

ALTERNATIVE PIG CARCASS PRESENTATION WITHOUT AURICLES USED IN THE CZECH REPUBLIC

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Abstract

The legislation of the European union permits the application of alternative carcass presentation by pigs in every member state. The referential carcass weight should be counted though. The aim of the study was to construct a formula to estimate the referential carcass weight from the carcass where auricles were cut off before weighing. A representative sample of 750 slaughter pigs was selected. The sample consisted from commonly used hybrids, the share of gilts and barrows was equal and the weight range was in between 60 and 120 kg. A regression formula was constructed to enable the estimation of the referential carcass weight (y) from the carcass weight without ears (x): $y = 0,16162 + 1,00118x$.

The regression formula fulfils the accuracy requests and could be used to count out the referential carcass weight for the price reports and allows the use of the alternative presentation of the carcass by pigs in the Czech republic.

Key Words: pig, carcass presentation, auricles, regression formula

The grading of pig carcasses is in the Czech republic obligative since 2001 and since 2004, after joining the EU, the european legislation is obligative (EC Regulation 1234/2007 and EC Regulation 1249/2008; and EC Decisions 2005/1 which was changed with EC Decisions 2006/383 and 2010/793).

Through the grading process the basic value of the pig carcass is determined – the lean meat content. This share of the lean meat is the basic parameter for the farm prices (Augustini, Dobrowolski and Heining, 1993). The second but not less important parameter is the carcass weight. The combination of both these parameters is commonly used for the assesment of the farm prices (Vališ *et al.*, 2008). The carcass weight is described together with the standard carcass presentation in the EC Regulation 1234/2007. The standard presentation is defined as two halves of the same animal including head and skin, without brain, spinal chord, diaphragm, kidneys, flare fat, genital organs, hooves, and organs of thoracic, abdominal and palvic cavities removed with adjacent fat.

An alternative carcass presentation could be permitted and used due to some traditional or technological reasons. In the conditions of the Czech republic is since the year 2011 used the alternative presentation of the carcasses without removing the flare fat – the carcasses could be weightened within the flare fat and the reference weight is counted using a special formula (EC Decision 2010/793). The results from the carcass grading are thus comparable even if the alternative presentation is used (Branscheid *et al.* (1990) and Walstra and Merkus (1996).

Beyond these permitted carcass presentations a demand on a new alternative presentation appeared, which could be used in selected slaughterhouses. It's the alternative which presents the carcass without the auricles (ear lobes). This request came from businesses that use ear lobes as a raw material for the production of feed for domestic animals (dried ear lobes), and with regards to the fact that in the course of scalding, dehairing and cleaning there is often damage to the ear lobes, it is more advantageous for them to take the ear lobe before scalding. The reason for this request for approval of the new alternative presentation of pig carcasses are the technical requirements of the enterprises, which corresponds to the condition for the authorisation of other presentations in individual Member States.

To fulfil the legislation and the supplier-customer relations, a formula should be used for the correction of the weight when an alternative presentation is used. This formula should enable the comparison between the grading results of different alternative presentations of the carcass (Pulkrábek *et al.*, 2010).

The aim of the study was to create the correction formula for the carcass weight when the alternative carcass presentation without the auricles is used.

Material and Methods

A sample of 750 pig carcasses were put in the test. These carcasses came from different suppliers from different crossbred combinations. The share of gilts and barrows was equal and the sample was also representative concerning the carcass weight. The slaughter process has been done in the slaughterhouse which demanded this alternative presentation. For the correction formula, the carcass weight without auricles was registered and also the weight of the cut off auricles (ear lobes). For saving the representativity of the sample, the FOM device was used for the carcass grading process and the lean meat content was estimated and the carcasses were stratified according to the weight classes (Table 1).

The tested sample is representative and in all aspects comports with the slaughter pig population in the Czech republic. This was compared with the informations presented on the websites od SZIF, where all these aspects are monitored.

