

EFFECT OF BOAR PRESENCE ON THE REPRODUCTIVE PERFORMANCE OF SOWS

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Received : 08.02.2013

Accepted : 06.12.2013

ABSTRACT

The success and efficiency of pig farming mainly depends on the reproductive performance of pigs. An experiment was conducted to study the effect of presence of the boar on the reproductive performance of sows, the feasibility and economics of rearing pigs of either sex together. Sixteen weaned Large White Yorkshire gilts, twelve weaned sows and two boars were randomly assigned to five groups as T1, T2, T3, T4 and T5 each consisting of six. Sows in T1 and T3 groups were bred at the body weight of 70-80 kg with designated boars at the time of breeding. The sows in T5 group were bred in the first oestrus after weaning. In T2 and T4 group sows were reared with boar. The onset and intensity of oestrus were significantly different ($p < 0.05$) between groups. However, post weaning oestrus, duration of oestrus, conception rate and gestation length did not vary significantly between groups. Litter size and weight at weaning also did not vary significantly. The behaviour of parents and other pen mates towards the litter did not vary significantly ($p > 0.05$) in all groups. Overall results suggest that in farming conditions group housing system can be practiced. It is advisable to keep animals in advanced stage of pregnancy in farrowing pens till weaning of piglets.

Key words: Growth, Reproduction, Group housing system and Pigs

*Part of the M.V.Sc thesis submitted by the first author to Kerala Agricultural University, Kerala.

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INTRODUCTION

Pigs are extremely versatile animal, able to adapt to a wide variety of circumstances imposed by man. They can thrive on highly concentrated or bulky feeds and produce high percentage of meat and fat. With today’s increasing population and its ever increasing consumption of meat, swine production is gaining more importance in our economy and a leading role in agricultural income. The success and efficiency of pig farming mainly depends on the reproductive performance of the pigs. The effect of social environment on the reproductive performance of pigs in tropics has not been fully assessed. Hence, the present investigation was designed and conducted to study the effect of presence of the boar on the reproductive performance of pigs and the feasibility and economics of weaning pigs of either sex together.

MATERIALS AND METHODS

Sixteen weaned large White Yorkshire gilts, twelve sows after first farrowing and two boars belonging to University Pig Breeding Farm, Mannuthy, Kerala were utilized for the

study. The pigs were maintained on rations which contained crude protein 18 % and crude protein 14% respectively.

The pigs were randomly assigned to five experimental groups T1, T2, T3, T4 and T5 each consisting of six pigs as given below.

- T1 - 6 gilts alone (4 months of age)
- T2 - 5 gilts + 1 boar
- T3 - 5 gilts + 1 weaned sow
- T4 - 5 weaned sows + 1 boar
- T5 - 6 weaned sows alone

Sows in group T1 and T3 were bred at the body weight of 70 – 80 kg with designated boars at the time of oestrus. The sows in T5 group were bred at the first oestrus after weaning. In T2 and T4 group sows were reared with boar. All groups of pigs were reared under the managerial conditions prevailed at the university pig breeding farm. Onset of oestrus, post weaning oestrus in sows was recorded. Body weights in gilts were recorded wherever required during morning before feeding using a platform balance with built in cage. The duration of oestrus was observed. The intensity of oestrus symptoms were scored as given below.

Intensity of oestrus:

Sl.No	Description	Score
1.	Grunting, off feed, keeping away from other animals, restlessness, swollen vulva	1
2.	Discharge from vagina, swollen vulva, slight discharge, immobility response	2
3.	Mounting on other animals, restlessness	3

The litter size and weight at weaning were also recorded. The pigs were scored for their behaviour of parents and other pen mates towards the litter as described below.

Sl.No	Description	Score	
		+ve	-ve
1.	Perfect identification of its own litter	1	0
2.	Good temperament, docile and confidence on attendant	1	0
3.	Alertness towards the safety of piglings	1	0
4.	Fondling piglings before and after suckling	1	0
5.	Overlying (trampling), biting, injuring, killing the piglings and hostility to piglings	0	1
6.	Presence of cross suckling	0	1
7.	Presence of lactional estrus	0	1
8.	Presence of cannibalism	-1	1
9.	Aggressive behaviour towards the piglets at the time feeding	0	1
10.	Presence of aggressive behaviour between the piglets belonging to different litters.	0	1

The data were statistically analyzed as per the method described by Snedecor and Cochran. (1994).

RESULTS AND DISCUSSION

Onset of oestrus in gilts

The onset of oestrus (days) in gilts in treatment groups I, II and III are shown. Treatment group II has attained puberty earlier than other groups. It can be seen from table -1 that the onset of oestrus (days) in gilts in treatment groups I, II and III was 168 ± 5.84 , 149.8 ± 4.488 and 173.2 ± 3.105 respectively. A significantly lower ($P < 0.05$) age at first oestrus in treatment group II, when compared to treatment groups I and III is indicative of the fact that a social environment enriched with the presence of a boar helps in early onset of

oestrus which is advantageous to the farmer with respect to economic piglet production. Siswadi and Hughes (1996) who reported that the introduction of mature gilts is known to induce the precocious attainment of puberty.

Post weaning oestrus in sows

The numbers of days required for the onset of post weaning oestrus are presented. The Pigs in all treatment groups showed the signs of post weaning oestrus within a week and the onset of post – weaning oestrus did not vary significantly ($P > 0.05$) between groups in primiparous sows as reported by Kannan (1995).

Fortnightly body weight of pigs

The fortnightly body weight of gilts from four months of age to farrowing are presented. The fortnightly body weight of animals in treatment groups I, II and III did not vary significantly ($P>0.05$). The average daily body weight gain in groups I, II and III were 381, 297 and 358g respectively, a trend for higher growth rate in group II (gilts with boar) and least in group III (gilts with sow) is indicative of certain social environmental effect on growth rate and attainment of mature body weight. Kerr *et al.* (1988) and Ramesh *et al.* (2010) reported that enrichment of environment enhances the production performance and welfare of pigs.

Duration of oestrus in pigs

The duration of oestrus are recorded pigs in treatment groups I, II, III, IV and V group were 58.8 ± 2.273 , 54.4 ± 4.490 , 57.6 ± 4.490 and 52.8 ± 2.939 hours respectively. The variation of duration of oestrus was found to be non significant between treatments. The female sexual behaviour of the pig was largely a genetic one is least affected by social contacts. Signoret (1970) and Hmar (1993) reported that the duration of oestrus varied from 15-75 hours.

Intensity of oestrus in pigs

The intensity of oestrus behavior are scored in the different treatment groups and are shown. The intensity score of oestrus in pigs in treatment groups I, II, III, IV and V were 2.6 ± 0.2449 , 2.8 ± 0.2 , 1.8 ± 0.2 , 2.8 ± 0.2 and 2.4 ± 0.2448 respectively. The highest score was observed in group II and IV and the lowest in group in III. A significantly high score in groups II and IV clearly indicated that the

presence of boar in the pen enhance the intensity of oestrus and probably the reproductive performance due to the fact that high intensity of oestrus helps in easy detection of heat and timely mating and hence may be advantageous to the farmer. The least response seen in group III is a clear indication of effect of social environment on the oestrus intensity in pigs thereby bringing to light the disadvantage of housing sow and gilts together in commercial swine farming. Eliasson (1991) reported that gilts attained puberty earlier showed more intense signs of heat when compared to that which attained puberty at a later age.

Conception rate

The conception rate at first mating and overall conception rate among different groups are given. Treatment group IV had lowest conception rate at first mating (60%) compared to other groups. It can be seen from that the conception rate at first mating and overall conception rate did not vary significantly ($P>0.05$) between treatment groups supporting the similar findings of Kannan (1995) who found that age, body weight or boar contact have no influence on conception rate in pigs. A Lower conception rate in group 4 may be due to early post weaning exposure of sows to boar supporting the findings of Moody *et al.* (1967) who reported a lower conception rate in sows exposed to boar immediately after weaning.

