



Sexual Behavioural Activities of Purebred Landrace Boars under Different Mating Regimens

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Short Research Article

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ABSTRACT

In order to determine the effect of various mating regimens on the expression of sexual behavioural activities of purebred Landrace boars, a study was conducted at Swine Production Farm, LPM Section, IVRI, Izatnagar, India. Six apparently healthy (Age: 8.5 ± 0.5 months) purebred Landrace boars were selected and randomly mated to 18 purebred Landrace gilts following outdoor hand mating system under three different treatment groups, viz., single mating (T1), double mating (T2) and triple mating (T3) during a single oestrus of the gilts. Pre-treatment libido score was similar for all the boars. Data were manually recorded in all the mating sessions (Average duration of 19.50 ± 1.00 minutes) using specialized data coding sheets for the occurrence, frequency and duration of the behavioural activities performed by the boars. Among pre- and post-coital behavioural activities, the most frequent behaviour was nosing (2.61 ± 0.16 and 1.65 ± 0.14). On an average, 1.26 ± 0.09 successful mounts were achieved after an average of 3.35 ± 0.32 total mount attempts during the mating sessions. During copulation, a significantly ($P < 0.05$) higher number of mount attempts was observed in T3 as compared to T1 and T2. Average mount duration was 5.17 ± 0.32 minutes and average total duration of intromission was 4.10 ± 0.31 minutes. No significant difference was found among the groups in frequency and duration of pre-coital and post-coital sexual behavioural activities in purebred Landrace boars except in number of mount attempts.

Keywords: Sexual behaviour; boar; landrace pig; mating frequency.

1. INTRODUCTION

Expression of normal sexual behaviour is an indication of good health of any animal and it

affects the herd reproductive efficiency. The pigs are considered to encounter very few reproductive problems during their farm life, especially for a wean-to-finish unit. But in a

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farrow-to-farrow (breeding) unit, the breeding stock is retained for a sufficiently longer time, thereby increasing the chances of reproduction related problems [1,2]. As Landrace breed is known to be of maternal nature, the sexual behaviour of boars during the mating session is of utmost importance, as far as the reproductive efficiency of the gilts/ sows is concerned. Keeping this in view, a study was undertaken to see the effect of various mating regimens on the sexual behavioural expression in purebred Landrace boars under outdoor hand mating system.

2. MATERIALS AND METHODS

The present study was conducted on the mating sessions of six randomly selected apparently healthy purebred Landrace boars (Age: 8.50 ± 0.50 months; Libido score: 3.50 ± 0.25) and 18 selected gilts maintained at Swine Production Farm, IVRI, Izatnagar, India. The average duration of the mating sessions were 19.50 ± 1.00 minutes. The bout frequency, duration and occurrence of different sexual behavioural activities performed by boars like sniffing, biting, champing, licking, nosing, nudging, head to head interaction, caressing ears, sniffing genitalia, tail biting, playful behaviour and dribbling of urine were recorded using specialized data coding sheets, over an experimental period of five months. The data on pre-mating, mating and post-mating activities were collected and subjected to Frequency analysis and ANOVA [3] using STATS [4] and SPSS [5].

3. RESULTS AND DISCUSSION

3.1 Bout Frequency of Sexual Behaviour

Overall bout frequencies of pre-coital sexual behaviours like sniffing, biting, champing, licking, nosing, nudging, head to head interaction, caressing ears, sniffing genitalia, tail biting, playful behaviour and dribbling of urine were recorded as 1.39 ± 0.10 , 1.52 ± 0.17 , 1.46 ± 0.24 , 1.46 ± 0.24 , 1.25 ± 0.09 , 2.61 ± 0.16 , 2.33 ± 0.20 , 1.50 ± 0.14 , 1.27 ± 0.14 , 1.83 ± 0.20 , 1.38 ± 0.18 , 1.93 ± 0.28 and 1.00 ± 0.00 respectively (Table 1). Nudging and nosing were the most frequent behavioural activities observed and 'nosing' by boars played an important role to induce sows to stand still or lordosis response, which in turn had motivated boar to mount [6]. The bout frequencies of various pre-coital male sexual behavioural activities were analysed and no significant difference among groups was

revealed. In contrast to T2 and T3, a conspicuous absence of aggression in mating sessions of T1 was observed, which might be due to individual variation in boar temperament of T1 [7]. However, mating frequency did not seem to influence this specific behaviour.

