

**EFFECT OF ENVIRONMENTAL TEMPERATURE ON DAILY FEED
INTAKE AND DIGESTIBILITY IN HARES**

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Key words: hare, digestive system, temperature, feed intake, digestibility.

■ INTRODUCTION

Since the effect of environmental temperature on food utilisation in hares is not well known, we studied the relationship between temperature, hare daily feed intake and digestibility.

■ MATERIALS AND METHODS

Ten couple bred hares, *ad libitum* fed with a commercial pellet (crude protein 17%, and crude fibre 21%), were monitored from April to June in Tuscany (Experimental breeding farm of the Agriculture Ministry, Bieri, LU). The recorded temperature in this period changed from 8 °C min. to 25 °C Max. Hares were fed *ad libitum* a commercial pellet (17% protein and 21% fibre, on dry matter). Feed and excreta were measured in 3 observation periods. Each period lengthened 4 days and was preceded by 7 days of adaptation. Feed and excreta were analysed according to Weende and Van Soest (Italian committee for Feed Evaluation, 1980-1996). Digestibility was evaluated by the use of lignine as a tracer. Effect of temperature (3 categories) was analysed by ANOVA. Daily intake and digestibility of organic matter were analysed by non-linear estimations (Wilkinson, 1988).

■ RESULTS AND DISCUSSION

Feed ingestion was increased by low temperatures and digestibility coefficients, according to Mussa *et al.* (1978), were better than those observed in other lagomorphs, particularly for fibre. The unfavourable effect of the increased feed consumption was confirmed by the regression coefficients calculated on feed consumption (table 1).

Consumption (Linear variable) and temperature (categorical variable) explained only 53% of the digestibility variance, so that data were analysed for non linear components too.

The square relationship Organic matter digestibility = +49.503 + 1.547*temperature - 0.0381*temperature², explained 82% of variance, since consumption and temperature are joined variables.

Decreasing of temperatures is related to a non linear increase of consumption and, consequently, a non linear increase of protein intake. Excess of proteins are, not rarely, responsible for digestive disorders.

Feed producers must consequently modify the protein content of the hare feed during the reproductive season.

Table 1. Effect of temperature and feed intake on apparent digestibility coefficients (avg. s.e.).

		Temperature						daily intake
		5	10	10	16	18	25	
Daily intake	g	230	6a	204	7b	202	7b	
Organic matter	"	63,9	1,52	62,8	1,42	63,0	1,47	b = - 1,5E-03*
Protein	"	75,9	3,26	72,7	3,04	72,8	3,16	b = - 1,9E-03*
Ether extract	"	78,1	3,24	80,0	3,02	80,8	3,14	b = - 6,0E-04
Fibre	"	37,6	3,19	33,8	2,98	33,5	3,09	b = - 2,4E-03*
N-free extract	"	72,1	1,11	71,7	1,03	72,1	1,07	b = - 1,3E-03*
NDF	"	44,5	2,09	43,1	1,95	43,1	2,03	b = - 1,9E-03*
ADF	"	39,7	3,09	34,0	3,01	33,5	3,00	b = - 2,9E-03*
Hemicellulose	"	56,2	2,50	58,6	2,33	59,2	2,42	b = - 3,0E-04
Cellulose	"	41,8	2,43	37,5	2,27	37,2	2,35	b = - 2,6E-03*

* significant regression, $p < .05$

REFERENCES: Italian committee for Feed Evaluation; *Zoot. Nutr. Anim.* (1980), 6:19-34. Italian committee for Feed Evaluation in small farmed animals; *Zoot. Nutr. Anim.* (1996), 1:47-51. Mussa P. *et al.*: *Riv. di Coniglicoltura* (1978), X, 15-17. Wilkinson L.: *SYSTAT* (1988).

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