

# **Fattening of lambs of different breeds on extensively grazed grassland – first results of possibilities and limitations**

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## **Abstract**

The aim of this study is to examine the potential of extensive grassland for fattening of Merino lambs and purebred Waldschaf lambs under different stocking rates. During the first months of grazing Merino lambs are pastured taking advantage of the high grass growth intensity. The Waldschaf lambs are grazed in the second half of the vegetation season with lower growth intensity of the pasture until the end of the pasture period. Both breeds are grazed in two separated paddocks with different stocking rates and grass growth heights.

**Key words:**

## **Zusammenfassung**

### **Lämmermast verschiedener Rassen auf extensiv beweidetem Grünland – erste Ergebnisse von Möglichkeiten und Grenzen**

Ziel dieses Projektes ist es, die Auswirkungen unterschiedlicher Besatzstärken auf der Fläche bzw. der Futter-Aufwuchshöhen auf die Mast- und Schlachtleistung von abgesetzten Mastlämmern bei reiner Weidehaltung zu untersuchen bzw. das Potential einer Magerwiese im Hinblick auf Mastleistungen zu erfassen. Die Merinolandschaflämmer werden in der ersten Weideperiode unter Ausnutzung der hohen Wachstumsintensität der Weide bis zur Schlachtreife geweidet. Die Waldschafälämmer werden anschließend in der zweiten Weidehälfte bei geringeren Wachstumsintensitäten der Weide bis zum Ende der Weideperiode geweidet. Beide Rassen werden auf zwei Koppeln mit unterschiedlichen Besatzstärken bzw. Aufwuchshöhen geweidet.

**Schlüsselwörter:**

## **Introduction**

Lamb fattening is roughly distinguished between intensive lamb fattening, extended lamb fattening and fattening on pasture. Intensive lamb fattening is based on concentrate feeding. It starts at a live weight of about 20 kg following a rearing period. With average daily gains of more than 300 g, the final weight of 40-45 kg is reached at the age of 4-5 months. This form of fattening requires an intensive nutrient supply, with ad libitum feeding of concentrates.

Extended fattening of lambs is designed to increase the use of feedstuffs produced on farm. The basic idea is to reduce the amount of concentrates and to use high quality roughage, which is obtained on pastures or in field forage production. In this form of fattening, weights of 45-50 kg are reached within 6-7 months. The higher age of the lambs and the associated mutton flavor is not appreciated by Austrian consumers. This is one important reason why this form of lamb fattening using intensive meat breeds is not common.

Pasture fattening is almost not existent in Austria. However, in the pre-alpine and inner-alpine areas not only of Austria there are enough areas that could be grazed with different animal species including lambs (SCHMID, 2003). In the case of mother bound fattening with Waldschaf and crossbred Waldschaf x Ile de France, good weight gains were achieved (PODSTATZKY and BERGER, 2017). The aim of this trial was to evaluate the possibilities of fattening intensive and extensive breeds on extensively grazed grassland.

## Material and methods

The study is carried out over two grazing periods (2017 and 2018).

The extensive pasture was grazed by sheep in the last two years. In April 2017 20 Merino lambs were bought and adapted for pasture over 10 days. Grazing with Merino lambs started on the 24<sup>th</sup> of April. At the end of June the Merino lambs were slaughtered. On the 4<sup>th</sup> of August grazing with Waldschaf lambs started. They were slaughtered on the 31<sup>st</sup> of October.

The lambs of each breed were assigned to two groups. Both groups differ in stocking rate or grass growth heights. The grazing area of group N (normal=reference group) is managed according to the grass growth heights of about 6 cm (measured with Rising Plate Meter). The necessary adaption of the grazing area in the group N (< 5 cm Rising Plate Meter) causes an adaption of the grazing area in group L (long) by the factor 1.2. Growth height in each paddock was measured weekly. Shelter was provided by a pasture tent with straw bedding. Water and a salt lick were always available. Descriptive statistics is used in this report because only results from the first project year are available.

## Results and discussion

The growth heights and the dry matter (DM) yield of harvested grass were higher in the group L. The energy content of the grass was highest in spring, showed a slight decrease during the vegetation period and reached nearly the same content in autumn as in spring (Table 1). In June 2017 a drought period decreased the DM yield dramatically.

