Introduction
Among the different goat breeds found in India Osmanabadi is one of the major Indian goat breed found in Osmanabad, Beed, Aurangabad, Parbhani and other districts of Marathwada region and mostly reared for meat purpose as the milk yield is very low. It also found in other different regions of Maharashtra. They are regular breeders in favourable conditions (Tambhale et al., 2009). Breed has contributed significantly to the socio-economic status of pastoral communities of this region. It has many desirable characteristics of meat breeds, high prolificacy, early maturity, high kidding rate, better growth rate and quality meat.
Goat kid twice a year or thrice in two years. Goats are efficient users of grasses, shrubs and tree leaves, and by-products of human foods, but this cannot satisfy their requirements. The productivity of goats may be increased by concentrate feeding (Madibela and Jordao, 1991). The importance of concentrate supplementation on growth and productivity of goats is well recognized (Kochapakdee et al., 1994). Live weight of dams affects the weight gain of the kids, more obviously during the second and third month after birth (Romagas, 1981). Although, the Black Bengal is a dwarf goat, at 12 months of age live weight gain is 15.00 kg (Husain et al., 1998).

The present research was undertaken to study the Effect of Feeding Improved Varieties of Fodder on Productive and Reproductive Performance of Osmanabadi Goat. Eighteen Osmanabadi does of one and half to two years of age were randomly selected and divided into three groups, six in each group on the basis of body weight and age. The 50 per cent DCP from green Maize fodder + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi (T1), 50 per cent DCP from green Marvel grass + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi (T2) and 50 per cent DCP from green DHN-6 fodder + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi (T3).

The highest post-partum gain in body weight was observed in T2 than T1 and T3 treatment groups. It was concluded that the maximum monthly body weights and monthly gain in body weights of Osmanabadi kids born in treatment group T3 (DHN-6) followed by T2 (Marvel) and T1 (Maize).

Keywords: Osmanabadi goat, Productive performance, reproductive performance.

Materials And Methods
2.1 Animals, housing and feeding management
The anthelmintics were orally given to experimental goats (Fenbendazole 5 mg per kg BW) in the beginning of experiment and allowed to adapt for few days before experimental feeding. Experimental goats were housed in a clean, well ventilated shed with facilities of individual feeding and watering. The shed and surrounding area was sprayed with Butox and Diptraz at an interval of one month to control external parasites. The goats were regularly groomed and cleaned. The goats were regularly checked for their healthy condition by veterinary doctor. Healthy and hygienic condition was maintained in the shed during experimental period.

The trial was conducted on 18 Osmanabadi Does divided into 3 groups, 6 Does in each group. The Does of one and half to two years of age were selected for study. The experimental period was 300 days and 10 days as a pre-experimental period. The stall feeding was adopted during course of study. The 50 per cent DCP from green Maize fodder + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi, 50 per cent DCP from green Marvel grass + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi (T1), 50 per cent DCP from green DHN-6 fodder + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi (T2) and 50 per cent DCP from green DHN-6 fodder + 50 per cent DCP from Concentrate + ad lib Sorghum kadbi (T3). The homemade concentrate mixture was prepared by using following ingredients viz. Groundnut cake 30 per cent, Maize grain 30 per cent, Wheat bran 17 per cent, Gram chuni 20 per cent, Mineral mixture 2.5 per cent and salt 0.5 per cent. All the does were dewormed before the experiment and kept under hygienic condition in well ventilated shed with adequate space requirement. The does from T1, T2 and T3 treatment groups were fed with concentrate mixture at 8:00 am daily followed by green maize, marvellous and DHN fodder to the respective treatment groups. In the afternoon session, at 4:00 pm ad libitum feeding with soghum kadbi was done for all groups. Fresh, clean and cool drinking water was offered to does thrice a day in between feeding feed such as concentrate mixture, green fodder and soghum kadbi. The body weights of experimental does were recorded at weekly intervals. The observations were recorded for number of services per conception, litter size, birth weight of kids born, pre-partum and post-partum weight of does, post-partum gain in body weight of does, feed and protein conversion efficiency.

2.2 Experimental Design
The observations were recorded for post-partum gain in body weight of does and reproductive parameters were analyzed by using CRD completely randomized design (Snedecor and Cochran, 1994). Monthly body weight of kids born, monthly gain in body weight of kids born, feed conversion efficiency and protein conversion efficiency was analyzed by using FCRD.

Results And Discussion
The results of the present study as well as relevant discussions have been presented under following sub heads:

3.1 Post-partum gain in body weight of does
The mean post-partum gain in body weight of Osmanabadi does from treatment group T1, T2 and T3 was 1.71 ± 0.60, 2.85 ± 0.89 and 0.88 ± 0.73 kg, respectively. Post-partum gain in body weight was non-significantly differed amongst treatment. The highest post-
Part gain in body weight was observed in T2 followed by T1 and T3 treatment groups. The analysis of variance revealed non-significant differences for the post-partum gain in body weight of Osmanabadi does. The present results were higher than the Bushara et al. (2010), Murniati et al. (2013). The present results were lower than the Naqvi et al. (2013).

