Proceedings of the 11th International Symposium
Modern Trends in Livestock Production
October 11-13, 2017

TREASURE - MANGALITSA LOCAL PIG BREED IN SERBIA

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Review paper

Abstract: The main objective of this paper is to present the results of the research of the Swallow belly Mangalitsa genotype in the last six decades. According to the research, females reach the full maturity the age of 9-10 months, but they are mated at the age of 1-1.5 years. Average age at first farrowing is 556 days. Reproductive ability is poorly expressed, with a strong maternal instinct. Fertility of the Mangalitsa is relatively poor because it gives birth to 1-12 piglets, on average 4 to 5 piglets, with an average body weight of 1.25 kg with a variation of 0.8 to 1.8 kg. The suckling period is about 50 days (from 47 to 53 days). At lactation duration of 60 days, the piglet weight at the weaning ranges from 6-13 kg (average 9.61 kg) for piglets born in the spring, and from 7-15 kg (average 9.50 kg) for piglets born in fall. Depending on the rearing system, the start of fattening and final body weight, gains range 268 g to 830 g. The fat thickness (average measurements) at the ridge was 10.2 cm, the middle of the back 7.9 cm and the rump 8.1 cm, in previous studies, while in recent studies these values of fat thickness are somewhat lower, with the pre-slaughter body weight also being lower (the ridge 6.18 cm, the middle of the back 4.38 cm and at the rump 5.19 cm). The recent research of the *Longissimus dorsi* muscle shows an intramuscular fat content of 13.5%, protein content of 21.1% with specific qualitative properties pH^{45}=6.11; pH^{24}=5.50; CIE L*=40.13; a*=11.77; b*=3.73). In the *musculus longissimus lumborum and thoracis*, Mangalitsa (Swallow-bellied) pigs show higher levels of monounsaturated fatty acids (MUFA, 55.1%) and lower levels of saturated fatty

Key words: autochthonous breed, Swallow belly Mangalitsa, reproductive traits, growth, carcass and meat quality

Introduction

Autochthonous breeds of farm animals are breeds that originated in the territory of the Republic of Serbia and which have economic, scientific and cultural significance for our country. They contain in their genes information from the environment, they have been created over a long period of time, under the influence or without the influence of man. Their genes represent safety in the production of food in future times, in which the greater importance will be attributed to the resistance and adaptability of the breed. Bearing this fact in mind, autochthonous breeds represent the TREASURE that we need to preserve for future generations. Pig production in the Republic of Serbia has a long tradition. During the 19th century, pigs were the main export product. In that time, the pig farming was based on local indigenous breeds with the dominant breeds Šiška and Šumadinka. Šiška and Šumadinka was the most primitive breed of pigs, created by domestication of wild pigs Sus scrofa ferus (*Belić, 1951*). Today in Serbia there are three local indigenous pig breeds: Mangalitsa, Moravka and Resavka while Šiška and Šumadinka breeds are lost in their original form. Mangalitsa was very popular in Vojvodina (especially in Srem) and Hungary in the period from the 19th century until the fifties, and recently farming of this breed has been restored. In the Republic of Serbia there are three Mangalitsa breed strains, the Swallow-belly strain (Srem black Mangalitsa or Buđanovci pig), white and Subotica strain. In Hungary and Romania there is also so called red strain of this breed. Swallow belly Mangalitsa developed in the area of Srem near Ruma, village of Buđanovci *(Belić 1949).* Mangalitsa is a native primitive breed, originated from former Šumadinka breed and is so called "fat" pig breed type. In addition to their genetic merit for agro-biodiversity, they are the basis for a sustainable local pig production chain, and are particularly important for regions where arable land and grain production are limited. Autochthonous breeds of pigs provide security for the sustainable production of food in the future and form part of the genetic and cultural heritage. Since in Serbia the largest population is the Swallow-belly strain, the aim of this paper is to describe this variety, from the literary sources available, to the most important production traits.

Description of the breed and population size

Exterior: The head is relatively small in length and width, with ears that are not too large and always facing in the direction of the snout. The length of the ear is 2/3 of the length of the head. The body is short and rather rounded, while the ridge is of the medium width and usually seamlessly crosses into the backline (*Belić 1951).* The cheast is wide and deep. The back, loin and sides are of the

medium width. Shoulders and ham are quite well expressed. The legs are of medium length with plenty of thin bones and often soft pastern bones. The skin is dark in colour, with dense, luminous and curly bristles that are shorter in the Swallow-belly strain. The colour of the bristles can be from gray-yellow to reddish (ginger). *Briznej (1948)* states that there are two varieties of which one from the western breeding region is called "Buđanovac" variety named after the village Buđanovci, which has a greater part of the pigmented body (entire head, body and the sides of the body and the legs from the outer-lateral side to the claws). The second variety - "Otok" and "Lasa" named after the village of Otok in the western part of the Srem region, with the legs pigmented only to the hock joint and the lower part of the papilla is white. The Otok variety has regularly strongly developed bristles or "feathers" which the "Buđanovac" variety lacks ot are not so developed (*Briznej 1948)*. Claws, teats and snout tip are pigmented *(Belić, 1951).* The number of animals of mangalits breed has increased over years (Table 1). In 2016, only on the territory of Central Serbia, 321 sowes and 32 boars were registered (in the records of the Main Breeding Organization).

Table 1. Population size

Year	2004	2008	2009	2012	2013	2014	2014*	2015*
Population	55-100	400-1000	400-1000	1000-2000	100-1000	300-1000	300-1000	300-1000
Nº sows	19	200	350	600	90(90#)	203 (153#)	247(247#)	345 (345#)
Nº boars	9	20	20	50	2	24	35	50

Source of data-DAD-FAO (www.dad.fao.org) access 29/06/2016
#Registered animals in Herdbook.
*Source of data of Institute for Animal Husbandry *(Main Breeding Organisation)*, Annual Report (2014, 2015)-animals under the control of productivity.

Mangalitsa is very resistant and well adapted to extensive conditions of housing, where the needs are only for a simple shelter from rain and snow. It is located in the municipalities of Subotica, