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TISSUE COMPOSITION OF WILD BOARS CARCASSES

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ABSTRACT

Investigations have been done on 18 carcasses of wild boars including their cutting to main elements and detailed dissection of received parts of carcasses. It was found that the biggest element of wild boars carcass is a ham. High participation of neck shoulder and low participation of jowl is also characteristic. In comparison to the hog carcass the estimation of tissue composition showed not large quantity of adipose tissue and considerably higher mass of bones. Most valuable elements of wild boars carcass were ham and shoulder blade. The work confirms high useability of wild boars carcasses.

Key words: wild boar, dissection, tissue composition

INTRODUCTION

Population of wild boars in Poland belongs to most numerous in Europe nowadays and their number is valued at ca 85 thousands of specimens (Przybylski, Wiśniewski 1998). According to data collected by Dzierżyńska-Cybulko and Fruziński, 1997 ca 15% of European wild boars population equal to 80 thousands of animals per year is gained over in Poland. This calculation basis on mean values from 5 years long periods which levels seasonal amplitudes of wild boars number. At present the shot of wild boars is lower in comparison to the maximum level denoted in year 1990 when 122 thousands of wild boars have been shot. However possibilities of our hunting-grounds are used only in 50-60% (Przybylski, Wiśniewski 1998), and specialists foresee gaining over on level at least 100 thousands of animals per year (Dzierżyńska-Cybulko, Fruziński 1997, Dzierżyńska-Cybulko 1996, Pielowski and in. 1993).

The only factor limiting the number of wild boars population are harms caused in farming tillages. At present about 81% of daily food eaten by one wild boar are cultivation plants (Wlazełko, Łabudzki 1992).

The structure of wild boars shots indicates that most of all animals demonstrate masses below 50kg (Przybylski, Wiśniewski 1998, Fruziński 1993). It should be expected, that also in nearest years wild boars with comparatively small mass (piglets) will determine the biggest part of all animals gained over in Poland (Przybylski, Wiśniewski 1998, Dzierżyńska-Cybulko, Fruziński 1997, Fruziński 1993).

Basing on results of investigations relating estimations of useability of wild boars carcasses collected by various authors (Dzierżyńska-Cybulko, Fruziński 1997, Miliński 1996, Iwańska and al. 1996, Korzeniowski and al. 1991, Ristic and al. 1987, Rede and al. 1986, Łabecka, Gardzielewska 1975) it can be concluded that the most important factor in formation of main parameters of this estimation is the mass of animal. The yield of wild boars carcasses varied in the range between 59.9 and 74.3% and increases together with increase of their mass. Considerable variation of results also shows participation of skin (15.71-29.38%). The biggest element of wild boar carcass is a ham, and the next one -the shoulder-blade. These elements also demonstrate the highest content of meat (73.80-78.40%) (Korzeniowski and al. 1991, Ristić and al, 1987). Quantity of meat in whole carcass is stimulated by the mass of animal and increases as the mass from 63.70% to 68.22% (Korzeniowski and in. 1991). Only about 1.5-2% lower content of meat has been found in wild boar carcass than at meat type hogs (Rede and in. 1986). Carcasses of wild boars are characterized with small quantity of adipose tissue and this content results from many factors like f.e. mass of animals (Korzeniowski and in. 1991, Ristić and in 1987, Rede and in. 1986). It looks different when we consider participation of bones and considerably higher level of bone content in wild boars carcasses are observed in comparison to carcasses of hogs (Pezacki 1984), however, some differences of data collected by various authors are observed.

AIM OF THE STUDY

Mainly young wild boars are gained over nowadays and the mass of carcass is an important factor by formation of her technological useability. Therefore, the aim of this work was to estimate useability of carcasses of wild boars weighing below 50 kg.

MATERIALS AND METHODS

Experiments have been performed on 18 chilled carcasses of wild boars, shot in Masuria province in winter period. After removal of skin, whole obtained carcasses were divided in accordance with the standard BN-84/9241-10 into main elements, which were next subjected to detailed dissection separating: meat, bones, fat and waste meat. After weighing, percentage participation of each element in relation to mass of whole carcass and of each tissue in element and whole carcass was calculated.

