Trop. J. Anim. Sci. 2003 Vol. 6 No. 1: 77-80

Effects of Restriction and Feeding on Performance in Weaner Lambs

Esugbohungbe, O. O. and I. O. A. Adeleye*

Department of Animal Production, College of Agricultural Sciences, Ogun State University, Ago-Iwoye, Nigeria
** Department of Animal Science, University of Ibadan, Ibadan. Nigeria*

Target Audience: Animal nutritionists, sheep producers

Abstract

The effect of refeeding after mild restriction on the growth of weaner ewe lambs was studied. While the control animals in Group A were not restricted but fed continuously, Groups B and C animals were restricted for 23 and 35 days and refed for 47 and 35 days respectively. Although the mean total feed intake was higher (P < 0.05) in the control (33.793 kg) when compared with those on restriction (B – 24.210kg and C – 27.227kg); its mean feed intake (482.76gm/day) was significantly lower (P < 0.05) than the group C animals (777.9gm/day) that were fed on alternate days. The mean body weight gain (B – 82.57gm and C – 88.14gm) of animals in groups B and C under restriction were non-significantly lower by 15.49% and 9.79% respectively than those animals fed continuously. Also, the restricted and refed animals were observed to be more efficient (P < 0.05) in terms of feed conversion than the control group. It is therefore concluded that ad libitum feeding may be wasteful under certain harsh conditions.

Keywords: Ewe lambs, restriction, alternate days, continuous feeding

Description of Problem

Insufficient feedstuff accompanied by inadequate feeding of ruminants due to some adverse effects of weather and topographical conditions, mechanical failures, interrupted work schedules and other gross mismanagement on farm settlements have been observed. As a result of this many sheep through out the country are either underfed and, or starved. Available information (1) showed that the appetite of animals after periods of undernutrition is commonly increased; and that this intake factor may contribute to the increased growth rates and improved efficiency of conversion. There is no general agreement on this point however, since there was no indication of any increase in appetite of the refed young cattle (2). After working with young cattle which were allowed to graze good quality herbage after experiencing a low plane of nutrition during a long dry season; it was reported (3) that there was a strong relationship between the severity of underfeeding and the subsequent rate of recovery. It was however reported (4) that the method of restraint of the stalled animals will affect digestibility to the extent that undue restraint will lower feed intake and thus increase forage digestibility.

In addition to the above mentioned recurrent and short term seasonal variations in feed supply animals are sometimes subjected to periods of starvation which occurs during transportation of these animals from one part of the country to the other, most especially during festival periods. It is because of these problems that this present study was undertaken to examine the effect of restriction and refeeding on subsequent feed intake, body weight changes and other performance parameters on West African Dwarf (WAD) weaner lambs.

***Correspondence author**

Material and Methods

A total of 9 weaner lambs weighing averagely 8.78kg were selected from the flock at the sheep unit, TRF, University of Ibadan. The animals were individually housed, dewormed with Barminth II dewormer and treated against ecto and other endo parasites using ivomec at the beginning of the study. They were divided into three groups of three animal each on weight basis. Group A served as the control while Groups B and C served as the experimental animals. The control animals were offered feed to appetite throughout the experimental period. On the other hand, Group B animals were fed two days to be starved for one day while Group C animals were fed on alternate days. The feed used was compounded at the University of Ibadan feed depot. During the feeding days however, experimental animals were usually fed *ad libitum* and with adequate water supply. The feed offered daily to each animal was usually weighed out, and the quantity of feed consumed by each animal was determined by weighing back the refusals every morning. The live weights of the individual animals were taken and recorded at the beginning of the study and subsequently at weekly intervals. These weights were usually taken at 08.30 hours before introducing the day's feed. An animal from each treatment was moved into individual metabolic cage for faecal collection after the 70 days of initial study. The total length of the digestion trial was 8 days divided into 3 days preliminary and 5 days collection periods. Feed was fed *ad libitum* as at when due at approximately 08.30 hours. Water was also equally supplied. Total faeces were collected and weighed daily and aliquots (10%) dried in a forced-drought oven at 105°C to constant weight and milled to pass through a 1mm sieve. Collected data were subjected to statistical analysis (5) and proximate composition of feed and faeces were also analysed (2).