The sample was analysed in the SAS® program version 8.2 using the MEANS, GLM a REG (SAS Institute Inc., 2001).

Results and Discussion

The basic parameters for the correction formula are the carcass weight and the weight of the auricles (ear lobes). These parameters are shown in the Table 2. The weight of the auricles was stratified into 4 cathegories and is shown in the Figure 1.

The average weight of the ear lobes was for the whole sample $273.9 \pm 1,23$ g. 55.7% of all classified carcasses were in the most frequent weight interval of ear lobes - 250 to 299 grams. The two adjacent intervals represented 23.6% and 18.1% and the interval of ear lobes over 350 grams represented 2.5% of the total number of individuals monitored.

On the base of this evaluation a formula was constructed to recount the carcass weight without the auricles (x) on the standard weight of the carcass (y):

$$y = x + a,$$

where: y = hot carcass weight (kg) – standard presentation according to the EC Regulation 1234/2007

a = 0.274 kg (274 g) – average weight of the both auricles

On that ground was constructed a formula which takes in account also the carcass weight:

$$y = 1.1811x + 161.18$$

The straight line of this linear formula and the mutual relation between the weight of the auricles and the carcass weight is shown in the Figure 2.

However this correction formula doesn't take into account the individual carcass weight. The significant impact of the carcass weight on the results is shown in the Table 3.

The correction was realised using the estimation formula:

$$y = 0.16162 + 1.00118x,$$

where: y = hot carcass weight (kg) – standard carcass presentation

x = hot carcass weight (kg) without the auricles

Basic statistical parameters of accuracy of this formula:

$$s_e = 0.03 \quad r = 0.999 \quad R^2 = 0.999.$$

These parameters show a high predicative ability of the designed corrective procedure. The comparison between the estimated carcass weight and the real carcass weight is shown in the Figure 3.

Table 1. Characteristics of the stratified sample (n = 750)

Parameter	Individuals (n)	Share of individuals (%)
Lean meat content – grading class		
S	242	32.3
E	471	62.8
U	37	4.9
S - E	750	100
Hot carcass weight (kg)		
< 70	3	0.4
70 – 79.9	34	4.5
80 – 89.9	153	20.4
90 – 99.9	323	43.1
100 – 109.9	209	27.9
> 110	28	3.7
60 - 120	750	100

Table 2. Parameters measured for the construction of the correction formula

Indicator	\bar{X}	X_{\min}	X_{\max}
Hot carcass weight without ear lobes (kg)	95.5	65.2	121.2
Weight of ear lobes (g)	273.9	146.0	408.0
Lean meat content in carcass (%)	58.8	50.3	64.5

