

EFFECT OF NON-GENETIC FACTORS ON THE REPRODUCTIVE TRAITS IN CROSSBRED PIGS

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ABSTRACT

Data on reproductive performance of 255 crossbred pigs over a period of 1989 to 2000 constituted the material for the present study. The over all least squares means for AFS, AFF, GP, SP and FI were 277.12 ± 3.86 ; 387.23 ± 3.90 , 111.82 ± 0.61 , 98.01 ± 2.14 and 206.32 ± 1.53 days, respectively. Period and season of birth influenced all the reproductive traits except gestation period in this study. The heritability estimates for reproductive traits in the present investigation were found to be low.

Key words: Crossbred pigs, Heritability, Reproductive traits

INTRODUCTION

Profitability of swine enterprise primarily depends upon the sow's reproductive efficiency. Age at first service, age at first farrowing, farrowing interval and service period are the some of measures of efficiency of reproduction. The present study was undertaken to study the effect of some non genetic factors on the reproductive traits in crossbred pigs

MATERIALS AND METHODS

Data pertaining to age at first service (AFS), age at first farrowing(AFF), gestation period (GP), farrowing interval (FI) and service period (SP) were collected from 255 Large White Yorkshire crossbred pigs (75% Large White Yorkshire 25% Indigenous pigs) spread over a period of 12 years from 1989 to 2000. Data were classified according to period and season of farrowing. The total period

was divided into four periods of three years each. Each year was divided into three seasons based on the agro climatic conditions and farrowing time as season 1 (March-June), season 2 (July-October) and season 3 (November-February). The data were subjected to least squares analysis (Harvey, 1979) to resolve the effect of period and season of farrowing. Heritabilities were estimated as per Becker (1975) after adjusting the data for non genetic factors and standard errors were computed by the method of Swiger *et al.* (1964).

RESULTS AND DISCUSSION

Least squares means of various reproductive traits according to various subclasses are detailed in Table 1. The overall least squares means for age at first service (AFS), age at first farrowing (AFF),

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gestation period (GP), service period (SP) and farrowing interval (FI) were 277.12 ± 3.86 ; 387.23 ± 3.90 , 111.82 ± 0.61 , 98.01 ± 2.14 and 206.32 ± 1.53 days, respectively. The overall means reported in the present study for age at first service, age at first farrowing and gestation period were comparable with the means recorded by Hmar (1998), Nath *et al.* (2002) and Das *et al.* (2005) in Hampshire pigs. The means observed for farrowing interval and service period in the present study were much lower than the means reported by Hmar (1998), Nath *et al.* (2002) and Das *et al.* (2005) in Hampshire pigs which might be due to the fact that the crosses involved in their study and level of exotic inheritance may not exactly be comparable to the present investigation.

Period of farrowing

The period of farrowing significantly influenced all the reproductive traits except gestation period. Least square means for age at first service varied from 230.80 ± 9.63 to 327.26 ± 7.99 days. Period Two recorded the lowest (230.80 days) and period three the highest (327.26) for age at first service. The AFF of the corresponding periods were 343.08 and 432.26 days, respectively. The means recorded for AFS and AFF were much lower than the means reported by Singh *et al.* (2002) in Landrace and LWY pigs. Perusal of Table 1 revealed that period 3 recorded the lowest values for service period and farrowing interval. Significant effect of period of birth on the reproductive traits in the present study was contrary to the reports of Hmar (1998) and Das *et al.* (2005) in the Hampshire pigs and Pradeep *et al.* (2004) in local and improved pigs of coastal Karnataka.

Season of farrowing:

The least squares means for AFS among seasons varied from 251.33 to 295.97 days. Season three recorded the lowest AFS (251.33 days) and the differences were non significant between season

one and two. However, the season three differed significantly from other two. Significant effect of season on AFS, AFF, SP and FI in the present study was coincided with the findings of Mukhopadhyay *et al.* (1992), but contradictory to the findings of Bhowal (1998), Hmar (1998) and Singh *et al.* (2002). Non significant effect of season on gestation period in the present study was corroborated with the findings of Hmar (1998), Bhowal (1998) and Das *et al.* (2005).

Heritability estimates

The heritability estimates for AFS, AFF, GP, SP and FI were found to be 0.16 ± 0.21 ; 0.14 ± 0.12 , 0.18 ± 0.14 , 0.13 ± 0.11 and 0.11 ± 0.09 , respectively. The heritability estimates obtained in the present study were almost comparable with that of Das *et al.* (2005), but lower than those of Bhowal (1998). The estimates in the present investigation were found to be low since these traits related to components of fitness (Falconer, 1996).

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Table 1 . Least squares means (days) of reproductive traits in crossbred pigs

| Effects | n | AFS | AFP | n | GP | n | SP | FI |
|---------------------------------|-----|---------------------------|---------------------------|-----|-------------|-----|----------------------------|---------------------------|
| Overall mean | 150 | 277.12±3.86 | 387.23±3.90 | 255 | 111.82±0.61 | 105 | 98.01±2.14 | 206.32±1.53 |
| Periods | | * | * | | NS | | * | * |
| Period 1 (1989-91) | 35 | 256.94 ^b ±8.05 | 367.21 ^b ±8.12 | 63 | 110.72±1.18 | 28 | 96.62 ^b ±2.68 | 203.56 ^b ±2.63 |
| Period 2 (1992-94) | 29 | 230.80 ^a ±9.63 | 343.08 ^a ±9.70 | 41 | 112.57±1.57 | 14 | 111.99 ^a ±3.20 | 227.78 ^a ±3.71 |
| Period 3 (1995-97) | 34 | 327.26 ^c ±7.99 | 432.26 ^c ±8.05 | 50 | 110.27±1.34 | 17 | 79.13 ^c ±3.89 | 181.01 ^c ±3.49 |
| Period 4 (1998-2000) | 52 | 293.48 ^b ±6.94 | 406.35 ^b ±7.00 | 101 | 113.74±1.04 | 46 | 104.29 ^{bc} ±3.33 | 202.94 ^c ±2.38 |
| Seasons | | * | * | | NS | | * | * |
| Season 1 (March-June) | 40 | 295.97 ^b ±8.08 | 406.58 ^b ±8.14 | 54 | 111.07±1.36 | 16 | 97.03 ^{ab} ±4.97 | 192.13 ^a ±3.55 |
| Season 2 (July - October) | 60 | 284.05 ^b ±6.66 | 393.09 ^b ±6.72 | 100 | 111.17±1.07 | 44 | 90.46 ^a ±3.49 | 197.26 ^a ±2.50 |
| Season 3 (November to February) | 50 | 251.33 ^a ±6.75 | 362.01 ^a ±6.80 | 101 | 113.24±0.96 | 45 | 106.53 ^b ±2.93 | 229.58 ^b ±2.10 |

Means bearing same superscript in each effect do not differ significantly

*Significant at P<0.05; NS: Non significant

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