Effect of Parity Number on the Productivity of Taggar Goats under Dry Land Farming in Western Sudan

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Abstract: Forty seven (47) mature Taggar goats were randomly allocated to four groups according to the parity No. to evaluate the effect of parity on reproductive and productive traits. Highly significant differences observed among groups in birth weight, body weight at kidding and body weight at weaning. Parity No. exerted no significant effect on litter size, kidding rate, kidding interval and total milk yield. High percent of abortion in parity 1 (14.3%) compared to parity 2, 3 and 4 (zero %). No mortalities were found in parity 3 and 4 compared to 7.1 and 8.3% in parity 1 and 2. Generally parity No. had an important effect on the reproductive and productive traits of the Taggar dam.

Key words: Dry land • Productivity • Parity • Taggar goats

INTRODUCTION

Goats play a crucial role in the subsistence economy of rural communities in Sudan, whereas they are generally raised by poor farmers. Goat's population in Sudan estimated as 43 million heads [1]. The major breeds are: Sudanese Nubian, Desert, Nilotic and Mountain (Taggar) breeds [2]. The Taggar's breed is kept for meat production since its milking potential is poor and widely distributed in many parts of the Sudan and they are concentrated in Nuba Mountains, south Kordofan.

Reproductive performance of goats is a major determinant of productivity and economic viability of commercial goat farms. High fertility and prolificacy of dams are profitable in meat production [3], since better reproductive performance and milk production increased with increasing age of the dam which has great effect on birth weight and all growth traits and so its productivity affected significantly [4, 5].

The present experiment was designed to study the effect of parity on productivity performance of Taggar goats under dry farm condition.

MATERIALS AND METHODS

Experimental Animals: Forty seven pregnant, 1-4 years old Taggar goats with three bucks purchase from local market. On arrival they were divided into four groups: G1, G2, G3 and G4 with 14, 11, 12 and 10 dams, respectively according to parity No. All the groups were ear tagged and treated against endo-and ecto-parasites. Vaccination was applied against goat pox, Anthrax and Hemorrhagic Septicemia. The animals were allotted to free grazing (from 8:00 am to 6:00 pm). Live weight was weekly recorded before kidding (8 weeks) and post kidding (12 weeks). Milk samples were collected for three consecutive months post kidding.
Table 1: Effect of parity No. on the productivity of Tuggar goats.

<table>
<thead>
<tr>
<th>Parity No.</th>
<th>N</th>
<th>Litter Size</th>
<th>Kidding %</th>
<th>Birth wt (Kg)</th>
<th>Body wt at kidding</th>
<th>Body wt at weaning</th>
<th>Kidding interval</th>
<th>Milk prod. (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>1.1±0.12</td>
<td>85.7</td>
<td>1.9±0.14</td>
<td>20.7±0.39</td>
<td>18.8±0.47</td>
<td>337.6±13.95</td>
<td>53.5±3.32</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>13±0.14</td>
<td>100</td>
<td>2.0±0.15</td>
<td>22.9±0.42</td>
<td>20.9±0.53</td>
<td>319.2±15.74</td>
<td>59.3±3.66</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>1.5±0.14</td>
<td>100</td>
<td>2.2±0.15</td>
<td>25.6±0.44</td>
<td>23.2±0.51</td>
<td>310.2±15.07</td>
<td>66.5±5.59</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>1.8±0.15</td>
<td>100</td>
<td>2.5±0.16</td>
<td>27.9±0.46</td>
<td>25.6±0.56</td>
<td>294.3±16.15</td>
<td>72.8±4.33</td>
</tr>
</tbody>
</table>

*superscripts within a row: * means different superscripts within a row are significantly different (*P*<0.05).

Table 2: Effect of parity on abortion and mortality rates

<table>
<thead>
<tr>
<th>Parity No.</th>
<th>N</th>
<th>Abortion %</th>
<th>Mortality %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>14.3</td>
<td>7.1</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>0</td>
<td>8.3</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Statistical Analysis: Data was statistically analyzed using SPSS software [6]. Differences between means were tested using Duncan’s Multiple Range Test.

RESULTS

Litter size and kidding rate increased with the increase of parity No. from 1.07 to 1.8 and 85.7 to 100%, respectively, thus no significant differences were found between parities. Birth weight of kids was significantly affected by parity No. whereas parity 4 showed the largest birth weight. Kidding and weaning weight were high in parity 4 and significantly increased with age (*P*<0.05). It was observed that kidding weight of parity 3 and 4 was significantly (*P*<0.05) higher than that of parity 1 and 2. The results of kidding intervals indicated that no significantly different were found among parities. Kidding intervals for parity 4 was short (294.3 days) than parities 1, 2 and 3, while parity 1 recorded long kidding interval (337.6 days). Parity No. exerted no significant effect on total milk yield, however, high milk production was found in parity 4, while low milk production observed in parity 1 (Table 1).

The present results indicated that high incidence of abortion in parity 1 (14.3%) as compared to zero % in parity 2, 3 and 4. No mortalities were observed in parity 3 and 4 compared to parity 1 and 2 (Table 2).

DISCUSSION

The result of litter size for parity 1 was similar to that reported by many authors [7-10], while parity 2 and 3 in the present work were lower than the results reported by the former studies. In addition, the highest kidding rates were obtained by 2nd, 3rd and 4th parities which in agreement with finding that age and parity of the dam significantly affected the reproductive traits [11].

Results of birth weight in the present work significantly affected by parity No. These results were similar to that obtained by Wilson, Mellado and Husain et al. [12-14] who revealed that there was tendency to increase birth weight with the advance of parity at least up to 3rd parity. This may be due to the improved reproduction efficiency as the dam mature.

Kidding and weaning weight showed significant differences among parities and similar values to previous results [15, 16] who reported that postpartum weight increased with increasing parity No. and litter size. It was observed that the 1st, 2nd and 3rd parities had longer kidding interval compared 4th parity. This goes in agreement with the statement that the female of early parities take longer than older dams to return to their reproductive status [17] and disagreed with Awenu et al. [10], Hossain et al. [18] and and Sodiq et al. [19] who stated that parity significantly affected kidding interval of dams which generally decreased with parity till the 4th parity.

The effect of parity No. on milk production showed no differences and this contrasted the results obtained by Papachristoforou and Mavrogenis [20], while generally these results goes in agreement with Awgichew et al. [4], Jolio [21] and Riberio et al. [22] who reported that better reproductive performance and milk production increased with increasing dam age.

As shown in table 2, neither abortion nor mortality rate were found in parity 3 and 4. This indicated that the increase of parity No. had reduced the incidence of abortions and mortality rate. Similar results reported earlier showed that fertility rate increases and abortion rate decreases with the increase of dam age [11] which agrees
with Ndlovu and Bryant [23] who revealed that the abortion rate was higher in the young dams (11%) compared to (8%) in old one. As well, it was reported previously [24, 9] that mortality rate of Creole goats was higher for primiparous dam than for multiparous dam (25.3 vs. 13.2%).

In conclusion, the results from this study would indicate that parity No. had an important effect on the reproductive and productive traits of the Taggar dam.

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REFERENCES
