

OPTIONS FOR THE PRODUCTION OF LAMB CARCASSES FROM GREEK DAIRY BREEDS OF SHEEP

1. Indoor feeding

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Introduction

The objectives of this study were to investigate:

- 1. The flexibility in dairy farm systems using local resources to produce a range of carcass weights (10-16 kg).
- 2. The effect of level of nutrition on growth and development.
- 3. The possibility for extending the time scale in the supply of carcasses to the market.

The experiment formed part of the wider project previously described. As part of larger experiment the three dairy breeds Boutsko (B), Serres (S) and Karagouniko (K) were compared at slaughter when they reached equal proportions of their mature liveweight (MW), as previously defined. In the first phase, using non-limiting feed conditions, it was found that when each breed was slaughtered at 45% of MW the carcass composition was closest to the definition of "acceptability". However at a mean fat class grade of 4L they were considered overfat. In the present study, therefore, the constant percentage of MW at slaughter was reduced to 42%. The design of the relevant section of the experiment is shown in Table 1.

Table 1. - TARGET SLAUGHTER WEIGHTS AT 42% OF BREED MATURE WEIGHT (MW)

Concentrate level	Target slaughter LW (kg)		
	Boutsko	Serres	Karagouniko
High	23	28	33
Medium	23	28	33
Low	23	28	33

*4 male lambs individually penned per cell.

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Materials and Methods

Male lambs born in October and weaned in mid-December at 42 days of age were individually penned and offered 3 levels of concentrate feeding, described as high (H), medium (M) and low (L). In addition they were offered unchopped alfalfa hay *ad lib*. Individual refusals of hay were measured (all concentrate was consumed). The target slaughter weights at 42% MW were 23, 28 and 33 kg respectively for the B, S. and K breeds. A total of 36 lambs were used, 4 for each breed and group. The levels of concentrate were based on the *ad lib* consumption found for each breed in the previous year. The levels were set at 80, 50 and 25% of *ad lib*. The initial allowances were increased weekly by 14%, 11% and 12% for B, S and K breeds; the increments being based on the weekly increase in *ad lib* intake (Table 2).

Table 2. - INITIAL CONCENTRATE ALLOWANCE AND WEEKLY INCREMENT (G/DAY)

Concentrate level	Boutsko	Serres	Karagouniko
High (H)	237(33)	429(48)	450(54)
Medium (M)	158(22)	286(32)	300(36)
Low (L)	71(11)	143(16)	150(18)

*All lambs were offered alfalfa hay *ad libitum*.

Results and Discussion

The mean consumption of both concentrate and hay between the start of the feeding period and slaughter for each group is shown in Table 3 for each feed component.

Table 3. - CONSUMPTION OF CONCENTRATE (C) AND ALFALFA HAY (A) (G/DAY)

Concentrate level	Boutsko		Serres		Karagouniko	
	C	A	C	A	C	A
High (H)	405	271	627	282	674	350
Medium (M)	255	439	445	471	500	521
Low (L)	157	581	241	615	262	711

In all 3 breeds a significant amount of hay was consumed at the highest concentrate level and this was increased in response to the reduction in concentrate.

The 3 breeds differed in weaning weight according to their adult size and were allocated to different slaughter weights based on 42% MW. Hence, the required liveweight gain from weaning to slaughter varied mainly with breed. There were however, minor differences in practice between the feed groups.

The mean weight gains for each group are shown in Table 4.

Table 4. - LIVEWEIGHT GAIN (KG) FROM WEANING TO 42% MW

Concentrate level	Boutsko	Serres	Karagouniko
High (H)	10.7	13.0	16.3
Medium (M)	10.2	13.3	16.1
Low (L)	10.6	13.6	15.9

The mean number of days from the start of the feeding period to slaughter was affected to a greater extent by the level of concentrate offered than by breed (Table 5).

Table 5. - TIME TAKEN TO REACH SLAUGHTER WEIGHT (DAYS)

Concentrate level	Boutsko	Serres	Karagouniko
High (H)	79	64	71
Medium (M)	70	76	86
Low (L)	108	94	97

In general, the time taken to reach target weight increased as concentrate level was reduced. However, the Boutsko breed appeared to require a shorter time when fed at the M level than on the H.

Differences in time taken to achieve target gains were a reflection of mean daily liveweight gain as affected by breed and treatment (Table 6).

Table 6. - MEAN DAILY LWG (G/DAY) FROM WEANING TO SLAUGHTER

Concentrate level	Boutsko	Serres	Karagouniko
Hgh (H)	136	202	229
Medium (M)	150	175	189
Low (L)	99	146	168

Over all nutritional treatments the mean DLWG was a reflection of breed differences in MW and the reduction in concentrate offering. Again the B breed had a higher DLWG on the M than on the H ration.

At the beginning of the study the approximate cost of the concentrate feed was 100 Dra/kg and that of the alfalfa hay was 60 Dra/kg. These values were used in the present study to estimate total feed cost for breed and treatment from weaning to achievement of target slaughter weight (Table 7).

Table 7. - TOTAL FEED COST (DRAX1000) FROM WEANING TO SLAUGHTER AND COST PER KG OF LIVEWEIGHT GAIN

Concentrate level	Boutsko	Serres	Karagouniko
High (H)	4.5	5.1	6.3
Medium (M)	3.6	5.6	6.9
Low (L)	5.5	5.8	6.6

The total feed costs were highest for the K breed and lowest for the B. However, given the differences in required liveweight gain, there were only minor differences in feed cost per kg gain associated with either breed of feed level (418±14.5 Dra/kg).

One main objective of the study was to assess the possibility for the production of heavier carcasses at an acceptable degree of fatness (taken as fat class 2 to 3L) in each of the breeds. The mean carcass weights when slaughtered at 42% MW for the 3 breeds are shown in Table 8 together with estimates of fat class based on chemical analysis of 1/2 carcasses and on visual scoring of the carcasses at slaughter. The fatness levels were considerably lower than the corresponding carcasses (at 45 MW %) when fed concentrate *ad libitum*.

Table 8. - CARCASS WEIGHT (CW) AND FAT CLASS (FC)

Concentrate level	Boutsko		Serres		Karagouniko	
	CW	FC	CW	FC	CW	FC
High (H)	10.3	3L	13.8	3L	16.4	4L
Medium (M)	9.4	3L/3H	13.2	2	15.5	3L
Low (L)	10.1	3L/3H	13.2	2/3L	15.5	3L
Overall	3L		2		3L/3H	

Conclusion

The three dairy breeds can produce acceptable carcasses at higher weights than traditional.

Different levels of nutrition had only a minor effect on acceptability at a given carcass weight, although the relatively slow growth was associated with reduced fat level as compared with the unrestricted diet.

Different levels on nutrition had a major effect on time taken to reach a given carcass weight. This gives flexibility to the farmer for an extended period of market supply with suitable lambs.