In coital sexual behaviour, there was no difference in number of successful mounts among boars of different groups. On an average, 1.26 ± 0.09 successful mounts were achieved after an average of 3.35 ± 0.32 total mount attempts during the mating sessions (Table 1). Thus the mounting efficiency (number of copulations per number of mounting events) was on an average 37 percentage for whole mating sessions. It was revealed that there was a significantly ($P < 0.05$) higher number of mount attempts in T3 compared to T1 and T2. It was observed during real time recording that the female drifted away more frequently during later mating sessions especially if they were wounded or injured during early matings, and that could have resulted in decreased mount efficiency in T3. Less than 10% mounting efficiency for boars was reported [8] during 72 h observation of mating session. Reason for lower mounting efficiency in their study was due to the fact that breeding animals were reared together and their observation on sexual behaviour was made for a longer duration (72 h), whereas our study observed sexual behaviour of gilts and boars introduced into mating pen for 20 minutes duration after detection of heat. This needed, also, to be read keeping one observation in mind which had reported an aggressive mating behaviour for duration of 20 minutes [9].

Bout frequency observed for post-coital sexual behaviours like sniffing, biting, champing, nosing, nudging, head to head approach, caressing ears and circling the partner were 1.05 ± 0.05 , 1.22 ± 0.20 , 1.30 ± 0.15 , 1.65 ± 0.14 , 1.58 ± 0.14 , 1.33 ± 0.17 , 1.29 ± 0.18 and 1.38 ± 0.18 , respectively (Table 1). Nudging and nosing were the most frequent post-coital behavioural activities recorded in present study, which was similar to the earlier observation made [6]. No significant ($P > 0.05$) difference was observed between the three groups. Caressing of ears with mouth and circling around the partner were not shown in T1 and T3, respectively.

3.2 Duration of Sexual Behaviour

Total mount duration, total duration of intromission and refractory period did not differ

significantly ($P>0.05$) among different groups. Average duration for which the boars remained mounted over gilts (mount duration) was 5.17 ± 0.32 min and average total duration of intromission was 4.10 ± 0.31 min (Table 2). Copulation was performed within normal range of 3-20 minutes as per earlier report [10]. While describing copulations achieved in pig,

intromissions above 3 minutes (180 seconds) of duration had been classified as excellent [11]. The average duration of intromission in our study indicated an overall "excellent" mating sessions across the groups [11,12]. Similar performances in each group indicated that the mating duration per mating session was not influenced by the mating regimen (frequency of matings).

Table 1. Mean \pm SE of frequency of sexual behavioural activities in Landrace boars

