

EFFECT OF WEANING WEIGHT ON GROWTH PERFORMANCE OF RABBITS

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Abstract - Growth performances of five fattening flocks of rabbits (816 rabbits) raised at different seasons with a similar diet have been compared. Differences between classes of weight were constituted, with differences of 86 g in average between classes at weaning. At slaughter, difference between classes of weight is significant and reach 129 g in average, which correspond to 3 days of fattening.

INTRODUCTION

With the increase of artificial insemination in France, the rabbits are more and more produced in flocks "all in - all out". This facilitate breeders'work and improve sanitary conditions. Meanwhile, all the rabbits must be removed on the same day which is in agreement with slaughter houses'requirements. But, some rabbits may not weight enough.

Furthermore, rabbit slaughterhouses require more and more standardized slaughter weight.

That is why it seems very important to know better how do different live weights at weaning age affect slaughter weights at an age of 71 days.

MATERIAL AND METHODS

Animals, housing and diet

A total of 816 conventional weaning rabbits from the rabbit experimental facility of Sanders in Sourches (France) were used to study the effect of weaning weight on growth performance. There were 5 fattening flocks of rabbits, bred all along the year. The dates of weaning are in Table 1.

In each flock, rabbits were allotted at 35 days of age by their initial weight in 4 groups and set in flat-deck cages of 0.42 m².

The fattening flocks were fed a similar diet. The characteristics are given in Table 2. Feed and water were provided *ad libitum*.

Table 1 : Date of weaning of the 5 fattening flocks of rabbits

Flock	Weaning (35 days)	Number of rabbits	Number of rabbits/cage
1	28.11.94	168	7
2	30.01.95	168	7
3	13.03.95	144	6
4	17.07.95	168	7
5	28.08.95	168	7

Table 2 : Analysis of the diet (% as fed)

Dry Matter (%)	88.4 ± 0.7
Crude Protein (%)	16.1 ± 0.6
Crude Fiber (%)	15.8 ± 0.8
Starch (%)	15.0 ± 0.6

Recordings

Feed intake and weight of animals were recorded for each cage at 71 days of age. Mortality was noted daily. Mean results for weight, average daily gain, feed intake, feed conversion index and mortality were calculated for the growing period between 35 and 71 days.

Statistical analysis

Analysis of variance was carried out on the results according to a factorial model (SAS, 1988). The factors were the flocks (n=5), the class of initial weight (n=4) and their interaction. Mortality was analysed with the Wilcoxon Test.

RESULTS AND DISCUSSION

Comparison between the class of weight at weaning.

The results are given in Table 3.

Table 3 : Effect of initial weight of rabbits on growth performance.

Variable		1	2	3	4	MSE	Flock	Initial weight	I
Weight at 35 days	(g)	836a ±42	931b ±40	1001c ±44	1087d ±41	12.0	**	**	ns
Weight at 71 days	(g)	2281a ±172	2434b ±167	2530c ±173	2668d ±178	93.0	**	**	ns
ADG 35-71 days	(g/d)	40.1a	41.7ab	42.5bc	43.9c	2.62	**	**	ns
Feed Intake 35-71 days	(g)	4585a	4900b	5013b	5297c	292	**	**	ns
FCI 35-71 days		3.17a	3.26ab	3.27b	3.35b	0.14	**	**	ns

ADG : Average Daily Gain ; I : Interaction ; FCI : Feed Conversion Index ; MSE : Mean Square Error ; ns : non significant.

Differences between initial weights are significant and mean square errors are similar. All the variables are very significant, with no interaction between the effect of the initial weight and the flock.

The weight of rabbits at weaning (35 days) is a very important factor to explain the weight at slaughter (Table 5) : an average difference of 84 g at 35 days lead to an average difference of 129 g at 71 days, which represents more than 3 days of fattening (with an average daily gain of 40 g/day).

The differences (in percent) between the lots at 35 days still exist at 71 days, but are smaller, as given in Table 4. Moreover, mean square errors represent about 7 % of the final weights against 4 to 5 % for the initial weights.

