

Effect of feeding program before weaning on the performance of rabbit does and their kits

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ABSTRACT – The aim of the experiment was to examine the effect of the feeding program between the 21st day of lactation and weaning on performance of rabbit does and their kits. The does and their kits received a lactation diet until weaning during the whole experiment (BB group; n=60) or a lactation diet until the 21st day of lactation and a post-weaning diet until weaning (BG group; n=59). After weaning, all kits consumed the same diet for growing rabbits. No significant differences were observed between the BB and BG groups for number of inseminations per parturition, body weight of the does at parturition and at 21st day of lactation, litter size, feed conversion ratio and mortality of kits. The feeding program affected the body weight of the does at the 35th day of lactation (4610 vs. 4530 g in BB and BG group, respectively; P=0.016), the litter weight at day 35 (8160 vs. 7834 g; P=0.001) and the does condition at kindling measured by the TOBEC method (P=0.024). Body weight of the growing rabbits was higher in the BB group at 5 and 7 weeks (984 vs. 937 g, P<0.001; 1651 vs. 1621 g, P=0.008, respectively), but the differences were not significant afterwards. It could be concluded that it is advantageous to feed both does and kits with the lactation diet until weaning.

Key words: Feeding program, Rabbit does, Reproductive results, Growth performance.

INTRODUCTION – In the rabbit farms the does and their kits may receive the same pelleted diet for lactation until weaning or a post-weaning diet from the 21st day of lactation until weaning. However, the nutrient demands of the does and kits are different (Fortun-Lamothe and Gidenne, 2003). The energy and nutritional requirements of rabbit does are: 11 MJ/kg DE, 18-19% crude protein, >13.5% ADF, >3% ADL, >30% NDF, and <20% starch, while 3-6 weeks-old rabbits need 9.5 MJ/kg DE and 15-16% crude protein, >19% ADF, >5.5% ADL, >32% NDF, and <14% starch (Lebas, 2004). The aim of the experiment was to compare the effects of two feeding programs, lactation diet till weaning or change to a post-weaning diet from the 21st day of lactation, on reproductive results of does and growth performance of rabbits.

MATERIALS AND METHODS – The experiment was conducted at the Kaposvár University with Pannon White rabbits. Two groups were formed using commercial diets. In the first group the does and their kits received a lactation pelleted diet from parturition to weaning (DE: 10.4 MJ/kg, crude protein: 18.7%, crude fibre: 13.6%, starch 18.5%; BB group; n=60 does, 228 parturitions), in the second group the lactation diet was replaced by a post-weaning diet from the 21st day of lactation until weaning (DE: 9.7 MJ/kg, crude protein: 16.0%, crude fibre: 17.2%, starch 15.1%; BG group;

(n=59 does, 234 parturitions). After weaning all does received lactation diet and the kits consumed post-weaning diet but between 9 and 11 weeks fattening diet was supplied (DE: 10.5 MJ/kg, crude protein: 16.0%, crude fibre: 14.6%, starch 18.6%). Diets were given *ad libitum*. The does were first inseminated at the age of 16.5 weeks, then a 42-day reproduction rhythm was used. Five reproductive cycles were evaluated. The litters were standardized according to the average number of kits born alive in each group (maximum 10 kits/litter). Non-pregnant after two successive AI, sick does and does with weak conditions were culled. The body conditions of does were evaluated by total body electrical conductivity (TOBEC) measurements (E-value by EM-SCAN) on randomly selected rabbit does (n=30) from every group. The kits were weaned at the age of 35 days and their production was controlled till 77 days of age. The productive performance of does and kits were evaluated by means of multifactor ANOVA; mortality was analyzed by chi-square test using SPSS 10.0 software package. To evaluate the body condition of does (E-value), their live weight at the day of measurement was considered as covariate.

RESULTS AND CONCLUSION – The results are summarized in Table 1.

Table 1 – The effect of the feeding program on the rabbit does' production.

Traits	Feeding		SE	Prob.
	BB	BG		
AI/kindling	1.18	1.17	0.02	0.957
Body weight of does, g				
at kindling	4154	4121	18.0	0.234
at 35 d	4610	4530	17.4	0.016
Litter size				
total	8.97	8.98	0.12	0.832
born alive	8.49	8.60	0.11	0.801
at 21 d	8.18	8.12	0.06	0.668
at 35 d	8.07	8.08	0.06	0.702
Litter weight, g				
at birth (before standardization)	538	551	6.48	0.406
at 21 d	3239	3206	29.3	0.186
at 35 d	8160	7834	69.2	0.001
Individual weight of kits, g				
at birth	64.7	65.0	0.46	0.793
at 21 d	397	393	2.51	0.364
at 35 d	1006	964	5.04	<0.001
Mortality of kits, %				
0-21	3.2	4.0		0.216
21-35	1.2	0.5		0.144
Feed intake of does and their litters, g/day				
0-21	413	414	2.85	0.805
21-35	683	668	4.35	0.069
TOBEC, E-value of kindled does	1922	1957	24.3	0.024
Doe survival, %	73.3	84.7		0.096

The does body weight was lower (P=0.016) at 35 days in the BG group. In the present analysis the feed intake of does and their litters was not different during the first three

weeks of lactation until they received the same diet, but the BG rabbits consumed slightly less between the days 21 and 35 ($P=0.069$). The negative effects of the sudden diet change during lactation was described by several authors (Debray *et al.*, 2002, Gidenne and Fortun-Lamothe, 2002) who found lower feed consumption and, as a consequence, lower doe body weight and milk production and lower kits body weight. This finding was also supported by our results as lower individual and litter weights were recorded at the age of 35 days in the BG group ($P<0.001$) compared to the BB rabbits. The differences in the energy content of the diets also accounted for these results (Maertens and De Groote, 1988; Fortun-Lamothe, 1997; Pascual *et al.*, 1999). The feeding regime had no effect on the number of AI/kindling, litter size and suckling mortality. The lower body weight of BG does at weaning did not influence the reproductive performance, although the BB does showed a better body condition (TOBEC E-value) at parturition compared to the BG does ($P=0.024$). The rabbit does in both groups were fed with the lactation diet after weaning. This may have resulted in a better condition of the BG rabbits at kindling. The BG does showed slightly better survival, but the difference between the groups was significant only at 0.1% level.

At 5 and 7 weeks of age, rabbits were heavier in the BB group ($P<0.001$ and $P=0.008$). After weaning (between the 5th and 7th weeks), because of the change of the diet, the feed consumption of the BB group was lower ($P=0.020$) which resulted in a slight difference ($P=0.077$) of the body weight gain (between the 7th and 9th week) in favour of the BG group. The body weights at 9 and 11 weeks were similar (data not reported in the table). No significant difference was obtained for the mortality between the groups. Comparing the two feeding programs, feeding both the rabbit does and their kits with the lactation diet until weaning is more advantageous than using a post-weaning diet from 21 days to weaning.

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