

*Original Research***Performance of Concentrate Supplementation during Pre-partum and Lactation in Sonadi Sheep**C. M. Yadav* and R. K. Sharma¹Krishi Vigyan Kendra, Bhilwara, Maharana Pratap University of Agriculture & Technology,
Udaipur – 313001, Rajasthan, INDIA¹College of Agriculture, Bhilwara, Rajasthan, INDIA*Corresponding author: cmyadav_jaipur@yahoo.com

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Abstract

An on-farm trial was undertaken to assess birth weight, milk intake and growth performance of Sonadi sheep in field condition maintained on grazing alone (T_1) and supplemented graded levels of concentrate feed (10 and 20% of dry matter requirements) during late gestation (last 45 days of gestation) and lactation (first 60 days of lactation) in T_2 and T_3 groups. Lambs were fed concentrate feed @ 10 and 20% of the dry matter requirements up to 120 days in T_2 and T_3 groups, respectively. The significantly ($P < 0.05$) different body weight gains in Sonadi sheep during late gestation in T_1 , T_2 and T_3 groups was observed and values were 1.05 ± 0.32 , 1.33 ± 0.16 and 2.15 ± 0.22 kg, respectively. Birth weight of lambs in 2.84 ± 0.06 (T_3) and 2.21 ± 0.05 (T_2) groups were significantly ($P < 0.05$) higher than 1.89 ± 0.76 (T_1) group. Similarly, milk intake of lambs in T_3 and T_2 groups were significantly ($P < 0.05$) higher as compare to T_1 group. It was concluded that supplementation of concentrate feed to adult Sonadi sheep @ 20% of dry matter requirement during late gestation and lactation not only improves the body weight of ewes but also increases the birth weight and the milk intake and subsequent growth rate of lambs.

Key words: Lactation, Pregnancy, Sheep, Sonadi, Supplementation

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Introduction

Sonadi is one of the important sheep breed distributed in southern part of Rajasthan. Sheep husbandry has been backbone of rural economic in India due to its contribution in sustaining the livelihood of rural poor in problematic topographies with scarce vegetation, marginal land and higher poverty. Sheep is distributed in higher density in arid, semi-arid and mountains region. Majority of sheep in the country are maintained on grazing resources with little bit or no supplementation. This traditional system of sheep husbandry may

not be able to fulfill the rising demand of meat in near future. Sheep population in the country is 65.07 million and 12.71% of the total livestock population in India (19th Livestock Census, 2012). Scientific approach for management of breeding, lambing, nutrition, housing and health care must be followed for reducing the losses and fetching more return to the end user.

In India, sheep are reared mainly on grazing resources that are not sufficient to meet the nutritional requirements throughout the year. Majority of the shepherds in semi-arid region do not supplement concentrate to their sheep during pregnancy and lactation (Chaturvedi *et al.*, 2003). Pre-weaning growth affects the post-weaning growth, reproduction and production of animals (Singh *et al.*, 2013). Growth in lambs is dependent on the quality of milk consumed during the early part of life. Keeping these points in mind this study was undertaken to determine the optimal level of concentrate supplementation to sheep during late gestation and lactation for their maximal production performance.

Materials and Methods

On-farm trial was conducted by Krishi Vigyan Kendra, Bhilwara in adopted village Satola ka khera, Kotri block during the period of October to February 2016. Forty-five Sonadi sheep (3-4 years) weighing 26 to 32 kg were selected from farmer's flocks and divided randomly into three groups (15 each) in a completely randomized design. Body weight for various age groups was taken using 100 kg electronic hanging weighing balance in the field. The body weight of the Sonadi sheep were recorded at the start of experiment at lambing and at end of experiment and the milk yield was assessed by weight suckle weigh method (Benson *et al.*, 1998). Birth weight of lambs and fortnightly changes in lamb's body weight up to 120 days were also recorded. The control group animals (T₁) were maintained only on grazing for eight hours daily from 9.00 am to 5.00 pm. In addition to grazing, sheep in treatment groups (T₂ & T₃) were supplemented with concentrate feed (18% crude protein and 65% total digestible nutrients) @ 10 and 20% of their dry matter requirements, respectively during late gestation (last 45 days) and lactation (up to 60 days). Lambs born in T₂ and T₃ group were fed concentrate feed @ 10 and 20% of their dry matter requirements up to 120 days, respectively. Before starting the experiment, all sheep and lambs were dewormed and vaccinated as per standard protocol.

Result and Discussion

The average daily consumption of concentrate feed by Sonadi sheep in T₂ and T₃ during late gestation and lactation were 118.60 ±2.24, 242.20±2.98 and 103±40±1.32, 220.29±2.82 g respectively (Table 1). The body weight gain in adult sheep during late gestation ranged significantly (P<0.05) higher body weight in T₃ group (2.15kg) as compared T₂ (1.33 kg) and T₁ (1.05kg) groups, respectively. This might be due to fact that the feeding of concentrate to their dams during pregnancy leading to a better body condition which in turn might have diverted nutrients towards foetal growth. Similarly, Chaturvedi *et al.* (2003) reported that

supplementation of Malpura and Kheri ewes in late gestation with a concentrate mixture (1% of body weight) resulted in significantly ($P<0.01$) higher lamb birth weight (3.92 kg) than maintained on sole grazing (2.98 kg).