Figure 1. Representation of individual intervals of ear lobe weight

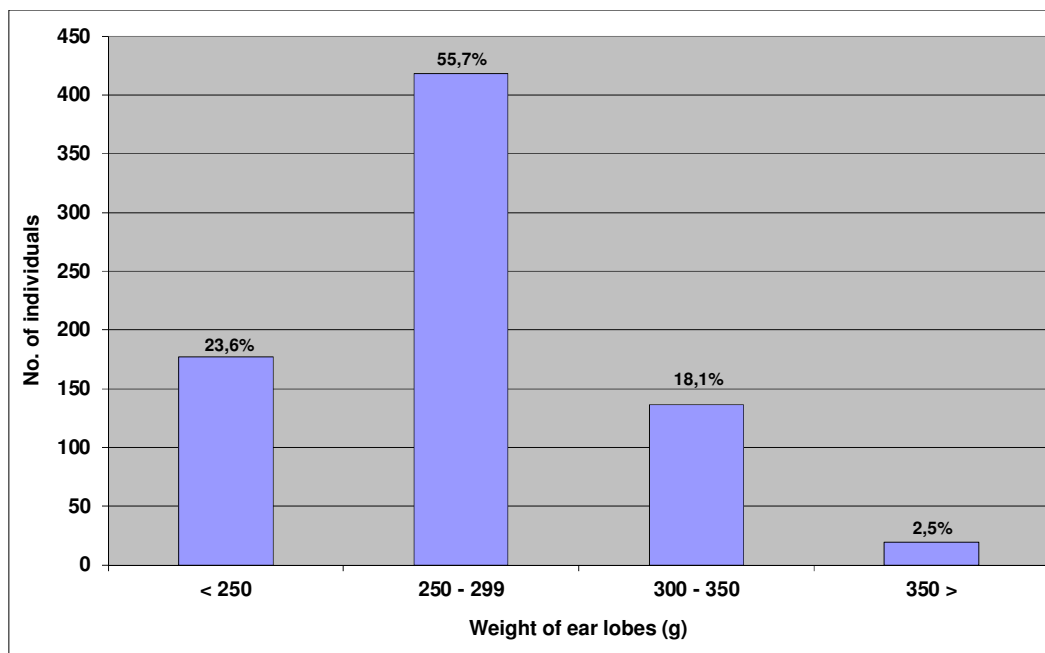


Table 3. Weight of ear lobes in dependence of hot carcass weight categories (Reference presentation of carcass according to EU standards)

Hot carcass weight (kg)	Basic statistical characteristics of the weight of the ear lobes (g)			
	n	\bar{x}	s	$s_{\bar{x}}$
< 70	3	222,3 ^a	17.39	10.04
70 – 79.9	34	249.1 ^b	31.23	5.36
80 – 89.9	153	264.8 ^{bc}	31.97	2.59
90 - 99.9	323	273.8 ^{bcd}	31.35	1.74
100 - 109.9	209	282.3 ^{cd}	33.12	2.29
≥ 110	28	298.5 ^d	41.95	7.93
60 - 120	750	273.9	33.75	1.23

Differences between the averages indicated by the same letter are not mutually statistically significant ($P \leq 0.05$)

