AN INFLUENCE OF SLAUGHTER WEIGHT ON COMMERCIAL DESIGNATION OF CARCASS HYBRID PIGS (CLW x CL) x (D x BL) ACCORDING TO SEUROP SYSTEM

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Abstract

The aim of the test was to evaluate an influence of slaughter weight on commercial designation of carcass hybrid pigs (CLW x CL) x (D x BL) according to SEUROP system on a base of determined portion of lean meat in carcass modified pigs´ body. From all slaughtered animals the highest number (27.1%) had the average slaughter weight 105.5 kg in weight interval 100 – 109.9 kg. Values of back fat thickness had increasing tendency with growing slaughter weight contrary to lean meat portion which showed linear declining tendency. The lowest value (9.39 mm) of back fat thickness was determined in weight group under 80 kg and the highest value (16.86) in weight group under 130 kg.

The highest number of slaughtered animals (62.1%) was designated in commercial class E which corresponds with percentage of lean meat in range 55.0 – 59.9 (average value was 57.65%). In class U there was 20.9% of animals. Really positive findings it was the fact that only 3 pigs were designated in class O and no animals were designated in the worst class P. According to sex in gilts there were more animals in the best classes S and E in comparison with hogs. 25% of gilts were classified as class S, in hogs it was only 9%. In class E there was 69% of gilts in comparison with hogs – 57%.

Key Words: Lean meat, carcass pig, slaughter weight, back fat thickness

HETÉNYI, GRÁČIK (1985), VÍTEK et al. (2004), KIM et al. (2005) studied an influence of slaughter weight on carcass structure of hybrid pigs. Their conclusion was the fact that change of slaughter weight has an important influence on a composition of carcass body of hybrid pigs. They found that with growth of slaughter weight the weight of meat and fat parts in absolute values is growing but a portion of meat parts in carcass body is declining relatively. During growth the depositing of fat is growing and in higher weight categories growth of fat tissue predominates over growth of lean meat. CHABIERA et al. (1994), DEMO et al. (1993), HENKEL (1985), HENNEBACH et al. (1987), LENGERKEN (1985) mention that with every 1 kg of live weight gain back fat thickness is growing and lean meat declining.

A lean meat percentage in carcass body is the main trait of carcass value in SEUROP system. After establishing of apparatus classification of carcass pig body in the Czech Republic it will be necessary to reduce slaughter weight to 105 – 108 kg as it is recommended by DEMO and POLTARSKÝ (1997).

In the Czech Republic there is an obligation of objective classification of carcass modified bodies of pigs since April the 1st 2001. Obligatory using of SEUROP system for evaluation of carcass bodies of pigs in the Czech Republic is solicited by law number 110/1997 Sb. About food and tobacco products in text of law number 306/2000 Sb.

Material and Methods

The aim of the test was to evaluate an influence of slaughter weight on commercial designation of carcass hybrid pigs (CLW x CL) x (D x BL) according to SEUROP system on a base of determined portion of lean meat in carcass modified pigs´ body.

For experiment it was done an operational test of pigs in the same environmental conditions in chosen commercial breeding. Hybrids of F1 generation (CLW x CL) were used as mothers and they were inseminated with insemination portions of hybrid boars (D x BL) from boars station in Velké Meziříčí. Six boars were used in test with registration marks H13, H14, H15, KRN1, KRN2, KRN3. After born tested piglets were individually marked with identity number and sex of animal was put to database. Fattening was done separately according to sex in one fattening hall. Common commercial feeding mixtures were used in fattening. In the end of test 277 tested pigs were slaughtered in a slaughter house in Kostelec u Jihlavy where weight of carcass modified body was determined and slaughter weight of animals was calculated with coefficient 1.285. Next lean meat portion in carcass modified body was determined. From determined values of lean meat percentage designation of carcass bodies to commercial classes SEUROP was done. From measured values basic statistical characterizations were counted – an average and standard deviation. For test of cogency of differences among traits a Student-Newman-Keuls test was used. Statistical program UNISTAT 5.1 was used for these purposes.

Results and Discussion

As it is showed in Table 1 the highest number of slaughtered animals (27.1%) were slaughtered in average slaughter weight 105.05 kg from weight interval 100 – 109.9 kg. The lowest numbers were in groups with slaughter weight less than 80 and more than 130 kg. MATOUŠEK et al. (1990) found in his experiment that the highest optimal slaughter weight in population of discontinuous four-breed final hybrids is 120 – 125 kg.

With growing slaughter weight values of back fat thickness had growing tendency in comparison with lean meat percentage, which showed linear declining tendency. WAJDA et al. (2004) in their experiment discovered that with higher slaughter weight for 15 kg back fat is growing for 6 mm. The lowest value (9.39 mm) of back fat thickness was determined in weight group under 80 kg and the highest value (16.86 mm) in weight group over 130 kg. The muscle depth reached higher values with growing weight in most of measuring too.

