

Effects of Season, Sex and Period of Farrowing on Growth Performance of Large White Yorkshire Pigs

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ABSTRACT

An attempt was made to establish the effect of season, sex and period of farrowing on growth performance for Large White Yorkshire pigs. The data pertaining to achieve the objectives were collected between 2011 to 2016 at PGRIAS, Kattupakkam, on bodyweights at different ages of pigs with the Male and Female Large White Yorkshire pigs were included in the study. Based on the objective of the study, collected data was grouped into five equal periods (Period I: 2011 to 2012; Period II : 2012-2013; Period III : 2013-2014; Period IV: 2014-2015; Period V:2015-2016). To assess the seasonal fluctuations, (Season I: March –June, Season II: July-October, Season III: November-February) seasonal factors were included in the study. The General Linear models was used in the analysis. The over all least squares mean for birth weight, 56 days weight, 120 days weight, 180 days weight, 240 days weight were 1.401 ± 0.05 kg, 7.749 ± 0.06 kg, 25.244 ± 0.15 kg, 41.546 ± 0.03 kg, 75.847 ± 0.12 kg respectively. The effect of sex was found as significant source of variation from birth to weaning. The period of farrowing and season of farrowing was not found as significant source of variation on the body weights.

Key words: Growth Performance, Large White Yorkshire, Linear model

INTRODUCTION

India has about 11.13 million pigs and swine farming in India contributes about percent of the total meat production³. Large White Yorkshire is the English bacon breed, well adapted to different climatic conditions, large in size, known for its good milking and

mothering ability¹. Thus, a understanding between environmental effects on pigs growth performance would provide better pork production in India and its contribution towards the development of industry as well as the growth traits of the particular breed.

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MATERIAL AND METHODS

Data pertaining to the present study were collected over six years at the Pig breeding unit, Post Graduate Research Institute in Animal Sciences (PGRIAS), Kattupakkam. Information on pedigree, sex, growth performance and disposal weights from the year 2011 – 2016 were utilized for this study. Further the data were classified into five equal time periods (Period I:2011 to 2012; Period II: 2012-2013; Period III:2013-2014; Period IV:2014-2015; PeriodV: 2015-2016). To assess the seasonal fluctuations, (Season I: March –June, Season II: July-October, Season III: November-February) Seasonal factors were included in the study. The data was collected both for male and female Large White Yorkshire pigs.

The description of statistical analyses carried out is presented below. All the analyses were performed using IBM® SPSS® 20.0 for windows®

General Linear Models for growth performance analyses

The following mathematical model was used for the analysis of body weights from birth to 240 days weight

$$Y_{ijkl} = \mu + P_i + C_j + S_k + e_{ijkl}$$

where,

Y_{ijkl} - Body weight of the l^{th} animal of the k^{th} sex born in the j^{th} season of the i^{th} period of farrowing

μ - Over all mean

P_i - Fixed effect of i^{th} period of farrowing

C_j - Fixed effect of j^{th} season of farrowing

S_k - Fixed effect of k^{th} sex born

e_{ijkl} - Residual random error,

RESULTS AND DISCUSSION

The growth performance of large white Yorkshire pigs was shown in table 1 and 2. The over all Mean \pm Standard Error for birth weight was 1.401 \pm 0.05 kg. The mean birth weight (1.381 \pm 0.03) in period 5 (2015-16), followed by period 2 and 3 (1.372 \pm 0.01) and period 1 (1.371 \pm 0.01). period of farrowing was found to have no significant effect on birth weight of Large White Yorkshire pigs. The overall for Mean \pm Standard error weaning (56 days) weight was 7.749 \pm 0.06 kg. The mean 56 days weight (kg) was highest (7.357 \pm 0.07) in period 5 (2015), followed by period 4 (7.349 \pm 0.07), period 3 (7.344 \pm 0.08) , period 1 (7.124 \pm 0.08) and period 2 (7.083 \pm 0.07). period of Farrowing was found to have significant effect on 56 days weight. The over all Mean \pm Standard error for 120 days weight was 25.244 \pm 0.15 kg. The mean 120 days weight was highest 26.274 \pm 0.2426.186 \pm 0.30 in period 4 (2014-15), followed by periods 5 (2426.186 \pm 0.30),3(26.250 \pm 0.22), 2(25.905 \pm 0.22) and 1 (25.604 \pm 0.24). Period of farrowing was found to have non significant effect on weight at 120 days of LWY pigs. The overall Mean \pm Standard error for 180 days weight was 41.546 \pm 0.03 kg. The mean 180 days weight (kg) was highest period 5(43.059 \pm 0.08). Period of Farrowing was found to have non significant effect on 180 days weight. The overall Mean \pm Standard error for 240 days weight was 75.847 \pm 0.12 kg. The mean 240 days weight (kg) was highest period 5(73.692 \pm 0.34). Period of Farrowing was found to have non significant effect on 240 days weight.