Figure 2. The weight of the ear lobes depending on the hot carcass

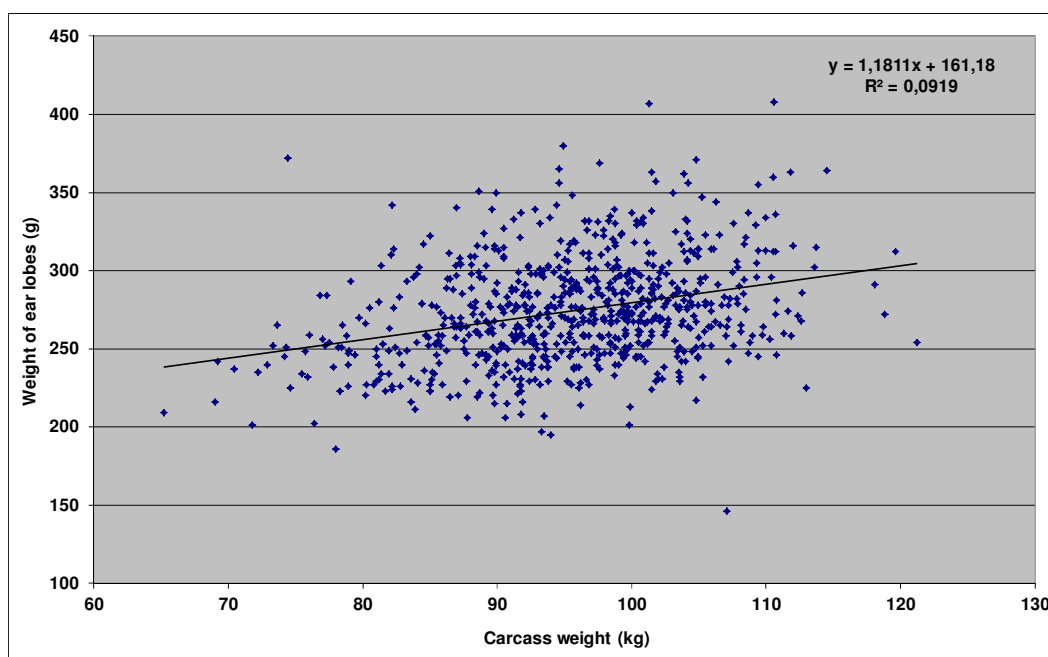
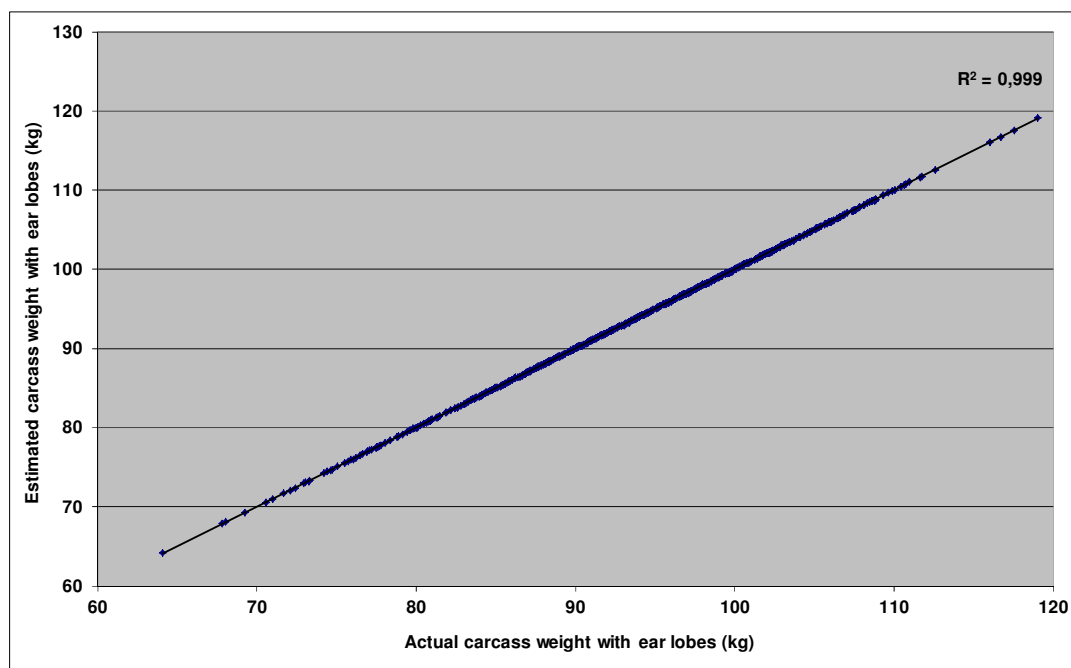


Figure 3. Difference between the estimated weight and real weight

References

- AUGUSTINI, C., DOBROWOLSKI, A., Heining, F.: Objektive Schlachtörperbewertung beim Rind. Kulmbacher Reihe Bd., 12, 1993, 27 – 53.
- BRANSCHIED, W., DOBROWOLSKI, A., SACK, E.: Simplification of the EC – reference method for the full dissection of pig carcasses. Fleischwirtschaft, 70, 1990, 5, 565 – 567.
- PULKRÁBEK, J., DAVID, L., VÍTEK, M., VALIŠ, L.: Pig carcass presentation with flare fat in Czech Republic. Research in Pig Breeding, 4, 2010, 13 – 16.
- SAS Institute Inc: Release 8.2 (TS2MO) of the SAS® System for Microsoft® Windows®. SAS Institute Inc, 2001, Cary, NC, USA.
- VALIŠ, L., VÍTEK, M., DAVID, L., PULKRÁBEK, J.: Lean meat content and distribution in pig carcasses. Research in Pig Breeding, 2, 2008, 39 – 41.
- WALSTRA, P., MERKUS, G., S., M.: Procedure for assessment of the lean meat percentage as a consequence of the new EU reference dissection method in pig carcass classification. Twist, 1996, 1 – 22, NL: ID-DLO.

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