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## EFFECT OF LIVEWEIGHT ON THE CARCASS TRAITS OF PANNON WHITE GROWING RABBITS

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### Introduction

To improve the quality of our exports of rabbit we need to increase dressing percentage and proportion of valuable body parts of growing rabbits. Slaughter value varies upon breed, nutrition, keeping conditions, body weight and some less important factors (Rudolph, 1988). Effect of age and body weight on carcass traits has been analysed by Schlolaut (1977), Rao et al. (1978), Rudolph and Fischer (1979), Varewyck and Bouquet (1982), Mösch et al. (1984), Ristic (1988), Petersen et al. (1988), Maertens and de Groote (1992), Ristic and Zimmermann (1992). According to investigations by Szendrő (1989), dressing percentage is not affected by age if rabbits are slaughtered at same body weight, so it is the effect of body weight that dominates even in case of slaughter at different ages.

It is difficult to compare research findings published in different sources of literature because results of trial slaughter refer to rabbits killed at different weights (ages) and according to different methods. Such results are mainly suitable for drawing some general conclusions from them. Blasco et al. (1992) have developed and recommend an uniform method of slaughter to eliminate the difficulties mentioned. In our experiment we used this method to investigate on the slaughter value of Pannon White growing rabbits of different body weights.

### Material and method

The investigation was carried out at the Pannon Agricultural University using Pannon White rabbits.

The experimental animals were weaned at the age of 6 weeks. They were kept at the place of birth until slaughter. They were housed in flat-deck wire cages (5-6 rabbits per

cage). The animals were fed commercial pelet ad libitum and some hay. Drinking water was available continuously from self-drinkers.

The growing rabbits were killed at the age of 12-13 weeks, after 24 hours of fasting. Body weight before fasting and after fasting, weight loss, blood, commercial skin, extremities, head, full gastrointestinal tract, edible offals (liver, kidneys, heart, lungs, perirenal fat), carcass (hot carcass minus head and edible offals) fore, intermediate and hind part of carcass (cutpoints between 7th and 8th ribs and dorsal vertebrae and between 6th and 7th lumbar vertebrae, in the line of the thighs), hind leg (hind part without backbone) and meat covering intermediate part and hind leg (fileted with a knife) were measured. Then rations of single body parts were calculated.

After slaughter, rabbits were grouped according to body weight before fasting into classes set up by 0.1 kg. Group averages and deviations were calculated for each trait. Groups below 2.6 kg and above 3.0 kg included rabbits of more extended weight classes, which is indicated by larger deviations in every single trait.

#### Results and discussion

Weight averages and deviations for each body part are summarized in Table 1. Body weight measured before fasting increased by 28.1 % during the period investigated. Compared to this, there were body parts showing a growth rate below average, average and above average. Growth of body weight measured after 24 hours of fasting, extremities, carcass, carcass + head, carcass + head + edible offals, hind part, hind leg and intermediate + hind parts showed around average. Weight loss during 24 hours, weight of full gastrointestinal tract, head and liver were below average, while skin, kidneys + heart + lungs, perirenal fat, carcass + edible offals, fore and intermediate parts, meat on intermediate part, meat on hind leg and meat on intermediate part + hind leg above average.

Full gastrointestinal tract have to be highlighted here, since their growth of 11.7 % falls far behind average. Similarly to reports by Ouhayoun (1984) stating that the allometric coefficient of the digestive tract changes at 650 g of body weight drastically (from 1.13 to 0.46), Deltoro and Lopez (1985) detected a decrease to similar extent, i.e. from 1.36 to 0.57 at the age of 6-7 weeks, too. As far as proportion of the digestive tract is concerned, definite decrease was described by Lebas (1975), Rao et al. (1978), Petersen et al. (1988), Szendrő (1989), Parigi-Bini et al. (1992). This fact is definitely encouraging from the viewpoint of dressing percentage. Similarly, the declining proportion of head is

also favourable, and is also supported by some other publications (Rao et al., 1978; Szendrő, 1989).

Out of body parts growing at a rate above average, growth of skin (45.1 %) and perirenal fat (96.7 %) are most remarkable. As it has been stated by Rao et al (1978), Szendrő (1989) and Parigi-Bini et al. (1992), too, the increasing proportion of skin is not by all means undesirable, since fur is one of the most important byproducts of meat rabbits, and thus, its larger size may even be desirable economically. Fat content of the meat of rabbits of larger body weight does not change markedly (Parigi-Bini et al., 1992). On the contrary, the perirenal and scapular fat deposits increases with age, abruptly. A rate of increase even more than twice as great as the previous data have been observed by Prud'hon et al. (1970) after 106 days of age, Rudolph et al. (1986) at 57 and 85 days of age, Ouhayoun (1984) above 950 g and 2,100 g body weight and Romvári et al. (1993) above 2,500 g body weight. This change is unfavourable from the viewpoint of carcass quality.

