

QUALITY OF PORK CARCASS ON THE SLAUGHTER LINE IN MINI SLAUGHTERHOUSES

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Abstract

The quality of slaughter pigs in terms of meat content is assessed by taking certain measures in one or both carcass, cutting of or measuring the finest particles, determining the content of certain tissues and quantitative relationships meat-fat. Research is carried out in mini slaughterhouse "Dim Dim" Trn, Laktaši. Total of 38 finishing pigs was taken from the municipality Laktaši, Republic of Serbian. Performed the basic measures of the quality of carcasses, live weight of pigs, hot carcass weight with head and warm carcass without the head mass, the weight of pork head, pork fat, weight of offal and mass of pig waste. The average mass of warm carcass with the head was 74.95 kg, while the average weight of hot carcass without the head was 69.54 kg. The share of the head of the pig relative to the total weight amounted to 5.41%, in relation to the weight of the head on the warm carcasses 7.2% The share of abdominal fat was 1.37% based on the total live weight, 1.83 % based on mass of warm carcasses with the head and 1.97% by weight of hot carcass without the head. From the data presented it can be concluded that in the Republic of Serbian mini slaughterhouses are not implemented EUROP standards on the quality of pig carcasses as regulated in the European Union where they pigs for slaughter have live scales of 125 kg, with an average mass of warm carcass of 93 kg.

Key words: *pig, mini slaughterhouse, hot carcass weight, slaughter indicators, EUROP standards*

Introduction

Production and quality of finishing pigs depends on many factors. The most important factors that influence the quantity and quality of fattening pigs are genetically and abiotic (race, fathers, breeding methods, age, weight throat, gender, neutering, feeding, slaughtering procedures during slaughter and after slaughter). Most important genetic factor is race, and the par genetic factor is nutrition and great role play a stress during transport and slaughter process. It is very important to reduce stress situations and to get the best quality meat, which is manifested by changing properties of meat designated as pale, soft and exudative (BMW) meat (Rudolf and Petrovich, 1997). Important role in the carcass quality have a selective method. The coefficient of heritability for fattening pig breeds is medium to high. They are for the same type vary between breeds, methods of evaluation, throat sex, group selection, feeding system. Carcass quality can be assessed using dissection (Walstra and Merkus, 1996). Radovanovic (2001) states that the for determination of carcass meat yield may use different electron-optical devices, such as FOM (Fat-O-Meter), HGP/S-4 (Hennessy Grasing Probe System), PCC (Pork Classification Center) and lately VIS 1000 (Pork Vision System), FOM AUTO (Automatic Fat-O-Meter) and others. In European countries with advanced breeding pigs for the first standards for evaluating the quality of carcass are defined in the late sixties of the last century (Petrović et. al. 2009). In 1970 in Germany and Holland was introduced the first standard for carcasses quality, which included hot carcass weight, thickness of the adipose tissue of the back acts measured at two measuring points, as well as evaluating the type and conformation of the carcass (Petrovic et al. 2009). Improvement of the standard in

1985 was drafted legislation (Commission Regulation (EEC) NO. 2967/85) which was in force until 1989, when after that adopt Europe Standard (Jotanović et al. 2011). The aim of this study is to show the quality parameters of fattening pigs at the slaughter that is recorded in the mini slaughterhouse, to get the review in which condition are the mini slaughterhouse. The obtained data point out mini slaughterhouse and compare them with other modern slaughterhouses.

Materials and methods

The research was carried out at the slaughterhouse "DIM-DIM" Klačnice, Trn, during June and July 2009. Total 38 fattening pigs was included of both sexes and body weight between 90-105 kg, with different genotype formed between breed of Landrace, Pietrain, Yorkshire and Hampshire hybrids. The pigs originating from farms from around Ljevča fields of municipalities Laktaši. After slaughter, evisceration and cutting carcasses on the slaughter line, the following parameters of quality are: live body weight, hot carcass weight with head mass, warm carcass without the head, the weight of pork head, pork fat, offal weight and mass of pig waste. To determine the live weight of porkers is used mechanical scales in the terminal (waiting boxes for pigs), to determine the mass of warm carcass and other parameters was used electronic scale on the slaughter line. During research, data and protocol from slaughterhouse "DIM-DIM" Klačnic, Laktaši was used. It was used official and internal records. The data on the value of the quality parameters are presented in tables.

