

## PREWEANING AVERAGE DAILY GAIN – A COMPARATIVE ANALYSIS OF 50 AND 75 PER CENT LARGE WHITE YORKSHIRE CROSSES

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Data on body weights of 232 piglets of Large White Yorkshire crosses 50 (n=70) and 75 (n=162) per cent belonging to F<sub>3</sub> generation were recorded from birth to weaning at weekly intervals at the AICRP on Pigs of Livestock Research Station, Kattupakkam. The preweaning growth rates as Average Daily Gain at two weeks interval up to weaning were subjected to Least squares analysis. The overall mean birth weight was  $1.16 \pm 0.01$  kg and the mean growth rate in the period between 0-2 weeks was  $140.04 \pm 0.04$  g. The average daily weight gains during 2-4, 4-6 and 6-8 (weaning) periods were  $158.14 \pm 0.05$ ,  $173.17 \pm 0.06$  and  $245.89 \pm 0.08$  g respectively. The 50 per cent LWY crosses showed significantly ( $P < 0.01$ ) higher average daily gains in the period from birth to two weeks and 4-6 weeks. The 75 per cent cross showed significantly ( $P < 0.05$ ) higher average daily gain in 2-4 weeks period and there was no significant difference in the growth rates between the genetic groups during the 6-8 weeks period. The influence of sex on the average daily weight gain was significant ( $P < 0.05$ ) in the sixth week to weaning period.

**Key words:** Preweaning, Large White Yorkshire crosses, Average daily gain

Pig genetic resources in India is having a very low commercial value. Yet the meat industry is fast developing and pig is becoming an important source of meat. Improvement of non-descript desi pigs is generally done by crossing with Large White Yorkshire. Efficient pig production largely depends on the pre-weaning weights. The average daily gain is an important economic

trait and has a greater impact on the growth and productivity. The present study documents the pre-weaning growth rate of Large White Yorkshire crosses (50% and 75%).

### MATERIALS AND METHODS

Body weight of 232 Large White Yorkshire (LWY) crossbred piglets belonging to two genetic groups viz. 50 % LWY (LWY x Desi; n=70) and 75 % LWY (50% LWY x LWY; n=162) were recorded from birth to weaning at weekly intervals. All the pigs were farm-bred and raised under similar feeding, housing and other management practices. The pre-weaning growth rates as Average Daily Gain (ADG) at two weeks interval from birth up to weaning in individuals which were not showing negative growth rates were computed. The data was cross classified according to the genetic group and sex to understand the effect of these factors on the average daily weight gain and the heritability measures were also estimated by Least squares analyses (Harvey 1990).

### RESULTS AND DISCUSSION

The least-squares mean of ADG in pre weaning body weights of Large White Yorkshire crosses are presented in the Table 1.

#### Birth to two weeks

The overall mean birth weight and the second week body weight were  $1.16 \pm 0.01$  and  $2.50 \pm 0.04$  kg respectively. The average daily gain during this period was  $140.24 \pm 0.04$  g. The ADG in case of the 75 % crosses were  $128.92 \pm 0.04$  g which was significantly ( $P < 0.01$ ) lower than that of

Table 1. Least-squares mean ( $\pm$  S.E.) - Average Daily Weight Gain in Large White Yorkshire crosses

Main Effect / Subclass	Average Daily Gain (g)			
	0-2 weeks	2-4 weeks	4-6 weeks	6-8 weeks
Overall	140.24 $\pm$ 0.04 (232)	158.14 $\pm$ 0.05 (232)	173.17 $\pm$ 0.06 (232)	245.89 $\pm$ 0.08 (232)
Genetic group	**	*	**	NS
75 % LWY	128.92 $\pm$ 0.04 (162)	167.76 $\pm$ 0.05 (162)	158.36 $\pm$ 0.06 (162)	258.88 $\pm$ 0.09 (162)
<b>50 % LWY</b>	151.55 $\pm$ 0.07 (70)	148.51 $\pm$ 0.08 (70)	187.97 $\pm$ 0.09 (70)	232.90 $\pm$ 0.14 (70)
Sex	NS	NS	NS	*
Males	141.04 $\pm$ 0.05 (126)	157.74 $\pm$ 0.06 (126)	174.04 $\pm$ 0.07 (126)	226.10 $\pm$ 0.11 (126)
Females	139.43 $\pm$ 0.06 (106)	158.53 $\pm$ 0.06 (106)	172.29 $\pm$ 0.08 (106)	264.78 $\pm$ 0.12 (106)

Figures in parentheses are the number of observations.

