

Effects of Various Ages of Weaning on Growth Performance of Morkaraman Lambs

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Abstract: This study was conducted on 46 Redkaraman lambs born at the Ataturk University, Agricultural Faculty Sheep Research Farm. The lambs were weaned at different ages such as 45, 60 and 75 days. After weaning, the lambs were sent to the pasture and fed on concentrate including 15.3% crude protein in a ratio of 1.5% of live body weight for the first 6 weeks thereafter, amount of feed was increased to 2% of the live body weight in addition to pasture at the evenings. Live body weights and daily weight gain of lambs were determined from 45 days to end of the grazing period within 14 days intervals. Live weights at 45 days for the lambs weaned at 45, 60 and 75 days were 12.20, 11.58 and 12.47 kg and at 60 days were 14.38, 14.79 and 15.40 kg and 75 days were 15.30, 16.06 and 17.28 kg. Live weights at the end of the grazing period were 34.86, 35.11 and 38.93 kg for the lambs weaned at 45, 60 and 75 days of age, respectively. The differences among the group were found significant ($p < 0.05$) for live weights at the end of the grazing period. Daily weight gains of lambs in the groups were found as 144.5, 145.7 and 164.0 g for the end of the grazing period; 137.3, 142.6 and 160.5 g for the 46 days of age and 136.5, 135.5 and 157.0 g for 61 days of age. The differences among the group were found significant ($p < 0.05$). The results of this research indicated that there were significant ($p < 0.05$) differences for the live weights at the end of the grazing period in Redkaraman lambs weaned at various ages, also there were significant ($p < 0.05$) differences for daily weight gains at the end of the grazing period, 46 and 61 days of age.

Key words: Redkaraman, lamb, weaning age, growth performance, live weight, feed

INTRODUCTION

Even though demand for the milk products from sheep milk is not high, controlling milk production in sheep breeding is necessary due to the growing rates of the lambs depends on the amount of the milk suckled from dam (Akcapinar, 1983). It is important to increase the amount of milk obtained from the sheep. Besides, one should be careful to not cause any negative effect for the growing performance for the lambs (Duzgunes *et al.*, 1961). Especially, in Mediterranean countries ewes with high fertility and milk production are started to be milked by weaning their lambs as early as possible (Sarican, 1980). Therefore, it is stressed for the early weaning of lambs. Increasing the milk production of ewes is possible in two ways; one is that improving feeding regimes and the other is that extending the milking period. There are several ways to extend milking

period. The most important one of them is separating lambs 24-48 h after birth, suckling short duration and early weaning (Sarican *et al.*, 1979).

In Turkey, researches have been conducted for increasing the amount of the milk marketed by extending milking period with early weaning (Altin and Celikyurek, 1996; Darcan and Guney, 1996). There are some criteria rather than age for the time of weaning. Lambs can be weaned when they reach 12-13 kg live weight or when they reach 3-4 times of their birth weights. The most important issue is that to make sure lambs are capable to consume the feed to meet their daily nutrition requirements. Early weaning means that weaning of lambs earlier than regular suckling period or separating them from their dam. There are two aims for early weaning, one of them is that ewes are designed to be included in accelerated lambing programs and the other is that obtaining marketing milk as soon as possible (Kaymakci,

2006). The success of the early weaning depends on partially to rumen development of the lambs and milk production of the dams (Ward *et al.*, 2008).

Increasing lamb production is possible to shorten the lambing interval. In accelerated lambing programs, lambs have to be weaned as early as possible and this management is not very acceptable for the rural areas due to the extra labor (Sarican *et al.*, 1978).

Moreover, lambs weaned in early ages are recorded with retardation for the growth rate. In eastern Anatolia, lambs are wintered following the grazing period and they are marketed when they are 1.5 years old. In spite of the low milk production traits of the native sheep raised in the region, ewes are milked for the popularity of sheep milk and yogurt. In the current study, it was investigated the possible weaning ages in Eastern Anatolia.

MATERIALS AND METHODS

A total of 46 lambs born in March at the Ataturk University, Agricultural Faculty Sheep Research Farm. Concentrate utilized in experiment is shown in Table 1.

Date of birth, birth weights, birth type and sex of the lambs were recorded during the lambing period. Lambs were divided into three groups and lambs were weaned at 75 days (n = 15); 60 days (n = 15) and 45 days (n = 16).

