

EVALUATION OF PIG CARCASSES PRODUCED IN ESTONIA BY ZP-METHOD

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Introduction. About 50% of the meat produced in Estonia is pork. Pork is an essential agricultural product in Estonia and it will probably be one of the most important export articles in the nearest future.

Objective of the present work was to determine the accordance of Estonian pork quality (lean meat content) on the bases of the quality grading systems in European countries.

Experimental methods. Two pork grading systems are in force in Estonia at the present time. 1. The standard of the previous Soviet Union (GOST 7724-77) is still used in some meat plants. Age, backfat thickness, sex and carcass weight are the main indexes for grading pork according to this standard /GOST 7724-77/. 2. Standard of the Estonian Meat Association classifies pork carcasses on the bases of lean meat content, age, sex, hot carcass weight. Fattened pigs with the carcass weight from 50-100 kg are classified into six classes on the bases of lean meat content (S - 60% and more, E - 55-60%, U - 50-55%, R - 45-50%, O - 40-45%, P - less than 40%) /Tapasigade... 1994/. In the present work lean meat content in pork carcasses was determined on the bases of three methods: ZP-method /Verordnung ... 1990/, Ultra FOM-100 (Instruction... 1993.) and factual deboning. Experimental pigs were grown up on different farms. Pigs were slaughtered in the usual way. In hot carcasses pH₁, hot carcass weight, lean meat content with ZP-method and Ultra FOM-100 were measured. Water content, water holding capacity, colour, pH₄₈ (table 1) were measured and the results of factual deboning (table 2) were determined after having chilled carcasses during 48 hours. Total number of carcasses classified according to EUROP-system was 1264 (table 3).

Table 1

Arithmetical means of characteristics of fresh pork on experimental and middle-sized farms

Characteristics	Experimental farm 1992-1993			Middle-sized farms 1991-1993		
	n	\bar{x}	s	n	\bar{x}	s
Carcass weight, kg	603	68,2	0,2	491	67,1	0,6
Lean meat content, %	581	51,2	0,1	490	47,8	0,2
Water content, %	593	74,1	0,05	68	73,7	0,21
Water holding capacity, %	592	65,1	0,26	68	64,4	0,50
Colour, max 9 points	593	4,8	0,1	68	5,4	0,2
pH ₁	600	6,50	0,02	481	6,36	0,02
pH ₄₈	593	5,60	0,01	478	5,82	0,01

n - number of pigs, \bar{x} - average, s - standard error

Principle results. Better lean meat content - 67,4% (E + U classes) was in pig carcasses on experimental farm in 1991-1994 while only 27,2% of the pork was with lean meat content over 50% on middle-sized farms.

Comparing different methods of determining lean meat content it became evident that both used methods: ZP-method and Ultra FOM-100 resulted higher lean meat contents (accordingly 3,5% and 4,4%) in comparison with factual deboning.

Conclusions. 1. On the bases of lean meat content Estonian pork mostly belongs to R-class (lean meat content 45-50%).

2. ZP-method can be used for classification of pork carcasses if Ultra FOM-100 or other instruments are not available.

Table 2

Lean meat content in pig carcasses by ZP-method, Ultra FOM-100 and factual deboning

	Carcass weight, kg	ZP-method			Lean meat content, by Ultra FOM-100, %	Factual deboning			
		fat thickness, mm	loin thickness, mm	lean meat content, %		lean meat content, %	fat+rind content, %	bones content, %	tendons content, %
1	44,4	10	48	55,5	49,9	49,1	34,0	15,2	1,7
2	70,4	19	62	50,1	57,6	51,3	33,5	13,2	2,0
3	71,0	14	52	53,2	56,3	47,4	35,6	15,7	1,3
4	56,8	9	60	59,0	60,2	55,2	29,1	14,0	1,7
5	73,4	20	57	50,3	53,5	46,0	41,7	10,5	1,8
6	78,0	20	63	51,2	44,4	51,0	36,2	11,4	1,4
7	74,2	15	57	53,4	54,7	49,6	37,1	11,8	1,5
8	75,4	20	57	50,3	55,9	48,6	37,5	12,5	1,4
9	78,0	20	62	51,0	49,7	44,3	40,0	14,0	1,7

Arithmetical means:

69,1		52,7	53,6	49,2	36,1	13,1	1,6
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Lean meat content:

factual deboning ± ZP and Ultra FOM 100, %	+3,5	+4,4	0
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Table 3

Classification of carcasses by EUROP-method from 1991 to 1994

Class	Lean meat content %	Distribution of carcasses, %								
		Middle-sized farms				Experimental farm				Total (n=1264)
		1991 (n=422)	1992 (n=59)	1993 (n=70)	Mean (n=551)	1992 (n=315)	1993 (n=175)	1994 (n=223)	Mean (n=713)	
E	55 and more	2,9	5,0	1,4	2,9	7,4	20,8	22,9	15,6	10,1
U	50-55	24,4	30,5	17,5	24,3	49,3	57,2	51,1	51,8	39,8
R	45-50	57,8	52,6	65,2	58,2	42,2	20,2	25,6	31,6	43,2
O	40-45	14,4	11,9	15,9	14,2	1,1	1,8	0,4	1,0	6,7
P	less 40	0,5	-	-	0,4	-	-	-	-	0,2

References.

- GOST 7724-77. Pork meat in whole and half carcasses. (In Estonian).
- Classification of slaughter pigs and pork carcasses. Estonian Meat Association. Tallinn 1994. (In Estonian).
- Verordnung über gesetzliche Handelsklassen für Schweinehälften. Vom.16.august 1990. Bundesgesetzblate, Jahrgang 1990, Teil 1.
- Instruction of Ultra FOM-100. SFK- Technology AS. Denmark. 1993.