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A STUDY OF SEASONAL VARIATIONS ON PRODUCTIVE PERFORMANCE OF CROSS BRED PIGS IN HIGH RANGE REGIONS OF WAYANAD

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ABSTRACT
Livestock farming play an important role in the livelihood of poor farmers in high range region of Wayanad. A study was conducted to assess the productive performance of cross bred pigs and effect of season on parameters like average litter size, number of piglets born live, number of piglets bone dead, average weight of piglets and weaning size were analysed for a period of two years in different seasons namely summer, winter and rainy season. It is found that litter size was more during rainy season and less during winter season. Liveability of piglets was more during the winter season and it was 99.29% and 96.65 %, 78.72 % in rainy and summer season respectively. The mortality rate was higher during summer season. The piglet born during summer and winter season shows higher body weight than rainy season as the litter size was more during the rainy season. It is found that the proper reproductive management of sows prior to winter and summer management of piglets will increases the profit and livelihood of the pig farmers in high range zones of Kerala.

KEY WORDS: Liveability, piglets, litter size, productive performance.

INTRODUCTION

Swine production is a major part of animal husbandry in India. It plays an important role in Indian economy as well. The total pigs contribute around 2.01 % of the total livestock population. The total number of pigs in Kerala is 55782 according to 19th livestock census contributing only 0.54 % to the national pig population. The total pigs in the country decreased by 7.54% over the previous census and the total pigs in the country are 10.29 million numbers in 2012 (19th Livestock census). The productive output of pigs depends on many factors affecting pigs. It is generally accepted that there is a large variation in the production and survivability, mainly caused by farm, environment and sow-related parameters in high range regions of Wayanad. Seasonal variations in productive performance of swine herds are observed. Several factors can be minimized by better management and breeding. Many researchers have studied the relationship between production performance and seasonal variation. In addition to age and parity number, two main categories of factors affecting the productive performance of sows are genetic factors and environmental factors, mainly climatic zone, season and herd management. Bérard *et al*., 2008, did not observe any differences in the pre-weaning growth of low-birth-weight, average-birth-weight, and heavy-birth-weight pigs. The mortality pattern and occurrence of different diseases and disorders may also vary with different genetic groups of pigs (Gupta *et al*., 2001 and Nandakumar *et al*., 2004). Not all the factors associated with mortality can be controlled, but understanding them will assist the farmers and producers in minimizing death loss (Holyoake *et al*., 1995). Mortality pattern in organized swine herd serves as a useful indicator for assessing the status of herd heath and management programme and their efficacy. The first and foremost target of an ideal farm is to reduce the morbidity and mortality rate. Often, there is considerable loss due to the seasonal and routine changes in management, which could be avoided by adopting standard management practices and avoiding unnecessary and abrupt changes in the routine management activities (Mondal *et al*., 2012). Retrospective study on mortality may play a role in forecasting the future occurrence of disease in a particular geographical area (Basumatary *et al*., 2010). In this regard the present retrospective study in an organaized farm is conducted to assess the seasonal variations of the productive performance of cross bred pig in the geographical area.

MATERIALS & METHODS

The retrospective study was carried out at the instructional livestock farm complex of the College of Veterinary And Animal Sciences Pookode situated at 11^0 32'N longitude and $76^0$01'E latitude, at an altitude of 867 M above Mean Sea Level. The production performance of 76 crossbred pigs and its litter were collected for a period of two years from the records maintained in the farm and analysed for average litter size, percent of piglets born live and dead, percent of piglets live at weaning and average weight at weaning in different seasons.

One way analysis of variants with least significant difference test was used for finding out the variation in litter size, birth weight and weaning weight among different seasons. Chi square test for multiple proportion was used for finding out the seasonal difference in the survival rate at the time of birth and also at weaning stage.