Daily weight gains are determined 14 days intervals. Lambs were subjected to group feeding and they were fed daily with the concentrate in a ratio of 1.5% of average live weight for the first 6 weeks thereafter amount of feed was increased to 2% of the live weights (Macit *et al.*, 1998).

Data were analyzed by analysis of variance (SPSS, 2002). Significant differences between means of growth traits were tested using Duncan's multiple range tests.

Table 1: Composition of concentrated feed (%)

Raw materials	Rate in concentrate (%)
Barley	65.0
Soybean meal	22.5
Wheat bran	10.0
DCP	1.0
Salt	0.5
Premix (*)	1.0
Chemical composition of concentrate (%)	
Dry matter	90.0
Crude protein	15.3
Crude fibre	6.5
Ash	4.3
Ether extract	2.0
N free extract	61.9

*For kg: 7,000,000 I.U. Vitamin A, 1,000,000 I.U. Vitamin D3, 30,000mg Vitamin E, 50,000 mg Mn, 50,000 mg Zn, 50,000 mg Fe, 10,000 mg Cu, 8000 mg I, 200 mg Co, 150 mg Se and 100 mg Mg

RESULTS AND DISCUSSION

The least-square means for lamb weights and Average Daily Weight Gains (ADG) are shown in Table 2 and 3. Lamb weights at any ages including at birth were not found significantly differed for the lambs weaned at different ages. However, body weights at the end of grazing period was significantly higher in lambs weaned at 75 days of age compared to those weaned at 45 and 60 days of age. Birth weights were also not effected by age of dam, sex and birth type of lamb. Birth weights of lambs in the current study are similar with other native breeds such as Whitekaraman, Awaasi, Morkarman (Unal, 2001; Esenbuga and Dayioglu, 2002) while, Kivircik, Chios x Kivircik, Chios and Turkgeldi lambs had lower birth weights.

The other Turkish native lamb weights at 45 days were reported as 12 kg for Karayaka lambs (Saricicek *et al.*, 1993), 11.78 kg for Morkaraman lambs (Odabasioglu *et al.*, 1996) and 8.58 kg for Kivircik lambs (Altin *et al.*, 2003). Our current results, for the Morkaraman lamb live weights at 45 days of age were similar to the other native breeds given above. In addition to similar live weights at 45 days of age, Morkaraman lambs weights at 60 and 75 days of age also were found similar with Karakas (Cengiz *et al.*, 1998) and Awassi lambs (Esenbuga and Dayioglu, 2002). Kivircik and Chios x Kivircik lambs were recorded 12.33 and 12.53 kg, respectively by Altin *et al.* (2003) and these breed of lambs showed lower growing performance than the Morkaraman lambs included in the current study. In spite of Kivircik and crosses with Chios lambs are usually weaned early for the current lamb market in the western region of Turkey, their low body weight is thought to be a source of economic loss in total meat to be marketed. Esenbuga *et al.* (1999) conducted a crossbreeding between two Turkish native breeds such as Morkaraman and Tuj and indicated an increase in body weights (Approx. 4 kg heavier) at 75 days of age. Thus, crossbreeding Morkaraman breed with other native breed of sheep may reflect an increase for the body weights at early ages. In our study, Morkaraman lambs weaned at different ages had similar body weights at 4 months old and these findings are similar to those recorded for Kivircik and crosses Altin *et al.* (2003). One of the important indicator for the fattening performance of the lambs is that body weights at the end of grazing period especially, in the Eastern Anatolia since lambs are generally fattened after grazing ends. Morkaraman lambs weaned at 75 days of age were 3 kg heavier than those weaned earlier.

Table 2: Average live body weights of Redkaraman lambs weaned at different months (kg)

Production traits	N	Live weights (X±S _e)				
		Birth weight	45th day weight	60th day weight	75th day weight	Final weight (210th day)
Group		ns	ns	ns	ns	*
1	15	4.06±1.62	12.20±0.88	14.38±0.72	15.30±0.86	34.86 ^a ±1.51
2	15	4.09±0.16	11.58±0.84	14.79±0.68	16.06±0.82	35.11 ^b ±1.39
3	16	4.09±0.17	12.47±0.91	15.40±0.73	17.28±0.87	38.95 ^a ±1.47
Age of dam		ns	ns	ns	ns	ns
2	6	3.83±0.24	10.97±1.28	13.69±1.03	14.09±1.25	33.17±2.12
4	18	4.15±0.16	11.24±0.84	14.56±0.68	16.51±0.83	37.71±1.40
5	12	4.30±0.16	12.67±0.83	14.82±0.67	16.27±0.81	36.05±1.38
6	10	3.99±0.21	13.46±1.09	16.36±0.88	17.98±1.07	38.03±1.82
Type of birth		ns	ns	ns	ns	ns
Single	36	4.77±0.10	13.34±0.55	15.94±0.45	17.47±0.54	37.13±0.92
Twin	10	3.37±0.19	10.83±1.30	13.74±1.05	14.95±1.27	35.49±2.16
Sex		ns	ns	ns	ns	**
Male	24	4.22±0.13	12.62±0.69	15.06±0.56	16.64±0.68	38.94±1.16
Female	22	3.92±0.14	11.55±0.83	14.65±0.67	15.79±0.81	33.68±1.38

