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Effect of non genetic factors on litter traits of desi pigs

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Abstract

The assessment of productive and reproductive performances of indigenous or so called *desi* pigs in different parts of India is limited. Hence, the present study was framed on reproduction or sow traits of *desi* pigs under an organized farm condition. Data's of litter size and litter weight of birth and weaning was collected from organized farm and utilized for statistical analysis. The overall mean of litter size at birth, litter size at weaning, litter weight at birth and litter weight at weaning were 5.597 ± 1.08 , 5.557 ± 0.59 , 4.363 ± 0.712 and 26.17 ± 3.162 respectively. Significant effect was encountered on period of birth and parity and no significant effect was noticed on season of birth in sow traits.

Keywords: Desi pig, litter traits, non genetic factors

Introduction

Pig production is an important secondary occupation for livelihood and nutritional security of our people. The main purpose of pig farming all over the world is the pork production than production of skin, bristle, manure etc. Pig farming has great potential and gaining popularity among farmers because of its faster growth rate, low investment, feed conversion ratio and minimum maintenance. In India, pig farming is highly unorganized and 75 per cent of the pig population is reared by traditional small holders. Compared to exotic breeds of pig, native black pig is mostly reared under free ranging system by tribal peoples.

Subalini *et al.* (2010) [17] stated that, decreasing trend of *desi* pig population is mainly due to lack of knowledge in scientific farming, organized breeding programme and difficulties in marketing of black pork than white pork. Even though 13 indigenous pig breeds recognised by NBAGR, still native pig breeds are in the stage of extinction and need immediate conservation programme to save the indigenous pig genome from extinction (De *et al.*, 2014; Hmingthanzuala *et al.*, 2016) [3, 6]. Borkotoky *et al.* (2014) [1] reported, availability of information on performance of indigenous pigs under different conditions is less and it's not sufficient to frame the breeding programme to achieve the genetic improvement. Hence, the study was conducted to ascertain the reproduction performance of *desi* pigs in an organized farm condition.

Materials and Methods

The data's on reproduction traits was collected from Pig Breeding Unit, Post Graduate Research Institute in Animal Sciences, Kattupakkam, Chengalpattu, Tamil Nadu. All the *desi* pigs are maintained under intensive system of rearing with standard feeding, housing, breeding and other management practices. In this study, litter traits such as litter size at birth (LSB), litter size at weaning (LSW), litter weight at birth (LWB), litter weight at weaning (LWW) were recorded and analysed. The data was classified according to period, season and parity. The least squares analysis of variance technique (Harvey, 1990) [5] was carried out to study the effect of period, season and parity on litter traits. The analysis was performed by using SPSS software version 23.

Result and Discussion

The Post Graduate Research Institute in Animal Sciences, Kattupakkam is an only organised farm rearing more than 800 pigs in Tamil Nadu including local *desi* pigs, exotic and crossbred pigs. Even though, population of *desi* pigs are spread all over the state, this is the only organised farm rearing *desi* pigs under scientific farming practices. The least square mean of litter traits are mentioned in table 1. The overall mean of litter size at birth (No's), litter size at weaning (No's), litter weight at birth (Kg) and litter weight at weaning (Kg) were 5.597 ± 1.08 , 5.557 ± 0.59 , 4.363 ± 0.712 and 26.17 ± 3.162 respectively.

Table 1: Least square means for various factors affecting litter traits in *desi* pig

Effect	Litter size at birth	Litter size at weaning	Litter weight at birth	Litter weight at weaning
	Mean±SE	Mean±SE	Mean±SE	Mean±SE
Overall mean	5.597±1.08 (31)	5.557±0.59 (28)	4.363±0.712 (31)	26.17±3.162 (28)
Period of birth	**	**	**	**
2019	4.264±1.414 ^b (8)	4.603±1.37 ^b (5)	2.906±0.93 ^c (8)	15.468±7.33 ^b (5)
2020	8.514±1.092 ^a (10)	7.569±1.021 ^a (10)	7.765±0.719 ^{ab} (10)	44.692±5.464 ^a (10)
2021	6.097±1.092 ^a (4)	6.486±1.021 ^a (4)	4.298±0.719 ^a (4)	32.731±5.464 ^a (4)
2022	3.514±0.726 ^b (9)	3.569±0.679 ^b (9)	2.485±0.478 ^b (9)	11.792±3.632 ^b (9)
Season of birth	NS	NS	**	NS
Summer	3.625±1.089 (8)	4.585±1.022 (8)	1.369±0.716 ^a (8)	20.241±5.468 (8)
South west monsoon	5.75±0.639 (13)	5.543±0.604 (10)	5.114±0.421 ^a (13)	30.067±3.234 (10)
North east monsoon	-	-	-	-
Winter	7.417±1.277 (10)	6.543±1.197 (10)	6.608±0.84 ^a (10)	28.203±6.403 (10)
Parity	*	*	**	NS
1	3.431±0.453 (20)	3.168±0.433 (17)	2.005±0.298 (20)	17.046±2.317 (17)
2	4.431±0.61 (10)	4.501±0.577 (10)	2.97±0.401 (10)	21.083±3.088 (10)
3	8.931±1.742 (1)	9.001±1.631 (1)	8.115±1.146 (1)	40.383±8.728 (1)

