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QUANTITATIVE CHARACTERISTICS OF RABBIT HYBRIDS

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Abstract

Flemish giant rabbit and New Zealand white rabbits (group ON), were used as a material for the study. Rabbits were fed ad libitum with commercial pelleted feed, with the addition of small amounts of green feed and hay. The experiment included 6 rabbits, 3 males and 3 females. Previously defined live weight of 1800 to 2500 g was achieved within 77 days and after that they were slaughtered. Study results presented in this paper show fattening and slaughter properties of Flemish giant rabbit and New Zealand white rabbit. The achieved average weight of male rabbits was 2792 g and meat-to-bone ratio was 47.92%, 2597 g and 48.61% respectively in female rabbits. Average participation of the back part of the carcass in male/female rabbits was 28.02% and 27.34%, dorsal part was 20.93% and 22.65%, front of the carcass was 25.26% and 25.39%.

Key words: *rabbit, hybrids, live weight*

INTRODUCTION

The food of animal origin still constitutes one of the most important components of human nutrition, because it is a source of numerous essential nutrients that a person needs for growth, development and normal functioning.

Rabbit meat products can be evaluated according to carcass quality and to meat quality as for other livestock. Carcass quality has to satisfy economic objectives, such as saleable meat yield and attractiveness to consumer (Gjurič, 1985; Dalle Zotte, 2002). The dressing percentage is a very important economic variable in the rabbit market. Some combinations of measurements such as retail cut weights or length measurements are necessary to predict lean percentage in the carcass (Yalçın et al., 2006).

The meat of rabbit belongs to the group of meat rich with protein, significantly low in fat and cholesterol and it contains essential nutrients: essential amino and fatty acids, calcium, copper, iron, vitamins from the B complex, low energy value, and less connective tissue (Koch & Pavčič, 2000; Wood et al. 2003; Dal Bosko et al. 2001; Pogány Simonová, et al. 2010; Chrenek, et al. 2012; Para et al. 2015). The meat has a mild taste and is easily digestible therefore it is known as a dietary food. It is recommended for children in growth, for a diet of patients with arteriosclerosis and enlarged lipids, as well as for patients with stomach illness and elderly people (Grün, 2002; Lah, 2006).

World rabbit meat production amounted to 1.56 million tonnes in 2014. The leading world producer of rabbit meat is China with 762,627 t year, while, in Europe, the main producer is Italy (268,980 t), followed by Spain (63,790 t), France (53,292 t), Czech Republic (38,602 t) and Germany (34,253 t year). Unfortunately, for most Balkan countries we have not managed to find data, except for Greece (6,799 t), Bulgaria (6,629 t) and Romania (143 t year) (FAOSTAT, 2014; Belichovska et al. 2017).

The purpose of cultivating the hybrids is to obtain the meat, that is, they are kept solely for slaughter. When creating animals - hybrids, two (or more) selected lines are crossed along by

either the father or the mother. During crossing two lines hybrids are created, which in turn will give the best features from both lines. The mother line brings fertile properties (increased number of offspring), while the father gives racial qualities (ability to grow rapidly, good food utilization, good slaughter quality and meatiness) (Grün, 2002).

The influences in the nutrition over the parts of the trunk, the fattening and slaughtering properties of rabbits have been studied by many authors (Panić & Petrović, 1989; Ozimba & Lukefahr 1991; Dalle Zotte et al. 1996; Skandro et al. 2004; Metzger et al. 2006; Omojola 2007; Baiomy & Hassanien 2011; Kostovska 2012). Chemical composition of rabbit meat has been especially investigated (Dalle Zotte et al. 1996; Hernández et al. 1998; Gondret et al. 1998; Nizza & Moniello 2000; Metzger et al. 2003; Wood et al. 2003; Pascual et al. 2004; Polak et al. 2006; Ali, 2007; Nistor et al. 2013).

The purpose of this paper is to present the fattening and slaughtering properties of the meat of crossed hybrids based upon our results and data.

MATERIAL AND METHODS

Six rabbit's hybrids (3 male and 3 female), that is, crossed units from the so-called Belgium oriash and New Zealand's white rabbits (ON) fed ad libitum with industrially pelleted food (containing alfalfa, barley, corn, wheat, soy, granules sunflower premixes, salt, vitamins and minerals) were the research material for our study.

The rabbits reached the defined weight from 1800 to 2500 g in 77 days kept in separate wire cages. 24 hours before slaughter, their feeding was stopped. Slaughtering and primary processing of rabbits was performed in the usual way. The slaughter was done after the veterinary examination and looting. 24 post mortem cool carcasses were cut in basic peaces and measured on an electronic scale, there in each organ individually, and then cut to the front, the middle and the back part (Bivolarski et al., 2011).

