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EFFECT OF DIFFERENT SLAUGHTERED WEIGHTS ON THE BASIC CARCASS PARAMETERS OF LAMBS

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Abstract

Evaluation of the effect of different slaughtered weights (group I. = 29.0–32.0 kg; group II. = 32.1–35.0 kg; group III. = 35.1–38.0 kg and group IV. = 38.1–41 kg) on basic carcass parameters (carcass yield, proportions of kidney and kidney fat) have been evaluated in Charolais male lambs (n=42). The study has been carried out at the farm of Mendel University in Žabčice. From birth till the beginning of pasture season the daily feeding ration (DFR) of lambs were consisted of dam's milk, meadow hay (ad libitum) and concentrates (0,05 kg). During pasture season till slaughter the DFR of lambs consisted of pasture on permanent pasture (ad libitum), dam's milk (ad libitum), meadow hay (ad libitum) and concentrates (0,12 kg) till the slaughter. The daily weight gains (DG) from birth till the slaughter varied from 0.220 to 0.268 kg, whilst the highest DG was found in group IV and the lowest in group I. The slaughtered weight had a significant effect only on the proportion of kidney, its highest value was found in the group I. On the other hand, the slaughtered weight did not have any significant impact on carcass yield and kidney fat. However, the highest carcass yield (48.44 %) was found in the group of heaviest lambs.

Keywords: slaughter weight, basic carcass parameters, lamb, Charolais breed

Introduction

In the Czech sheep breeding the main product is lamb whilst the wool is generally considered as by-product. Contrary to South European countries, where the consumers prefer so called „light" lambs, Czech consumers prefer mainly well-conformed so called „hard" lambs whose live weights at the slaughter vary between 25 and 40 kg. The same consumer trend can also be found in other Central or Northern European countries. However, in this live weight the consumer also requires the lambs to be

lean. Due to the above-mentioned facts in the Czech Republic there meat and mixed sheep breeds are kept, like for example Suffolk, Charolais, Oxford Down, Merino-landschaf, Šumava sheep and Romney march.

The Charolais breed (CH) is generally appreciated for its good prolificacy, milking ability of ewes, high growth ability and relatively good conformation. However, in the Czech Republic the CH sheep are reared mostly in lowlands, due to their lower resistance against hard climatic conditions.

The results in the literature indicate that carcass quality of lambs is above all affected by nutrition, genotype, sex and health, while one of others factors, which can affected carcass quality is live weight at the time of slaughter. The effects of different live weights at the slaughter on carcass parameters of hard lambs were assessed by *Tufan and Akmaz (2001)* and *de Siqueira et al. (2001)*. On the other hand, in „light" lambs the effect of the same factor was evaluated by *Cifuni et al. (2000)* and *Velasco et al. (2000)*.

The main aim of our study was to define the effect of different live weights at the slaughter on basic carcass parameters of male CH lambs.

Material and methods

The experiment was carried out at an university farm in Žabčice located in southern Moravia in the Czech Republic. The animals used in the experiment were 42 single male lambs of CH breed. The slaughter weights of lambs ranged from 29 to 41 kg. At the slaughter the CH lambs were divided - according to their slaughter weights - into four groups (group I. = 29.0–32.0 kg; group II. = 32.1–35.0 kg; group III. = 35.1–38.0 kg and group IV. = 38.1–41 kg). From birth till the first ten-day period of April, the lambs were reared indoors with their mothers. In the following period till the end of experiment the common pasture of the lambs with their mothers was used. During the whole experiment the weaning of lambs was not carried out and their feeding ration was based on dam's milk. The other components of their feeding ration before pasture were meadow hay (ad libitum) and concentrates (0.08 kg/ head/day). During pasture period the feeding ration of lambs consisted from grazing on permanent pasture (ad libitum), mother´s milk (ad libitum), concentrates (0.12 kg/head/day) and meadow hay (ad libitum). During the experiment, all of the lambs were reared in one flock under identical conditions without any discernible differences in nutrition or management.

The characteristics such as live weight (LWS), age at slaughter and daily gain (DG) from birth till the slaughter were evaluated on the day of slaughter. On the following day, after a chilling period of approximately 24 hours, the cold carcass weight (CCW), carcass yield (CY), the weight of kidney and kidney fat were evaluated. The data were statistically analysed using procedure GLM.

