The Pharma Innovation Journal 2018; 7(10): 544-546

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2018; 7(10): 544-546

www.thepharmajournal.com
Received: 23-08-2018
Accepted: 24-09-2018

Swathi Y
Department of Livestock Production Management, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Ravindra Reddy Y
Department of Livestock Production Management, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Suresh Babu D
All India Coordinated Research Project on Pigs, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Ramana JV
Department of Animal Nutrition, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Sharma GRK
Department of Veterinary & A.H. Extension education, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Correspondence
Swathi Y
Department of Livestock Production Management, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Effect of weaning age on post-weaning reproductive performance of crossbred pigs

Swathi Y, Ravindra Reddy Y, Suresh Babu D, Ramana JV and Sharma GRK

Abstract
A study was conducted to assess the effect of weaning age on post-weaning reproductive performance of crossbred sows. A total of eighteen crossbred sows were selected and weighed at 110th day of gestation and farrowing. After weaning these sows were weighed and divided into three groups based on weaning age as Group-I (28 days of weaning age), Group-II (42 days of weaning age) and Group-III (56 days of weaning age). The body weight loss of sow due to lactation per piglet was significantly (P<0.01) higher in Group III (3.12 ± 0.17) compared to Groups I (1.63 ± 0.13) and II (2.14 ± 0.17). Weaning to estrus interval is significantly (P<0.01) lower in Group I (5.16 ± 0.54) compared to Group III (12.50 ±1.72) and did not differ with Group II (9.33 ± 0.95). Sows in Group I (151.50 ± 3.72) are with lowest and Group III (183.00 ± 1.71) with highest farrowing intervals. Litter size on subsequent farrowing was slightly higher in group III (10.16 ± 0.30) compared to Group II (9.50 ± 0.42) and lowest in Group I (9.33 ± 0.71). Based on the findings we can conclude that sows in Group I and II have better reproductive performance compared to Group III.

Keywords: Crossbred pigs, body weight, weaning to estrus interval and litter size

1. Introduction
In India, pig rearing is confined to traditional small scale subsistence-driven production systems with meagre scientific management practices. Improved scientific management practices to improve the economic returns of the farms in swine rearing are necessary to enhance the livelihood of pig farmers. Weaning is a critical scientific practice, in which age of weaning influences both sow and piglet performance. Naturally, weaning remains on the sow's decision and under conventional rearing, piglets are weaned at 8 weeks of age. Weaning contributes to the removal of inhibitory influences on the hypothalamus and pituitary gland, thereby permitting increased secretary activity of the hypothalamo-hypophyseal axis, gonadotropin stimulation of ovarian activity, and, ultimately, estrus and ovulation. Further the length of lactation period influences the extent of sow body weight loss and weaning to estrus interval. Hence, In the recent times early weaning is being adopted to improve the piglet health and sow reproductive performance. Thus present study was undertaken to study the effect of weaning age of piglets on post-weaning reproductive performance of crossbred Large White Yorkshire sows.

2. Materials and Methods
The study was undertaken at All India Coordinated Research Project on Pigs, Tirupati, Andhra Pradesh, India. A total of eighteen large white Yorkshire crossbred sows (75 per cent) at 110th day of gestation were selected, weighed, housed individually in farrowing pens with separate provision for creep area and were maintained under uniform standard management conditions. Body weights of sows were recorded at 110th day of gestation, next day of farrowing. The selected animals were divided equally into three groups as uniformly as possible with regard to litter size and were randomly allotted to three experimental groups based on weaning age as Group-I (28 days), Group-II (42 days) and Group-III (56 days).
After weaning, sows were weighed and moved to a separate pen and littermates were kept in the same pen. For assessing the effect of weaning age on reproductive performance of sows, interval between weaning to post weaning return to estrus was recorded. Heat checks were made daily by looking for symptoms of heat. Sows were bred and pregnancy diagnosis was done seven to eight weeks after mating. Further number of days taken to conceive, farrowing interval and litter size on subsequent farrowing was recorded and comparisons were made among the three weaning age groups.

3. Results and discussion

Gestation body weight loss of sows in different weaning age groups was presented in the ''Table no: 1''. The body weights of sow at 110th day of gestation and weaning (kg) were 156.72 ± 5.08 and 128.10 ± 2.98, respectively in Group I; 145.59 ± 5.09 and 110.27 ± 4.77, respectively in group II; 153.41 ± 4.68 and 111.23 ± 4.25, respectively in Group III. Body weight of sow immediately after weaning (kg) was significantly (P<0.01) higher in Group I (128.10 ± 2.98) compared to Group II (110.27 ± 4.77) and Group III (111.23 ± 4.25). These findings were in agreement with Kapelanska *et al.* (2012) [1] who reported that the body weight of sows at weaning in 21 and 28 days lactation periods were considerably diverse. The gestational body weight loss (kg) of sows from 110th day of gestation to the day of weaning was -28.61 ± 3.97, -35.31 ±1.55 and -42.17 ± 0.76, respectively in Group I, II and III. Group I has significantly (P<0.01) lower gestational body weight loss (kg) compared to Group III. These findings were in contrary to Weaver *et al.* (2014) [2] who reported that in crossbred sows, live weight change over the first 26 days post-partum was similar between 26 and 21 days lactation length.

Lactation body weight loss of sows in different weaning age groups was presented in the ''Table no: 2''. The lactation body weight loss of sow was significantly (P<0.01) higher in Group III (25.31 ± 1.48) compared to Group I (13.49 ± 1.00) and Group II (16.94 ± 1.05). These findings were in agreement with Kapelanska *et al.* (2012) [1] who reported that longer lactation period resulted in an increase in the body weight loss. The change in body weight of sow due to lactation per piglet was significantly (P<0.01) higher in Group III (-3.12 ± 0.17) compared to Group I (-1.63 ± 0.13) and II (-2.14 ± 0.17) showing that body weight loss increased with increasing weaning age. These findings in agreement with Kapelanska *et al.* (2012) [1] who reported that the lactation body weight loss calculated per one reared piglet was 1.35 kg at 21st day and increased to 1.56 kg at 28th day. Further Thaker and Bilkei (2005) [3] stated that the weaning-to-service-intervals of sows appeared to be minimized at lactation weight losses of less than 5 per cent and lactation weight losses more than 10 per cent had a negative effect on subsequent farrowing rates to first service. Valros *et al.* 2003) [4] opined that even with a standardized size of litters and a uniform feeding programme the degree of body weight loss during lactation demonstrates considerable variability. The results of the present study shows that body weight loss at lactation and 110th day of gestation to weaning day increased with increasing weaning age.

The post weaning reproductive performance of sows was presented in the ''Table No: 3''. The weaning to estrus interval (days) in weaning age groups I, II and III were recorded as 5.16 ± 0.54, 9.33 ± 0.95 and 12.50 ±1.72, respectively. These findings are in agreement with Narayanan *et al.* (2008) [4], Jayashree and Sivakumar (2013) [6], Ravi *et al.* (2013) [7], Saikia *et al.* (2017) [8]. Weaning to estrus interval is significantly (P<0.01) more in Group III compared to Group I and Group II did not differ with I and III groups. These findings are in agreement with Narayanan *et al.* (2008) [5], Jayashree and Sivakumar (2013) [6], Ravi *et al.* (2013) [7], Saikia *et al.* (2017) [8]. Weaning to estrus interval is significantly (P<0.01) more in Group III compared to Group I. These findings were in agreement with Narayanan *et al.* (2008) who reported that all sows weaned at 28 days returned to estrus by 4-5 days post weaning, whereas sows weaned at 56 days returned to estrus by 10-20 days. Further Correa *et.al.* (2014) [9] reported that increasing lactation length, weaning to service interval and farrowing to service interval increased the next litter size of sows and it could have a negative effect on sow productivity per year and sow lifetime productivity.

