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Influence of protein level in the diet on performance of Polish Lowland lambs

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Fattening performance of Polish Lowland lambs from weaning at 90 days of age to 40 kg live weight was studied. Male and female lambs (64 males and 64 females in groups of 8 animals each) were fed according to Polish standards (1993, Nutrient Requirements of Cattle and Sheep, Traditional System, Instytut Zootechniki Krakow) or on diets with protein level reduced to 100 and 95 g PDI in DM (male and female, respectively). Daily rations were composed of meadow hay (20 %) and concentrate (80 %), and rations dry matter was calculated according to the equation $DM_{kg} = (41.9 \times BW_{kg} - 217.6) \times 0.0011$. To calculate the content of intestinal digestible protein the values of effective protein degradability estimated on 3 adult sheep were used.

Energy value of experimental rations was similar (1.02 vs 1.07 UFV) but crude protein content in DM of protein restricted rations was lower than those of Polish standards, and this probably the reason of differences in lamb growth rates. Both the male and female lambs grew significantly better ($P \leq 0.05$) when fed according the Polish standards than on protein restricted rations.

The rate of growth of female fed on protein restricted rations was slower in the middle and last fattening period. The growth rate of male was similar regardless of the rations but at the end of fattening period those fed on lower protein rations grew significantly less than on Polish standards. Utilization of DM, PDIE and UFV by both male and female lambs was worse ($P \leq 0.01$) when fed on low protein ration than on Polish standards.

	Male		Female	
Feeding standards	Polish	Restricted	Polish	Restricted
PDIN in DM intake (g/kg)	134	100	134	95
PDIE in DM intake (g/kg)	115	138	115	142
Initial body weight (kg)	19.4 ± 2.6	19.4 ± 2.7	18.4 ± 2.3	18.4 ± 2.3
Total gain (kg)	19.7 ± 2.9	18.9 ± 2.9	18.4 ± 2.1	15.5 ± 2.1
Daily live-weight gain (g)	258 ± 39	188 ± 44*	204 ± 35	139 ± 34*
DM utilization (kg/kg gain)	4.3 ± 0.3	6.0 ± 0.3**	5.0 ± 0.6	7.0 ± 0.3**
PDIN utilization (g/kg gain)	570 ± 38	598 ± 32	675 ± 72	663 ± 33
PDIE utilization (g/kg gain)	489 ± 37	826 ± 44**	579 ± 64	995 ± 40**
UFV utilization per kg gain	4.5 ± 0.3	6.1 ± 0.3**	5.4 ± 0.6	7.1 ± 0.3**

*$P \leq 0.05$ **$P \leq 0.01$