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Effects of Sexual Restraint and Stimulation of Boars on Fertility and Fecundity Rate in Sows

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Sixty Large White sows (aged 2.0 yr) and 12 boars of the same breed and age were used to study the relative dependence of sow fertility and fecundity rate on the sexual stimulation of boars. Boars were subjected to two different sexual stimulation procedures. In the first, four boars were assigned to each of the three treatment groups involving 0, 5 and 10 min of sexual restraint (R) per 30 min test period. In the second, the 12 boars were randomly reassigned to 6 treatment combinations involving 0, 5 and 10R and two levels (5 and 10 min) of libido tests (reaction time) per 30 min period. Libido was recorded as the reaction time (RT) (in minutes) and was defined as the time from intromission to ejaculation. Semen was collected by the use of an artificial vagina device following sexual stimulation, and analyzed for quantitative and qualitative parameters using standard methodology. Semen from each boar was artificially inseminated (AI) to 5 sows twice, 12 and 24 h after the onset of the first oestrus. Fertility was determined as non-return rate, which was observed as the proportion of females that conceived, divided by the total number in a herd of sows that were artificially inseminated. Fecundity was measured in terms of the percentage of sows that farrowed and the total number of piglets (litter size) born per litter.

Results from the first procedure indicated that 5 min of sexual restraint (5R) was necessary to achieve the highest sexual drive at the shortest reaction time of 2.8 min. The 5R boars produced semen that gave the highest semen viability and fertility in AI sows compared with the 10R and 10R, respectively. In the second procedure, 5 min sexual restraint combined with 5 min reaction time (5R-5RT) produced an overall advantage in improving the sperm viability and fertility of AI sows, compared with the various groups in both the first and second procedures. Results of the two experimental procedures showed that in comparison, boars in the 5R vs. the 5R-RT groups produced semen with the highest sperm cell motility (80.7 ± 0.25 vs. 83.6 ± 0.34%), progressive movement (6.8 ± 0.25 vs. 8.7 ± 0.53), acrosomal NAR (90.0 ± 6.61 vs. 91.4 ± 0.22%), non-return rate (82.5 ± 0.18 vs. 90.0 ± 0.2%), farrowing rate (85.5 0.43 vs. 88.1 ± 0.06%) and the largest number (7.4 ± 0.11 vs. 8.3 ± 0.05) of piglets per litter with the greatest proportion (5.5 ± 0.19 vs. 7.3 ± 0.05 piglets) farrowed alive. The results suggest that sexual stimulation of boars significantly enhanced semen viability of the boars, with concomitant improvement in fecundity and non-return rate of AI sows. The 5 min of sexual restraint in conjunction with 5 min reaction time (5R-5RT) of boars were most suitable for use in AI services.

Key Words: boar sexual restraint, libido, non-return rate, semen viability, sow fecundity

Abbreviations: DAR – damaged apical ridge, LAC – loose acrosomal cap, MAR – missing apical ridge, NAR – normal apical ridge, NRR – non-return rate, R – sexual restraint, RT – reaction time, SV – strained volume, TSV – total strained volume

INTRODUCTION

In most animals where courtship, display and foreplay precede mating, it is reasonable to assume that these behavioural patterns serve to excite the sexual partners. Hence, in the course of mating, sexual excitement increases in both sexes to a level at which copulation is initiated and consummated (Morris 1972; Umesiobi and Iloeje 1999; Umesiobi 2000; Umesiobi 2004; Umesiobi et al. 2004). An increase in sexual excitement will also tend to overcome those inhibitions which may be inherent in the use of artificial vagina or other artifices employed in controlled mating and collection of sperm.