Table 4 : Percentages of variations in comparison with the first class of weight

Variable	2-1	3-1	4-1
Weight 35 days	+ 11 %	+ 20 %	+ 30 %
Weight 71 days	+ 6.7 %	+ 11 %	+ 17 %
ADG 35-71 days	+ 4.0 %	+ 6.0 %	+ 9.5 %
Feed Intake 35-71 days	+ 6.7 %	+ 9.3 %	+ 16 %
IFC 35-71 days	+ 2.8 %	+ 3.1 %	+ 5.7 %

The heaviest rabbits have the highest feed intake and the highest daily gain but the worst feed conversion. This is in relation with the growth curve of rabbit, because the feed conversion is calculated at the same age and not at the same slaughter weight.

Moreover, the average weight at 71 days of the smaller rabbits don't reach 2.3 kg, which is commonly asked by the slaughter house and the difference between the biggest and the smallest reaches 387 g at 71 days, which represents 10 days of fattening.

Table 5 : Differences between classes of weight

Comparison	2/1	3/2	4/3	Mean
Weight at 35 days	+ 95	+ 70	+ 86	84
Weight at 71 days	+ 153	+ 96	+ 138	129

Comparison between the lots

Results of each flock are given in Table 6.

Table 6 : Growth results of the five flocks of rabbits

Flock		1	2	3	4	5
Month of weaning		November	January	March	July	August
Temperature		16°4	17°5	16°2	25°8	20°5
Weight at 35 days	(g)	976 ±84	1008 ±95	985 ±94	952 ±92	898 ±90
Weight at 71 days	(g)	2513 ±167	2620 ±171	2622 ±182	2267 ±151	2368 ±165
ADG 35-71 days	(g/d)	42.7	44.8	45.5	36.5	40.8
Feed Intake 35-71 days	(g)	5325	5333	5275	4043	4765
IFC 35-71 days		3.47	3.31	3.22	3.08	3.24

Mean weights of rabbits at 35 days and 71 days are in close relationship with the season, that is to say with the temperature inside the building.

The lowest weight at 71 days and so the smallest average daily gain were observed in summer and the best growth performances are in winter (lots 2 and 3).

So in our statistical analysis, the effect of the flock was taken in account and was very significant ($p = 0.0001$) (CHIERICATO *et al.*, 1992).

Mortality

Table 7 gives results of mortality.

Table 7 : Classes of weight and percentage of mortality for each lot (%)

Class of weight	Lot	1	2	3	4	5	Mean
1		0	11.43	19.44	5.72	5.72	8.55
2		5.36	7.14	13.89	2.38	4.76	6.62
3		0	8.16	2.38	6.12	7.14	4.97
4		0	9.53	20.00	14.29	5.72	10.44
Mean		1.79	8.93	13.20	7.14	5.95	7.40

The Wilcoxon test on the percentage of mortality by classes of weight was not significant.

As showed by MORISSE (1985), it's obvious that weaning weight have an effect on weight at 70 days. Nevertheless, we have no effect of weaning weight on mortality, which was not the case of MORISSE (1985). This could be in relationship with the age of weaning which was 29 days against 35 days in our trials. Actually, LEBAS (1993) proved that weaning at 35 days lead to higher live viability of rabbits and weight at slaughter.

To go further, it would be useful to determine which factors before weaning act on weaning weight and which factors during fattening enhance or reduce the variability.

On an other hand, live weight and age at slaughter as well as season influence dressing percentage (ROIRON, 1991). Moreover, carcass quality, dressing percentage and carcass composition are improved with live weight at slaughter (ROIRON *et al.*, 1992). So, differences of weight between rabbits at slaughter are not only a problem for breeders and slaughterhouses but for the consumers too.

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Effet du poids au sevrage sur les performances de croissance des lapins - Les performances de croissance de 5 lots de lapins (soit 816 au total) élevés aux différentes saisons avec un régime similaire ont été comparées en s'intéressant aux différences entre les blocs de poids.

Au sevrage, 4 classes de poids sont constituées, avec des écarts de 86 g en moyenne entre les classes de poids. A l'abattage, l'écart entre les classes de poids est significatif. Il atteint 129 g en moyenne, ce qui correspond à 3 jours d'engraissement et 387 g entre les deux classes extrêmes, soit 10 jours d'engraissement.