ns: not significant (p>0.05), *p<0.05, **p<0.01, means values with different letters are significantly different at p<0.05

Table 3: Average daily weight gains of Redkaraman lambs weaned at different month (g)

Production traits	N	Daily weight gains (X±S _e)						
		45th day	60th day	75th day	Final weight (210th day)	46-210th day	61-210th day	76-210th day
Group		ns	ns	ns	*	*	*	ns
1	15	176.8±20.1	181.3±12.2	170.2±11.8	164.0±7.2	160.5 ^a ±8.1	157.0±7.6	160.5±8.2
2	15	156.9±10.6	171.1±11.3	153.9±10.9	145.7 ^b ±6.6	142.6 ^b ±6.6	135.5 ^b ±7.0	141.1±7.6
3	16	170.7±19.6	164.4±11.9	143.7±11.5	144.5 ^b ±6.9	137.3 ^b ±7.9	136.5 ^b ±7.4	144.9±7.9
Age of dam		ns	ns	ns	ns	ns	ns	ns
2	6	143.4±28.3	152.9±17.2	127.6±16.7	136.5±10.1	134.6±11.5	129.9±10.7	141.4±11.5
4	18	149.4±18.7	167.3±11.4	159.9±11.0	158.0±6.7	160.4±7.6	154.3±7.1	157.0±7.6
5	12	118.1±18.4	171.7±11.2	156.8±10.8	150.2±6.6	141.7±7.5	141.5±6.9	146.5±7.5
6	10	198.8±24.3	197.3±14.7	179.5±14.3	160.9±8.7	150.5±9.8	146.3±9.2	150.5±9.9
Type of birth		ns	ns	ns	ns	ns	ns	ns
Single	36	196.0±12.3	190.9±7.5	172.7±7.2	155.3±4.4	144.2±4.9	141.0±4.7	145.6±5.0
Twin	10	140.3±28.9	153.7±7.5	139.1±16.9	147.5±10.3	149.4±11.7	145.0±10.9	152.1±11.7
Sex		ns	ns	ns	**	**	**	**
Male	24	180.1±15.4	175.8±9.4	161.6±9.1	163.9±5.5	159.5±6.2	159.2±5.8	165.2±6.3
Female	22	156.2±18.4	168.9±11.2	150.3±10.8	138.9±6.6	134.1±7.4	126.9±6.9	132.5±7.4

ns: not significant (p>0.05), *: p<0.05, **: p<0.01, Means values with different letters are significantly different at p<0.05

Average daily weight gains of lambs weaned at different ages were differed (p<0.05). Lambs weaned at 45 days had higher (160.5 g) ADG than 60 days (142.6 g) and 75 days (137 g) in days between 46-210 days. The same trend was observed for the ADG between 61-210 days. Thereafter, ADG was similar in three groups of lambs and was between 144.9 and 165.4 g. Neither age of dam or birth type effected ADG but male lambs had higher ADG than female lambs between 46 and 210 days. The amount of concentrate consumption in addition to pasture/kg live weight gain for the lambs weaned at 45, 60 and 75 days of age were found 2.670, 3.006 and 3.078 kg, respectively. Macit and Aksoy (1996) found concentrate consumption on pasture/kg live weight gain for the Morkaraman lambs weaned at 54 days as 4.65 kg in semi intensive management system, in which lambs were offered with concentrate 2% of their live weights.

CONCLUSION

We concluded that except for body weights at the end of grazing period lambs weaned at different ages showed similar growing performance. In general speaking based on the current research findings, the best time of weaning for the Morkaraman lambs is that 60 days of age. If ewes are milked, weaning age could be shorten to 45 days.

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