Effect of Season on Kidding and Birth Weight in Osmanabadi Goats Reared in an Organized Farm

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Abstract
An attempt has been made to appreciate the pattern of seasonal births and their effect on birth weight in Osmanabadi goats under semi-intensive system of management reared in an organized farm. The study area has three distinct seasons namely summer, rainy and winter seasons. The birth records of the goats were analyzed for six years (2003–2008). All the kiddings recorded during the period were classified into three seasons, namely summer (March–June), rainy (July–October) and winter (November–February). The births recorded were also classified according to their sexes. Birth weights of 288 kids were classified according to sexes and season. Data were analysed using appropriate statistical methods. The 396 births recorded during the study period revealed that in the Osmanabadi goats, the major kidding season was winter in which 48.95% of all births take place followed by summer (33.68%) and rainy (17.36%) seasons. The birth weight of kids differed significantly (P<0.05) between the season of birth. During winter months the mean birth weight was 2.42 ± 0.02 kg followed by summer season (2.46 ± 0.02 kg) and rainy season (2.64 ± 0.02 kg). Higher birth weights were recorded in rainy season born kids followed by summer and winter season. The sex of the kids also significantly (P<0.05) affected the birth weights. The average birth weight of Osmanabadi female kids was 2.35 ± 0.01 kg and in male kids, it was 2.60 ± 0.01 kg. It is concluded that, the results of the present study have practical implications not only for goat husbandry but also for the increased knowledge of factors that significantly influence variation in birth weight as birth weight itself has become a significant predictor of later health outcomes.

Key words: Birth weight, Kidding, Osmanabadi goat, Seasons.

Introduction
In India, we have 23 well defined goat breeds. The current world population of goats is 783 million, out of which Asia possesses 63.78 % and India possesses 15.33 % (Singh, 2006). Goat farming plays a major role in the upliftment of rural economy and in gainful employment of rural youth. Goats can thrive well in hardy weather conditions and because of their small size they can be conveniently reared on uncultivable land, where dairy farming is not economical. The goat contributes significantly to our national economy through production of meat, milk, skin and fibre (Kataktaalware et al., 2004). Further, it is now well documented that goat production could be an important tool to ameliorate the conditions of resource poor rural women in developing countries, the same being seen as a source of women’s emancipation by the development agencies (Bharathidhasan et al., 2009). The Osmanabadi goat is a well recognized goat breed in the north-western and western parts of Andhra Pradesh and Maharashtra states are known for their meat producing ability and majestic appearance, forms an integral part of livelihood for poor small and marginal farmers including landless agricultural labourers. A flock of about 120 Osmanabadi goats
are being maintained at Livestock Experimental Station, Livestock Research Institute of Sri Venkateswara Veterinary University, Hyderabad for over several years to study their production ability and to improve the performance under semi-intensive system. Production traits are affected by various non-genetic factors like sex, season, year and type of birth as reported (Kumar et al., 2007). Hence, an attempt has been made to appreciate the pattern of seasonal births and their effect on birth weight in Osmanabadi goats under semi-intensive system of management reared in an organized farm.

Materials and Methods

A total of 396 birth records of Osmanabadi goats reared at Livestock Experimental Station, Livestock Research Institute, Hyderabad were taken to understand the parturition pattern. The study area was classified as Deccan plateau in southern part of India, at latitude 17°20’ N, longitude 78°30’ E and elevation of 536 m above sea level. The region has three distinct seasons namely summer, rainy and winter seasons. The birth records of the goats were analyzed for the last six years (2003–2008). The kiddings recorded during the period were classified into three seasons, namely summer (March–June), rainy (July–October) and winter (November–February). The births recorded were also classified according to their sexes. Birth weights of 288 kids were classified according to sexes and season. The goats at the station were reared under semi-intensive system of management, wherein they were allowed 4–6 hours of grazing on grass land project and were provided with limited supplementation of concentrate mixture (100-150 g/day) along with ad libitum chopped, cultivated green forage feeding. The concentrate mixture was formulated to have 14% CP (DM basis) to meet requirements of animals according to ICAR (1998). Data were analyzed according to the procedures suggested by Snedecor and Cochran (1994) and the difference between treatment means was tested for significance by Duncan’s multiple range and F Test (Duncan, 1955).