Meat-to-bone ratio (slaughter weight expressed in percentage) was calculated in compliance with the recommended processing procedure (Gjurič, 1985; Caklovica et al. 1986; Omrčen, 1995; Skandro et al. 2004; Ali, 2007).

Statistical analyses were made by using the statistical software SPSS ver. 21 (SPSS Inc, Chicago, IL, 2012).

RESULTS AND DISCUSSION

The middle values of live weight of male/female rabbits are shown following the cycle of 77 days of their age. The table shows that the live weight of male rabbits on average was 2792 grams while at female rabbits it was 2579 grams. The results that we found in relation to the live weight of male vaccines are in line with the results obtained by Kostovska (2012), while in relation to female units the results obtained by Kostovska (2012) compared to our results are higher for 191 grams.

The values we found in relation to the live mass compared to the values of live mass found by Ali (2007) and Skandro et al. (2008) are higher. Within our study the male rabbits achieved a higher body mass compared to females (for 213 grams), while in the studies by Skandro et al. (2008) the female rabbits achieved a higher body mass than the males for 10 grams.

Table 1. Meat-to-bone ratio (%) - slaughter and live weight (g) of male and female rabbits.

	ON Male	ON Female
Live weight (g)	2792±140	2597±90
Mass slaughter (g)	1338±90	1280±50
Meat-to-bone ratio (%)	47.92	49.29

$\bar{x}$ – mean, Sd – standard deviation; number of pieces = 3

Meat-to-bone ratio (%) of male rabbits is 47.92% while at female rabbits it is 49.29%. The results that we obtained in relation to the meat-to-bone ratio (%) are in line with the allegations of other researchers (Kovačević and Rašeta, 1983; Urošević et al. 1986; Skandro et al. 2008). Tafro et al. (1989); Skandro et al. (2004), Ali (2007) and Kostovska (2012) referred to meat-to-bone ratio (%) values for rabbits between 40 and 53%.

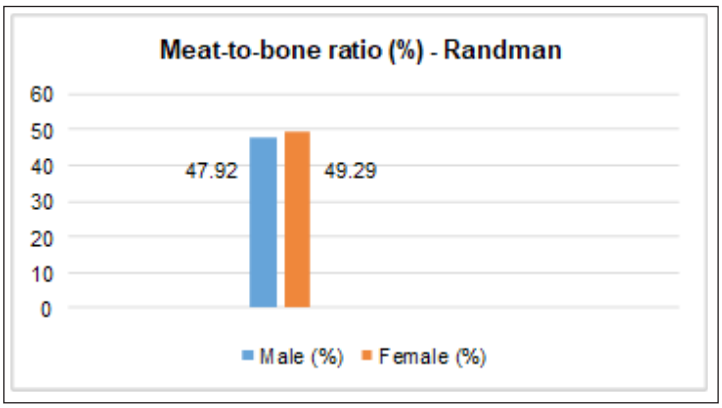

Figure 1. Meat-to-bone ratio (%) of male and female rabbits.

The average level of blood in the total body mass is 3.34%; at male rabbits it is 3.22% and at female rabbits it is 3.46%. A bit lower results in relation to the results obtained by us in terms of the prevalence of blood in the live weight of rabbits is stated by Kostovska (2012). The same author found blood levels in relation to the live weight of male rabbits of 2.95% and at female rabbits of 2.97%.

Skandro et al. (2008) found blood levels in relation to the live weight of rabbits, which is 7.20%, that is 7.70% at male rabbits and 6.70% at female rabbits. The results they received were greater than the results obtained by us probably because they also calculated the crack of cutting.

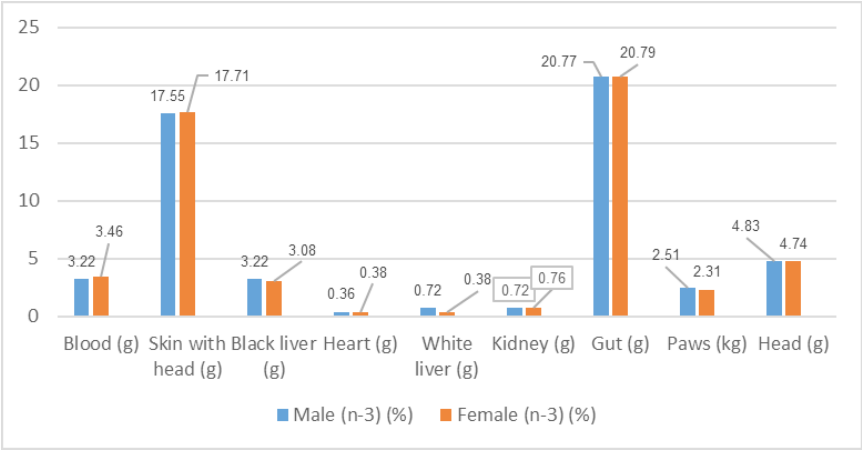

Figure 2. Participation of major meat categories in carcass composition of male and female rabbits.