Table 1. Grass growth height (cm), Dry matter yield (kg/ha) and energy content (ME MJ/kg MD) during the pasture period

	20.04.17	29.05.17	21.06.17	18.08.17	29.09.17	31.10.17
Grass growth height (cm)	N	6.2	2.1	5.9	3.9	2.9
	L	7.6	5.4	10.6	5.3	5.2
DM-yield (kg/ha)	N	1997	220	1017	1771	311
	L	2153	560	1849	2062	484
Energy content (ME MJ/kg DM)	12.0	10.66		10.21	10.49	11.20

The botanical composition of the grazed sward is seen in Table 2. At the end of June the proportions of legumes and herbs reduced dramatically due to the water stress. The proportion of grass was stable and rose towards the end of the grazing period.

Table 2. Plant inventory (area percent)

	4.5.17	29.5.17	21.6.17	10.8.17	20.9.17	31.10.17
Gaps	0	3	70	0	15	8
Grass	18	17	20	40	15	42
Legumes	70	60	5	25	30	20
Herbs	12	20	5	35	40	30
Total	100	100	100	100	100	100

Table 3. Body weight (BW, kg), weight increase (WI, kg) and daily weight gain (DWG, g) of Merino and Waldschaf

		BW (kg)		WI (kg)		DWG (g)	
		N	L	N	L	N	L
Merino	Beginning	24.9	26.1	14.8	14.0	220.28	215.14
	Slaughter	39.8	40.1				
Waldschaf	Beginning	17.0	16.9	11.2	14.9	113.48	166.97
	Slaughter	28.3	31.8				

In Merino slightly better daily weight gains were found in the group N. But in Waldschaf much better daily weight gain was found in the group L (Table 3). The average slaughter weight in Merinos was nearly at the desirable level for the market. The endangered breed Waldschaf had less daily weight gain, especially in the group N (Table 3).

Table 4. Life weight, carcass weight and dressing percentage per breed and group

Group	Breed	Life weight (kg)	Carcass weight. cold (kg)	Dressing percentage. cold (%)
Merino	N	39.8	17.8	44.5
	L	40.1	18.1	44.9
Waldschaf	N	28.3	12.8	45.0
	L	31.8	14.7	46.3

Between the N and L group the dressing percentage in Merino sheep was similar but different in Waldschaf sheep (Table 4), with higher values in the L group.

Fattening of Merino sheep on pasture with carcass weight nearly meeting the demands of the market was possible within 5 months. The endangered breed Waldschaf is no fattening breed. Weaning took place at an age of about 4 month and the fattening period on pasture lasted about 2.5 month until the end of the grazing season (Table 5). Life age of the Merino lambs at the time of slaughter was similar to data by KOCAK et al. (2013) with 145 and 144 days, respectively.

Table 5. Average age (days and months) of Merinos and Waldschaf sheep at the beginning of pasture and at slaughter

Group	Breed	Days		Months	
		Beginning	Slaughter	Beginning	Slaughter
Merino	N	74	144	2.5	4.81
	L	78	145	2.6	4.8
Waldschaf	N	123	204	4.1	6.8
	L	120	201	4.0	6.7

The effectiveness of the utilisation of grassland can be measured in the production of meat per area. With the Merino sheep more carcass weight could be produced by intensive pasture conditions even on extensive grassland pasture than with the Waldschaf, but great carcass weight differences could be seen between the Waldschaf lambs (Table 6). Examinations with other breeds in Switzerland showed the influence of different types of pasture on daily weight gain and carcass weight. The Swiss examinations started very late with about 36 kg body weight and 26 week of age (WILLEMS et al., 2013). Mother bound fattening of lambs on pasture was tried by PODSTATZKY and BERGER (2017) with daily weight gains in Waldschaf lambs of 150 – 200 grams.

Table 6. Meat production (kg) per hectare with Merino and Waldschaf lambs

Group	Breed	ha (Ø)	Weight increase (kg)	Weight increase (kg)/ha	Carcass weight (kg/ha)
Merino	N	0.274	14.8	54.0	64.9
	L	0.327	14.0	42.8	55.4
Waldschaf	N	0.247	11.2	40.9	46.7
	L	0.275	14.9	45.6	53.5

More results will be available after finishing the second grazing period in 2018 and final evaluation of all data. Especially the influence of intensive grazing on the botanical composition of the extensive grassland will be monitored.

### Conclusion and recommendation

Good fattening performance can be achieved even on extensive grassland pasture. The quality of grazed grass and breed influence the weight gain. Beside these first results other open questions are waiting i.e. as sheep show a selective feeding strategy (SCHMID, 2003) on pasture. Changes of botanical composition are expected especially with intensive grazing of extensive grassland.

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