The number of days taken to conception were 8.83 ± 3.46, 9.33 ± 0.95 and 12.50 ± 1.72 in Groups I, II and III, respectively, without any significant difference among the groups. These findings are in agreement with Smith *et al.* (2008) [10] who reported that no significant differences were observed for Weaning-to-conception interval in crossbred pigs.

The farrowing interval (days) in Groups I, II and III were 151.50 ± 3.72, 165.83 ± 0.90 and 183.00 ± 1.71, showing significant (P<0.01) diffent groups among the groups. These finding were in agreement with Szostak and Katsarov (2013) [11] who reported that the average length of the farrowing interval on the farms ranged from 164.6 to 193.9 days in Polish Large White and Polish Landrace sows. However Kumari and Rao (2010) [12] reported that the overall farrowing interval was 206.32 ± 1.53 days in large white Yorkshire crossbred pigs.

Sows in Group I were having lowest farrowing intervals and Group III with highest farrowing intervals. These findings are in agreement with Ravi *et al.* (2013) [7] who opined that early weaning system had reduced lactation period and also shortened weaning-to-estrus interval, thereby increased the chances of frequency of farrowing per female per year.

The litter size on subsequent farrowing in Groups I, II and III were 9.33 ± 0.71, 9.50 ± 0.42 and 10.16 ± 0.30, respectively, with no significant differences among the groups. These findings are in agreement with Smith *et al.* (2008) [10] and Saikia *et al.* (2017) [8] who reported no significant difference in litter size in subsequent farrowings among different groups of weaned piglets.

However litter size on subsequent farrowing was slightly higher in group III compared to Group II and lowest in Group I. Similar findings were reported by Tummaruk *et al.* (2000) [13], Kapelanska *et al.* (2012) [1], Correa *et al.* (2014) [9] who reported that as lactation length decreased there was a decrease in subsequent litter size and an increase in pigs weaned per sow per year.

Table 1: Gestation weight loss of sows in different weaning age groups

Parameters	Weaning age groups		
	Group I	Group II	Group III
A) Body weight of sow at 110th day of gestation (Kg).	156.72 ± 5.08	145.59 ± 5.09	153.41 ± 4.68
B) Average body weight of sow at weaning (Kg) *	128.10 ^{a} ± 2.98	110.27^{b} ± 4.77	111.23^{b} ± 4.25
C) Change in body weight (Kg) **	(-)28.61^{b} ± 3.97	(-)35.31^{ab} ±1.55	(-)42.17^{a} ± 0.76

Means having different superscripts with in a row differs significantly ** (P<0.01) * (P<0.05)

Table 2: Lactation weight loss of sows in different weaning age groups

Parameters	Weaning age groups		
	Group I	Group II	Group III
Body weight of sow at farrowing (Kg)	141.60 ± 3.58	127.21 ± 5.48	136.55 ± 5.23
Body weight of sow at weaning (Kg) *	128.10^{a} ± 2.98	110.27^{b} ± 4.77	111.23^{b} ± 4.25
Change in body weight of sow due to lactation (Kg) **	(-)13.49^{b} ± 1.00	(-)16.94^{b} ± 1.05	(-)25.31^{a} ± 1.48
Litter size at weaning (number)	8.33 ± 0.33	8.00 ± 0.36	8.16 ± 0.40
Change in body weight of sow due to lactation per piglet (Kg) **	(-)1.63^{b} ± 0.13	(-)2.14^{b} ± 0.17	(-)3.12^{a} ± 0.17

Means having different superscripts with in a row differs significantly ** (P<0.01) * (P<0.05)

Table 3: Post weaning reproductive performance of sows in different weaning age groups