RESULTS

Average mass of estimated carcasses (with skin together) was 32.47 kg by the variation equal to 26.93% ([table 1](#)). First executed act was the removal of skin. The average mass of skin was 6.79 kg and it determined 20.91% of carcass with skin ([Table 1](#)). This value was comparable with values given by other authors (Dzierżyńska-Cybulko, Fruziński 1997, Miliński 1996, Korzeniowski and al. 1991, Ristić and al. 1987). It's well-known that the mass of skin and its proportional participation in carcass depends on age and mass of animal. In group of animals with mass of 21 – 40 kg, according to Miliński (1996), the skin determined 21.59 % of carcass, while according to Korzeniowski and al (1991) in group of wild boars with average mass about 30 kg its participation in carcass was 19.10 %. Similar results were obtained also for wild boars with greater masses (74.6 kg) equal to 21.72 % of carcass Ristić in.(1987). Above presented values show also that participation of skin in carcasses of wild boars is higher than of household hog (6-7%), because it is thicker and more thickly covered by bristle what results from its protective function.

Table 1. Weigh characteristic of wild boar with skin

	$x \pm \text{SEM}$ [kg]	V [%]	% of carcass with skin
Carcass in skin	32.47 \pm 2.05	26.93	100.00
Carcass	25.65 \pm 1.70	28.03	79.00
Skin	6.79 \pm 0.42	27.23	20.91

After removal of skin, carcasses were obtained with average mass equal to 25.65 kg, what determined 79.00% of carcass with skin ([Table 1](#)). Participation of main elements in relation to carcass are presented in [figure 1](#) and [table 2](#).

Figure 1. Participation of main elements in carcasses of wild boars

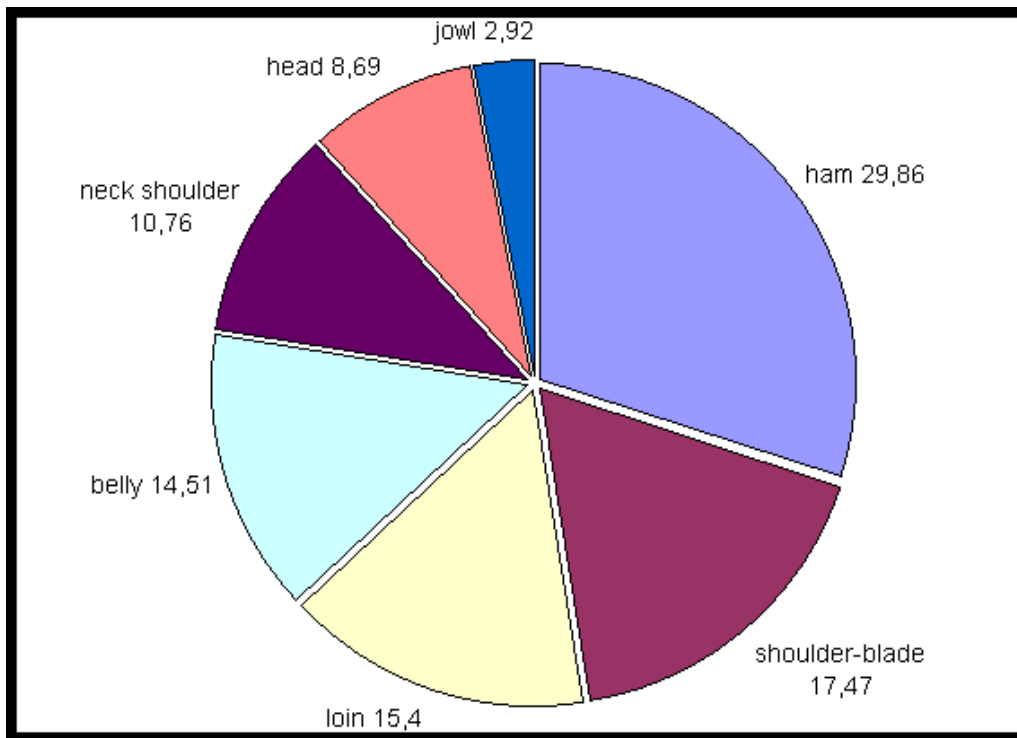


Table 2. Participation of main elements in wild boar carcass

Element	$\bar{x} \pm \text{SEM}$ [kg]	V [%]	% of carcass
Ham	7.66 ± 0.49	27.26	29.86
Shoulder-blade	4.48 ± 0.31	29.61	17.47
Loin	3.95 ± 0.28	30.62	15.40
Belly with ribs	3.72 ± 0.24	27.44	14.51
Neck shoulder	2.76 ± 0.19	28.60	10.76
Head	2.23 ± 0.25	37.18	8.69
Jowl	0.75 ± 0.05	29.01	2.92

