

Proceedings of the



4-7 july **2000** – Valencia Spain

These proceedings were printed as a special issue of WORLD RABBIT SCIENCE, the journal of the World Rabbit Science Association, Volume 8, supplement 1

ISSN reference of this on line version is 2308-1910

(ISSN for all the on-line versions of the proceedings of the successive World Rabbit Congresses)

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ON PERFORMANCE**

Volume A, pages 585-588

EFFECT OF RABBIT MANAGEMENT CONDITIONS ON PERFORMANCE

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ABSTRACT

The best final parameters of fattening performance were obtained in a group of rabbits kept on deep litter in boxes, in a closed, unheated house, with a mean weight of 2465 g and the lowest feed conversion per 1 kg weight gain of 3.93 kg between 35 and 90 days of age. Mortality occurred mostly in the early stages of fattening between 35 and 56 days of age, being the highest (12.5%) in a group of rabbits kept in wooden multi-tier cages located in the open air.

Rabbits were found to be able to adapt to the conditions provided by man, but beyond a certain limit their performance was reduced.

INTRODUCTION

On Polish rabbit farms, farming conditions do not in many cases satisfy the biological needs of animals. This concerns the construction of cages, and especially the type of floor (e.g. wire-mesh floors often lead to bruises and other leg injuries). Proper ventilation and lighting are also important. Various gases emitted from faeces and urine pose a serious threat to both breeding and slaughter rabbits. This especially concerns those animals kept in 2- or 3-tier cages situated indoors. Because of this, many farms have readopted the deep litter system.

The aim of the present work was to compare the effect of different environmental conditions offered to rabbits on their fattening performance.

MATERIAL AND METHODS

The experiment was carried out in the autumn-winter period on a Zootechnical Experimental Station farm belonging to the National Research Institute of Animal Production in Balice and involved New Zealand White rabbits from weaning at 35 days of age to the end of fattening at 90 days of age. Rabbits were kept in three housing systems:

- group I - on deep litter in boxes, in a closed and unheated house (minimum temp. 8°C);
- group II - in wire-mesh, two-tier cages, in a closed and heated house (minimum temp. 16°C);
- group III - in wooden multi-tier cages located in the open air (minimum temp of -15°C occurred three times, and -5°C to +10°C during the other days) .

Each group consisted of 40 rabbits with equal proportions of sex. Four rabbits of the same sex were placed in one cage. 1020 to 1100 cm² of area was assigned to one animal. Young rabbits were randomly selected from litters of 6 to 8 rabbits and efforts were made to make the mean weight of animals in different groups similar.

The experimental feed was manufactured in our own Feed Mill located at the Experimental Station mentioned above. The pelleted feed contained lucerne meal, ground barley,

ground maize, soybean meal, wheat bran, meat-and-bone meal, powdered milk, fodder yeast, Dicalcium phosphate and NaCl. Chemical analysis of feeds showed 18.43% content of crude protein, 3.24% of crude fat, and 14.12% of crude fibre. Metabolizable energy of the feed components, calculated from the tables of feed nutritive value, was 10.94 MJ.

The animals were fed on an *ad libitum* basis with free access to water (automatic drinkers in groups I and II, metal cups in group III). Feed intake was monitored daily by weighing feed given and uneaten.

RESULTS AND DISCUSSION

Analysis of variance showed that differences between the traits analysed (body weight) in different experimental periods were statistically non-significant for the sexes. For this reason, the results are discussed for both sexes together. (Statgraphics).

The groups of experimental rabbits were of similar weight at 35 days of age (Table 1). Variation of body weight was relatively high, ranging from 20.73 to 21.42%. Differences in body weight at the beginning of the experiment were not confirmed, just as those at 56, 70 and 77 days of age. At 90 days, rabbits from group I achieved 161 g (6.5%) and 265 g (10.8%) higher body weights than groups II and III, respectively. Differences between groups I and III were significant.