Activities	T1	T2	T3	Overall
Pre-Coital Sexual Behaviour				
Sniffing	1.75 \pm 0.25(8)	1.35 \pm 0.18(20)	1.25 \pm 0.11(16)	1.39 \pm 0.10(44)
Biting	1.60 \pm 0.40(5)	1.56 \pm 0.33(9)	1.45 \pm 0.21(11)	1.52 \pm 0.17(25)
Champing	1.50 \pm 0.50(2)	31.67 \pm 0.33(3)	1.38 \pm 0.38(8)	1.46 \pm 0.24(13)
Licking	1.20 \pm 0.20(5)	1.27 \pm 0.14(11)	1.25 \pm 0.16(8)	1.25 \pm 0.09(24)
Nuzzling / Nosing	2.45 \pm 0.49(8)	2.72 \pm 0.21(18)	2.56 \pm 0.24(22)	2.61 \pm 0.16(48)
Nudging	2.14 \pm 0.40(7)	1.80 \pm 0.24(15)	2.65 \pm 0.32(22)	2.33 \pm 0.20(44)
Head to head	1.50 \pm 0.28(4)	1.33 \pm 0.23(9)	1.64 \pm 0.20(11)	1.50 \pm 0.14(24)
Caressing ears	1.25 \pm 0.25(4)	1.25 \pm 0.25(4)	1.33 \pm 0.33(3)	1.27 \pm 0.14(11)
Sniffing genitalia	2.00 \pm 0.00(2)	1.86 \pm 0.34(7)	1.78 \pm 0.32(9)	1.83 \pm 0.20(18)
Tail biting	1.00 \pm 0.00(2)	1.33 \pm 0.33(3)	1.50 \pm 0.27(8)	1.38 \pm 0.18(13)
Teasing/ playful	1.25 \pm 0.25(4)	1.50 \pm 0.50(2)	2.33 \pm 0.41(9)	1.93 \pm 0.28(15)
Aggression		1.67 \pm 0.67(3)	1.20 \pm 0.20(5)	1.38 \pm 0.26(8)
Dribbling of urine	1.00 \pm 0.00(3)	1.00 \pm 0.00(3)	1.00 \pm 0.00(2)	1.00 \pm 0.00(8)
Non-specific exploration	1.50 \pm 0.50(2)	1.80 \pm 0.37(5)	1.75 \pm 0.25(8)	1.73 \pm 0.18(15)
Coital Sexual Behaviour				
Mounting attempts	2.00 \pm 0.27 ^a (8)	2.75 \pm 0.32 ^a (20)	4.23 \pm 0.57 ^b (26)	3.35 \pm 0.32(54)
Successful mounting	1.29 \pm 0.18(7)	1.33 \pm 0.19(12)	1.19 \pm 0.10(16)	1.26 \pm 0.09(35)
Post-Coital Sexual Behaviour				
Sniffing	1.00 \pm 0.00(3)	1.13 \pm 0.13(8)	1.00 \pm 0.00(10)	1.05 \pm 0.05(21)
Biting	1.00 \pm 0.00(2)	1.00 \pm 0.00(2)	1.67 \pm 0.33(3)	1.22 \pm 0.20(7)
Champing	1.25 \pm 0.25(4)	1.67 \pm 0.33(3)	1.00 \pm 0.00(3)	1.30 \pm 0.15(10)
Nuzzling / Nosing	1.57 \pm 0.29(7)	1.89 \pm 0.26(9)	1.50 \pm 0.17(10)	1.65 \pm 0.14(26)
Nudging	1.83 \pm 0.31(6)	1.56 \pm 0.24(9)	1.45 \pm 0.21(11)	1.58 \pm 0.14(26)
Head to head	1.67 \pm 0.33(3)	1.00 \pm 0.00(4)	1.50 \pm 0.50(2)	1.33 \pm 0.17(9)
Caressing ears	0	1.33 \pm 0.33(3)	1.25 \pm 0.25(4)	1.29 \pm 0.18(7)
Circling the partner	1.50 \pm 0.29(4)	1.25 \pm 0.25(4)	0	1.38 \pm 0.18(8)

Values in parenthesis represented number of mating sessions.

^{a-b}: Means with dissimilar superscripts in a row differed significantly ($P < 0.05$)

Table 2. Duration and interval (Mean \pm SE) of certain mating related parameters in Landrace boars

Duration	T1	T2	T3	Overall
Total mount duration (min)	05.35 \pm 0.67(7)	05.47 \pm 0.70(12)	04.85 \pm 0.38(6)	05.17 \pm 0.32(35)
Total duration of intromission (min)	04.28 \pm 0.58(7)	04.65 \pm 0.73(12)	03.62 \pm 0.38(16)	04.10 \pm 0.31(35)
Refractory period (min)	0.50 \pm 0.17(2)	01.10 \pm 0.60(5)	01.25 \pm 0.52(3)	01.02 \pm 0.32(10)

Values in parenthesis represented number of mating sessions.

4. CONCLUSION

From the present findings, it can be concluded that the bout frequency and duration of sexual behavioural activities were not influenced by various mating regimens in purebred Landrace young boars.

CONSENT

All the authors have given consent for the publication.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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