Elements demonstrating highest mass were hams (7.66kg) determining near 30% of carcass. The next element in respect to sizes were shoulder blades weighing average 4.48 kg, (it means 17.47% of carcass). The mass of loins carried out 3.95 kg (15.40% of carcass), while the average weigh of belly with ribs was 3.72 kg (equal to 14.51% of carcass). The average mass of neck shoulders was 2.76kg (it means 10.76%), while heads weighed 2.23kg (8.69% of carcass mass). Element demonstrating lowest mass was jowl (0.75kg) determining almost 3% of carcass. Variation coefficients referring to masses of each element, with exception of head, were situated in the range between 27.26 and 30.62% and were close to variation of masses observed for whole carcasses equal to 28.03%. However considerably higher coefficient of variation equal to 37.18%, indicating large differences in mass of this element, was the variation of head mass. Similar high value of mass variation was reported also by Miliński, 1996.

Comparing results obtained in this study and data given by other authors, similar participation of main elements in carcass of wild boars has been found (Dzierżyńska-Cybulko, Fruziński 1997, Miliński 1996, Korzeniowski and in. 1991, Ristić and in. 1987). Lower values concerning percentage participation for hams, shoulder-blades and loin were obtained only by Rede and al.(1986). Instead a little higher values given by Miliński, 1996) result probably from calculation of participation of elements in relation to carcass of wild boars without heads. Additionally, about 2.5 % lower participation of neck shoulder in relation to data given by Ristić and al., 1987 has been found in this study, what results from greater masses of wild boars examined by these authors.

Results obtained in this study confirmed a little bit different other proportions of elements in carcass of wild boars in relation to the same elements of hog what is the result of different circumstances of life and of manner used by feed finding (Kapelański and in. 1997, Wajda and in. 1995, Borzuta and in. 1994, Pezacki 1984).

For example, due to the opinion of Korzeniowski and al.(1991), high participation of neck shoulder (about 3.5% higher in carcass of wild boars) is the result of manner of feed finding used by these animals.

About 2% lower participation of jowl testifies little adiposity of wild boars carcasses.

Percentage participation of other elements in carcasses of wild boars is not always comparable to participation of the same elements in hog carcasses, and this results from differences in cutting methods of carcasses. Some elements obtained during partition of hog carcass like sirloin and ventral part of the belly (flank end) are not separated in carcass of wild boar, and for this reason, lines of cuts during partition of wild boar carcass are different in comparison to cut lines of hog carcass. The element separated from hog carcass as sirloin in wild boar carcass is a part of ham, while ventral part of the belly typical for hog carcass is treated as a part of belly with ribs and this results in higher participation of this element in whole carcass. Differences described above cause that hams of wild boars determining ca 30% of carcass are indeed weakly developed than hams of hogs determining average 22. 5% only, referring to the size of whole hog carcass.