Table 1: Means \pm Standard Error of Growth Performance (Weights in Kg)

| Fixed Effect | Birth Weight | Weight at 56 Days | Weight at 120 Days | Weight at 180 Days | Weight at 240 Days |
|---------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Over all Mean | 1.401 \pm 0.05 | 7.749 \pm 0.06 | 25.244 \pm 0.15 | 41.546 \pm 0.03 | 75.847 \pm 0.12 |
| Season | | | | | |
| S1 | 1.365 \pm 0.08 | 7.244 \pm 0.06 | 25.064 \pm 0.19 | 41.026 \pm 0.05 | 73.431 \pm 0.21 |
| S2 | 1.375 \pm 0.07 | 7.211 \pm 0.07 | 25.760 \pm 0.19 | 41.053 \pm 0.04 | 73.377 \pm 0.22 |
| S3 | 1.385 \pm 0.05 | 7.293 \pm 0.06 | 26.307 \pm 0.18 | 41.082 \pm 0.05 | 73.934 \pm 0.20 |
| F value | 0.426 ^{NS} | 0.403 ^{NS} | 2.176 ^{NS} | 0.282 ^{NS} | 0.160 ^{NS} |
| Sex | | | | | |
| Male | 1.379 \pm 0.07 | 7.336 \pm 0.05 | 25.961 \pm 0.15 | 43.064 \pm 0.03 | 73.506 \pm 0.17 |
| Female | 1.297 \pm 0.03 | 7.157 \pm 0.06 | 26.126 \pm 0.15 | 43.048 \pm 0.05 | 73.188 \pm 0.18 |
| F value | 18.396** | 4.634* | 0.573 ^{NS} | 0.138 ^{NS} | 1.577 ^{NS} |

| PERIOD | BIRTH | 56 DAYS | 120 DAYS | 180 DAYS | 240 DAYS |
|---------|---------------------------|---------------|---------------------------|---------------------------|---------------------------|
| P1 | 1.371 ± 0.01 | 7.124± 0.08 | 25.604±0.24 | 43.059±0.07 | 73.492 ± 0.27 |
| P2 | 1.372 ± 0.01 | 7.083± 0.07 | 25.905±0.22 | 43.043±0.06 | 73.315± 0.23 |
| P3 | 1.372 ± 0.01 | 7.344± 0.08 | 26.250±0.22 | 43.005±0.05 | 73.027±0.25 |
| P4 | 1.370 ± 0.01 | 7.349±0.07 | 26.274±0.24 | 43.097±0.07 | 73.129±0.24 |
| P5 | 1.381 ± 0.03 | 7.357±0.07 | 26.186 ±0.30 | 43.059 ±0.08 | 73.692 ±0.34 |
| F value | 0.350^{NS} | 2.572* | 1.412^{NS} | 0.264^{NS} | 0.934^{NS} |

NS- non significant, ** significant at P < 0.01 level, * significant at P < 0.05 level

The effect of sex was found as significant source of variation in birth to weaning. Male piglets were heavier than female piglets. The season of farrowing was not a significant source of variation. The overall Mean ± Standard error of birth weight obtained in this study was in agreement with the earlier reports of 1.40±0.29 kg² and 1.60 kg⁶. The maximum birth weight in males was 1.38 kg and that in females was 1.41⁶. The overall Mean ± Standard error of weight at 56 days were obtained in this study was in agreement with the earlier reports of 7.77 kg⁴. The overall Mean ± Standard error of 120 days weight obtained in this study was in agreement with the earlier reports 21.99 ± 0.62 to 28.57 ± 0.11 kg⁶. The overall Mean ± Standard error of 180 days weight obtained in this study was in agreement with the earlier reports of (42.87 ± 5.23 kg)⁵. The overall Mean ± Standard error of 240 days weight obtained in this study was in agreement with the earlier reports of (72.45 ± 2.15 kg)⁷. The slaughter weight of males and females were 75.79 ± 0.88 and 75.35 ± 2.07 kg, respectively⁸.

CONCLUSION

The study was to undertaken to identify the environmental effects of growth performance of Large White Yorkshire pigs. Thus, The effect of sex was found as significant source of variation in birth to weaning. The period of farrowing and season of farrowing was not found as significant source of variation on the different ages of Large White Yorkshire pigs. Post Graduate Research Institute in Animal Sciences (PGRAS), Kattupakkam Pig breeding unit upgraded the farm practices to overcome the summer stress by using foggers in recent years because of foggers usage there

is no significant source of variation in season and period of farrowing.

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