SE- Standard error; NS- Not significant; *- Significant; **- Highly significant

Litter size at birth (LSB)

The period of birth had highly significant ($p < 0.01$) and season of birth had no significant effect on litter size at birth. Significantly highest litter size at birth was noticed on third farrowing and period of 2020. Mathew *et al.* (1999) [10] reported low litter size at birth in Kerala *desi* pigs. Contrast to the present findings, lower litter size was recorded in Andaman *desi* pigs and Andaman crossbred pigs by Kundu *et al.* (2020) [8] and Kundu *et al.* (2017) [9]. Gokuldas *et al.* (2015) [4] reported litter size at birth in Ghungroo pigs was significantly higher and it was similar to our findings. Significantly higher litter size at birth (10.02±0.35) in Ghungroo *desi* pigs was revealed by Sahoo *et al.* (2012a) [15]. Comparatively lower litter size at birth of *desi* pigs than the present findings were reported (Nath *et al.*, 2013; Kumaresan *et al.*, 2007) [11, 7]. Lowest litter size born in summer might be due to climatic condition of different season during pregnancy period of sows.

Litter size at weaning (LSW)

Highest litter size at weaning was arrived in the year 2020 and third parity significantly. Overall period and parity had highly significant ($p < 0.01$) and significant effect on litter size at weaning. In India, average litter size at weaning of *desi* pigs range from 2-12 (Boro *et al.*, 2016) [2]. Comparing the findings in this study, higher litter size at weaning was reported in Haryana local pigs and Ghungroo pigs of West Bengal by Rajiv and Pandey, (2000) [14] and Zaman *et al.* (2013) [18] respectively. Prakash *et al.* (2008) [13] reported that the average litter size at weaning in indigenous pig was 6.78±0.11. Nevertheless, in contrast to the present findings wide range of lower litter size at weaning was reported by Nath *et al.* (2013) [11] as 2.79±0.24 in Sikkim local pigs and Mathew *et al.* (1999) [10] in Kerala local pigs. In the present findings, non-significantly lowest weaning litter size was observed in summer season and significantly in first parity.

Litter weight at birth (LWB)

The period, season and parity of birth were found to be highly significant ($p < 0.01$) on litter weight of birth. The overall lowest litter weight was observed in first and second farrowing. Nearer to our litter weight was observed by Sahoo *et al.* (2012b) [16] in Niang-Megha pigs and Kundu *et al.* (2020) [8] in Andaman pigs. Antithetically lowest litter weight on birth was reported in various *desi* pig breeds by Mathew *et*

al. (1999) [10]; Kumaresan *et al.* (2007) [7]; Sahoo *et al.* (2012a) [15] and Nath *et al.* (2013) [11]. Drastically lowest litter weight at birth was noticed in summer than other season.

Litter weight at weaning (LWW)

Highly significant with reference to the period and no significant difference in season and parity on litter weight of weaning was observed in this study. The overall highest and lowest litter weight on weaning was noticed significantly in 2020 and 2022 period respectively. The litter weight at weaning under different weaning system in various *desi* pigs ranged from 15-50 kg. Compared to our results, higher litter weight on weaning was reported by Kumaresan *et al.* (2007) [7] in Mizoram local pigs and Sahoo *et al.* (2012a) [15] in Ghungroo pigs. Nath *et al.* (2013) [11] and Mathew *et al.* (1999) [10] found lowest litter weaning weight in *desi* pigs. Pandey and Singh, (2010) [12] concluded that the season of birth influence the production and reproduction performance of pigs.

Conclusion

Indigenous pigs serves as a rich source of protein, vitamins, minerals and secondary income source to the rural farmers. This results provides a key database on reproduction traits of our indigenous pigs. Scientific management plays a significant role in the growth and production of pigs. In this study, summer season had low production values and more attention may be needed in management practices on different season. In this context, the production and reproduction attributes are to be given special attention in the selection of breeding stock and as important steps towards conservation programmes in *desi* pigs.