Table 1: Daily concentrate feed intake and body weight changes in sheep during late gestation and lactation in sheep

Characters	Level of Concentrate Supplementation (% of Dry Matter Requirement)		
	0 (T ₁)	10 (T ₂)	20 (T ₃)
Daily Concentrate Feed Intake (g)			
Late gestation	–	118.60 ± 2.24	242.20 ± 2.98
Lactation	–	103.40 ± 1.32	220.29 ± 2.82
Body Weight (kg) in Late Gestation Period			
Before supplementation	29.23 ± 0.39	28.79 ± 0.37	29.23 ± 0.44
After supplementation for 45 days	30.28 ± 0.28	30.12 ± 0.46	31.38 ± 0.29
Body weight change	+ 1.05 ^a	+ 1.33 ^b	+2.15 ^c
Body Weight (kg) in Lactation Period			
Before supplementation	27.44 ± 0.30	27.16 ± 0.22	27.46 ± 0.20
After supplementation	25.18 ± 0.46	27.91 ± 0.54	28.42 ± 0.58
Body weight change	- 2.26 ^a	+ 0.75 ^b	+0.96 ^b
Daily Intake of Milk by the Lamb (g)			
0 – 30 days	116.00 ± 3.86 ^a	135.00 ± 4.92 ^b	154.00 ± 7.10 ^c
31 – 60 days	138.00 ± 4.35 ^a	166.00 ± 5.84 ^c	154.00 ± 7.28 ^b
61 – 90 days	135.00 ± 5.62 ^a	162.00 ± 6.42 ^b	178.00 ± 7.76 ^c
91-120 days	131.00 ± 4.92 ^a	155.00 ± 6.12 ^b	166.00 ± 7.16 ^c
Lamb Weight (kg)			
At birth	1.89 ± 0.76 ^a	2.21 ± 0.05 ^b	2.84 ± 0.06 ^c
At 90 days	6.43 ± 0.19 ^a	9.43 ± 0.22 ^b	10.86 ± 0.18 ^c
At 120 days	6.96 ± 0.16 ^a	10.10 ± 0.26 ^b	11.64 ± 0.14 ^c
Average Daily Weight Gain in Lamb (g)			
0 – 90 days	46.12 ± 0.48 ^a	56.24 ± 0.90 ^b	68.10 ± 0.92 ^c
91 – 120 days	56.40 ± 1.96 ^a	72.15 ± 2.18 ^b	82.41 ± 2.10 ^c
0 – 120 days	40.10 ± 1.22 ^a	62.58 ± 1.80 ^b	74.42 ± 1.72 ^c

Means bearing different superscripts between row different significantly ($P<0.05$)

The body weight gain/ loss during lactation varied significantly ($P<0.05$) among groups (-2.26 kg in T₁, + 0.75 kg in T₂ and 0.96 kg in T₃). The present findings indicated that Sonadi sheep in T₁, (Control) group mobilized their body reserves to meet the additional nutrient requirement of lactation, leading to reduction in their body weight. Similar results were reported by Idris *et al.* (2010). Further, Al-saigh and Al-Khauzai (1993) reported that ewe body weight was significantly related to milk yield, lamb birth weight and lamb daily weight gain. Milk intakes of lambs in T₂ and T₃ groups were significantly ($P<0.05$) higher compared to T₁ group due to more milk yield of ewes with concentrate supplementation. The birth weight of lambs at 90 and 120 days of age were 6.43 ± 0.19, 9.43 ± 0.22 and 10.86 ± 0.18; 6.96 ± 0.16, 10.10 ± 0.26 and 11.64 ± 0.14

kg for the T₁, T₂ and T₃ groups, respectively. Birth weight and body weight gains of lambs at 90 and 120 days of age were significantly (P<0.05) higher in T₃ and T₂ groups as compared to T₁ group (Table 1). The overall average daily gains of lambs in T₁, T₂ and T₃ groups were 48.10±1.22, 62.58±1.80 and 74.42±1.72 g, respectively. Higher birth weight and subsequent higher body weight gains of lambs born to sheep of T₂ and T₃ group were due to concentrate feed supplementation during pregnancy and lactation and increased colostrum and milk yield of sheep Chaturvedi *et al.* (2008) conducted that under field condition providing supplement in the form of concentrate mixture @ 1% of the body weight to lambs is significantly benefited lambs born to such ewes in terms of birth weight and daily body weight gain. Similarly, Chaturvedi *et al.* (2010 and 2012) reported increase in milk yield of ewes during lactation in native Malpura sheep when supplemented with concentrate mixture at the rate of 400 g daily after grazing on semi-arid rangeland in field flocks.

Conclusion

It was concluded that supplementation of 20% concentrate to Sonadi sheep during late gestation and lactation significantly increased milk yield of ewes and birth weight, milk intake and growth rate of lambs.

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