

INTERRELATIONS OF SERVICE BEHAVIOUR AND SEMINAL ATTRIBUTES OF HAMPSHIRE BOARS

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ABSTRACT

Forty ejaculates from five Hampshire boars (8 from each) were collected by simple fist method using a dummy. The service behaviour in terms of reaction time was positively correlated ($p < 0.05$) with strained volume and total ejaculate volume ($r = 0.314$ and 0.326 , respectively). The service behaviour in terms of ejaculation time was positively correlated ($p < 0.05$) with gel mass volume, strained volume, total ejaculate volume and total sperm output ($r = 0.722, 0.816, 0.805$ and 0.335 , respectively), and was negatively correlated ($p < 0.05$) with sperm concentration ($r = -0.533$). The gel mass volume was positively correlated ($p < 0.05$) with strained volume and total ejaculate volume ($r = 0.861$ and 0.820 , respectively). Also, between the latter two parameters existed a positive correlation ($r = 0.944, p < 0.05$). The gel mass volume, strained volume and total ejaculate volume was positively correlated ($p < 0.05$) with total sperm output ($r = 0.327, 0.326$ and 0.494 , respectively), and was negatively correlated ($p < 0.05$) with sperm concentration ($r = -0.561, -0.690$ and -0.572 , respectively). The gel mass volume was positively correlated ($p < 0.05$) with live spermatozoa ($r = 0.321$). In brief, service behaviour (reaction time and ejaculation time) and gel mass volume had significant correlations with seminal attributes, thus, these parameters can be the components of breeding soundness assessment in Hampshire boars.

Keywords: Breeding soundness, Hampshire boar, Semen, Seminal characters, Service behaviour

INTRODUCTION

The superior exotic boar belonging to Hampshire breed has become popular among the farmers of Assam. However, a limited effort was made to study the reproductive characteristics of Hampshire boars under the Agro-climatic condition of Assam (Chutia *et al.*, 2014). In most cases, the boar selection is carried out on the basis of morphological structures of the body that fail to reflect reproductive efficiency in the field. Under such circumstance, an easy, quick and reliable protocol is highly indicated for the selection of quality breeding boar. Hence, the present study was carried out to record the service behaviour, seminal characters and their interrelations for assessing the breeding potential of Hampshire boars.

MATERIALS AND METHODS

The present study was conducted with five sexually mature and healthy Hampshire boars (age: 18-24 months). All the boars were housed in well-ventilated pens and maintained under similar management and feeding schedule. The service behaviour of boars in terms of latency to mount, reaction time and ejaculation time were recorded using a stopwatch. Latency to mount was the interval taken by the boar from the moment of entering the collection area to the moment of first mounting over the "Dummy". Reaction time was the interval taken by the boar from the moment of entering the collection area to the moment of the beginning of ejaculation. Ejaculation time was the interval between the moment when the penis of the boar was locked in the hand with commencement of ejaculation, to the moment when erection ceased and the boar dismounted.

Total eight ejaculates from each of five boars, two

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ejaculates per week at minimum of two-day interval, were collected by "Simple fist" method over a fixed iron dummy. The semen was collected into a prewarmed (37°C) thermos flask using Buchner funnel lined with sterilized tissue cloth for separation of gel mass. The volume of gel mass, strained part and total ejaculate (strained part plus gel mass) was recorded with the help of a sterilized prewarmed (37°C) graduated glass cylinder. Immediately after collection, the semen was evaluated under phase contrast compound microscope fitted with biotherm for initial sperm motility, live spermatozoa, live spermatozoa with intact acrosome and sperm concentration with the help of haemocytometer counting chamber method.

The descriptive statistics for service behaviour and seminal characters was obtained by SPSS version 10. Pearson correlation coefficient was calculated to evaluate the relationship between service behaviour and seminal characters and between physical and microscopical parameters of semen.