Results and discussion

In most countries of the European Union (EU) meat quality by the end of the twenties is based on the measurement of backfat thickness. According to Pedersen (1988) basis for this method is the high correlation ($r = - 0.75$) between backfat thickness and meat percentage in the carcass. An evaluation of carcass quality is assessed and the total work in the field of genetics, selection, nutrition, reproduction and health. Quantitative and qualitative characteristics of pigs depend on the selection method. Requirements for work on genetic improvement of the quality of pig's are knowledge of the variability of production traits of breeding animals. For this purpose, we used tests and recorded for all of the properties in respect of which the selection is carried out. All data collected on the farm should be explained with slaughterhouse data. In this case, can be obtained complete data on production characteristics and breeding stock selection effect will be much higher, which is the right way to improve pig production. Assess the quality of a pig on the slaughter line is necessary without which can not imagine progress in pig production (Radović et al. 2003). As part of research into mini slaughterhouse was taken and analyzed 38 fattening pigs, originating from the municipality Laktaši. For slaughter redeem meaty pigs: Landrace, Pietrain, Yorkshire, Hampshire and hybrids formed between these breeds or animals in the type of some of these races. The main objective of the slaughterhouse is to find on the market very quality finishing pigs, with low fat.

Table 1. Slaughter data of porkers from mini slaughterhouse "DIM-DIM" Klačnice-Laktaši

Slaughter measures	Total (kg)	Average value (kg)	Participation in relation to the total mass (%)
Body weight	3784	99.58	100
Mass of warm carcass with head	2848	74.95	75.26
Mass of warm carcass without had	2643	69.54	69.84
Head	205	5.38	5.42
Abdominal fat	52	1.37	1.37

From the data of table 1 shows that the total live weight of fattening pigs (38) was 3784 kg average weight was 99.58 kg. The total mass of warm carcass with head was 2848 kg, with an average weight of 74.95 kg or 75.26 % participation of the total mass. The total mass of hot carcass without head is 2643 kg, the average weight was 69.54 kg and 69.84 % of the total weight. The total mass of pig head was 205 kg, an average of 5.38 kg and 52 kg was fat and an average of 1.37 kg. Pig's head in proportion to the total amount is 5.42 mass % relative to the weight of the head on the warm carcasses 7.2 %, while abdominal fat proportion was 1.37 % based on the total live weight, 1.83 % of hot carcass weight to the head, and 1.97 % by weight of hot carcass without the head.

Comparing these data with research Jotanović et al. (2009) shows that the average mass of warm carcass with head lower by 3.35 kg (78.30:74.95). Comparisons are based on the monitoring data of pigs purchased from ex-intensive system (sub-contractors). The pigs from intensive system were from farm "Top Farm" Nova Topola, Gradiska hybrids imported from the Netherlands with an average body weight of 103.56 to 110.50 kg and an average hot carcass weight of 84.70 kg, the thickness of the dorsal bacon with 8.26 mm. The pigs from half-intensive that originate from two pig farms (Breko District and Nova Topola) have average of hot carcass weight 85.02 kg and average backfat thickness 6.14 mm. From ex-intensive system were bought fattened pigs for small producers (with weak internal data) with an average hot carcass weight 78.30 kg and average of backfat thickness 30.23 mm. Research Stojanovski et al. (2011) suggest that the average weight of Landrace pigs before slaughter were 94.97, a mass of warm carcass with head 70.95. The values obtained are lower than our results. While research Prevolnik et al. (2012) are very different from our results, they have progeny pigs from Landrace × Large White × Landrace dams and Pietrain sires (free of the RYR1 gene). They have mass of warm carcass without had 82.20 kg while backfat thickness were 17.2 mm.