Ratios of single body parts are shown on Table 2. The average dressing percentage calculated based on carcass weight only, was 51.4 %. The values received when head and head + edible offals were also included proved to be greater by 5.7 % and 10.5 % (i.e. 56.1 % and 61.9 %), respectively. As compared to body weight measured after 24 hours of fasting, proportion of the less valuable fore part proved to be 15.4 %, while that of the hind part (containing most meat) was highest (19.1 %). Proportion of the most valuable parts (intermediate and hind parts, together) amounted to 68.3 % within the carcass. It is difficult to compare these data to those available in literature objectively, because of the different methods of slaughter and calculation used. Nevertheless, they can be stated as good performance results, undoubtedly.

Proportion of single body parts does not increase parallel to body weight before fasting (Table 2). The lowest value was found in category below 2.6 kg, while the highest one was usually detected in categories between 2.7-2.9 kg. With heavier rabbits (above 2.9 kg), however, a slightly declining tendency could be observed.

Most authors (Varewyck and Bouquet, 1982, Mösch et al., 1984, Ristic et al., 1988, Petersen et al., 1988, Szendrő, 1989) agree that, in case of growing rabbits, carcass yield improves with age, considerably. However, as stated by Rudolph and Fischer (1979), Rao et al. (1978), Parigi-Bini et al. (1992), the differences between groups become smaller in larger body weight categories. Deltoro and Lopez (1986) did not detect any significant changes from the age of 11 weeks on (up to 20 weeks of age), in fact, dressing percentage even decreased during some weeks. As further difficulty, we can mention

changes of certain parts of the carcass. Deltoro and Lopez (1986) observed that while proportion of the fore quarters (without extremities) within the carcass decreases steadily until 5 weeks of age, and increases to a small extent later on, proportions of the intermediate part and hind legs increase significantly until 14 and 15 weeks of age, respectively, and remain unchanged later on. These can be an explanation to the fact that fore-, intermediate- and hind parts reach their maximum proportion within the carcass at different body weights.

### Summary

For 163 Pannon White growing rabbits of both sexes slaughtered at 12-13 wk of age at a body weight of <2.6, 2.6-2.7, 2.7-2.8, 2.8-2.9, 2.9-3.0 and 3 kg, the av. dressing percentage was 60.40, 61.07, 62.92, 61.58 and 61.32 %, resp. As compared to average weight gain of the body (28.1 %) between <2.6 and 3 kg, full gastrointestinal tract (11.7 %), blood (22.8 %), head (23.8 %) and liver (24.7 %) were the slowest, whereas skin (45.1 %) and perirenal fat (94.7 %) were the fastest in gaining weight. Relative to liveweight and carcass weight, rabbits weighing 2.8-2.9 kg were classified as of best slaughter value.

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Table 1

Effect of liveweight on carcass traits of Pannon White rabbits

Traits	Liveweight, kg						Together	Difference, % between the smallest and largest groups
	<2,6	2,6-2,7	2,7-2,8	2,8-2,9	2,9-3,0	3,0<		
1. No of rabbits	22	24	37	36	18	26	163	
2. Liveweight, g	$\bar{x}$ 2.437	2.658	2.758	2.840	2.949	3.122	2.797	28,1
(before fasting)	s 136	30	25	25	25	143	216	
3. Weight loss during 24h fasting	$\bar{x}$ 178	194	206	206	232	220	206	15,6
4. Liveweight after 24h fasting	$\bar{x}$ 2.259	2.464	2.552	2.634	2.717	2.902	2.592	28,1
	s 149	78	54	45	53	127	207	
5. Blood weight, g	$\bar{x}$ 72	78	71	73	80	89	76	22,8
	s 11	16	13	13	13	15	15	
6. Skin weight, g	$\bar{x}$ 333	399	409	423	450	484	417	45,1
	s 32	36	25	28	30	44	54	
7. Wight of distal part of fore and hind leg,g	$\bar{x}$ 83	86	85	91	91	96	89	26,4
	s 10	14	6	8	7	8	10	
8. Full gastrointestinal tract weight,g	$\bar{x}$ 367	378	360	375	384	408	377	11,7
	s 36	68	29	36	44	49	46	
9. Head weight, g	$\bar{x}$ 128	138	151	151	149	158	146	23,8
	s 11	14	8	6	10	9	14	
10. Liver weight,g	$\bar{x}$ 53	58	58	65	62	67	61	24,7
	s 7	5	7	6	7	6	8	
11. Kidneys+heart+lung weight, g	$\bar{x}$ 36	41	39	42	44	48	42	34,7
	s 5	4	6	6	4	7	7	
12. Perirenal fat weight g	$\bar{x}$ 13	21	23	24	24	26	22	96,7
	s 6	11	10	8	8	11	10	
13. Carcass weight,g <sup>x</sup>	$\bar{x}$ 1.135	1.248	1.334	1.376	1.395	1.480	1.334	30,5
	s 86	59	54	35	58	79	120	
14. Carcass+head weight g	$\bar{x}$ 1.262	1.385	1.485	1.527	1.544	1.638	1.480	29,8
	s 94	66	59	38	63	82	130	
15. Carcass+edible organs weight,g	$\bar{x}$ 1.237	1.368	1.455	1.507	1.525	1.621	1.458	31,1
	s 93	69	54	36	58	84	132	
16. Hot carcass weight,g	$\bar{x}$ 1.365	1.505	1.606	1.658	1.674	1.779	1.605	30,4
	s 101	76	58	38	63	87	142	
17. Fore part weight,g	$\bar{x}$ 334	373	397	413	419	448	399	34,4
	s 24	23	20	13	25	30	41	
18. Intermediate part weight, g	$\bar{x}$ 350	387	421	431	438	463	417	32,4
	s 34	27	24	21	28	28	43	
19. Hind part weight,g	$\bar{x}$ 417	459	501	517	511	540	494	29,5
	s 31	26	37	21	22	31	46	
20. Hind leg weight,g	$\bar{x}$ 392	435	474	489	481	508	466	29,6
	s 29	22	27	20	22	31	44	
21. Meat on intermediate part,g	$\bar{x}$ 233	267	280	286	298	314	280	34,9
	s 24	35	23	21	22	22	34	
22. Meat on hind leg,g	$\bar{x}$ 290	326	353	360	366	387	349	33,3
	s 25	21	21	17	19	23	36	
23. Intermediate+hind part weight,g	$\bar{x}$ 767	849	922	948	949	1.003	912	30,8
	s 61	46	45	32	44	51	86	
24. Meat on intermediate and hind part,g	$\bar{x}$ 523	593	633	646	664	701	629	34,0
	s 47	50	38	32	36	39	66	

