Reproductive performance and disorders of Swamp buffalo cows under organized system of rearing in Guwahati Assam

R Deka, KC Nath, M Bhuyan, NC Nath, GC Das, N Deka and M Islam

Abstract
A study was conducted on 60 Swamp buffalo cows and heifers maintained at Network Project on Buffalo improvement (Swamp), College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam to accumulate data on reproductive performance and incidence of reproductive disorders. Reproductive performance was studied from the records maintained in the farm and incidence of reproductive disorders was studied by clinico-gynaecological examination of the animals and analyzing their breeding records. Average age at first calving, post-partum oestrus interval, service period, gestation period and intercalving period was 1841.75 ± 95.18, 262.90 ± 30.27, 331.63 ± 65.51, 304.18 ± 2.05 and 795.39 ± 104.53 days respectively. Anoestrus was the most common reproductive disorder in Swamp buffalo occurring in 45.83 percent cows and 87.50 percent heifers.

Keywords: Swamp buffalo, anoestrus

1. Introduction
Buffalo has a significant role in the agriculture economy by providing milk, meat and draught power in many developing countries including India. In India dairy industry is mostly buffalo oriented. The phylogenetic study indicated that the Swamp type buffalo might have originated in China and was domesticated about 4000 years ago. Rate of reproduction is the basis of power in many developing countries including India. In India dairy industry is mostly buffalo oriented. The phylogenetic study indicated that the Swamp type buffalo might have originated in China and was domesticated about 4000 years ago. Rate of reproduction is the basis of power in many developing countries including India. In India dairy industry is mostly buffalo oriented. The phylogenetic study indicated that the Swamp type buffalo might have originated in China and was domesticated about 4000 years ago. Rate of reproduction is the basis of power in many developing countries including India. 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2. Materials and methods
2.1 Ethical approval
This study was approved by institutional animal ethics committee, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam with approval no.770/ac/CPCSEA/FVSc/AAU/IAEC/16-17/384 dated 30.07.2016

2.2 Studies on reproductive performance
Reproductive performance was studied based on data pertaining to the Swamp buffaloes maintained at Network Project on Buffalo Improvement (Swamp), College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam for the period from 2010 to 2016 and different parameters were recorded as follows:

2.2.1 Age at first calving
It was the actual age of buffaloes at the time of its first calving and expressed in days.
2.2.2 Post-partum oestrus interval
It was considered as the period from calving to first postpartum oestrus and expressed in days.

2.2.3 Service period
It was considered as the period from calving to the post-partum oestrus at which the cow conceived and expressed in days.

2.2.4 Number of services per conception
It was considered the average number of inseminations or natural services required by the buffalo to become pregnant.

2.2.5 Gestation period
This was considered as the period in days from last day of service to birth of calf.

2.2.6 Intercalving period
It is the period between two successive calving and expressed in days.

2.2.7 Birth weight of calf
It was measured as the weight of the calf on day of birth and expressed in kilograms.

2.3 Studies on reproductive disorders
The reproductive disorder was studied on the basis of farm record maintained from January, 2010 to December, 2016 and direct clini-co-gynaecological examination of buffalo cows and heifers. Breeding records of 42 cows and 18 heifers which were more than 4 years of age in January, 2010 were checked and percentages frequency of anoestrus in cows and heifers were worked out. A heifer was considered to be anoestrous when she failed to show the external signs of oestrus even after 4 years of age. A cow was considered to be anoestrous when she failed to show the external signs of oestrus even after 6 months of parturition. In addition present genital status of all 33 buffalo cows and 12 heifers was determined through clini-co-gynaecological examination of each animal.

2.4 Statistical analysis
The statistical analysis of the data was done using software IBM-SPSS-20 (http://www.spss.co.in) and Micro Soft Excel-2010 (http://office. microsoft.com).

3. Results and discussion
3.1 Reproductive performance in female Swamp buffalo
Average values for various reproductive traits in Swamp buffalo cows as estimated from breeding records maintained in the college farm have been represented in Table 1.

In the present study mean age at first calving was recorded as 1841.75 ± 84.15 days which was similar with the finding of others [3-6] in Swamp buffaloes. The ranged varied from 323.41 to 326.80 days. Mean intercalving period was recorded as 795.39±104.53 days in the present study, while, shorer intercalving period was reported by others [3-5, 7] in Swamp buffaloes of Assam ranging from 323.41 to 326.80 days. Mean intercalving period was recorded as 304.18±2.05 days on an average in the present study, which is in agreement with the findings of others [3-5, 7] in Swamp buffalo. Gestation period was found to be 340.18±2.05 days on an average in the present study, which is in agreement with the findings of others [3-5, 7] in Swamp buffalo.

Author [3-5, 7] recorded lower service period in Swamp buffalo cows of Assam, ranged varied from 177.34 to 205.44 days. In the present study number of services per conception was recorded as 2.09±0.27, which is in agreement with findings of others [11, 13-15, 6] in different breeds of buffaloes. The ranged varied from 1.7 to 2.57. However, number of services was higher (3.5 ± 2.5) was reported by author [8] in Thai Swamp buffalo. Gestation period was found to be 304.18±2.05 days on an average in the present study, which is in agreement with the findings of others [3-5, 7] in Swamp buffalo.

