D Balasubramanyam, SN Sivaselvam and P Tensingh Gnanaraj

Abstract

The present study was carried out in different districts of Tamil Nadu to evaluate the phenotypic attributes of indigenous pigs for the first time ever. A total of 1059 indigenous pigs were selected for the study. Field level survey on phenotypic of indigenous pigs was carried out using a pre-framed questionnaire. The results revealed that the predominant coat colour was black. Animals with complete black without pigmentation (96.14%), black with white (2.42%) and black with brown (1.73%) was noticed. Legs were white below the hock joint. Head was straight (94.24 %) and convex (5.76 %). The ears were leaf like drooping (51.56 %) with downward orientation and straight (48.44 %). Almost all pigs had pendulous tail with the tuft of hairs in the tip of the tail (100 %). The pigs are wild in nature and look, and small in size. Body shape was found to be stocky (51.74%) and angular (48.26 %). Belly type was flat (93.57 %) and pot (6.33 %). Top line was straight back (56.94 %) and arched back (43.06 %). Hoof placement was full in all the animals surveyed. In some animals wattles are seen below the jaw. The indigenous pigs were reared predominantly under scavenging management systems with occasional tethering, as majority of the farmers are from weaker sections of the society. The study are very much useful to characterize indigenous pigs of Tamil Nadu state and also in the selection of breeding stock for future parents.

Keywords: Phenotypic attributes, indigenous pigs, Tamil Nadu

1. Introduction

Pig rearing becomes one of the most profitable occupations of people of Tamil Nadu and especially among poor and weaker sections of the society [6]. It helps in improving the socio-economic status and it acts as a safeguarding business among socially weaker section of the society [11]. Indigenous pigs have marked reproductive performance and production potential. Indigenous pigs have high fecundity, high feed conversion efficiency, early maturity, short generation interval, highly disease resistant and relatively small space requirement. The pigs are reared predominantly under scavenging management systems with occasional tethering [8]. Indigenous pigs in India show different phenotype and morphology. There has been no thorough investigation carried out to characterize or to evaluate the performance of indigenous pig in spite of the fact that they continue to thrive under poor management in a harsh climate [1, 12]. There is no planned breeding program for indigenous pigs and as a result the native pig population is decreasing gradually, but despite decreasing trends in populations these native types still represent a valuable component of local genetic resources [12]. Literatures also revealed that there is no information on the phenotypic characteristics of indigenous pig of Tamil Nadu. The documentation of phenotypic, morphometric, genotypic and reproductive parameters of such indigenous pigs is useful in the selection of breeding stock for future parents. Hence, keeping in view of the above facts, present study was attempted to characterize the Indigenous pigs of Tamil Nadu, phenotypically.

2. Materials and Methods

2.1 Study area

The study was carried out as a field level survey and investigation through direct observation of phenotypic traits of indigenous pigs in the different districts of Tamil Nadu namely Thiruvannamalai, Villupuram, Vellore, Kancheepuram and Thiruvallur to evaluate the phenotypic attributes of indigenous pigs during the period from September 2016 to May 2017. A total of 1059 Indigenous pigs including piglets, grower and adults were utilized in the study.

Correspondence

K Sangli Vikram Kumar

M.V.Sc., Scholar, Department of
Animal Genetics and Breeding,
Madras Veterinary College,
Chennai, India

Field level investigation on phenotypic traits of these native pigs was carried out using a pre-framed questionnaire. The phenotypic traits of Indigenous pigs like coat color and skin pigmentation, head shape and orientation, ear shape and orientation, tail shape and orientation, body shape, belly type, top line, hoof placement and presence of wattles were observed and recorded by visual observation.

2.2 Description of Traits

The pig descriptors were noted as per the Food and Agriculture Organization and the guidelines given by the National Bureau of Animal Genetic Resources, Karnal, Haryana.

2.2.1 Descriptive traits

The descriptive traits studied were coat colour and pigmentation, head shape and orientation, ear shape and orientation, tail shape and orientation, belly type, top line, body shape, hoof placement and presence of wattles and was recorded by visual observation.

i.	Coat colour and pigmentation	-	Black colour or black with pigmentation (white or brown).
ii.	Head shape and orientation	-	Convex or straight shaped head
iii.	Ear shape and orientation	-	Upward or horizontal ear direction and erect or dropping ear orientation
iv.	Tail shape and orientation	-	Pendulous or curled tail
v.	Belly type	-	Flat or pot belly
vi.	Top line	-	Straight back or Arched back
vii.	Body shape	-	Angular or stocky body
viii.	Hoof placement	-	Partial or full placement of hoof to the ground
ix.	Presence of wattles	-	Presence or absence of wattles below the jaw

2.3 Statistical Analysis

The data pertaining to phenotypic traits were analysed using MS Excel software to obtain their descriptive statistics.

3. Results

A total of 1059 pigs were recorded for the following descriptive traits and the observations are presented in Table 4.1.

The coat color of indigenous pigs of Tamil Nadu was black with skin pigmentation of complete black (84.23%), black with white (14.83%) and black with brown (0.94%). The shape of the head was straight in most of the indigenous pigs (94.24 %) and the others had convex shape (5.76 %). The present study showed that the indigenous pigs are having straight ears (48.44%) and leaf like droopy ears (51.56%). The ear orientation or direction of the indigenous pigs was erect pointing backwards towards the tail (32.30 %), horizontal on either sides (16.14 %) or downward drooping ears (51.55%). The erect ears showed either upward or horizontal orientation. Body shape of indigenous pigs was angular (Fig. 3) and stocky (Fig. 4) which were 48.26 % and 51.74 %, respectively. In which those which had droopy ears fell into the stocky body shape while the erect ears fell into angular body shape category. The indigenous pigs were having flat (Fig 5) (93.57 %) and pot (Fig 6) (6.33 %) shaped bellies. The present study showed that the Top line of indigenous pigs was straight back and arched back which were 56.94 % and 43.06 %, respectively. The indigenous pigs were having long and pendulous tail (100 %) with of a tuft of

hair at the tip of tail. Hoof placement of indigenous pigs was full in all animals studied. Wattles were not commonly found (96.98 %) and it is found only in minimal population (3.02 %).