The head with the total body weight at male rabbits is 4.83% and at female rabbits it is 4.74%. The results that we obtained are lower compared to the results obtained by Skandro et al. (2008); Kostovska (2012). Compared to our results, Kostovska (2012) found a slightly higher participation of the head in the body weight of the fuselage of 5.71% at male rabbits and 5.34% at female blacks, probably as a result of researching a larger number of rabbits (n = 18; 9 male / 9 female).

Skandro et al. (2008) determined the participation of the head in the final body mass of the body 8.68% (at male rabbits 8.71%, at female rabbits 8.65%). Our values were lower than the results obtained by Skandro et al. (2008) and Kostovska (2012) probably due to the larger number of male and female individuals (n = 24 rabbits; 12 male / 12 female).

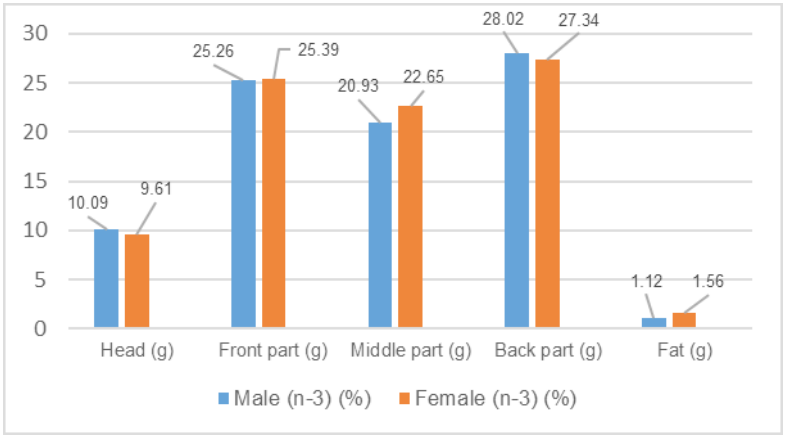

Figure 3. Participation of fat and major meat categories in carcass composition of male and female rabbits

The average participation of internal organs in the total body mass of male and female rabbits is 25.79%. Our results were lower than the results obtained by Ali (2007) who found a share of internal organs of 30.72%, and those were greater than the values obtained by Skandro et al. (2008) and Kostovska (2012), who established a share of internal organs of 23.84% at male rabbits and 23.48% at female rabbits, that is, 24.39% at male rabbits and 24.83% at female rabbits.

CONCLUSIONS

Based on results of investigation of quantitative characteristics of meat of Flemish giant rabbit and New Zealand white rabbit, it may be concluded as follows:

- Average carcass dressing percentage, without head, was higher in female rabbits,
- Participation of hind and back parts, considered as the qualitative parts of meat in dressed and cooled carcass, was higher in male rabbits.

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КВАНТИТАТИВНИ КАРАКТЕРИСТИКИ НА ХИБРИДИТЕ ЗАЈАЦИ

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Резиме

Како материјал за ова истражување ни послужија хибриди на вкрстени единки од т.н. белгиски оријаши и новозеландски бели зајаци (ОН), кои беа хранети ад либитум со индустриски пелетирана храна. Во истражувањето беа опфатени шест зајаци и тоа три машки и 3 три женски. Дефинираната жива маса од 1800 до 2500 g зајаците ја постигнаа за 77 дена, по што се изврши колењето. Во трудот се изнесени резултатите од истражувањето на товните и клавните својства, како и утврдување на составот на месото од зајаци. Достигната е просечна жива маса на машките зајаци од 2792 g, и рандман од 47,92%, додека кај женските зајаци просечната жива маса беше 2695 g и рандман од 48,61%. Просечен удел на задниот дел од трупот кај машките/женските зајаци 28,02% и 27,34%, на грбниот дел 20,93% и 22,65%, додека на предниот дел на трупот 25,26% и 25,39%.

Клучни зборови: *зајаци, хибриди, жива маса.*