FARROWING BEHAVIOUR OF LARGE WHITE YORKSHIRE SOWS UNDER ORGANIZED AND INDIGENOUS SYSTEMS IN MIZORAM

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ABSTRACT

A total of 56 farrowings comprising 26 and 30 farrowings of Large White Yorkshire (LWY) sows from organized and indigenous systems of rearing respectively were studied for different parameters on farrowing. It was revealed that LWY sows reared in organized and indigenous systems exhibited similar pattern of occurrence of different preparturient behaviours viz., mammary gland enlargement, swelling of vulva, colostrums in teat, reddish vulvar mucosa, pawing at the floor and vaginal discharge. The parturient behaviours viz. paddling of legs, switching of tail, complete lateral recumbency and both ventral and lateral recumbency were also similar in both the systems. However, during the entire period of farrowing, 61.54 and 36.67 per cent of sows under organized and indigenous systems of rearing respectively were lying down continuously whereas 38.46 and 63.33 per cent of sows respectively stood up in between expulsion of piglets.

Key words: Farrowing behaviour, Indigenous system, Organized system, Preparturient behaviour, Parturient behaviour.

INTRODUCTION

The system of management plays an important role in the economy of pig farming. Scientific methods of pig farming have been evolved with specific management, feeding and housing systems which are followed in organized farms. However, indigenous system of rearing is generally adopted by the common people in Mizoram due to the economic constraint of the farmers and geographical condition of the state. Systematic studies of farrowing behavior of female pigs under indigenous system of management have not been reported. The use of increased prepartum activities to determine the time of farrowing was reported (Hurnick, 1985). The start of occurrence of particular farrowing behaviour can be utilized to make necessary managerial arrangement well in advance. Before attempting any intervention in the indigenous system of rearing, a systematic study to record and analyze the reproductive performance of pigs under this system of rearing versus organized system of rearing is very much essential. The present investigation is, therefore, planned to study the farrowing behaviour of Large White Yorkshire (LWY) pigs under indigenous system of rearing, involving easily available low cost housing materials and affordable management system, which will help for future planning of piggery development in the state of Mizoram.

MATERIALS AND METHODS

A total of 56 farrowings comprising 26 and 30 farrowings of Large White Yorkshire (LWY) sows from organized and indigenous systems of rearing were studied for different parameters on farrowing. LWY pigs maintained under organized farm in Regional Pig breeding Farm, Selesih, Govt. of Mizoram, and under indigenous system by the private farmers in and around Aizawl were included in the present study. In indigenous system, pigs were kept confined in the sty constructed by the side of the owner’s house. The pig sties were of temporary and hanging type and were constructed mainly with locally available materials (Figure 1). The floor of the sties was made up of wooden planks or bamboos with a gap of about 1 inch in between them so that excreta directly fall down on the ground. Since the

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land where sties were constructed was having a slope, the floor of the sties was elevated from the ground with an average height varying from 6 inches at the front to 5 feet at the back side depending upon the degree of slope of the land. The pillars or posts of the sties were made up of wooden logs or reinforced cement concrete. The walls of the sties were also made up of timber or bamboo fixed vertically in most of the cases but fixed horizontally in a few cases. The piece of bamboo/timber for the wall was fixed in such a way that enough gap existed between them to provide sufficient ventilation, but not to allow piglet to go through. The roofing materials were mainly C.I. sheet and in a few sties it was of bamboo covered with silepouline. Sties were not provided with any open yard area. Pigs had been kept confined in the same sty right from the beginning when they were purchased at about 2 months throughout their life. Most of the farmers in the present study were having only 1 sow but a few farmers were rearing 2 or 3 sows and kept them in separate sties.