Gestation length

The gestation length of animals in different treatment groups are furnished. The gestation length of animals in all the treatment groups did not vary significantly ($P>0.05$)

supporting findings of Omtvedt et al. (1965) and Kannan (1995) indicating that length of gestation is a property of the species and remain almost unchanged. But a trend for lower gestation length in group II is an indication for early termination of pregnancy in gilts due to boar contact and is also in support to the findings of Busko (1974) who reported that earlier age at conception led to shorter duration of gestation in pigs.

Litter Performance

The litter performance at birth and weaning such as litter size, litter weight, number of still born and pre weaning mortality are presented.

Litter size at birth

The live litter size at birth in treatment groups I, II, III, IV and V were 7.2 ± 0.734 , 6.0 ± 1.581 , 7 ± 0.547 , 8.6 ± 1.435 and 9.4 ± 1.32 (Table -8) indicated no significant difference ($P>0.05$) between groups. Hughes and Cole (1975) and Tarocco (1992) who reported that mature boar contact during rearing did not appear to influence significantly the litter size of the pigs. A trend at birth noticed in group II is in support of Antie and Trbojevic (1975) indicating that the social environment may have certain effect on the litter size at birth in pigs. An apparently higher percentage of still birth noticed in treatment groups II and IV (14.70% and 13.95%) when compared to that groups I, III and V (5.5,8.5 and 0) brings to light, the effect of intervention of social environment in the pre-partum survivability of piglets, supporting the finding of Oswagwuh and Akpokodje (1981).

Litter weight at birth

The litter weight at birth varied from 5.9 kg in group II to 11.680 kg in group V with other groups in between projected no significant difference ($P>0.05$) between treatment groups. But a relatively higher litter weight in group V and least in group II may be indicative of the beneficiary effect of group housing of sows in litter performance as reported by Soede (1993) and Gertken et al (1993).

Litter size and litter weight at weaning

It can be seen from that the litter size and litter weight weaning did not differ significantly ($P>0.05$) between treatment groups. The average litter size at weaning in treatment groups I, II, III, IV and V were 2.6 ± 1.07 , 2 ± 0.63 , 2.8 ± 0.86 , 1.8 ± 1.113 and 2.4 ± 1.029 respectively. The litter weight at weaning in treatment groups I, II, III, IV and V were 26.3 ± 10.387 , 18.76 ± 5.964 , 28.6 ± 9.321 , 18.2 ± 11.280 and 26.16 ± 10.237 respectively. Hoy and Lutter (1996) who reported that group housing had no effect on piglet vitality. The average piglet at weaning in all treatment groups projecting no significant difference between treatment groups indicating that social environment has little effect on the weaning weight of piglets. A very high percentage of pre weaning mortality of piglets noticed in treatment groups IV and V (65.11% and 74.46%) is indicative of certain effect of social environment on this trait as reported by Bunger and Schlichting (1995) who reported that group housing had no effect on piglet vitality.

Behaviour of parents and other pen mates towards the litter

The behaviour of parents and other pen mates towards the litter was scored in all the

treatment groups and are presented. The observed scores in treatment groups I, II, III, IV and V were 4.6 ± 0.812 , 5.6 ± 0.509 , 5.2 ± 0.663 and 6.8 ± 0.789 respectively. The highest score was observed in group V and the least in group I. The variation was found to be non – significant ($P>0.05$) between treatment groups. In the present study, group housing of nursing sows along with their pen mates had resulted in higher mortality due to trampling and biting. This may suggest that provision of guard rails with provide maximum protection for the piglets. Cannibalism was observed in all groups except in group V which is in support of the observation of Jones (1966). Cross suckling and sucking were observed in all treatment groups which may be due to the housing of nursing sows along with their pen mates as reported by Braun (1996) Sows in treatment groups with boar (groups IV) showed oestrus during lactation period and there was no incidence of lactational oestrus in other treatment groups which showed oestrus only after weaning. This observation is in support with the reports of Bryant *et al* (1983).

CONCLUSION

Overall results suggest that in farming conditions group housing system can be practiced. It is advisable to keep animals in advanced stage of pregnancy in farrowing pens till weaning of piglings.

ACKNOWLEDGEMENT

The authors acknowledge the facilities and financial support given to this study by the Dean, College of Veterinary and Animal Sciences, Mannuthy, Kerala Agricultural University.

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