

# Evaluating pork carcasses without SEUROP classification system

D. Lisiak<sup>1\*</sup>, K. Borzuta<sup>1</sup>, R. Jędrzejczak<sup>1</sup>, P. Janiszewski<sup>1</sup>, P. Ślósarz<sup>2</sup>

<sup>1</sup> Prof. Waław Dąbrowski Institute of Agricultural and Food Biotechnology, Warsaw, Rakowiecka 36, 02-532 Warszawa Poland

<sup>2</sup> Department of Animal Breeding and Product Quality Assessment, Poznań University of Life Sciences, Złotniki, Słoneczna 1, 62-002 Suchy Las, Poland

\*Corresponding author email: [dariusz.lisiak@ibprs.pl](mailto:dariusz.lisiak@ibprs.pl)

## Abstract

The differences between pork carcasses commercial values were studied. The carcasses were classified according to SEUROP system. Total of 116 E class carcasses were tested. The carcass weight was standardized to 92,5 kg. The value of 5 basic carcass elements was analysed in the experiment i.e. loin, ham, shoulder, neck and belly. Obtained results proved that the differences between carcasses values estimated based on the carcass lean meat content or based on the value of carcass elements, might exceed 17 USD i.e. 8,6% of the carcass value. Estimating pork carcasses value based on the yield of the most valuable carcass elements is a method of the future. Further progress in the carcass lean meat content and lower variability of this trait will lead to the situation when SEUROP classification system will become insufficient to properly evaluate the pork carcass commercial value, which is a base for the fatteners payment schemes.

**Key Words** –SEUROP classification, pork carcasses, commercial value

## INTRODUCTION

In the current market conditions not only the fatteners' weight determines its value but also the potential to obtain as much as possible of valuable carcass cuts. Slaughterhouses in general are willing to purchase meat not the bones and fat. This is the main reason why there are constant works on the improvement of carcass evaluation system and payment schemes for fatteners.

Pork carcasses classification using instruments started in Poland in 1993 when the first devices called choirometers were used in Polish slaughterhouses (Borzuta 1998). Many things have changed since then. The most important was the fact that SEUROP carcass classification system became obligatory in Poland since the moment of accession to EU. The detailed procedures were developed to introduce, recognize and to control all classification instruments. The procedures on one hand enabled to compare classification results between different countries (EU

directive no 1308/2013) but on the other hand they were time consuming and caused disturbances in the process of changes in Poland that lead to increased costs of implementing the new classification methods (Lisiak et al. 2014).

The average carcass lean meat content in Poland in 2015 was 57% and the average carcass weight was 92,5 kg (according to the Integrated System of Agricultural Market Information). Nowadays the carcasses class S and E market share reached almost 75% . It means that the fatteners population structure has become more homogenous and it will be more and more difficult to estimate the fatteners quality based only on the carcass lean meat content as the differentiating factor of the carcass commercial value.

## MATERIAL AND METHODS

The measurements were taken on 116 E class carcasses classified with CGM optical-needle instrument. The carcasses were cut after chilling according to the slaughterhouse cutting procedure. The following carcass elements were analysed: neck with the bone, loin with the bone, ham with knuckle, shoulder with knuckle, belly with ribs. The cuts weight was standardized to 92,5 kg carcass weight and their value was calculated based on the slaughterhouse price scheme in PLN. In order to calculate the cuts value in USD, the average currency exchange rate published on the 1st May 2016 by the National Polish Bank, was used. The price scheme for carcass elements was as follows: loin 3,02 USD/kg; ham 2,05 USD/kg; shoulder 1,84 USD/kg; belly 2,31 USD/kg, whole E class carcass 2,05 USD/kg.

## RESULTS AND DISCUSSION

The standardized weight of the basic carcass elements are presented in the table 1.