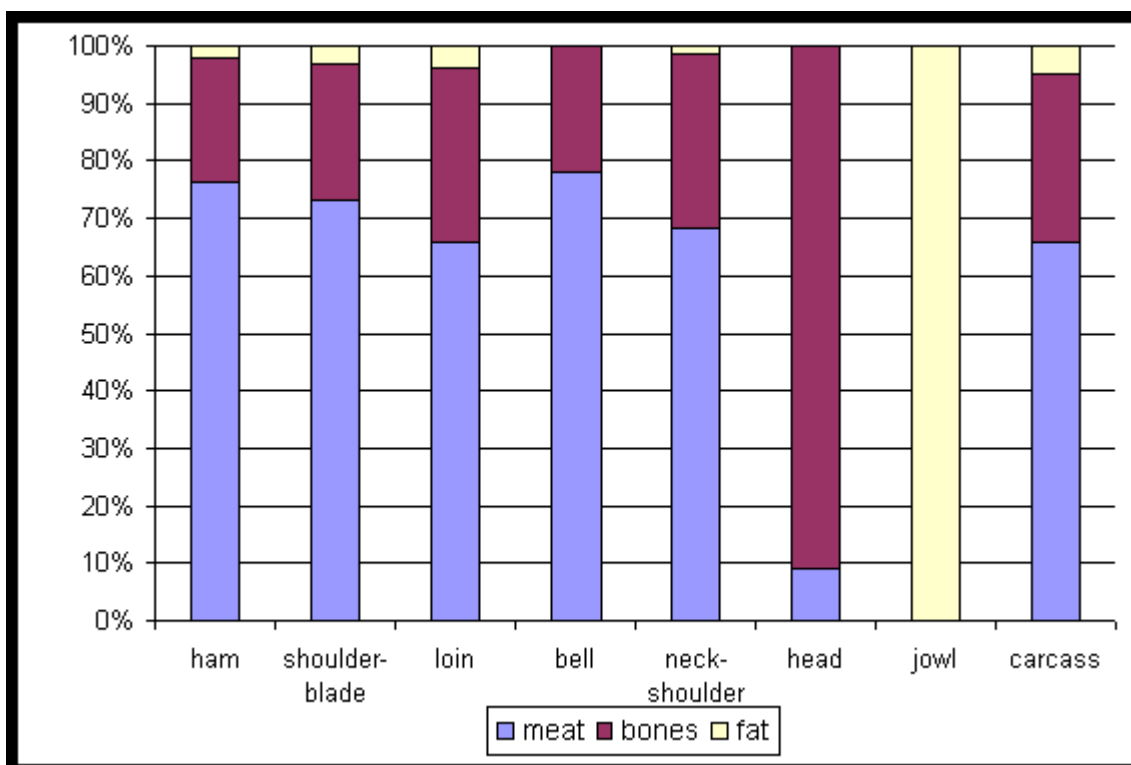
After calculation of percentage participation of each element in carcass of wild boars they were subjected to detailed dissection to parts in order calculating meat, fat and bones participation in each element. The dissection of elements obtained from each carcass of wild boars was preceded with elimination of waste meat, it means: meat surrounding gunshot wound and not suitable for food purposes because mechanical damages, blood stains and high content of lead (Monkiewicz, Jaczewski 1990).

During discussion of obtained results relating participation of each tissue in elements and in whole wild boars carcasses, waste meat was treated as muscular tissue. It allowed to obtain a real picture of meat content in each element, independently from location of gunshot wound. By analysis of tissue composition of each element an information about occurrence of the waste meat and its amount has been given. Dissection of jowl which was numbered to adipose tissue because of its superfatting and dissection of belly numbered to muscular tissue were not performed. Participation of each tissue in elements after dissection are presented in [table 3](#) and in [figure 2](#).

Table 3. Tissue composition of elements and carcass of wild boar

Element	Meat + waste meat		Bones		Fat		Waste meat	
	x ± SEM [kg]	% of element	x ± SEM [kg]	% of element	x ± SEM [kg]	% of element	x ± SEM [kg]	% of element
Ham	5.88 ± 0.42	76.76	1.63 ± 0.09	21.28	0.12 ± 0.02	1.57	0.0	0.00
Shoulder blade	3.34 ± 0.24	74.55	1.03 ± 0.07	22.99	0.11 ± 0.02	2.46	0.32 ± 0.07	7.14
Loin	2.58 ± 0.21	65.32	1.18 ± 0.09	29.87	0.16 ± 0.05	4.05	0.0	0.00
Belly with Ribs	2.92 ± 0.21	78.49	0.79 ± 0.05	21.24	0.0	0.00	0.29 ± 0.07	7.80
Neck shoulder	1.89 ± 0.14	68.48	0.82 ± 0.05	29.71	0.03 ± 0.02	1.09	0.13 ± 0.05	4.71
Head	0.22 ± 0.02	9.87	2.01 ± 0.16	90.13	0.0	0.00	0.0	0.00
Jowl	0.0	0.00	0.0	0.00	0.8 ± 0.05	100.00	0.0	0.00
Carcass	16.84 ± 1.18	65.65	7.46 ± 0.47	29.08	1.16 ± 0.09	4.52	0.73 ± 0.05	2.85

