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The effect of growth rates on carcass performance in pigs

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ABSTRACT

One hundred and nineteen crossbred pigs were housed 2 per pen and fed ad libitum.
The animals were fattened from 30 to approximately 107 kg body weight. Pigs were sorted into four groups according to their ADG (G1: under 849; G2: 850-949; G3: 950-1049 and G4: over1050 g/day). The pigs were slaughtered and carcass data were collected.
The analysis suggests differences in carcass performance among the 4 groups of growth rates. G1 had the highest level of meatiness expressed by the proportion of lean meat share (56.81%) compared to G4 (54.44%) ($P<0.01$). With increasing growth rate from G1 to G4 the proportion of main meat parts in the carcass was decreased (52.61-49.87%) ($P<0.05$) as well as the proportion of ham (22.23 – 20.75%) ($P<0.05$) and shoulder (10.37 – 9.82%) ($P<0.01$). The proportion of fatty parts was increased (18.78 - 20.36 %) from G1 to G4. Proportions of bone parts were equal in all groups (11.48-11.65%). The highest proportions of fat from main meat parts were in G4 (16.90%) while in other groups were equal (15.43-15.46%).
On the base of obtained results one could say that growth rate of pig has significant effect on the carcass performance.

INTRODUCTION

The achievement of the high growth intensity and at the same time of the optimum abattoir body constitution, from the point of view of muscle representation, are the principal aims of the abattoir pig producers. The discovery of the influence of genotype, sex or growth intensity is solved by a row of research works (Verstegen et al., 1994; Keller et al., 1995).

The objektive of this contribution was to assess the effect of growth intensity on carcass value in hybrid pigs.

MATERIAL AND METHODS

In the whole 119 abattoir pigs of currently bred final hybrids in the Czech Republic, of well-balanced gender, were tested. The stabling of pigs was in couples. The feeding by KKS (Complete Feed Mixture) ad lib, by means of self feeders of the company Duraumat, with continuous transition from one phase to the second.

For the evaluation of the growth intensity the pigs were regularly, in week intervals, weighted and on basis of the ascertained values they were divided according to their attained overall growth intensity in the period from 30 to 111 kg of live weight. The first group was created by the pigs with the overall average daily increase of weight within the test up to 750 g, the second with 751 - 850 g, third with 851 - 950 g, fourth 951 - 1050 g and fifth over 1050 g (Table 1).

Table 1. Animals in the test were divided according ADG

Group	n	ADG (g/day)		
		min - max	x	s
G1	26	750-850	803.9	22.5
G2	57	850-950	899.4	25.2
G3	27	950-1050	993.4	29.5
G4	9	nad 1050	1102.4	39.6

The animals were slaughtered in the live weight of c. 111 kg. In the course of the abattoir dissection these meat parts were observed:

- neck meat – meat without fatty cover and skin,
- loin meat – meat without fatty cover and skin,
- shoulder - meat meat without fatty cover and skin,
- ham meat - meat meat without fatty cover and skin,
- main meat marts (MMP) – neck + loin + shoulder + ham,
- belly,
- fat MMP – fatty cover and skin from neck, loin, shoulder and ham,
- fat parts – fat MMP + felt + jowl,
- bone parts – head + shanks + food,
- lean meat share.

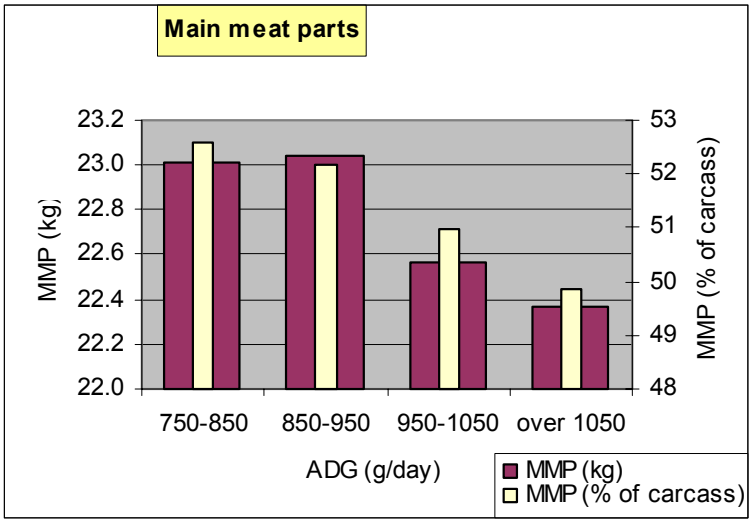
RESULTS

The influence of the intensity growth on the formation of the abattoir body is evident from the table 2. and figure 1. With increasing growth rate from G1 to G4 the proportion of main meat parts in the carcass was decreased (52.61-49.87%) ($P<0.05$).