Tab. 1 The standardized weight of chosen carcass elements in kg.

	average	min	max	s.d.
shoulder	8,28	7,23	9,47	0,40
neck	3,47	2,87	4,18	0,25
ham	12,99	11,74	14,21	0,52
loin	4,91	3,85	6,01	0,48
belly	5,53	4,52	6,63	0,44
sum of 5 elements	31,98	30,08	33,82	0,86

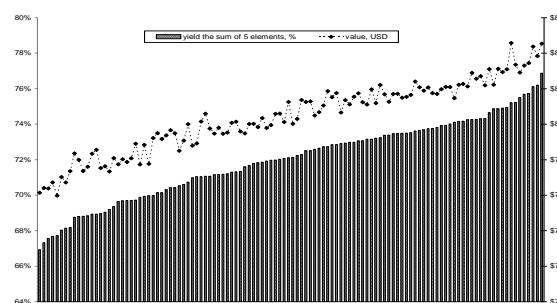
Multiplying the price by the weight the value of carcass elements was established and presented in the table 2.

Tab. 2 The value of carcass elements in USD

	average	min	max	s.d.
shoulder	15,19	13,26	17,39	0,74
neck	8,65	7,14	10,41	0,63
ham	26,57	24,01	29,06	1,07
loin	14,80	11,60	18,13	1,44
belly	12,76	10,43	15,30	1,03
sum of 5 elements	77,97	72,91	82,88	2,23

The average value of all 5 carcass elements was 77,97 USD. Assuming that the whole carcass value was 94,81 USD (46,25 kg x 2,05 USD/kg) it means that 5 carcass elements covered 82,2% of the total carcass value. The differences between the values of carcass elements were significant. The biggest difference was observed between loin and ham because the average values for these elements were 44,1% and 19% respectively. When summing up all maximum and minimum values and comparing the results, the difference of 10 USD on one carcass was observed. Of course the pig with only the highest carcass elements values did not exist. The results obtained for carcasses examined in the experiment are shown on graph 3.

Fig. 1. The most desirable carcass elements share and value.



The share of the 5 most valuable carcass elements may vary from 70% to approximately 78%, whereas their value may vary from 72,9 USD to 82,8 USD. In order to fully explain the differences between the carcasses, two similar carcasses were chosen and compared and the results are presented in table 3. Both carcasses were of similar weight and lean meat content.

Tab. 3 Commercial value of the two chosen carcasses

	carcass 1	carcass 2
no in the experiment	77	48
lean meat content	56,6	56,5
carcass class	E	E
shoulder, kg	8,15	8,03
shoulder in USD	14,96	14,75
neck, kg	3,33	3,41
neck in USD	8,31	8,51
ham, kg	12,98	14,01
ham in USD	26,55	28,67
loin, kg	4,09	5,51
loin in USD	12,35	16,61
belly, kg	4,65	5,61
belly in USD	10,74	12,95
total weight of 5 elements, kg	30,16	33,48
total value of 5 elements in USD	72,91	81,50

According to the SEUROP classification system the slaughterhouse would pay the same price for both fatteners. But when selling the meat the slaughterhouse would gain 17,2 USD more on one carcass which is 8,6% of the total carcass value. It means that classification based on the lean meat content does not match the real carcass commercial value. But why? Because almost all manual pork carcass

classification instruments are using so called the loin method to establish the lean meat content in the carcass (Zelenak et al. 2015). It means that carcass classes are determined based on the backfat thickness and *longissimus dorsi* thickness measurements (Lisiak et al. 2012). These traits are highly correlated with the lean meat content of all carcass cuts but directly they are correlated only with loin. So, the lower the variability of these traits, the more urgent the need to increase carcasses estimation accuracy by including additional measuring traits in the regression equations. The traits should be measured in other carcass elements, not only in loin. This issue was already handled in Autofom. This instrument is taking measurements on the whole carcass using 16 ultrasonic heads. It is possible to obtain the picture of the majority of the carcass and to estimate lean meat content of the basic carcass cuts (Brøndum J et al. 1998). However the price and technical disturbances with installing this instrument limited the use of this instrument to only 3 slaughterhouses in Poland (according to the Agricultural and Food Quality Inspection). That is why it is so important to look for the new solutions and new ways to obtain information on the fatteners commercial value.

## CONCLUSIONS

1. The carcasses of the same weight and the same E class may be of different values. The difference might exceed 17 USD.
2. Further progress in pork carcasses lean meat content as well as fatteners payment schemes development may lead to the situation when SEUROP classification system will become insufficient to properly evaluate the pork carcass commercial value.

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