Average dimensions of traditional pigsty for breeding under study were:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dimension (Mean±SE)</th>
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</thead>
<tbody>
<tr>
<td>Average length of sty (ft)</td>
<td>9.00 ± 0.20</td>
</tr>
<tr>
<td>Average breadth of sty (ft)</td>
<td>7.60 ± 0.60</td>
</tr>
<tr>
<td>Area per pig (sq.ft)</td>
<td>68.40 ± 0.18</td>
</tr>
<tr>
<td>Average height of wall (ft)</td>
<td>3.00 ± 0.03</td>
</tr>
<tr>
<td>Height at the front of sty (ft)</td>
<td>6.00 ± 0.12</td>
</tr>
<tr>
<td>Height at the back of sty (ft)</td>
<td>5.00 ± 0.05</td>
</tr>
<tr>
<td>Creep box (sq.ft)</td>
<td>12.00 ± 0.02</td>
</tr>
</tbody>
</table>

In indigenous system of rearing pigs were fed mainly cooked food comprising plant leaves, rice and kitchen waste which were then mixed, at the time of feeding, with about 500-1000 g of wheat bran and 250-1000 g wheat flour per animal per day depending upon the size of animal. Some farmers do not feed wheat bran and wheat flour, instead, they fed about 500-1000 g of commercially available concentrate feed per animal per day depending upon the size of the animal along with the cooked food and kitchen waste. The animals were fed ad lib twice in a day i.e., at about 7.00 to 8.00 AM and 4.00 to 4.30 PM. The farmers did not provide their pigs same type of feed throughout the study period. Usually water was not given separately other than along with the feed. However, some farmers used to provide water separately at noon particularly during late pregnancy and lactation periods. The sows in their advanced pregnancy and lactation period were given due care by increasing their ration specially the wheat flour and concentrate feed. Vitamins and minerals mixture were also provided to the pregnant and lactating sows. Deworming of pigs during gestation period was practised only by a few farmers.

Each female pig was observed carefully from a few days prior to expected date of farrowing and the following parameters were recorded:

**Pre-parturient behaviour:** The pregnant animals were observed carefully from a few days prior to the expected date of farrowing and the external signs such as enlargement of mammary glands, swelling of external genitalia, colostrums in the teat, reddened vulvar mucosa, pawing at the floor and vaginal discharge manifested by the females during this period were recorded and expressed in percentage.

**Parturient behaviour:** The different behavioural signs manifested by each female during parturition were observed carefully and were recorded separately for indigenous and organized systems of rearing. They were expressed in percentages.

**RESULTS AND DISCUSSION**

**Preparturient behaviour:** The incidences of different pre-parturient behaviours such as mammary gland enlargement, swelling of vulva, colostrum in teat, reddened vulvar mucosa, pawing at the floor and vaginal discharge at different days before farrowing are presented in Table 1.

Mammary gland enlargement was observed in 84.62 and 80.00 per cent sows maintained under organized and indigenous system of rearing respectively at 4 days before farrowing, and from 3 days before farrowing almost all sows exhibited enlarged mammary gland. The pattern of enlargement of mammary glands observed in the present study was in agreement with the reports of earlier workers (Graves, 1984; Devi, 1986 and Miachie-o, 1991).
Swelling of vulva was recorded in 26.92 and 33.33 per cent in pregnant sows maintained under organized and indigenous systems of rearing respectively on 4 days before farrowing and almost all pregnant sows exhibited swollen vulva from two days before farrowing. The present finding was in agreement with that of earlier workers (Day, 1980; Graves, 1984; Ash, 1986; Devi, 1986 and Miachie-o, 1991).