Table 2. Body formation according to growth intensity - MMP

	Main meat parts			
	%		**Kg**	
Group	x	s	x	S
G1	52.61	3.05	23.02	1.39
G2	52.18	2.92	23.04	1.27
G3	50.97	2.98	22.57	1.82
G4	49.87	2.39	22.37	1.10

Figure 1. Body formation according to growth intensity - MMP



In the table 3 there is the summary of the results of the detailed view to the individual parts of neck, roast meat, shoulder and ham without fatty cover and skin. In the majority of parts there is a drop of their weight with the growing of growth intensity. This fall is most distinctive at hams - from 22,23 % to 20,75 %; this corresponds with the fall from 9,7 kg to

9,35 kg. At roast meat the distinctive fall of its weight was ascertained in the group G3 (ADG over 950 g/day).

Table 3. Body formation according to growth intensity – neck, loin, shoulder, ham

	neck			
	%		**kg**	
Group	x	s	x	s
G1	6.48	1.26	2.82	0.53
G2	6.43	0.57	2.84	0.25
G3	6.47	0.50	2.87	0.25
G4	5.94	0.37	2.67	0.16
	loin			
	%		**kg**	
Group	x	s	x	s
G1	13.52	1.09	5.97	0.52
G2	13.82	0.96	6.12	0.44
G3	13.10	1.20	5.77	0.66
G4	13.35	0.97	5.93	0.44
	shoulder			
	%		**kg**	
Group	x	s	x	s
G1	10.37	0.60	4.54	0.27
G2	10.02	0.75	4.43	0.34
G3	10.08	0.69	4.46	0.36
G4	9.82	0.58	4.41	0.27
	ham			
	%		**kg**	
Group	x	s	x	s
G1	22.23	1.54	9.69	0.69
G2	21.90	1.88	9.66	0.77
G3	21.32	1.34	9.47	0.82
G4	20.75	1.33	9.35	0.69

In the table 4 there is the summary of the results of the fat and fatty parts analysis. The representation of the fatty cover of the main meaty parts (MMP) is almost same in the groups G1, G2 and G3. The higher accrual of its share (from 15,4 % to 16,9 %) is in the group G4 (ADG over 1050 g/day). The accrual of the weight share was ascertained also in the parts created largely by fat (dewlap, felt and fat from the MMP). The accrual was recorded on the fastest growing animals (G4) from 18,9 % to 20,36 %.

Table 4. Body formation according to growth intensity – fatty parts

	fat MMP			
	%		kg	
Group	x	s	x	s
G1	15.46	2.41	7.11	0.90
G2	15.44	2.14	6.88	0.90
G3	15.43	1.98	6.64	0.99
G4	16.90	1.62	7.24	0.76
	fat parts			
	%		kg	
Group	x	s	x	s
G1	18.78	2.96	8.65	1.11
G2	18.86	2.67	8.41	1.13
G3	18.99	2.58	8.17	1.27
G4	20.36	2.01	8.70	0.90

Table 5. Body formation according to growth intensity – bone parts

	bone parts			
	%		kg	
Group	x	s	x	s
G1	11.61	0.52	5.06	0.25
G2	11.48	0.80	5.06	0.35
G3	11.65	0.66	5.17	0.35
G4	11.61	0.62	5.24	0.19

As regards the belly its raising share was recorded with the increasing growth intensity.

Table 6. Body formation according to growth intensity – belly

	belly			
	%		kg	
Group	x	s	x	s
G1	16.42	1.05	7.31	0.45
G2	16.93	1.00	7.49	0.44
G3	17.40	0.99	7.64	0.61
G4	17.40	0.84	7.67	0.37

The share of muscle in the abattoir body was highest in the group G2 (ADG 850-950 g/day) - 57,5%. With the raising growth intensity it dropped up to 56,5 % in the fastest growing pigs.

Table 7. Body formation according to growth intensity – lean meat share

	lean meat %	
Group	x	s
G1	55.26	3.25
G2	57.54	3.90
G3	56.77	2.79
G4	56.55	2.46

CONCLUSION

- On the base of obtained results one could say that growth rate of pig has significant effect on the carcass performance.
- With increasing growth rate proportion of MMP in the carcass was decreased as well as the proportion of ham and shoulder.
- The proportion of fatty parts was increased.
- Proportions of bone parts were equal in all groups.