

# INFLUENCE OF EARLY WEANING ON PRODUCTIVE AND REPRODUCTIVE PERFORMANCE IN LARGE WHITE YORKSHIRE PIGS

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## ABSTRACT

*The objective of the study was to assess the influence of early weaning on productive and reproductive performance in Large White Yorkshire pigs under intensive system of management. Eighteen Large White Yorkshire sows and their piglets were selected for the study and were randomly divided to three treatment groups. The piglets were weaned at the age of 28 days (Group-I), 42 days (Group-II) and 56 days (Group-III). Feed consumption and weekly weight gain was recorded till 120 days of age. For each sow time taken for exhibiting estrus after weaning was recorded. At the end of experimental period (120 days), the overall body weight (kg) of piglets weaned at 28 days, 42 days and 56 days of age was  $24.08 \pm 0.62$ ,  $25.86 \pm 0.84$  and  $23.69 \pm 1.03$  respectively and they did not show any significant difference with respect to body weight gain (kg). Average daily weight gain (g) for the period upto 120 days was  $227.59 \pm 7.38$ ,  $245.31 \pm 9.15$  and  $212.63 \pm 10.85$  for 28 days, 42 days and 56 days of weaning respectively. Both 28 days and 42 days weaning groups showed similar and better feed efficiency ( $3.35 \pm 0.06$  and  $3.31 \pm 0.20$  respectively) compared to 56 days weaning group ( $4.15 \pm 0.29$ ). Number of days to post-weaning estrus and farrowing to subsequent estrus was significantly ( $P < 0.01$ ) less in sows when the piglets were weaned at 28 days of age. The findings imply that sows can be mated early after farrowing if the piglets are weaned early which in turn reduces farrowing interval.*

**Keywords:** Large White Yorkshire, weaning, body weight, weaning to estrus, farrowing to estrus

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## INTRODUCTION

To meet the challenges of food and nutritional security of fast growing population there is need for an integrated approach for livestock farming. Pig breeding and husbandry is a profitable venture as this species is very prolific and is good source of meat. However, in general, the pig husbandry remains still primitive in India and weaning losses is one of the major concerns. Weaning of piglets is an important operation and in India, weaning of piglet is generally done at 8 weeks of age. Several experiments have demonstrated the benefits of early weaning and (or) segregation for improving the health status of a swine herd. In modern pig industry piglets are usually weaned before 4 weeks of age. In developed countries piglets are weaned as early as 14 days of age without any detrimental effects on the piglet's performance and sow's health. The major aim in any swine enterprise is to increase the productivity and to reduce the mortality loss. Standard weaning age should be considered to reduce the pre-weaning losses and to reduce the farrowing interval to enhance productivity without affecting the cost of production. Lactation length (weaning age) can impact both nursery growth and sow fertility and should be optimized so that producers can maximize profitability of their pork operations. Limited research has been conducted to determine the weaning age for optimum performance in pigs. Hence, the present study was aimed to find out the effect of weaning at different ages and its impact on the growth performance of piglet along with the reproductive performance of sows.

## MATERIALS AND METHODS

The experiment was carried out at the piggery unit of Livestock Research Station, Kattupakkam, Tamil Nadu from birth to four months (120 days) of age. Eighteen Large White Yorkshire sows and their piglets were randomly and equally divided into three groups (Group-I, II and III). The piglets were weaned at the age of 28 days (Group-I), 42 days (Group-II) and 56 days (Group-III). All the sows were transferred to the farrowing stall before farrowing and were maintained under similar standard management conditions. At weaning, sow was moved to a separate pen and littermates were kept in the same pen. After weaning all piglets were provided a standard weaner feed. The concentrate was supplied *ad libidum* and the daily consumption of each group was recorded. Piglets were weighed within 24 hours of farrowing in a digital weighing balance. Piglets were weighed on the day of weaning i.e. on 28, 42 and 56 days of age in spring balance in the morning hours before feeding. After weaning, weighing was done at 42 and 56 days of age for Group-I and at 56 days of age for Group-II. For each group, weighing was done at the end of 90 days and 120 days. The average daily weight gain in grams (g) achieved during 28 days to 120 days was calculated by subtracting the initial weight from the final weight of any particular period. For assessing reproductive performance of sows, interval between weaning and oestrus was recorded. Heat checks were made daily by looking for symptoms of estrus.