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References

- Borkotoky D, Perumal P, Singh RK. Morphometric attributes of Naga local pigs. *Veterinary Research International*. 2014;2:08-11.
- Boro P, Patel BHM, Naha BC, Sahoo NR, Gaur GK, Dutt

- T, *et al.* Productive and reproductive performances of desi pigs: A review. *Agricultural Reviews*. 2016;37(3):228-233.
3. De AK, Jeyakumar S, Kundu MS, Kundu A, Sunder J, Ramachandran M. Farming practices and genetic characterization of Nicobari pig, an indigenous pig germplasm of Nicobar group of islands, India. *Tropical Animal Health and Production*. 2014;46:655-661.
 4. Gokuldas PP, Tamuli MK, Mohan NH, Barman K, Sahoo NR. A comparative analysis of reproductive performance of different pig breeds under intensive management systems in sub-tropical climate. *Indian Journal of Animal Science*. 2015;85:1042-1045.
 5. Harvey WR. User guide for LSMLMW. Mix model least squares and maximum likelihood computer programme. PC-2 Version Mimeograph, Columbia, Ohio. U.S.A, 1990.
 6. Hmingthanzuala, Das SK, Rahman S, Tolengkomba TC, Saikia P. Impact of SHG on income of pig farmers in Mizoram of North East India. *International Journal of Bio-resource and Stress Management*. 2016;7(3):485-488.
 7. Kumaresan A, Bujarbaruah KM, Pathak KA, Chhetri B, Das SK, Das A, *et al.* Performance of pigs reared under traditional tribal low input production system and chemical composition of nonconventional tropical plants used as pig feed. *Livestock Science*. 2007;107:294-298.
 8. Kundu MS, Perumal P, Ravi SK, Bhattacharya D, Kundu A, Jai Sunder, *et al.* Reproductive and Production Performance of Andaman Local Pig of Andaman and Nicobar Islands, India under Intensive System of Rearing, *International Journal of Bio-resource and Stress Management*. 2020;11(1):020-026. [HTTPS://DOI.ORG/10.23910/IJBSM/2020.11.1.2055a](https://doi.org/10.23910/IJBSM/2020.11.1.2055a).
 9. Kundu MS, Sunder J, Kundu A, De KA, Sujatha T. Reproductive and productive performances of crossbred Andaman local pigs under small holder production system at Bay Islands, India. *Indian Journal of Animal Research*. 2017;51(2):377-381.
 10. Mathew J, Viswanathan TV, Usha AP, Shyam Mohan KM. Production and reproduction traits in *desi* pigs of kerala under farm conditions. *Journal of Veterinary and Animal Sciences*. 1999;30:87-90.
 11. Nath BG, Pathak PK, Ngachan SV, Tripathi AK, Mohanty AK. Characterization of smallholder pig production system: productive and reproductive performances of local and crossbred pigs in Sikkim Himalayan region. *Tropical Animal Health and Production*. 2013;45:1513-1518.
 12. Pandey A, Singh SK. Factors affecting body weight in landrace, *desi* and their half bred pigs. *International Journal of Molecular Biology*, 2010;1(1):21-24.
 13. Prakash MG, Ravi A, Kumari BP, Srinivas RD. Reproductive and Productive Performance of Crossbred Pigs. *Indian Journal of Animal Sci*. 2008;78:1291-1297.
 14. Rajiv J, Pandey UK. Economics of pig rearing in Haryana. *Indian Journal of Animal Science*. 2000;70:1268-1271.
 15. Sahoo NR, Das A, Naskar S, Banik S, Pan S, Tamuli MK. A monograph on Ghungroo pig. A new promise in Indian Piggery. ICAR-NRC pig, Rani; c2012a.
 16. Sahoo NR, Das A, Naskar S, Banik S, Tamuli MK. A monograph on Niang-Megha pig. The nature's gift for food and fibre. ICAR-NRC pig, Rani; c2012b.
 17. Subalini E, Silva GLLP, Demetawewa CMB. Phenotypic Characterization and Production Performance of Village Pigs in Sri Lanka. *Tropical Agricultural Research*. 2010;21(2):198-208.
 18. Zaman G, Chandrashekar M, Ferdoci AM, Laskar S. Molecular Characterization of Ghungroo pig. *International Journal of Animal Biotechnology*. 2013;3:1-4.