3.2 Monthly body weight of kids born

It was revealed from Table 3.2.1 that, the maximum monthly body weight of Osmanabadi kids born was noted in treatment group T1 (DHN-6) followed by T2 (Marvel) and T3 (Maize). It was recorded that the monthly body weight of Osmanabadi kids was recorded up to 90 days during experimental period. The monthly body weight of Osmanabadi kids born during the experimental period in treatment group T1 (Maize) was 2.93 ± 0.13, 5.73 ± 0.28, 8.53 ± 0.58 and 11.23 ± 0.82 kg for initial, 30, 60 and 90 days, respectively. The monthly body weight of Osmanabadi kids born for treatment group T2 (Marvel) was 3.05 ± 0.08, 5.96 ± 0.49, 9.05 ± 0.89 and 12.15 ± 1.21 kg for initial, 30, 60 and 90 days, respectively. The monthly body weight of Osmanabadi kids born for treatment group T3 (Maize) was 3.25 ± 0.08, 6.34 ± 0.19, 9.13 ± 0.40 and 12.28 ± 0.52 kg for initial, 30, 60 and 90 days, respectively. The present results were lower than the Bhatta et al. (2002). The results were in line with Hassan et al. (2010).

3.3 Monthly gain in body weight of kids born

It was revealed from Table 3.3.1 that, the maximum monthly gain in body weight from birth to 90 days was observed of Osmanabadi kids born in treatment group T1 (DHN-6) followed by T2 (Marvel) and T3 (Maize). The monthly gain in body weight of Osmanabadi kids born during the experimental period in treatment group T1 (Maize) was 2.79, 2.69 and 2.80 kg, T2 (Marvel) was 2.90, 3.10 and 3.08 kg and T3 (DHN-6) was 3.08, 3.31 and 2.78 kg for 30, 60 and 90 days, respectively. The monthly gain in body weight of kids born for treatment group T2 (Marvel) was 3.05 ± 0.08, 5.96 ± 0.49, 9.05 ± 0.89 and 12.15 ± 1.21 kg for initial, 30, 60 and 90 days, respectively. The monthly gain in body weight of kids born for treatment group T3 (Maize) was 3.25 ± 0.08, 6.34 ± 0.19, 9.13 ± 0.40 and 12.28 ± 0.52 kg for initial, 30, 60 and 90 days, respectively. The present results were higher than the Bhatta et al. (2002).

3.4 Reproductive performance

It was revealed from Table 3.4.1 that, the mean values for number of services per conception of Osmanabadi does from treatment groups T1, T2 and T3 were 2.66 ± 0.51, 2.83 ± 0.40 and 2.83 ± 0.16, respectively. Differences in the mean values of number of services per conception in all treatment groups were statistically non-significant. The results were higher than the Hassan et al. (2010), Chowdhury et al. (2002), Choudhury et al. (2012) and Miah et al. (2016).

Litter size was observed single in all treatment groups. 18 kids were born from the 18 does in the experimental study. The results were lower than the Chowdhury et al. (2002), Kabir et al. (2002), Sodiq et al. (2002), Bushara et al. (2010), Hassan et al. (2010), Massawe (2010), Sultana et al. (2012), Choudhury et al. (2012) and Abd-Allah et al. (2015).

The mean birth weight of kids born from treatment groups T1, T2 and T3 were 2.93 ± 0.03, 3.05 ± 0.08 and 3.26 ± 0.88 kg, respectively. The numerically highest birth weight of kids born was observed in T1 followed by T2 and T3 treatment groups. The analysis of variance revealed non-significant differences for the birth weight of Osmanabadi kids born. The result was in agreement with the Bhatta et al. (2002). The results were higher than the Chowdhury et al. (2002), Kabir et al. (2002), Hassan et al. (2010), Massawe (2010), Bhowmik et al. (2014) and Abd-Allah et al. (2015). The results were in line with the Sultana et al. (2012).

The mean pre-partum weight of does from treatment groups T1, T2 and T3 were 32.95 ± 0.88, 32.82 ± 0.98 and 35.59 ± 0.77 kg, respectively. The highest pre-partum weight of does was observed in T3 followed by T1 and T2 treatment groups. The analysis of variance has revealed non-significant difference due to treatment on pre-partum weight of Osmanabadi does. The results were higher than the Islam et al. (2009), Bushara et al. (2010) and Massawe (2010). The results were lower than the Abd-Allah et al. (2015).