Results and Discussion

Influence of season on kidding

The 396 births recorded during the study period revealed that most of the births took place during November (28%) followed by October (16.4%), February (12.6%) and March (11.2%). Very small number of births (0.7–3.2%) was recorded during June and July months. When the observations on month of birth were classified into season, it was observed that 48.95% of the births were recorded in winter season (October–February) followed by 33.68% in summer and 17.36% in rainy season. The goats generally come into heat after first shower in rainy season by the end of June and early July, and hence more number of births was recorded in winter season particularly during the month of November. Singh et al. (2008) reported that, majority of goats in Orissa comes into heat during summer season which resulted in 46% of goats giving birth during September to November. It was also reported by Kale and
Tomar (1997) and Kumar et al. (2010), that the major kidding season was November to April in North-western India.

**Influence of season on birth weight**

The seasonal differences in birth weights of Osmanabadi kids were presented in the Table 1. The birth weight of kids differed significantly (P<0.05) between the season of birth. Out of the available 288 birth weights of the kids born during the study period, it was observed that during winter months the mean birth weight was 2.42 ± 0.02 kg followed by summer season (2.46 ± 0.02 kg) and rainy season (2.64 ± 0.02 kg). Higher birth weights were recorded in rainy season born kids followed by summer and winter season.

**Table 1: Birth weight of Osmanabadi goat kids born during different seasons**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Seasonal variation of birth weights (Mean ± SE)</th>
<th>Overall (Mean ± SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summer</td>
<td>Rainy</td>
</tr>
<tr>
<td>Females</td>
<td>2.32 ± 0.01 (n = 45)</td>
<td>2.58 ± 0.02 (n = 23)</td>
</tr>
<tr>
<td>Males</td>
<td>2.59 ± 0.02 (n = 52)</td>
<td>2.69 ± 0.02 (n = 27)</td>
</tr>
<tr>
<td>Overall</td>
<td>2.46 ± 0.02(^b)</td>
<td>2.64 ± 0.02(^a)</td>
</tr>
</tbody>
</table>

\(^a\), \(^b\) means with different superscripts row and column wise differ significantly (P<0.05).

The sex of the kids also significantly (P<0.05) affected the birth weights. The average birth weight of Osmanabadi female kids was 2.35 ± 0.01 kg and in male kids, it was 2.60 ± 0.01 kg. the results of present study were in accordance with the findings of Das et al. (1989), who reported, the birth weight of male kids of Barbari were significantly higher (P<0.05) than female kids. Similar results were also reported by Singh et al. (1983) and Banerjee and Jana (2010). The effect of sex on the body weight may be attributed to the anabolic effect of the male sex hormones as reported by Banerjee and Jana (2010). On contrary, Bharathidhasan et al. (2009), reported that no significant difference observed in birth weights of male and female kids, though male kids weighed 4.17 % higher birth weight than female kids.

The variation in birth weight of kids born in different seasons reflected variation in level of management, some environmental effects like temperature and humidity and availability of good quality feed in sufficient quantity. The level of management can vary according to the ability of the farm manager, his system of crop husbandry, methods and intensity of culling and his efficiency in the supervision of the farm labor as well as availability of financial resources. Several workers have reported that birth weights were significantly affected by season of birth (Roy et al. (2003); Afzal et al. (2004) and Kumar et al.
Goats have a diverse breeding habit in which they take pleasure in dry summer months when there are adequate shrubs and bushes existing in the grass land project to browse upon. Thus, the birth weight of kids during ensuing rainy season was higher than the kids born during summer or winter season. These results were in accordance with the findings of Kuralkar et al. (2002), who reported, kids born during rainy season were significantly heavier than those born in winter and/or summer. This could be due to the discrepancy in the nutritional status of dams in advance stages of pregnancy and of kids during pre and post weaning periods.

Conclusion

In Osmanabadi goats, the major kidding season was winter in which 48.95% of all births take place followed by summer (33.68%) and rainy (17.36%) seasons. The birth weight of kids was significantly affected by the kidding season and it was higher in rainy season than the other two seasons. The birth weight also varied significantly between the male and female kids and it was higher in male kids.

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References


