

**THE COMPARISON OF KEEPING LAMBS AT PASTURE
UNDER VARIOUS CLIMATIC CONDITIONS****I. Anderlová, I. Žáková****Summary**

The aim of this contribution was to inform about the conditions and results of pasture rearing (and fattening) lambs kept with their dams at two different extensive locations.

It is evident, on the basis of gains of lambs in control and experimental groups, that pasture rearing and fattening in mountains (about 1200 m above sea level) are not only possible but can be even more advantageous than grazing at lowland pastures under the conditions of the Czech Republic, especially in dry periods in summer. When sticking to the given requirements for grazing under extensive conditions, no pasture devastation occurs, and even it is possible to improve the herbage quality thanks to natural and by grazing supported spread of characteristic pasture species of plants.

Introduction

The aim of this contribution was to inform about the conditions and results of pasture rearing (and fattening) lambs kept with their dams at two different extensive locations:

1. Permanent pasture Louti lying in Central Bohemian region 365 m above sea level, average annual temperature 8,3°C with average annual precipitations of 530-560 mm. The observed piece of land of 9 ha size has been utilized for grazing sheep since a number of years. It lies on a sloping ground exposed to the south, is easily drying, with shallow topsoil layer, where rocky bed protrudes up to the surface on many places,

2. summer experimental pasture on the territory of Krkonoše National Park (KRNAP, village Zadní Rennerovky), 1210-1250 m above sea level, with annual temperature of 4.7° C and average annual precipitations of 1363 m. Experimental grazing has been implemented at this location already since 1991. Agricultural activities have to be limited on the protected territory and

Paper presented at 46th Annual Meeting European Association of Animal Production (EAAP), Prague, 4-7 September 1995

I. Anderlova, I. Žáková, Research Institute of Animal Production, 10400 Praha 10 - Uhřetěves, The Czech Republic

that is why a modification of the grazing system occurred: the size of the herd was decreased, stocking rate of the pasture maximum 5 ewes per 1 ha was determined, shelters must not be used. There are only natural resources of running water and two portable feed-houses with salt lick at pasture which was fenced by electric fencing equipment. Changes of botanical composition of pasture herbage as influenced by grazing are being observed by workers of the RIAP from foraging point of view, as well as workers of the Botanical Institute of Academy of Sciences of the Czech Republic with exact botanical methods.

Material and methods

The experimental herd consisted of 68 ewes - crossbreeds SM x VF x F and 3 rams (Suffolk and Lein). The herd was placed at pasture Louti all the year round without shelter, and used shrubs and trees as a protection in less favourable weather. A basic herd of 20 ewes with 27 suckling lambs aged 58 days in average at the beginning of the experiment was used for experimental grazing at KRNAP park for 55 days (7 July till 31 August) in 1994. Lambs were products of commercial crossing with Suffolk ram. The control group of 16 lambs were reared at pasture Louti.

Following indications were observed at both locations:

- State of health of animals and development of live weight - via weighting of ewes and lambs before and after finishing grazing.

- Production of grass mass by means of repeated harvest of controlled small areas (1 x 2 m) of herbage laid out at pasture, and protected by guard from wire network against grazing.

- Botanical composition of herbage from the foraging point of view with the help of the so called point method which was modified for the purpose of determination the actual state of individual plant species.

- Ethological data. At the location Zadni Rennerovky, 4 two-day ethological recordings were carried out in interval of 14 days. As far as distribution of daily regime is concerned, the lambs accommodate to ewes and that is why the length of grazing activity, rest, and total time of stay on 4 approximately identically large parts of pasture area were observed in 5 with colour indicated ewes (selectin 1 : 4) in intervals of 10 minutes. These 4 parts differed in the proportions of characteristic plant species and situation on the ground.

- Meteorological conditions. Temperature and precipitations were measured daily in the course of grazing period.

Results and Discussion

Dams in experimental and control groups of lambs were kept at pasture all the year round. Also lambs were born at pasture in April and May. This fact

also contributed to smooth course of acclimatization under harsh mountain condition of KRNAP so that no animal either died or fell ill at mountain pasture. Deworming and prescribed veterinary tests were carried out in the whole herd prior to transport experimental group to Zadní Rennerovky (mountains).

The gains in lamb of experimental group aged in average from 58 to 113 days (experimental period) were 192 g per head and day in average. They were comparable with gains at production pastures at pasture keeping. It appears that growth intensity depends more on mother qualities of ewes rather than on herbage quality. Stocking rate of the mountain pasture (area of 4.1 ha) made 4.9 ewes and 6.6 lamb per hectare. The live weight of ewes increased only by 2.91 kg per ewe in average. This bears witness of a good nutritional state of ewes before starting the experiment, according to our previous experience. Production of live weight made 83.6 kg per 1 ha i.e. almost 10 x less than in case of grazing at intensively manured herbage. This, however, corresponds to a low foraging value of pasture herbage and short vegetation (grazing) period. The achieved growth intensity in control group which had remained at lowland pasture (106 g) was lower, but the difference was - in regard to high individual variability - statistically insignificant, especially in control group. Cause of low gains in lambs of the control group was insufficiency of grazing possibilities owing to drought. Weight gains of lambs can be seen in Table 3.