In the present study mean age at first calving was recorded as 23.16±6.51 days in the present study. While, other author [3-5, 7] reported by others study number of services per conception was recorded as 2.09±0.27, which is in agreement with findings of others [11, 13-15, 6] in different breeds of buffaloes. The ranged varied from 1.7 to 2.57. However, number of services was higher (3.5 ± 2.5) was reported by author [8] in Thai Swamp buffalo. Gestation period was found to be 304.18±2.05 days on an average in the present study, which is in agreement with the findings of others [3-5, 7] in Swamp buffalo.

It was considered the average number of inseminations or natural services required by the buffalo to become pregnant. Number of services per conception is considered as the period in days from last day of service to the birth of calf. This was considered as the period in days from the last day of service to the birth of calf. In the present study mean age at first calving was recorded as 23.16±6.51 days in the present study. While, other

3.2 Studies on reproductive disorders
3.2.1 Based on farm records
On examination of farm records it was observed that there were no records of genital disorders affecting the animals during the period included in the study. However the incidence of anoestrus in cows and heifers was worked out and presented in Table 2.

3.2.2 Based on clini-co-gynaecological examination
Reproductive status of 33 buffalo cows and 12 heifers under the present study has been presented in Table 3. Results obtained in the present study indicated that anoestrus was the major reproductive problem in Swamp buffaloes with the overall incidence of 45.23 percent in cows and 83.33 percent in heifers. On clini-co-gynaecological examination, 44.44 percent animals were found to be true anoestrus with smooth ovaries, 40.00 percent silent oestrous and 15.56 percent pregnant. Author [16] also reported that anoestrus was the most common form of infertility in buffaloes with the overall incidence of 29.12 which was much lower than the incidence observed in the present study. However, on the basis of rectal palpation the author determined the incidence of true anoestrus as high as 60.58 percent in Murrah and upgraded Murrah buffaloes. Others author [17, 18] in buffaloes reported 27.40 and 20.84 percent as the incidence of true anoestrus. The incidence of silent oestrous as observed in the present study was 40.62 percent. However, author [17] in Murrah buffaloes reported much higher incidence of silent oestrous 80.00 percent. The cause of anoestrus in animals was found to be varied. According to author [16] anoestrus in buffaloes was due to negative energy balance, mineral deficiency as well as higher environmental temperature affecting folliculogenesis and steroidogenesis. Suckling, level of nutrition, loss of body weight during post-partum period, parity, season of the year and presence and absence of bull were found to be the factors determining the incidence of post-partum anoestrus in buffaloes [12, 19]. According to author [20] silent oestrous might be due to lack of adequate secretion of oestradiol by mature and secondary follicle or due to need for a higher threshold of oestrogen in the central nervous system to produce the characteristic nervous symptoms.
4. Conclusion
The present study was concluded that Swamp buffalo cows had longer intercalving period and post-partum oestrus interval and anoestrus was the most common reproductive disorder in Swamp buffalo cows and heifers.

Table 1: Reproductive traits in Swamp buffalo cows

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No of observation</th>
<th>Mean ± SE</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at first calving (days)</td>
<td>55</td>
<td>1841.75 ± 95.18</td>
<td>1129-2486</td>
</tr>
<tr>
<td>Post-partum oestrus interval (days)</td>
<td>58</td>
<td>262.90 ± 30.27</td>
<td>44-1015</td>
</tr>
<tr>
<td>Service period (days)</td>
<td>60</td>
<td>331.63 ± 65.51</td>
<td>83-1146</td>
</tr>
<tr>
<td>Number of service per conception (times)</td>
<td>60</td>
<td>2.09 ± 0.27</td>
<td>1-6</td>
</tr>
<tr>
<td>Gestation period (days)</td>
<td>60</td>
<td>304.18 ± 2.05</td>
<td>285-315</td>
</tr>
<tr>
<td>Intercalving periods (days)</td>
<td>59</td>
<td>795.39 ± 104.53</td>
<td>391-1752</td>
</tr>
<tr>
<td>Birth weight of calf (kilogram)</td>
<td>50</td>
<td>26.34 ± 0.88</td>
<td>20-34</td>
</tr>
</tbody>
</table>

Table 2: Incidence of anoestrus in Swamp buffalo cows and heifers as determined from breeding records

<table>
<thead>
<tr>
<th>Types of animals</th>
<th>No of animals investigated</th>
<th>No of observations</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows</td>
<td>42</td>
<td>19</td>
<td>45.23</td>
</tr>
<tr>
<td>Heifers</td>
<td>18</td>
<td>15</td>
<td>83.33</td>
</tr>
</tbody>
</table>

Table 3: Reproductive status in Swamp buffalo cows and heifers based on clinico gynaecological examination

<table>
<thead>
<tr>
<th>Reproductive status</th>
<th>No of observation</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant</td>
<td>7</td>
<td>15.56</td>
</tr>
<tr>
<td>Smooth ovaries</td>
<td>20</td>
<td>44.44</td>
</tr>
<tr>
<td>Silent oestrus</td>
<td>18</td>
<td>40.00</td>
</tr>
</tbody>
</table>

5. Acknowledgment
Author are thankful to Dr. B.C. Deko Professor and Head, Department of ARGO for his guidance and Dr. G.C. Das Professor cum Principal Investigator, Network Project on Buffalo Improvement (Swamp) Department of AGB for providing data from Network Project on Buffalo Improvement (Swamp) project to carry out this study.

6. References