RESULTS AND DISCUSSION

The latency to mount had positive correlation ($r=0.493$) with reaction time ($p<0.05$). This indicated

that the boar that had longer interval to mount over the dummy on being entered in the collection area would also take longer time to begin ejaculation. The reaction time was positively correlated ($p<0.05$) with strained volume ($r=0.314$) and total ejaculate volume ($r=0.326$), thus suggesting that the boars that had taken longer period to begin ejaculation after mounting on the dummy ejaculated higher volume. The positive correlation of reaction time with other seminal parameters was not significant, however, it had negative correlation with sperm concentration that could be due to reduction in sperm concentration with an increase in volume of semen in boars with higher reaction time.

The ejaculation time had positive correlation ($p<0.05$) with gel mass volume ($r=0.722$), strained volume ($r=0.816$), total ejaculate volume ($r=0.805$) and total sperm output ($r=0.335$), and had negative correlation ($p<0.05$) with sperm concentration ($r=-0.533$). This indicated that the prolongation of ejaculation time increases the quantum of ejaculate due to the stimulatory impact on accessory sex glands to secrete more vital substances (collectively known as seminal plasma including gel mass). However, an increase in total ejaculate volume with an increase

Table 1: The service behaviour and seminal characters of Hampshire boar (n=40 ejaculates)

Parameters	Mean±SE	Range
Service Behaviour		
Latency to mount, min	1.35±0.09	0.14 - 2.47
Reaction time, min	2.31±0.23	0.43 - 5.42
Ejaculation time, min	5.82±0.16	4.16 - 8.05
Seminal Characters		
Gel mass volume, ml	37.1±1.3	20 - 60
Strained volume, ml	228.7±6.4	156 - 312
Total ejaculate volume, ml	262.3±7.5	176 - 365
Initial sperm motility, %	87.4±0.5	80 - 95
Live spermatozoa, %	90.5±0.4	85.5 - 96.5
Live spermatozoa with intact acrosome, %	85.3±0.4	80 - 92
Sperm concentration per ml, ×10 ⁶	339.2±9.3	200 - 440
Total sperm output, ×10 ⁶	75,975.9±1,743.4	55,200 - 99,120

in reaction time and ejaculation time proportionately decreases the sperm concentration. Others also reported a positive correlation between the duration of ejaculation and volume of ejaculation ($r=0.58$) in boars (Levis and Reicks, 2005). The positive correlation between ejaculation time and total sperm output could be attributed to an increase in total ejaculate volume with an increase in ejaculation time despite the decrease in sperm concentration. In the present study, no correlation ($p>0.05$) of initial sperm motility, live spermatozoa and live intact acrosome was recorded with service behaviour parameters. This suggested that libido was not indicative for predicting the qualitative seminal attributes in boars.

The gel mass volume was positively correlated ($p<0.05$) with strained volume ($r=0.861$) and total ejaculate volume ($r=0.820$), as well as positive correlation ($p<0.05$) existed between the latter two parameters ($r=0.944$). This could be due to continuous secretion of gel mass during the span of ejaculation from the bulbourethral gland along with the seminal fluid forming the total ejaculate volume. The gel mass volume, strained volume and total ejaculate volume were positively correlated ($p<0.05$) with total sperm output ($r=0.327$, 0.326 and 0.494 , respectively) due to constant release of spermatozoa during the process of ejaculation from the epididymis, and had negative correlation ($p<0.05$) with sperm concentration ($r=-0.561$, -0.690 and -0.572 , respectively) due to the depletion in number of spermatozoa per unit volume with an increase in ejaculate volume.

Furthermore, the gel mass volume had positive correlation ($p<0.05$) with live spermatozoa ($r=0.321$), which is suggestive that the secretion of accessory sex glands could provide a conducive environment for producing higher number of live spermatozoa in Hampshire boars. In brief, the service behaviour expressed in terms of reaction time and ejaculation time had significant correlations with quantitative seminal characters that could be used for breeding soundness in Hampshire boars.

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