\*\* Significant at  $P < 0.01$ ; \* Significant at  $P < 0.05$ ; NS – Non significant.

the 50 % crosses which showed an average of  $151.55 \pm 0.07$  g gain during the same period. This could be due to the fact that the 75 % crosses had a significantly ( $P < 0.01$ ) higher birth weight of  $1.23 \pm 0.02$  kg compared to that shown by the 50 % crosses as  $1.09 \pm 0.02$  kg and the second week body weight did not significantly differ between these two genetic groups. The ADG for 50 % crosses was comparable with that reported by Prasanna *et al.* (2010); but they had reported a higher ADG for 75 % crosses than that obtained in this study. Their birth weight reported for 50 % crosses did not differ significantly from the birth weight obtained from this present study but the 75 % crosses showed a significantly higher birth weight than that reported by them.

#### Two to Four weeks

The overall mean fourth week body weight was  $4.08 \pm 0.08$  kg. The overall ADG in this period was  $158.14 \pm 0.05$  g. The ADG in case of the 75 % crosses were  $167.76 \pm 0.05$

g and that of the 50 % crosses were  $148.51 \pm 0.08$  g which was significantly ( $P < 0.05$ ) lower. The overall ADG reported by Prasanna *et al.* (2010) for the same period was the same and he further reported no significant difference between the genetic groups for this period. Similar values for ADG during different pre-weaning periods with an overall pre-weaning ADG of 0.153 kg (0 to 8 weeks) was reported in LWY-Desi crosses. (Prakash *et al.* 2008).

#### Four to six weeks

The overall four to six week ADG was  $173.17 \pm 0.06$  g with the 50 % crosses showing an ADG of  $187.97 \pm 0.09$  g which was significantly ( $P < 0.01$ ) higher than that found in the 75 % crosses. There was no significant difference in the body weights recorded for these genetic groups in these two periods in the present study and it was lesser than that reported in similar previous studies (Prasanna, *et al.* 2010, Prakash *et al.* 2008). But the ADG recorded for this period

was higher than that reported by the same authors for the same period.

### Six to 8 weeks (weaning)

The overall six to eight week ADG was  $245.89 \pm 0.08$  g. The 50 % crosses showed and ADG of  $232.90 \pm 0.14$  g which was significantly ( $P < 0.05$ ) lower than that of the 75 % crosses which showed  $258.88 \pm 0.09$  g of ADG in that period. The pooled weaning weight (8<sup>th</sup> week) was  $7.82 \pm 0.20$  kg. The weaning weight for 75% and 50% crosses were  $8.22 \pm 0.20$  and  $7.42 \pm 0.36$  kg respectively. The weaning weight found in the present study was less than that reported by Das and Bujarbaruah (2005) and Prakash et al. (2008). The highest ADG reported by Prasanna *et al.* (2010) was  $191 \pm 0.0003$  g in the 6-7 week period. In the present study for the period 6 – 8 weeks the overall ADG was  $245.89 \pm 0.08$  g which was much higher than that reports made so far in any of the Large White Yorkshire Crosses (Sharma *et al.* (1998) and Prakash *et al.* (2008).

### Effect of sex on ADG

In the present study there was significant ( $P < 0.05$ ) difference between the sexes in the ADG for the period 6 week to weaning. In all other periods the influence of sex on ADG was not significant. The females showed a higher ADG of  $264.78 \pm 0.12$  g than the males which showed ADG of  $226.10 \pm 0.11$  g for the 6 week to weaning period. As per earlier reports, sex had a non-significant influence on ADG at different periods during pre-weaning while it had a significant effect on ADG 0-8 weeks (Prasanna, *et al.* 2010). Sudhakar (2005) and Kumari *et al.* (2007) reported a similar non-significant effect of sex on ADG.

### CONCLUSIONS

The 50 per cent LWY crosses showed significantly ( $P < 0.01$ ) high average daily gains in the period of birth to 2 weeks and 4-6 weeks. The 75 per cent cross showed significantly ( $P < 0.05$ ) high average daily gain in the 2-4 weeks period and there was no significant difference in the growth rates between the genetic groups during the 6-8<sup>th</sup> week period. Least squares analyses revealed that the influence of sex upon the average daily weight gain was significant

( $P < 0.05$ ) in the sixth week to weaning period. In the rest of the age groups there was no significant influence of sex on daily weight gain. Selective breeding could improve the growth rates as implied by the estimates of genetic parameters during these periods.

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