The present study revealed morphologically two distinct genetic groups in indigenous pigs, (1) Genetic group with erect ears (Fig 1) and (2) Genetic group with droopy ears (Fig 2.)



Fig 1: Indigenous pig with erect ears



Fig 2: Indigenous pig with droopy ears



Fig 3: Indigenous pig with angular body shape



Fig 4: Indigenous pig with stocky body shape



Fig 5: Indigenous pig with flat belly



Fig 6: Indigenous pig with pot belly

Table 1: Proportions of descriptive traits

Parameters	Characteristics	Number of animals (%)
Coat colour and pigmentation	Black	892 (84.23)
	Black with white	157 (14.83)
	Black with brown	10 (0.94)
Head shape and orientation	Straight	998 (94.24)
	Convex	61 (5.76)
Ear shape and Orientation	Erect	513 (48.44)
	Droopy	546 (51.56)
Body shape	Angular	512 (48.26)
	Stocky	547 (51.74)
Belly type	Flat	491 (93.57)
	Pot	68 (6.33)
Top line	Straight back	603 (56.94)
	Arched back	456 (43.06)
Tail	Straight / Pendulous	1059 (100)
Hoof placement	Full	1059 (100)
Wattles	Present	32 (3.02)
	Absent	1027 (96.98)

4. Discussion

The present study showed that the coat color of indigenous pigs of Tamil Nadu was complete black, black with white pigmentation or black with brown pigmentation which was in agreement with the findings of Yaetsu *et al.* [13] and Ritchil *et al.* [9] in indigenous pigs of Bangladesh, Dandapat *et al.* [2] in Mali pigs of Tripura, Subalini *et al.* [12] in Sri Lankan village pigs, Sahoo *et al.* [11] and Zaman *et al.* [14] in Ghungroo pigs of West Bengal, Khargharia *et al.* [3] in Doom pigs of Assam, and Prasanta Boro *et al.* [6] in Bareilly *desi* pigs. However, Mbaga *et al.* [4] reported that the coat color varied from white to grey, with white as the predominant coat colour in Tanzanian indigenous pigs. The head shape was straight in indigenous pigs of Tamil Nadu which concurred with the findings of Yaetsu *et al.* [13] and Ritchil *et al.* [9] in Bangladesh indigenous pigs, Dandapat *et al.* [2] in Mali pigs of Tripura, Subalini *et al.* [12] in Sri Lankan village pigs, and Prasanta

Boro *et al.* [6] in Bareilly *desi* pigs. Ear shape was erect or droopy which was in agreement with the findings of Mbaga *et al.* [4] in Tanzanian local pigs. However, lower incidence for droopy ears was reported by Subalini *et al.* [12] in Sri Lankan village pigs, Prasanta Boro *et al.* [6] in Bareilly *desi* pigs, Dandapat *et al.* [2] in Mali pigs of Tripura and Yaetsu *et al.* [13] and Ritchill *et al.* [8] in indigenous pigs of Bangladesh. Tail was long, straight and pendulous with the tuft of hair at the tip which was in agreement with the findings of Yaetsu *et al.* [13] in indigenous pigs of Bangladesh and Dandapat *et al.* [2] in Mali pigs of Tripura. However, curled tail was also reported by Mbaga *et al.* [4] in Tanzanian local pigs, Subalini *et al.* [12] in Sri Lankan village pigs, Ritchil *et al.* [9] in Bangladesh indigenous pigs and Prasanta Boro *et al.* [6] in Bareilly *desi* pigs. Top line was straight or arched back which concurred with the findings of Sahoo *et al.* [11] in Ghungroo pig. But, concave back was reported by Yaetsu *et al.* [13] in Bangladesh pigs. The belly of indigenous pigs of Tamil Nadu were flat or potbellied. But Yaetsu *et al.* [13] and Sahoo *et al.* [11] reported pendulous belly in Bangladesh and Ghungroo pigs respectively. Body shape was found to be angular or stocky in the present study which was similar to the findings of Subalini *et al.* [12] in village pigs of Sri Lanka. However, angular body type was found to be higher in the findings of Ritchil *et al.* [9] and Prasanta Boro *et al.* [6] in Bangladesh and Bareilly *desi* pigs, respectively. Dandapat *et al.* [2] reported compact body type in Mali pigs of Tripura.

5. Conclusion

Phenotypically, two distinct genetic groups were identified in the indigenous pigs of Tamil Nadu. Molecular characterization studies would help to distinguish these two distinct populations. The production potential of indigenous pigs may be improved through selective breeding and scientific management practices for providing food and nutritional security to the weaker sections of the society. Performance assessment and genetic classification of these indigenous pigs to improve its variety along with the production is essential to facilitate the livelihood of the indigenous pig farmers.

6. Acknowledgement

The author thanks all the indigenous pig farmers, Veterinary Assistant Surgeons of Animal Husbandry department of Tamil Nadu for their support during the study and also Dr. R. Ilavarasi, Dr. G. Manju, Junior Research Fellows at Pig Breeding Unit of PGRIAS, for extending their support during the study.

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