The mean post-partum weight of does from treatment groups T1, T2 and T3 were 28.64 ± 0.66, 27.92 ± 0.89 and 30.57 ± 1.24 kg, respectively. Post-partum weights of does were non-significantly differed amongst treatment groups. The highest post-partum weight of does was observed in T3 followed by T1 and T2 treatment groups. The analysis of variance revealed non-significant differences for the post-partum weight of Osmanabadi does. From the Table, it was observed that the treatment feed had no significant effect on reproductive performance of Osmanabadi does. The results were higher than the Islam et al. (2009), Bushara et al. (2010), Hassan et al. (2010), Massawe (2010) and Sultana (2012). The results were lower than the Abd-Allah et al. (2015).

Conclusions

From the present study, it inferred (conclude) that treatment groups T3 super seat rest of the treatment groups in respect of productive and reproductive performance. Hence, the set of feeding management with DHN-6 and homemade concentrate feed is beneficial for rearing of Osmanabadi does.

Acknowledgement

Our sincere gratitude goes to V.N.M.K.V., Parbhani for providing required materials and laboratory facilities for conducting research. The authors would like to acknowledge College of Veterinary and Animal Sciences, Parbhani for their insightful comments and encouragement, but also hard question which incepted me to widen my research from various perspectives.

References


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Table 3.1.1 Effect of feeding different fodders on post-partum gain in body weight of Osmanabadi doe

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Post-partum gain in body weight of does (kg)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>1.71±0.60</td>
<td>NS</td>
</tr>
<tr>
<td>T2</td>
<td>2.85±0.89</td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>0.88±0.73</td>
<td></td>
</tr>
</tbody>
</table>

NS- non-significant

Table 3.2.1 Monthly body weight (kg) of Osmanabadi kids born

<table>
<thead>
<tr>
<th>Days</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>Mean</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>2.93±0.13</td>
<td>3.05±0.08</td>
<td>3.25±0.08</td>
<td>3.08</td>
<td>NS</td>
</tr>
<tr>
<td>30</td>
<td>5.73±0.28</td>
<td>5.96±0.49</td>
<td>6.34±0.19</td>
<td>6.01</td>
<td>NS</td>
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<tr>
<td>60</td>
<td>8.53±0.58</td>
<td>9.05±0.89</td>
<td>9.13±0.40</td>
<td>8.90</td>
<td>NS</td>
</tr>
<tr>
<td>90</td>
<td>11.23±0.82</td>
<td>12.15±1.21</td>
<td>12.28±0.52</td>
<td>11.88</td>
<td>**</td>
</tr>
<tr>
<td>Mean</td>
<td>7.11</td>
<td>7.55</td>
<td>7.75</td>
<td>7.47</td>
<td></td>
</tr>
</tbody>
</table>

As means with dissimilar superscript differed significantly, ** significant at (P < 0.01), NS- Non-significant
### Table 3.3.1 Monthly gain in body weight (kg) of Osmanabadi kids born

<table>
<thead>
<tr>
<th>Days</th>
<th>Treatments</th>
<th>Mean</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T₁</td>
<td>T₂</td>
<td>T₃</td>
</tr>
<tr>
<td>30</td>
<td>2.79 ± 0.29</td>
<td>2.90 ± 0.43</td>
<td>3.08 ± 0.16</td>
</tr>
<tr>
<td>60</td>
<td>2.69 ± 0.31</td>
<td>3.10 ± 0.35</td>
<td>3.31 ± 0.27</td>
</tr>
<tr>
<td>90</td>
<td>2.80 ± 0.39</td>
<td>3.08 ± 0.40</td>
<td>2.78 ± 0.24</td>
</tr>
<tr>
<td>Mean</td>
<td>2.76</td>
<td>3.03</td>
<td>3.06</td>
</tr>
</tbody>
</table>

NS- non-significant

### Table 3.4.1 Effect of feeding different fodders on reproductive performance of Osmanabadi does

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Number of services per conception</th>
<th>Birth weight of kids born (kg)</th>
<th>Pre-partum weight (kg)</th>
<th>Post-partum weight (kg)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T₁</td>
<td>2.66 ± 0.21</td>
<td>2.93 ± 0.13</td>
<td>32.95 ± 0.88</td>
<td>28.64 ± 0.66</td>
<td>NS</td>
</tr>
<tr>
<td>T₂</td>
<td>2.83 ± 0.16</td>
<td>3.05 ± 0.08</td>
<td>32.82 ± 0.98</td>
<td>27.92 ± 0.89</td>
<td>NS</td>
</tr>
<tr>
<td>T₃</td>
<td>2.83 ± 0.16</td>
<td>3.26 ± 0.88</td>
<td>35.59 ± 0.77</td>
<td>30.57 ± 1.24</td>
<td></td>
</tr>
</tbody>
</table>

NS- non-significant