On a base of results which are showed in Table 1 and 2 it is possible to say that slaughter weight has an influence on lean meat portion together with hybrid combination and sex which is consequently displayed during designation to commercial classes. With change of commercial classification from class S with the highest portion of lean meat till class P with the lowest portion of lean meat slaughter weight is growing. PULKRÁBEK et al. (2000) mention that in pigs of present type increasing or decreasing of slaughter weight for 10 kg brings increasing or decreasing of lean meat percentage for 1.3% which corresponds with our results. This founding is mentioned by LISIAK et al. (1999) which discovered that which growth of slaughter weight for 10 kg lean meat percentage is declining for approximately 2%.

In most of samples with growing slaughter weight lean meat percentage was declining in carcass pigs as it is showed in table 1. SENCIC et al. (2005) found the same conclusions - in five weight groups of animals (90.30 kg; 100.40 kg; 110.30 kg; 120.50 kg and 130.20 kg) they determined declining values of lean meat portion (58.13 %; 57.73 %; 55.36 %; 54.93 % and 53.80 %) with growing slaughter weight.

In table 2 there are showed numbers and percentage of studied carcass pigs according to commercial designation of SEUROP system. Commercial class E represented the highest number of animals (62.1 %) which corresponds with lean meat percentage in a range 55.0 – 59.9 (an average value was 57.65 %). 20.9 % of animals were classified as class U. Only three animals were in class O. No animals were designated in the worst class P. WÄHNER (2002) mentions that during slaughtering a lean meat percentage should be between 58 and 60 %.

Table 3 and graphs show that according to sex in gilts there was higher number of animals designated in the best classes S and E in comparison with hogs. 25% of gilts were designated as class S, in hogs it was only 9%. In class E there was 69% of gilts in comparison with hogs – 57%.

Table 1. Characterization of studied traits according to slaughter weight in combination (CLW x CL) x (D x BL)

Weight interval (kg)	n	%	Slaughter weight (kg)		Back fat thickness (mm)		Muscle depth (mm)		Lean meat portion (%)	
			X	S_x	X	S_x	X	S_x	X	S_x
under 80	8	2.9	76.44	3.63	9.39	2.08	48.38	7.51	58.69 ^{f}	1.93
80 – 89,9	21	7.6	84.95	2.97	11.43	2.26	53.82	6.44	57.81 ^{a,i}	2.69
90 – 99,9	38	13.7	96.03	2.77	11.03	2.93	57.21	6.13	58.19 ^{b,c,g}	2.00
100 – 109,9	75	27.1	105.05	2.83	11.98	2.87	60.39	6.73	57.93 ^{d,e,h}	2.30
110 – 119,9	73	26.4	114.31	2.65	13.46	3.54	61.83	6.96	56.53 ^{b,e,j}	2.75
120 – 129,9	48	17.3	124.80	2.27	14.21	3.48	65.74	6.29	56.15 ^{a,c,d,k}	3.01
130 and more	14	5.0	137.24	5.62	16.86	3.52	66.61	8.82	53.46 ^{f,g,h,i,j,k}	4.04
Total	277	100	105.55	14.31	12.62	3.49	59.14	7.81	56.97	2.87

a,b: P≤0.05 c,d,e: P≤0.01 f,g,h,i,j,k: P≤0.001

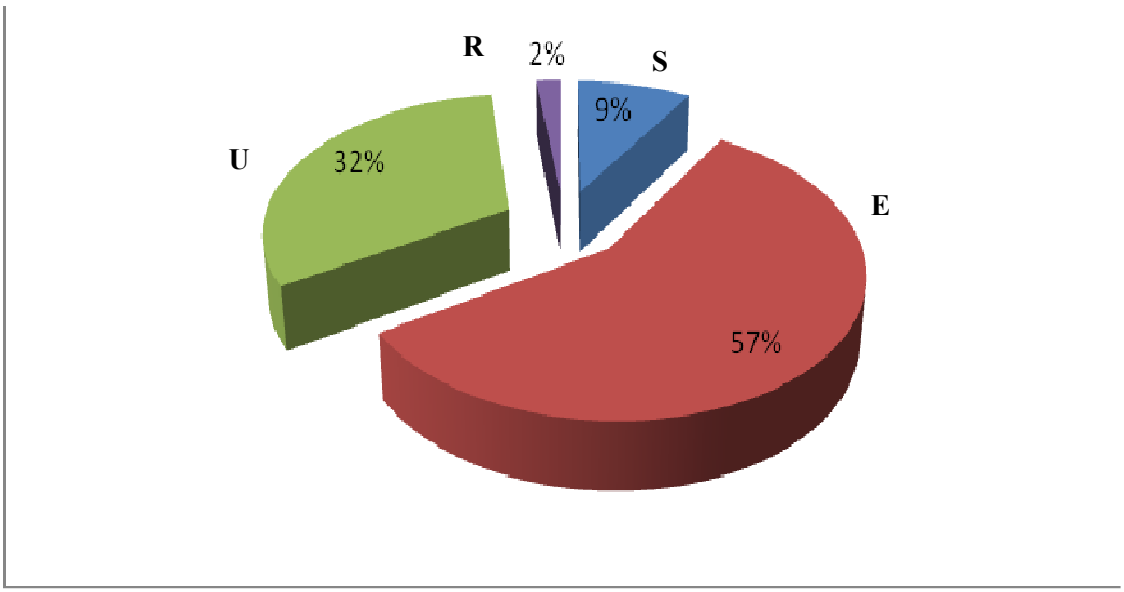
Table 2. Characterization of groups of carcass pigs designated to classes SEUROP system in combination (CLW x CL) x (D x BL)