The collected data were statistically analyzed by Completely Randomized Design.

The significance was tested using Duncan's multiple range test (Duncan, 1955).

## RESULTS AND DISCUSSION

**Litter traits at birth:** The mean  $\pm$  SE litter weight (kg) and litter size of Large White Yorkshire pigs at birth which were weaned at different ages are presented in Table 1. The litter weight (kg) at birth was  $11.29 \pm 0.53$  (Group-I),  $12.29 \pm 1.82$  (Group-II) and  $10.69 \pm 1.11$  (Group-III). The litter size at birth was  $8.83 \pm 0.48$  (Group-I),  $8.33 \pm 1.28$  (Group-II) and  $8.33 \pm 0.88$  (Group-III). The mean  $\pm$  SE of litter size and litter weight (kg) of Large White Yorkshire pigs at birth were in accordance with Palve *et al.* (2000) and had better litter size and litter weight (kg) than reported by Prasanna *et al.* (2009).

**Body weight at weaning:** The weaning weight (kg) was  $6.06 \pm 0.21$  (Group-I),  $8.06 \pm 0.23$  (Group-II) and  $10.08 \pm 0.41$  (Group-III). The Mean  $\pm$  SE of weaning weight (kg), litter size and litter weight (kg) of Large White Yorkshire piglets weaned at 28 days of age were in accordance with the body weight (kg) observation by Gupta *et al.* (2001) and had better weaning weight (kg) than reported by Cauveri *et al.* (2009). Better weaning weight (kg) was reported by Rita *et al.* (2008) than the result obtained. The Mean  $\pm$  SE of weaning weight (kg), litter size and litter weight (kg) of Large White Yorkshire piglets weaned at 42 days of age was in accordance with the observation of Prasanna *et al.* (2010) and had better weaning weight (kg) than the body weight (kg) reported by Chhabra *et al.* (2005). The Mean  $\pm$  SE of weaning weight (kg), litter size and litter weight (kg) of Large White Yorkshire piglets weaned at 56 days of age were in

accordance with Prasanna *et al.* (2010) with regards to weaning weight.

**Body weight at 56 days, 90 days and 120 days of age:** The mean  $\pm$  SE body weight (kg) of Large White Yorkshire piglets at 56 days, 90 days and 120 days was  $9.61 \pm 0.27$ ,  $16.49 \pm 0.48$  and  $24.08 \pm 0.62$ ;  $10.10 \pm 0.39$ ,  $17.55 \pm 0.69$  and  $25.86 \pm 0.84$ ;  $10.08 \pm 0.41$ ,  $14.98 \pm 0.63$  and  $23.69 \pm 1.03$  for Group-I, Group-II and Group-III respectively.

**Average daily weight gain:** The mean  $\pm$  SE average daily weight (g) gain in Group-I, Group-II and Group-III during 28 days to 42 days was  $120.85 \pm 7.96$ ,  $194.13 \pm 12.62$  and  $183.43 \pm 11.83$ , 43 days to 56 days was  $130.51 \pm 9.96$ ,  $133.65 \pm 10.60$  and  $172.43 \pm 12.70$ , 57 days to 90 days was  $201.50 \pm 9.07$ ,  $224.87 \pm 11.78$  and  $144.10 \pm 7.49$ , 91 days to 120 days was  $257.16 \pm 10.29$ ,  $268.48 \pm 12.31$  and  $290.30 \pm 16.60$ , 57 days to 120 days was  $227.59 \pm 7.38$ ,  $245.31 \pm 9.15$  and  $212.63 \pm 10.85$  and during post-weaning was  $191.82 \pm 7.38$ ,  $219.61 \pm 9.81$  and  $212.63 \pm 10.85$  respectively. The average daily weight gain (g) of Large White Yorkshire pigs weaned at different ages showed highly significant ( $P < 0.01$ ) difference during 28 to 42 days and 57 to 90 days and significant ( $P < 0.05$ ) difference at 43 to 56 days which may be due to post-weaning depression in growth rate as there was no significant difference in body weight gain at the end of 120 days. The result was in accordance with Abraham *et al.* (2004). The experimental piglets had better average daily weight gain (g) than reported by Kumaresan *et al.* (2006). But on the contrary Rita *et al.* (2008) observed better average daily weight gain (g) than the result obtained.