Parameters	Weaning age groups		
	Group I	Group II	Group III
Weaning to estrus interval (days) **	5.16^{b} ± 0.54	9.33^{ab} ± 0.95	12.50^{a} ±1.72
Number of days taken to conception	8.83 ± 3.46	9.33 ± 0.95	12.50 ± 1.72
Farrowing interval (days) **	151.50^{c} ± 3.72	165.83^{b} ± 0.90	183.00^{a} ± 1.71
Litter size on subsequent farrowing (number)	9.33 ± 0.71	9.50 ± 0.42	10.16 ± 0.30

Means having different superscripts with in a row differs significantly ** (P<0.01) * (P<0.05)

4. Conclusion

The body weight loss of sow due to lactation per piglet was significantly (P<0.01) higher in Group III compared to Group I whereas Group II did not differ with Group I. Weaning to estrus interval is significantly (P<0.01) more in Group III compared to Group I and, Group II did not differ with groups I and III. Sows in Group I are with lowest and Group III with highest farrowing intervals. Litter size on subsequent farrowing was slightly higher in group III compared to Group II and lowest in Group I. Based on the findings we can conclude that sows in Group I and II have better reproductive performance compared to Group III.

5. References

1. Kapelanska J, Grajewska S, Bocian M, Jankowiak H, Kapelanski W. Carcass and meat quality of primiparous sows as related to the lactation period of 21 or 28 days and to body weight loss. Journal of Acta Veterinaria Brno. 2012; 81:257-262.
2. Weaver AC, Kind KL, Terry R, Wettere HEJVW. Effects of lactation length and boar contact in early lactationon expression of oestrus in multiparous sows. Journal of Animal Reproduction Science. 2014; 149:238-244.
3. Thaker MYC, Bilkei G. Lactation weight loss influences subsequent reproductive performance of sows. Journal of animal reproduction science. 2005; 88:309-318.
4. Valros A, Rundgren M, Spinka M, Saloniemi H, Rydhmer L, Hulten F *et al.* Metabolic state of the sow, nursing behaviour and milk production. Livestock Production Science. 2003; 79:155-167.
5. Narayanan R, Ronald BSM, Baegan S, Prabakaran R. Effect of age at weaning on growth performance of Large White Yorkshire. Tamilnadu journal of veterinary and animal science. 2008; 4(6):237-239.
6. Jayashree PC, Sivakumar T. Influence of early weaning on productive and reproductive performance in large white Yorkshire pigs. Tamilnadu Journal of Veterinary and Animal Sciences. 2013; 9(3):207-212.
7. Ravi P, Pandey HN, Porteen K and Selvaraju G. Effect of early and split weaning performance on crossbred gilts (Landrace x Desi). Indian Journal of Veterinary Research. 2013; 22 (l):32-37.
8. Saikia K, Kalita G, Hmar L, Samanta AK, Goswami R, Tolenkhomba TC *et al.* Effect of early and split weaning management on reproductive performance of Large White Yorkshire pigs. International Journal of Livestock Research. 2017; 7(12):59-64.
9. Correa JCS, Herrera-Camacho J, Sanchez REP, Vazquez EG. Effect of lactation length, weaning to service interval and farrowing to service interval on next litter size in a commercial pig farm in Mexico. Journal of Livestock Research for Rural Development. 2014; 26(1).
10. Smith AL, Stalder KJ, Serenius TV, Bass TJ, Mabry JW. Effect of weaning age on nursery pig and sow reproductive performance. Journal of Swine Health and Production. 2008; 16(3):131-137.
11. Szostak B and Katsarov V. Reproductive performance of Polish Large White and Polish Landrace sows. Journal of Agricultural Science and Technology. 2013; 5(3):272-275.
12. Kumari BP and Rao DS. Effect of non genetic factors on the reproductive traits in crossbred pigs. Journal of tamilnadu veterinary and animal sciences. 2010; 6(1):1-4.
13. Tummaruk P, Lundeheim N, Einarsson S and Dalin AM. Reproductive Performance of Purebred Swedish Landrace and Swedish Yorkshire Sows: II. Effect of Mating Type, Weaning-to-first-service Interval and Lactation Length, Journal of acta agriculture scandinavica. 2000; 50:217-224.