The present study revealed that colostrum could be first squeezed out from the teat on 3 days before farrowing in one sow (3.84 versus 3.33 %) in each system of rearing and on the day before farrowing 76.92 and 73.33 per cent of sows in organized and indigenous systems of rearing respectively. The present finding was in conformity with the report of English et al. (1977) who found that on squeezing teat a almost clear thin fluid might be observed either in pin head size drops or in large blobs. Milk in pin head sized drops could be observed in about 5 days before and large blobs in about 3 days before farrowing. They also observed that in some sows milk could not be expressed till 8 hours before the birth of the first piglet. Grauvogl (1958) and Ash (1986) also reported that a serous secretion could be expected from the mammary glands of some sows as much as 48 hours prior to delivery and this secretion was changed to a milky consistency near delivery. When milk became readily available, one could expect the first piglet within 6 to 8 hours (Ash, 1986) and 24 hrs (Grauvogl, 1958). However, Jones (1966) observed that the secretion might be present in some teats and not in others, or it might be detectable at one examination and not at the next. He further reported that out of 26 pregnant sows, in 17 sows the first secretion seen was a straw-coloured, sticky fluid which gradually acquired a milky appearance and in another 9 sows the first secretion detected was milk. Except for two sows which had a serous secretion three and four days respectively before farrowing, the remaining 15 sows farrowed within 48 hours of the presence of a detectable serous secretion. The time elapsed from the expression of milk to the time of beginning of farrowing was never more than 24 hours and when milk flow was readily and abundantly obtained, farrowing was rarely delayed beyond 6 hours.

Reddish vulvar mucosa was observed rarely on 2 or 3 days before farrowing in the present study. The percentage of pregnant sows under organized and indigenous systems of rearing that exhibited reddish vulvar mucosa was 42.31 and 33.33 per
cent respectively on one day before farrowing and 100.00 and 83.33 per cent respectively on ‘0’ day i.e., day of parturition. This was in accordance with the reports of Jones (1966a), Day (1980), Devi (1986) and Miachie-o (1991). Jones (1966) further observed that the changes of the colour of vulvar mucosa were never remarkable.

Pawing at the floor was observed from 2 days before farrowing in 11.33 and 10.00 per cent of pregnant sows under organized and indigenous systems of rearing respectively. In the two systems of rearing, it was observed in 80.77 and 76.67 per cent sows respectively on the day before farrowing and 84.62 and 86.66 per cent sows respectively on the day of farrowing. This was in accordance with the reports of earlier workers (Miachie-o, 1991; Lakhani and Jogi, 1997; Pavicic et al., 2000; Damm et al., 2003; Singh and Sirohi, 2003 and Ramesh and Sivakumar, 2007). Jones (1966) reported that the sow might begin efforts at preparing a bed which was manifested by vigorous pawing movements of her forelegs and in the absence of bedding materials pregnant sows tended to play head and leg movements approximating those used in real nest building. This behaviour could probably be best classified as ‘Vacuum activity’ indicating very strong genetic predisposition for nest building prior to delivery (Signoret et al., 1975).

Blood stained vaginal discharge was observed in one sow (3.84 %) and 2 sows (6.66%) under organized and indigenous systems of rearing respectively on a day before farrowing and 73.00 and 76.00 per cent of sows respectively on the day of farrowing. The vaginal discharge before farrowing was also recorded by several earlier workers (Jones, 1966; English et al., 1977 and Ash, 1986). English et al. (1977) reported that about 60 per cent of sows showed blood stain fluid prior to the farrowing of first piglets.

The present study revealed that LWY sows reared in organized and indigenous systems exhibited similar pattern of occurrence of different preparturient behaviours viz., mammary gland enlargement, swelling of vulva, colostrums in teat, reddish vulvar mucosa, pawing at the floor and vaginal discharge.

**Parturient behaviour:** Percentage of occurrence of different parturient behaviours in Large white Yorkshire sows maintained under organized and indigenous systems of rearing are presented in Table -2.

Out of 26 and 30 sows in organized and indigenous systems of rearing respectively farrowing took place in complete lateral recumbency in 96.15 and 96.67 per cent sows respectively and in both ventral and lateral recumbency in 3.85 and 3.33 per cent sows respectively. In case of farrowing in both ventral and lateral recumbency a few piglets in a litter were farrowed in ventral recumbency and remaining piglets were farrowed in lateral recumbency. The present findings were in agreement with the reports of earlier workers (Miachie-o, 1991 and Roychoudhury et al., 1995). The incidence of delivery of piglets in lateral recumbency only was reported by Alexander et al.
The percentages of occurrence of complete lateral recumbency and both ventral and lateral recumbency during farrowing in LWY pigs was similar in organized and indigenous systems of rearing.