Table 1. Mean body weight of rabbits (g)

Age (days)		Group		
		I	II	III
35	x	934	915	931
	v%	21.42	20.73	20.80
56	x	1408	1400	1384
	v%	21.40	16.43	18.10
70	x	1757	1702	1680
	v%	17.86	12.96	26.20
77	x	1985	1958	1882
	v%	16.06	11.39	20.70
90	x	2465 a	2304 ab	2200 b
	v%	12.02	13.56	18.90

Means in rows with the different letters differ significantly: a-P \leq 0.05; A-P \leq 0.01

Body weight of NZW rabbits in group I at 90 days of age (2465 g) was high and attested to a rapid rate of growth. The results obtained were similar to those described for liveweight growth of New Zealand White rabbits by Niedzwiadek (1983) and Bielanski et al. (1996), and slightly lower than those obtained by specialized lines of meat rabbits in Western Europe (Maertens, 1992; Lebas, 1989).

Daily weight gains were 28, 25 and 22 g (groups I, II and III, respectively)(Table 2). As regards group I, similar results of growth rate for NZW rabbits were obtained by Niedzwiadek (1983), Bielanski et al. (1996) and Kopanski (1990).

Feed conversion per 1 kg weight gain (Table 3) varied according to group and age. Highly significant differences in feed conversion were found between groups from 56 to 90 days of age.

The lowest feed conversion for the whole fattening period was characteristic of rabbits in group I (3.93 kg) and the highest by those in group III (4.95 kg). In the studies by Maertens (1992) involving rabbits of specialized meat lines, feed conversion per 1 kg was 3.30 kg.

Table 2. Daily weight gains of rabbits in different fattening periods (g)

Fattening period		Group		
		I	II	III
35-56 days of age	x	23.33	22.02	23.16
	v%	27.48	19.65	24.28
35-70 days of age	x	23.34	23.16	20.10
	v%	21.24	22.64	25.20
35 –77 days of age	x	24.89	24.43	21.12
	v%	16.93	18.46	23.44
35-90 days of age	x	27.73 a	24.96 ab	22.00 b
	v%	11.51	21.75	23.20

Means in rows with the different letters differ significantly: a-P≤0.05; A-P≤0.01

Table 3. Feed conversion per 1 kg weight gain of rabbits (kg)

Fattening period		Group		
		I	II	III
35-56 days of age	x	3.39 A	3.95 B	4.22 C
	v%	16.16	20.99	21.12
35-70 days of age	x	4.31 Aa	4.57 b	4.69 B
	v%	15.61	18.48	19.21
35-77 days of age	x	4.36 A	4.70 B	5.03 C
	v%	14.67	13.85	16.25
35-90 days of age	x	3.93 A	4.63 B	4.95 C
	v%	11.63	12.47	13.50

Means in rows with the different letters differ significantly: a-P≤0.05; A-P≤0.01

Patterns of rabbit mortality (Table 4) show that the period between 35 and 56 days of age is the most critical. This period accounted for almost 70% of deaths in all groups. The remaining deaths occurred between 56 and 70 days of age. In the fattening period between 35 and 70 days, mortality was 6, 10 and 12.5% in groups I, II and III, respectively. Mortality did not occur between 70 and 90 days of age. Alimentary disorders were the most frequent cause of deaths.

Table 4. Rabbit mortality in different fattening periods (%)

Fattening period		Group		
		I	II	III
35-56 days of age	x	5.0 Aa	8.3 b	10.0 B
35-70 days of age	x	6.0 A	10.0 Ba	12.5 Bb
35-90 days of age	x	6.0 A	10.0 Ba	12.5 Bb

Means in rows with the different letters differ significantly: a-P≤0.05; A-P≤0.01

The results obtained lead us to **conclude** that both the growth and development of rabbits reared in the deep-litter system were very good. Health of these rabbits was also much better than in the cage system, as evidenced by better parameters of fattening performance.

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