Results and Discussion

The proximate composition of feed used which contained (on dry matter basis) 86% DM, 18.31% CP, 17.44% CF, 5.77% EE, 5.23% Ash and 52.24% NFE is shown in Table 1. The performance data obtained from the trial (Table 2) showed no significant differences ($P < 0.05$) in body weight gain, dry matter, crude protein and crude fibre digestibilities between ewe lambs on feed restriction when compared with those animals in group fed continuously. The experiment with Hereford steers (7) also showed this phenomenon and similar weight changes were reported in mature non-pregnant cows (8). Also, the longer the duration of feed consumed in the rumen and the slow rate of flow of digesta through the intestinal tract were thought to have been responsible for the marginally higher DM, CP and CF digestibilities in animals under feed restriction. The results of this study is in agreement with those researchers (4) who reported that feed restriction in order to avoid selection by the animals usually results in increased digestibility.

The mean total feed intake was undoubtedly lower ($P<0.05$) in the groups (B - 24.210kg and C - 27.227kg) which were under different shades of mild feed restrictions than those animals in control group (A - 33.793kg) which were fed continuously. Contrary to this however, and because of the mode of restriction imposed, the mean daily feed intake of animals fed on alternate days (group C 777.90gm) was significantly higher ($P < 0.05$) than animals in groups A (482.76gm) and B (515.11gm) respectively. The study also showed that restricted and refed ewe lambs in groups B and C were more efficient ($P < 0.05$) in terms of feed conversion than those animals continuously fed in group A. The response to *Ad libitum* feeding following a period of restriction, by increased feed intake either in absolute terms or in relation to the lambs sizes was thought to have been responsible for the improved performance of the lambs on mild restriction. The observation tends to support those of early workers (9) who showed that increased intake in such realimented animals seemed to be the major cause of this phenomenon of compensatory growth.

In conclusion, the result of this trial showed that mild restriction of feed intake promotes improved efficiency of feed conversion; hence, alternate day (survival) feeding might be a more economical method of raising ruminant animals under some severe conditions.

Table 1: Chemical Composition of ration fed to animals before and during the trial (% Dry matter basis).

Chemical Composition	Percentage
Moisture	14.00
Dry Matter	86.00
Ash	5.23
Ether Extract	5.77
Crude Protein	18.31
Crude Fibre	17.44
N.F.E.	53.24

Table 2: Growth response of lambs on different modes of restriction and refeeding.

Performance Parameters	Animal Groups		
Mode of restriction	A	B[+]	C[++]
Duration of experiment (days)	70	70	70
Days of restriction	0	23	35
Days of refeeding	70	47	35
Mean total feed intake (kg)	33.793[a]	24.210[b]	27.227[b]
Mean initial weight (kg)	8.83[a]	8.50[a]	9.00[a]
Mean final weight (kg)	15.67	14.28	15.17
Mean weight gain (kg)	6.84	5.78	6.17
Mean daily weight gain (gm)	97.71[a]	82.57[a]	88.14[a]
Mean daily feed intake (gm)	482.76[b]	515.11[b]	777.9[a]
Feed efficiency	0.2024[b]	0.1603[a]	0.1133[a]
Apparent Digestibility (%)			
Dry matter	58.87	60.48	67.02
Crude protein	76.29	77.56	81.22
Crude fiber	65.42	69.57	74.93

Means denoted by different superscripts horizontally were significantly different ($P < 0.05$).

Mode of restriction:

[+] Group B animals fed 2 days and restricted for 1 day.

[++] Group C animals fed on alternate days.

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