Lean meat portion in carcass body specified for each quality class (%)	n	%	Slaughter weight (kg)		Back fat thickness (mm)		Muscle depth (mm)		Lean meat portion (%)	
			X	S_x	X	S_x	X	S_x	X	S_x
60 and more	44	15.9	102.26	13.26	9.83	1.69	65.14	7.26	60.74	0.61
55,0 – 59,9	172	62.1	107.63	13.12	12.06	2.76	60.22	7.81	57.65	1.39
50,0 – 54,9	58	20.9	116.91	14.03	16.55	2.39	59.07	7.21	53.08	1.21
45,0 – 49,9	3	1.1	129.00	12.97	22.77	0.59	57.20	4.78	47.77	2.01

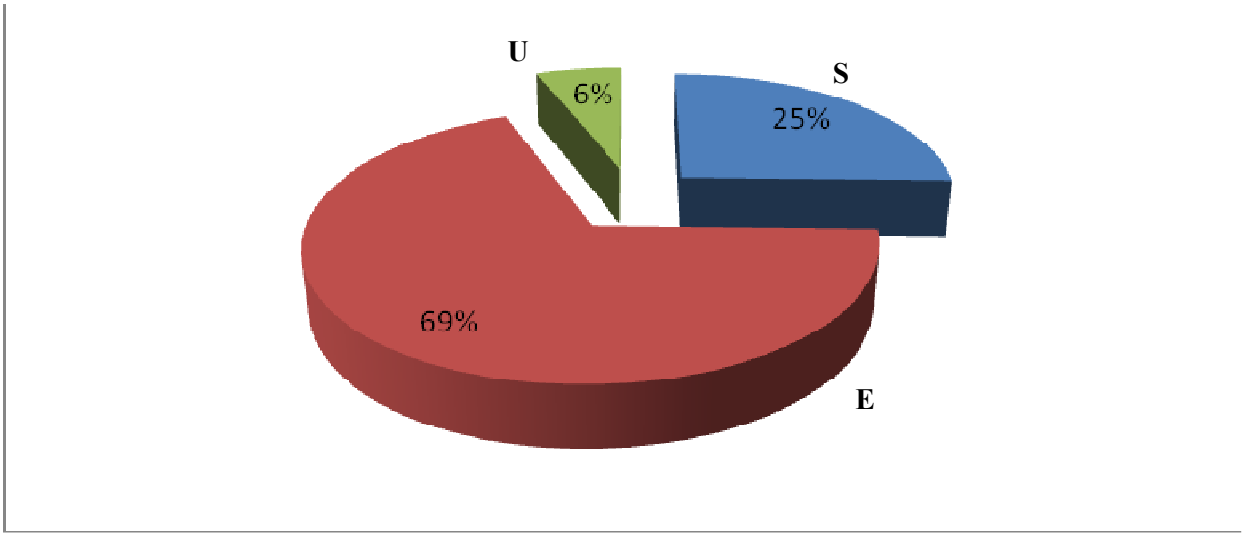
Table 3. Commercial classification in combination (CLW x CL) x (D x BL)

Class	S		E		U		R		O		P	
Traits	n	%	n	%	n	%	n	%	n	%	n	%
Hogs	14	9	91	57	51	32	3	2	0	0	0	0
Gilts	30	25	81	69	7	6	0	0	0	0	0	0
Total	44	16	172	62	58	21	3	1	0	0	0	0

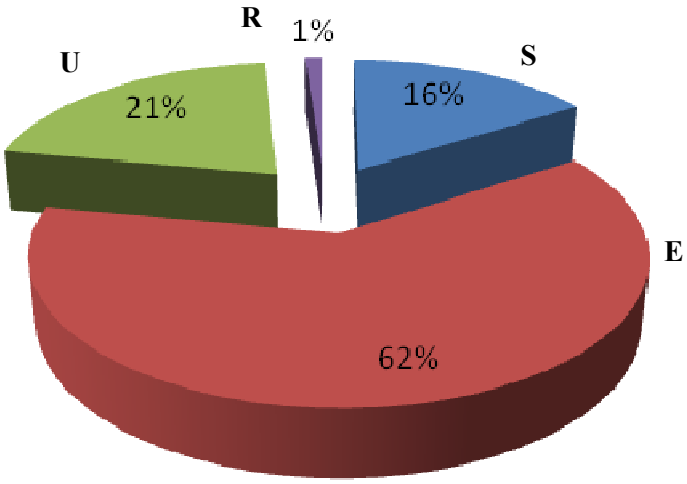
Graph 1. Commercial classification in combination (CLW x CL) x (D x BL) - hogs



Graph 2. Commercial classification in combination (CLW x CL) x (D x BL) - gilts



Graph 3. Commercial classification in combination (CLW x CL) x (D x BL)



Conclusion

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