Figure 2. Tissue composition of wild boars carcasses



The ham was characterized by high participation of muscular tissue (76.76%), while in shoulder-blade its quantity was about 2% lower and in neck shoulder-about 8%. Worthy to

notice is relatively high content of meat in belly with ribs (78.49%), however meat from this element is generally superfatted and uncomparable with meat of most valuable elements of carcass like ham, shoulder-blade and loin. During estimation of meat content in elements we should remember, that it is given with waste meat together.

Its separation diminishes quantities of meat obtained in practice and suitable for consumption purposes. This refers to estimation of neck shoulder containing on the average 4.71% of waste meat, of shoulder-blade (with content of waste meat equal to 7.14%) and of belly with ribs (7.80 % of waste meat)

The next component separated during dissection of elements was the adipose tissue. The quantity of this tissue obtained from all of elements (except jowl) was not large. Adipose tissue was present most abundantly in loin, where it determined about 4.05% of mass, while it wasn't separate from whole head. Low quantities of adipose tissue in elements after dissection results in its low participation in whole wild boar carcass equal to 4.52%. During analysis of bone content characteristic, very large participation exceeding 90% in head was observed, what doubtless also affected their content in whole carcass valued to 28.08%. Considerable participation of these tissues was also denoted in neck shoulder (29.71%) and loin (29.87%). Lowest percentage content of bone, exceeding slightly 20% only, was found in elements demonstrating highest quantities of meat like ham, shoulder - blade and belly. In respect to tissue composition of whole wild boar carcass, high meat and bone contents by very low quantity of fat should be emphasize once more.

Obtained results corresponded very well with data given in literature and experiments done by Korzeniowski and al. (1991) and Ristić and al. (1987), however, a little lower participation of bone and higher content of fat in most valuable elements of wild boar carcass was reported by Ristić. However Rede and al. (1986) found in these elements considerable quantities of back fat (equal to 17%). This observation probably resulted from fact that examined wild boars specimens were significant heavier.

Comparison of tissue composition of main elements in wild boar and hog carcasses indicate similar content of meat, markedly higher content of bone and lower content of fat in elements of wild boar carcasses. In relation to data given for hog carcasses by Pezacki (1984) indicating content of bone in head equal to 40%, in pork loin equal to 22% and in ham-8.5%, while in respect to whole carcass-10.7%, in experiments with wild boars performed during this study above 100% higher contents of bone in head, in ham and in shoulder-blade were found. About 50% higher quantity of bone in neck shoulder and in loin of wild boar was also found in our research in comparison to the same elements of hogs. For this reason also the content of bone in whole wild boar carcass is considerably higher than in hog carcass.

It looks different when we compare the level of adipose tissue, of which quantities both in elements as and of whole wild boar carcass (4.52%) are several times lower than in carcasses of hogs (about 30%). These differences are stimulated by young age of examined wild boars, smaller superfatting of each element, low mass of jowl and lack of possibility for separation of back fat.

Sum up the results presented above relating useability of wild boar element and their tissue composition, it have to be indicated a possibility of occurrence of considerable differences of estimated components, resulting from one year biological cycle of nature, which stimulates individual development of animals and from different form of each animal connected with its

place of existence, type of feed used and its availability. A size and location of gunshot wound has also some influence on results obtained during dissection of wild boar elements. This factor determines quantity of waste meat reducing total amount of meat suitable for consumption.

CONCLUSIONS

1. Biggest masses of elements obtained by cutting of wild boars carcass represent most valuable elements like ham, shoulder-blade and loin demonstrating almost 63 % of participation relating to whole carcass. In respect to quantity significant element of wild boar carcass is also neck shoulder.
2. Characteristic feature of tissue composition of elements of wild boars carcasses is low participation of adipose tissue, high quantity of osseous tissue, while content of muscular tissue is basically the same, in respect to percentage participation, as in hog carcasses .
3. Experiments performed during this study shown large potential useability of young wild boars demonstrating masses below 50 kg.

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