**Feed efficiency:** The mean  $\pm$  SE feed efficiency in Group-I during 28 to 42 days was  $1.95 \pm 0.36$ , for Group-I, Group-II at 43 to 56 days was  $2.91 \pm 0.39$  and  $3.85 \pm 0.77$ . The mean  $\pm$  SE feed efficiency in Group-I, Group-II and Group-III at 57 to 90 days was  $3.13 \pm 0.23$ ,  $3.23 \pm 0.35$  and  $4.45 \pm 0.83$ , at 91 to 120 days was  $2.73 \pm 0.23$ ,  $3.66 \pm 0.18$  and  $4.03 \pm 0.35$ , 57 to 120 days was  $3.36 \pm 0.07$ ,  $3.26 \pm 0.16$  and  $4.15 \pm 0.29$  and at post-weaning was  $3.35 \pm 0.06$ ,  $3.31 \pm 0.20$  and  $4.15 \pm 0.29$  respectively. The feed efficiency of Large White Yorkshire pigs weaned at different weaning ages had significant ( $P < 0.05$ ) difference in feed efficiency between the treatment groups and feed efficiency was better in 28 days and 42 days weaning groups as compared to 56 days weaning group at 57 days to 90 days, 57 days to 120 days and at post-weaning and it was highly significant at 91 days to 120 days of age. This was in agreement with the findings of Uttam *et al.* (2010). Better feed efficiency in 28 days and 42 days weaning groups may be due to better adaptability of the piglets to the feed as the piglets were introduced to the feed at relatively early age. The experimental piglets had better feed efficiency than reported by Gopinathan and Usha (2010).

**Sows reproductive performance:** The mean  $\pm$  SE for weaning to estrus interval (days) was  $7.00 \pm 1.18$ ,  $10.67 \pm 2.08$  and  $28.17 \pm 11.12$  and farrowing to estrus interval (days) was  $35.00 \pm 1.18$ ,  $52.67 \pm 2.08$  and  $84.17 \pm 11.12$  for Group-I, Group-II and Group-III respectively. The mean  $\pm$  SE for weaning to estrus interval (days) and farrowing to estrus interval (days) for sows weaned at different weaning ages revealed that there was significant ( $P < 0.05$ )

difference for weaning to estrus interval (days) and it was highly significant ( $P < 0.01$ ) from farrowing to estrus interval. Number of days to subsequent estrus was significantly less in sows when the piglets were weaned at 28 days of age. This was in agreement with the findings of Crenshaw *et al.* (2007). Early return of sows to estrus after farrowing when the piglets were weaned at 28 days may be due to more conservation of body mass as compared to sows lactating for a longer time period. This has also helped the 28 days weaning group to record less number of days ( $35.00 \pm 1.18$ ) for farrowing to estrus interval compared to 42 days weaning group ( $52.67 \pm 2.08$ ) and 56 days weaning group ( $84.17 \pm 11.12$ ) which was highly economical in terms of number of farrowing per year. Post weaning mortality was observed in 28 and 42 days weaning but there was no significant difference between the three groups.

## CONCLUSION

The findings imply that sows can be mated early after farrowing if the piglets are weaned early which in turn reduces farrowing interval. As a sequel to the above findings early weaning of piglets at 28 days of age may be recommended to increase the growth performance and increase the number of litter per sow per year in Large White Yorkshire pigs.

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**Table 1:**  
**Mean ( $\pm$  SE) of litter traits at birth and weaning of Large White Yorkshire piglets**

Traits	Weaning group		
	28 days	42 days	56 days
Litter size at birth	8.83 $\pm$ 0.48(6)	8.33 $\pm$ 1.28(6)	8.33 $\pm$ 0.88(6)
Litter weight (kg) at birth	11.29 $\pm$ 0.53(6)	12.29 $\pm$ 1.82(6)	10.69 $\pm$ 1.11(6)
Litter size at weaning	8.33 $\pm$ 0.42(6)	7.83 $\pm$ 0.98(6)	7.50 $\pm$ 0.50(6)
Litter weight (kg) at weaning	51.15 $\pm$ 1.77(6)	63.55 $\pm$ 7.13(6)	75.61 $\pm$ 2.94(6)

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