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Fattening of Apennine heavy lambs in central Italy using pasture

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Abstract. Two farming systems, extensive with pasture use (P) and intensive (S), with hay and concentrate, were evaluated for their effect in fattening 26 Apennine male lambs weaned at 41-54 days of age and slaughtered at about 30 kg of live weight. P lambs showed lower average daily gain: (132 vs 209 g/d), lower hay and concentrate daily intake, but higher carcass yield (50.1% vs 45.6%) compared to S lambs. The use of pasture for fattening Apennine lambs in Mediterranean areas seemed to be useful for producing carcass of moderate quality at lower costs.

Keywords. Heavy lamb – Apennine breed – Pasture – Fattening – Carcass quality.

Engraissement d'agneaux lourds de race "Appenninica" en Italie centrale avec utilisation de pâturage

Résumé. Deux systèmes d'élevage, extensif avec utilisation de pâturage (P) et intensif (S) avec foin et concentré, ont été évalués pour engraisser 26 agneaux mâles de race "Appenninica" sevrés à 41-54 jours d'âge et abattus à environ 30 kg de poids vif. Les agneaux P ont montré un gain moyen quotidien inférieur (132 contre 209 g/j), une consommation quotidienne de foin et concentré inférieure, mais un rendement de carcasse supérieur (50,1% contre 45,6%) en comparaison aux agneaux S. L'utilisation du pâturage pour l'engraissement des agneaux "Appenninica" a semblé être utile pour produire des carcasses de qualité modérée à des coûts inférieurs.

Mots-clés. Agneau lourd – Race "Appenninica" – Pâturage – Engraissement – Qualité des carcasses.

I – Introduction

Generally, in Central Italy, Apennine (an autochthonous meat sheep breed) lambs are raised with their mother until slaughtering age (at about 50-80 days of age); feeding consists in suckled milk, hay and a little quantity of concentrates. Typical selling periods for lambs are Christmas and Easter, when grazing in pasture is practically impossible due to cold weather affecting grass growth and temperature. Usually lamb's selling price have a dramatic decrease after Easter period, affecting the possible income from selling Apennine lambs born late in winter, too young to be slaughtered in Easter. A possible solution is to sell such lambs after Easter period at higher live weight reducing at the same time production costs by using pasture. The objective of this study is to verify growing and slaughtering performance of heavy Apennine lambs using as more as possible the pasture rather than the intensive fattening in multiple box with hay and concentrate (ratio: 30/70).

II – Material and methods

Twenty-six Apennine male lambs, reared in a Umbrian farm, were weaned, at about 41-54 days of age, and divided in two different groups for weaning weight, were fattened in the experimental sheepfold of Perugia University. After an adaptive period of a week, lambs were raised using two farming systems: (i) intensive (S) in sheepfold (12 lambs); and (ii) extensive (P), using pasture (14 lambs).

P lambs had a greater weaning weight than S ones (20.8 ± 2.1 kg vs 17.1 ± 1 kg respectively) for a better adaptation to pasture. Lambs grazed in natural pasture (two plots of 4000 m² of total area, using rotational technique): climate or farming organization allowed 47 grazing days during the trial. If pasture was not accessible (for rainfalls, when stumping is destructive in clayey soil) or not sufficient (at the end of period, for dryness) about 100 g/day of concentrate (maize: 39.1%; barley: 32.2%; soybean extraction meal: 26.4%; mineral and vitamin supplement: 1.5%; sodium bicarbonate: 0.8%) and hay *ad libitum* was furnished in the late afternoon.

S lambs were raised intensively in sheepfold (multiple pens) and fed with the same hay and concentrate (ratio: 30/70).

Both lamb groups were slaughtered at about 30 kg of weight or, if not possible, at about 110 days of age, before summer dormancy of vegetation. Grass hay, concentrate daily intake and growth rate were regularly recorded. Usual *in vivo* and slaughtering traits (ASPA, 1991) were collected or calculated. Data were analysed using a covariance model, with weaning weight (kg) as covariate, using SAS software (SAS, 1991).

III – Results and discussion

Dry matter (DM) daily intake of hay and concentrate in the two groups (Fig. 1) showed an evident difference, with less intake in P lambs, probably integrated by pasture consumption, unfortunately not recorded. Weaning weights were different in two groups: P lambs, using pasture, were older than S lambs (54 ± 7 d vs 41 ± 4 d respectively), in order to better bear pasture stressing factors. However, the covariance analysis pointed out similar weaning ages in both groups, due to the use of weaning weight as covariate; similar results were found for the length of finishing period (60 days) and carcass fatness (about '3').

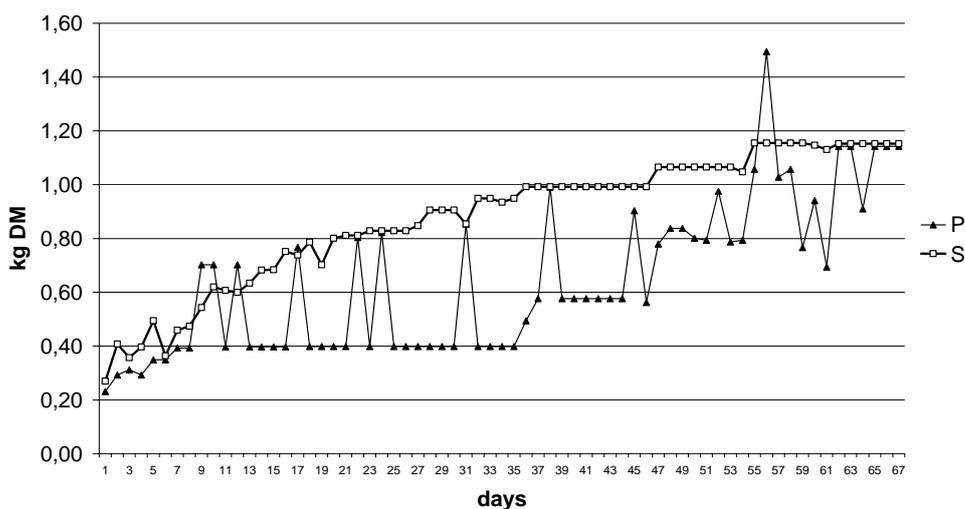


Fig. 1. Dry matter hay and concentrate consumption in P and S lambs.

On the other hand (Table 1) average daily gain (ADG), empty slaughtering weight (as found also by Zervas *et al.*, 1999), warm carcass weight and SEUROP conformation were significantly higher ($P < 0.01$) in S lambs, while P lambs had a significantly superior ($P < 0.01$) carcass yield. Diaz *et al.*, 2002, did not find any difference in ADG between extensively and intensively reared lambs, but using different slaughtering weights.

Table 1. *In vivo* and slaughtering characteristics (LS means) for lambs reared with different systems

	Farming systems (FS)			P<F	
	P	S	RMSE	FS	Weaning weight
Average daily gain (ADG) (g/d)	132	209	20	0.0001	0.02
Empty slaughtering weight (kg)	27.48	30.15	0.94	0.001	0.0001
Warm carcass weight (kg)	12.52	15.07	0.73	0.0001	0.0003
Carcass yield (%)	50.13	45.59	0.71	0.007	0.29
SEUROP conformation	4.6	6.5	1.0	0.004	0.05

IV – Conclusions

The use of pasture in spring for fattening Apennine lambs in Central Italy was useful for producing heavier lambs after peak selling period of Easter at low costs (due to a lower use of hay and concentrate, as reported by Zervas *et al.*, 1999) and carcasses of moderate quality, but seemed to be a marginal practise to be reserved only to a little amount of latecomer lambs.

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