

**PHENOTYPIC AND GENETIC CHARACTERIZATION OF  
WILD BOAR AND VILLAGE PIGS IN SRI LANKA**

by

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## ABSTRACT

Identification of the genetic diversity of wild boar and village pigs in Sri Lanka is vital for generating information to establish genetic improvement and conservation program as they are the only remaining putative alleles with economic value. In this context, the formulated study was comprised a field survey followed by laboratory investigations at molecular level. Field investigation was carried out at different locations in Sri Lanka; Puttalam, Kurunegala, Kalutara and Chilaw.

The result of the field investigation showed that most of the village pig community was Christian dominated. Thirty four percent of total income generation by village pig rearing comes from animal sales. The predominant management system of village pig was extensive system (77 percent) with moderate rearing condition and occasionally tethering and rearing in simple huts or concrete pens. The study showed that scavenging was the common method of feeding under extensive management system, especially in Kalutara area.

Swill feeding was the most common and popular among village pig farmers (60 percent). In the survey areas veterinary and extension services for village pig farmers are moderately available (on average of 44 percent). Marketing facilities were well organized in the survey area. The majority of the farmers (47 percent) keeping 1-5 village pigs in their herd with multiple category. The reasons for keeping village pigs are diverse; the predominant reasons were easy management, low disease incidences and low cost enterprise.

According to the present study, the common coat color of village pigs was black with long straight face. Most of the village pigs in surveyed areas had skin pigmentation (85 percent). Majority of the pigs had medium sized erect ears (77 percent). Eighty percent of the village pigs had stocky body. Pigs with 7 pairs of teats were observed to be most common (68 percent) followed by those with 6 pairs of teats.

The overall mean weights for the adult village pigs were 59.49 kg and 58.92 kg for male and female respectively. The girth size, height at withers, body length, length of head and width of head were comparatively higher in stocky type pigs than in animals with angular body shape. Eighty eight percent of the animals with stocky body shape had concave shape of head, straight tail and upward erected ears.

The average litter size was  $6.44 \pm 1.19$  and it showed variation in different locations. The average age at first farrowing was 292 days. The gestation length was from  $100 \pm 18$  days. There was no significant difference in age at first farrowing and gestation period among surveyed areas except farrowing interval ( $P > 0.05$ ).

In wild boar the qualitative traits such as body shape, head shape and orientation, ear shape and orientation, coat characteristics and tail thickness were very similar in different locations in Sri Lanka. Coat color was light brown without skin pigmentation. Wild boars had concave, long straight head with horizontally erected medium sized ears. All the wild boars in the study had stocky body with straight and narrow tail. Female had 5 teats. The weight of adult female and male was 75 kg and 74 kg respectively.

To study the genetic diversity and for molecular characterization, village pig, wild boar and exotic pig breeds namely Landrace, Large white and Duroc were genotyped for fifteen microsatellite markers recommended by International Society for Animal Genetics (ISAG) and Food and Agriculture Organization (FAO). Allele numbers, effective allele numbers ( $N_e$ ), allele frequencies, observed and expected heterozygosities were calculated to determine the genetic variation in village pigs and wild boar populations. The observed heterozygosities were in the range of 0.72 in village pigs to 0.34 in exotic pigs.

Total of 138 alleles were found at the 15 loci across five populations. The allele 242 in the locus S0090 was only found in both wild boar and village pigs. Allele 206 and 218 in the locus S0218 and allele 220 at locus S0228 were only found in exotic pigs. The mean effective number of alleles for 15 loci in wild boar, village pigs and exotic types were  $2 \pm 0.38$ ,  $2 \pm 0.53$  and  $1.73 \pm 0.59$  respectively. The observed heterozygosity value was higher in village pigs followed by wild boar ( $0.64 \pm 0.02$ ) than other pig populations used in this study ( $0.72 \pm 0.02$ ).

In the phylogenetic tree, high distances were observed separating exotic pig populations from the other two populations of village pigs and wild boar. The village pigs and wild boar clustered separately. Based on these findings it is proposed that village pigs and wild boars may be recognized as distinct population for breeding or conservation purpose. The village pigs and wild boar included in this study clearly diverged from each other. However, village pig from Kalutara was showing similarities to wild boar.

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