During the entire period of farrowing, 61.54 and 36.67 per cent of sows under organized and indigenous systems of rearing respectively were lying down continuously whereas 38.46 and 63.33 per cent of sows respectively stood up in between expulsion of piglets (Table 2).

Frazer (1975) and Hurnik (1985) reported that the nervous and more excitable sows stood up and lied down in between expulsion of piglets.

In both organized and indigenous systems of rearing, switching of the tail was observed in all sows (100%) just before the expulsion of each piglet (Table 2). The switching of the tail was found to be more vigorous during the delivery of the first piglet and in few cases the subsequent piglets were expelled without much switching of tail. Switching of tail at the time of farrowing was also reported by Grauvogel (1958), Fraser (1968), Randall (1972), Arthur (1975) and Miachie-o (1990). The percentage of sows showing tail switching under the organized and indigenous systems of rearing was similar.

Paddling of legs at the time of farrowing was found in 80.77 and 83.33 per cent of farrowing sows under organized and indigenous systems respectively (Table 2). The parturient behaviour of paddling of leg was also reported by Arthur (1975); Day (1980) and Miachie-o (1991). The paddling of leg was found to occur mainly before the expulsion of first piglet but it was also observed before the birth of the subsequent piglets in some sows. It was found to be more in gilts which might be due to the small genital tract requiring more effort to expel the piglet.

It may be concluded that Large White Yorkshire sows reared under organized and indigenous systems exhibited similar pattern of occurrence of different farrowing behaviours except standing in between the expulsion of piglets which is more in indigenous system of rearing.

### Table 2: Frequency of occurrence of farrowing behaviour in large white yorkshire sows under organized and indigenous systems of rearing.

<table>
<thead>
<tr>
<th>Behaviours</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organized (n=26)</td>
</tr>
<tr>
<td>Recumbency</td>
<td></td>
</tr>
<tr>
<td>Both ventral and lateral recumbency</td>
<td>3.85 (1)</td>
</tr>
<tr>
<td>Complete lateral recumbency</td>
<td>96.15 (25)</td>
</tr>
<tr>
<td>Standing or Lying</td>
<td></td>
</tr>
<tr>
<td>Lying continuously</td>
<td>61.54 (16)</td>
</tr>
<tr>
<td>Standing in between</td>
<td>38.46 (10)</td>
</tr>
<tr>
<td>Switching of tail</td>
<td>100.00 (26)</td>
</tr>
<tr>
<td>Paddling of legs</td>
<td>80.77 (21)</td>
</tr>
</tbody>
</table>

Figures in the parentheses indicate number of sows showing the behavior.

(1980), Ash (1986) and Lakhani and Jogi (1997). The percentages of occurrence of complete lateral recumbency and both ventral and lateral recumbency during farrowing in LWY pigs was similar in organized and indigenous systems of rearing.

During the entire period of farrowing, 61.54 and 36.67 per cent of sows under organized and indigenous systems of rearing respectively were lying down continuously whereas 38.46 and 63.33 per cent of sows respectively stood up in between expulsion of piglets (Table 2).

Higher percentage of sows standing (63.33%) in between expulsion of piglets during farrowing in indigenous system of rearing might be due to the fact that pig sties were constructed by the side of farmer’s house and during farrowing sows were disturbed by the farmers, and other people resulting in restlessness to the farrowing sows that led to frequent standing in between expulsion of piglets. Frazer (1975) and Hurnik (1985) reported that the nervous and more excitable sows stood up and lied down in between expulsion of piglets.

In both organized and indigenous systems of rearing, switching of the tail was observed in all sows (100%) just before the expulsion of each piglet (Table 2).
REFERENCES