<sup>x</sup>Carcass weight = Hot carcass minus head and edible organs (liver, kidneys, heart, lung)

Table 2

Effect of liveweight on carcass traits of Pannon White rabbits

Traits	Liveweight, kg						Together
	<2,6	2,6-2,7	2,7-2,8	2,8-2,9	2,9-3,0	3,0<	
1. No of rabbit	22	24	37	36	18	26	163
25. Dressing percentage, % (13/4x100) x	$\bar{x}$ 50,21 s 1,48	50,63 1,81	52,28 1,56	52,24 1,35	51,32 1,60	51,02 1,33	51,44 1,69
26. Dressing percentage, % (14/4x100)	$\bar{x}$ 55,87 s 1,46	56,22 1,95	58,19 1,63	57,98 1,47	56,81 1,75	56,47 1,41	57,11 1,83
27. Dressing percentage, % (15/4x100)	$\bar{x}$ 54,73 s 1,57	55,49 2,17	57,00 1,46	57,21 1,23	56,09 1,67	55,86 1,28	56,24 1,76
28. Dressing percentage, % (16/4x100)	$\bar{x}$ 60,40 s 1,53	61,07 2,32	62,92 1,54	62,94 1,32	61,58 1,82	61,32 1,38	61,91 1,89
29. Ratio of fore part, % (17,/4x100)	$\bar{x}$ 14,78 s 0,85	15,13 0,83	15,56 0,66	15,68 0,55	15,43 0,82	15,45 0,64	15,38 0,76
30. Ratio of Intermediate part, % (18/4x100)	$\bar{x}$ 15,46 s 0,92	15,71 0,84	16,49 0,81	16,36 0,75	16,13 0,87	15,94 0,67	16,08 0,87
31. Ratio of hind part (19/4x100)	$\bar{x}$ 18,46 s 0,65	18,64 0,91	19,62 0,89	19,66 0,80	18,79 0,72	18,62 0,80	19,08 0,95
32. Ratio of intermediate +hind part (23/4x100)	$\bar{x}$ 33,92 s 1,13	34,34 1,43	36,11 1,36	36,01 1,18	34,93 1,30	34,55 1,05	35,15 1,50
33. Ratio of fore part, % (17/13x100)	$\bar{x}$ 29,45 s 1,47	29,86 1,06	29,76 1,10	30,02 0,94	30,05 1,21	30,27 0,88	29,91 1,11
34. Ratio of intermediate part (18/13x100)	$\bar{x}$ 30,79 s 1,55	30,99 1,11	31,54 1,15	31,33 1,08	31,40 1,07	31,27 1,13	31,25 1,19
35. Ratio of hind part (19/13x100)	$\bar{x}$ 36,77 s 0,97	36,80 1,32	37,54 1,07	37,61 1,11	36,63 1,07	36,48 1,09	37,08 1,19
36. Ratio of hind leg (20/13x100)	$\bar{x}$ 34,55 s 0,96	34,88 1,13	35,48 1,06	35,52 1,04	34,48 0,99	34,31 1,13	34,98 1,15
37. Ratio of intermediate +hind parts (23/13x100)	$\bar{x}$ 67,56 s 1,27	67,81 1,32	69,07 1,11	68,93 1,05	68,04 1,15	67,74 0,97	68,32 1,22
38. Ratio of meat on the in- termediate part+hind leg (24/13x100)	$\bar{x}$ 46,06 s 1,46	47,45 2,40	47,41 1,80	46,94 1,68	47,59 1,18	47,33 1,34	47,14 1,75

Denmark: 13/4x100 = carcass weight (13) divided by liveweight after 24 h fasting (4) (x100)