RESULTS & DISCUSSION

The average litter size of piglets were 9.88 ±0.63, 9.92 ±0.49 and 8.17 ±0.29 in summer, Rainy and winter season respectively. The average litter size of the piglets born in winter season is significantly lower than average litter size during summer and rainy season ($p<0.05$). The average birth weight of the piglets is 1.23 ±0.60, 1.37 ±0.04 and 1.48 ±0.04 during summer, rainy and winter respectively. There is significant difference between the birth weight of piglets born during winter and summer seasons ($p<0.05$). The average weight at weaning among the piglets born during winter is significantly higher than that of piglets born during summer season ($p<0.05$) and it is 13.68 ±0.41, 12.57 ±0.4 and 14.87 ±0.35 during summer, rainy and winter respectively. There is no significant difference between the percentages of piglets born live was noted in different seasons and it was 84.94 %, 74.31% and 75 % in summer, rainy and winter seasons respectively. Dutta and Rahman (Dutta *et al*., 2006) observed overall pre-weaning mortality 30.62% in an organized swine farm but in our study we observed that the mortality highest in piglets born during summer season (21.28%), lower in piglets born during rainy season (3.35%) and it is below 1% in piglets born during winter season. This shows that there exist significant difference in survivability of piglets born in different seasons ($p<0.01$), it is 78.72%, 96.65% and 99.29 % in piglets born during summer, rainy and winter season, respectively. The litter size is negatively correlated to the average body weight at birth (-0.485, $p< 0.001$) and average body at weaning (-0.451, $p<0.001$), the average weight at birth and weaning are correlated positively ($p<0.01$). The negative correlation indicates that as the litter size increases average birth weight and weaning weight decreases and positive correlation of birth weight and weaning weight indicates that as the birth weight increases the weaning weight also increases. From table 2, litter size is significantly lower in the winter season whereas birth weight and weaning weight is higher in piglets born during winter season. The piglets born during rainy season shows significantly higher litter size but lower birth and weaning weight. These results confirm that season has a significant influence on the productive performance of piglets reared in the tropical high range regions of Kerala. They show significant variations in production performance of piglets like survivability of piglets during pre-weaning period and there by mortality of piglets during same period of growth.

TABLE 1. Survivability status of crossbred piglets at different seasons

Parameters	Summer (February-May)	Rainy (June-October)	Winter (November-January)
Total piglets born	166	362	188
Piglets born live	141 (84.94%)	269 (74.31%)	141 (75%)
Piglets born dead	25 (15.06)	93 (25.69%)	47 (25%)
Live at weaning	111 (78.72%)	260 (96.65%)	140 (99.29%)

TABLE 2. Comparison of litter size, birth weight and weaning weight in different season

Season	Litter size	Birth weight	Weaning weight
Summer	9.88 ± 0.63^{a}	1.37 ± 0.04^{ab}	13.68 ± 0.4^{ab}
Rainy	9.92 ± 0.49^{a}	1.23 ± 0.06^{b}	12.57 ± 0.47^{b}
Winter	8.17 ± 0.29^{b}	1.48 ± 0.04^{a}	14.87 ± 0.36^{a}
F-value	3.922*	6.278**	7.005*
P-value	0.024	0.003	0.002

*** Significant at 0.01 level;* significant at 0.05 level*
Means having same letter as superscript are homogeneous

TABLE 3. Correlation between different parameters

Parameters	Correlation	P value
Litter size Vs Average birth weight	-0.485^{**}	< 0.001
Litter size Vs Average weaning weight	-0.451^{**}	< 0.001
Average birth weight Vs Average weaning weight	0.886^{**}	< 0.001

*** Correlation is significant at the 0.01 level (2-tailed)*

CONCLUSION

From the present study, it is concluded that the production performance of piglets is influenced by the effect of season. Proper nutritional and management interventions during rainy and summer season will reduces the mortality during these seasons and which will give better results on survivability of piglets during rainy and winter season. The good nutritional and managemental practice of sows and piglets will contribute more to the profit of pig farmers in tropical high range regions of Kerala like Wayanad.

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