Table 2. Collective data of the internal organs from mini slaughterhouse “DIM-DIM”,
Klašnice-Laktaši

Intestines parameters	Total (kg)	Average value in relation to the number of livestock fattening pigs (kg)	Participation in a percentage relative to the total weight of the intestines (%)
Kidneys	8	0.21	4.8
Language	12	0.31	7.2
Heart	15	0.39	9.1
Liver	57	1.50	34.50
Lung	36	0.94	21.70
Esophagus	12	0.31	7.20
Stomach	20	0.52	12.10
Spleen	5.70	0.15	3.40
Total	165.70	4.36	100

Table 2 gives an overview of the total mass of the internal organs in individually, as well as their average weight. It is observed that the intestines of waste have average 4.36 kg, most of that is on the liver 1.5 kg and lowest in the spleen 0.94 kg.

Table 3. Collective date of slaughterhouse waste from slaughterhouse “DIM-DIM” Klašnice-Laktaši

Sample made at 38 porkers	Total (38)	Average value (kg)	Participation in percentages (%)
Blood, brain, spinal cord, hair, hoofs, intestinal with contents	718.30	19.90	19.03

For evaluation of fattening pigs are taken as a measure: hot carcass weight and fat thickness measured in two part. Based on these criteria using a table determines the amount of meat in the carcass. Flethy pigs have summation of back fat thickness from 30 to 105 mm, a fatty pigs of 75 to 150 mm. American standards on classifications of pork carcasses provide the following categories: young pigs, sows, barrows and boars (Rudolf and Petrovič, 1997). For the meat of young pigs and sows provided five classes: 1, 2, 3, middle and poor. Each class is given a description of certain tissues (muscle, fat, bone), a description of the conformation of the carcasses and certain parts.

According to the latest EU regulations in pork carcasses shall be classified in the class by the percentage of meat. Carcasses of young pig slaughter weight from 50 to 120 kg are classified into the following classes:

E → » 55 %; U → 50-55 %; R → 45-50 %; O → 40-45 %; P → « 40 %.

Appropriate to modern requirements in terms of quality, it is understandable that in practice countries, especially those with traditionally developed in livestock and meat production, there is a need to be in another production process as soon as possible, anticipate and determine the quality of carcass, or carcass. Results of these requirements, especially multidisciplinary approach to the issue, the modern methods and highly complex technical solutions with applications to the measurement of selected indicators of quality, process and record the data obtained accurately determine objectively differentiate the quality, value and class of carcass /carcasses in primary production (in-vivo), and on the slaughter line.

If you look closely the situation in agriculture of the Republic of Serbian (RS) at its branches, now you see that pig production in RS is not organized and is not integrated. In such circumstances, pig producers and manufacturing companies are independent and do not have a common interest. The meat industry is faced with poor carcasses quality and weakened quality of meat but do not participate in solving this problem. On the slaughter does not apply Europe Standard, in the years when the high demand and small supply pays a high price per 1 kg of live weight of non-performing pigs which discourages good producers.

The problem would be solved by adopting a definition of what it fattened pig with both desirable properties quantitatively (% lean meat) and qualitative (sensory and technological properties). The adoption of criteria and methods for classification pigs carcass in class, they could form a proper price carcasses of different quality.

Conclusion

Based on the presented results and discussions can be determined the following results:

1. The average value of the live weight of slaughtered fattening pigs was 99.58 kg;
2. The average value of warm carcass with the head was 74.95 kg and 69.54 kg without a head;
3. Average weight of abdominal fat was 1.37 kg;
4. The highest percentage of internal organs in relation to the total weight of the intestines was with liver and was 34.50% and the lowest in the spleen 3.4%;
5. Summary data slaughterhouse waste (blood, brain, spinal cord, hair, hooves, intestinal contents) was 19,03%.

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