Green mass yield of pasture herbage at Louti made 23.1 metric tons per hectare which is roughly a medium pasture yielding capacity.

Production of biomass (2 cuts) per grazing period in mountains made 21.53 m.t. of green mass, i.e. 5.23 t hay with 85% dry matter. This corresponds to a lower to medium yielding capacity of meadows.

Botanical composition of pasture herbage at the beginning of grazing in 1994 can be seen in Table 2. Foraging and exact botanical analysis show the same development tendencies, as far as the accrual of proportion of grasses and suppression of *Polygonum bistorta* are concerned. Thanks to grazing down, this species releases nutrients for the development of grasses and other species which were not identified previously (6 new species were found).

Ethological observations showed, that behaviour of sheep was markedly influenced by good arrangement of ground and weather, especially by high temperatures and precipitations which prolonged time of breaks. Also the length of daylight had influence. Sheep chose the upper parts of pasture for rest and grazing most frequently, particularly close to the entry to pasture. The lowest part of pasture was visited at least and only for the purpose of grazing. The grazing activities on parts 1 - 4 changed in the course of season in dependence on the stage of their grazing down which was almost identical after

ending the season. The stage of grazing down therefore corresponds more to grazing intensity than to the time of stay on the ground. No signs of devastation were found out.

The animals were observed only by daylight, i.e. 72% of the whole day in average. The average duration of grazing was 10 hours and 25 minutes, i.e. 56,16% of the total time of observation. Lambs in comparison with ewes reacted more markedly upon new stimuli and rested more frequently. A special enjoyment was offered by observation the evening plays of lambs lasting several minutes.

Meteorological values of both locations can be seen in Table 1. In the last years, deficit of precipitations became evident on the whole territory of the Czech Republic with the exception of Krkonoše mountains. Similarly, high even tropical country, and caused dry speels for pasture herbage. Seasonal grazing, rearing, and fattening of lambs in mountains would be therefore a solution of this problem.

Table 1. - METEOROLOGICAL CONDITIONS MONTHS SUM (TOTAL) PRECIPITATIONS (MM) AND AVERAGE MONTH TEMPERATURE (°C)

Month	I		II		III		IV		V		VI	
Louti	19.6	2.5	13.4	-0.4	58.5	6.2	43.0	7.7	60.6	12.4	56.0	16.7
KRNAP	161	-3.9	49	-6.3	279	-2.1	101	0.3	114	5.2	88	9.0
Month	VII		VIII		IX		X		XI		XII	
Louti	87.6	20.9	60.5	18.1	24.9	14.1	25.4	6.0	24.1	6.2	55.8	1.8
KRNAP	113.7	15.6	118.1	11.1	117	7.9	114	1.4	124	0.4	252	-2.9

Table 2. - BOTANICAL COMPOSITON OF PASTURE HERBAGE

	Louti	KRNAP
Cultural Poaceae	33.1	13.19
Other Poaceae	3.0	18.50
Viciaceae	23.2	-
Polygonum bistorta-		24.77
Other dicotylenidae	9.6	39.20
Free places	31.1	2.11

Table 3. - AVERAGE DAILY GAIN WEIGHT OF LAMBS (HAED/DAY)

Age (days)	Louti		KRNAP-Z. Rennerovky	
	grs	std. err.	grs	std. err.
0-33	233	14.9	-	-
30-60	221	21.6	-	-
60-120	106	50.1	192	43.1

Conclusion

It is evident, on the basis of gains of lambs in control and experimental groups, that pasture rearing and fattening in mountains (about 1200 m above sea level) are not only possible but can be even more advantageous than grazing at lowland pastures under the conditions of the Czech Republic, especially in dry periods in summer. When sticking to the given requirements for grazing under extensive conditions, no pasture devastation occurs, and even it is possible to improve the herbage quality thanks to natural and by grazing supported spread of characteristic pasture species of plants.

USPOREDBA DRŽANJA JANJADI NA PAŠNJACIMA POD RAZLIČITIM KLIMATSKIM UVJETIMA

Sažetak

Cilj ovog priloga je informirati o uvjetima i rezultatima pašnjačkog uzgoja (i tova) janjadi držane zajedno sa svojim ženskim roditeljima na dvije različite, prostrane lokacije.

Na osnovi prirasta janjadi u kontrolnoj i pokusnoj skupini očito je da pašnjački uzgoj i tov u planinama (oko 1200 m iznad mora) ne samo da su mogući već imaju i prednosti pred napasanjem na nizinskim pašnjacima u uvjetima Češke republike, osobito u suhom ljetnom rezdoblju. Ako se držimo datih zahtjeva za pašu u ekstenzivnim uvjetima ne dolazi do devastacije pašnjaka a čak je moguće poboljšati kvalitetu bilja zahvaljujući prirodnom i pašom potaknutom širenju vrsta karakterističnih za pašnjake.

Primljeno: 4. 3. 1997.