Results and discussion

Effect of different live weight at the slaughter on basic carcass parameters is presented in *Table I*. Average live weights at the slaughter (LWS) were in group I.: 30.76 kg, in group II.: 33.48 kg, in group III. 36.26 kg and in group IV.: 39.61 kg, whilst the differences among individual average LWS were significant. Average age of lambs at the slaughter ranged between cca 120 days to cca 131 days. In the period from birth till the slaughter the highest daily gain (DG) was found in the group of lambs with highest LWS (group IV: 0.268 kg). On the other hand, the lowest DG was found in the group of lambs with lowest LWS (group 1: 0.220 kg). DGs that varied from 0.220 to 0.268 kg, depending on the exact group are comparable with results published by *Petr et al. (2009)* in the same breed of lambs that were reared using extensive pasture. *Momani Shaker et al. (2002)* also reported in the lambs crossbreds with CH comparable DGs, however in this study intensive fattening of lambs was used. Among all individual groups significant differences in their cold carcass weights (CCW) have been found. The influence of different LWS didn't have a significant effect on carcass yield (CY) which is in agreement with *Mahgoub et al. (2000)*. On the contrary, *Velasco et al. (2000)* published that the higher LWS the higher CY.

***Table I*: Effect of different live weight at the slaughter on basic carcass parameters**

Range of slaughter weights	**29.00 – 32.0 kg**	**32.1 – 35.0 kg**	**35.1 – 38.0 kg**	**38.1 – 41.0 kg**	**Sign.**
Group	(I)	(II)	(III)	(IV)	
n	10	12	11	9	
	L.S.M.± S.E.M.	L.S.M.± S.E.M	L.S.M.± S.E.M.	L.S.M.± S.E.M.	
Live weight at birth (kg)	4.38 ± 0.48	4.18 ± 0.48	4.76 ± 0.44	5.36 ± 0.41	n.s.
Live weight at slaughter (kg)	30.76 ± 0.69 ^{BCD}	33.48 ± 0.69 ^{ACD}	36.26 ± 0.64 ^{ABD}	39.61 ± 0.60 ^{ABC}	* *
Age at slaughter (dny)	119.83 ± 7,77	131.17 ± 7,77	121.85 ± 7.19	128.50 ± 6.72	n.s.
Daily gain from birth till slaughter (kg)	0.220 ± 0.112 ^{CD}	0.224 ± 0.011 ^{cD}	0.260 ± 0.014 ^{Ab}	0.268 ± 0.009 ^{AB}	* *
Cold carcass weight (kg)	14.81 ± 0.59 ^{CD}	15.65 ± 0.59 ^{D}	17.29 ± 0.55 ^{Ad}	19.23 ± 0.51 ^{ABc}	* *
Carcass yield (%)	48.20 ± 1.11	46.75 ± 1.11	47.67 ± 1.02	48.44 ± 0.96	n.s.
Weight of kidney (g)	129.17 ± 10.55	106.67 ± 10.55	112.86 ± 9.77	125.63 ± 9.14	n.s.
Proportion of kidney (%)	0.87 ± 0.07 ^{cd}	0.68 ± 0.07	0.65 ± 0.06 ^{a}	0.66 ± 0.06 ^{a}	*
Weight of kidney fat (g)	75.0 ± 17.02	91.67 ± 17.02	85.00 ± 15.75	104.38 ± 14.74	n.s.
Proportion of kidney fat (%)	0.51 ± 0.11	0.60 ± 0.11	0.49 ± 0.10	0.55 ± 0.09	n.s.

* * - A, B, C, D – P ≤ 0,01; * - a, b, c, d - P ≤ 0,05

The influence of different LWS had a significant effect on the proportion of kidney, which is in line with the results published by *Macit (2002)*. Contrary to *de Siqueira et al. (2001)* they've reported that the higher LWS the higher proportion of kidney. Anyway it is necessary to note, that in our study the proportions of kidney in range of LWS of lambs from 32.1 to 41.0 kg were relatively very stable. *Macit (2002)* and *Abdullah and Qudsieh (2008)* in their experiments found that different LWS had not a significant effect on proportion of kidney fat. The same trend has also been found in the case of our experiment.

Conclusion

Analysing the effect of different live weights at the slaughter on basic carcass parameters of Charolais ram lambs above all resulted, that this factor didn't have a significant effect on carcass yield and kidney fat proportion, whilst a significant effect factor was found on cold carcass weight and proportion of kidney only.

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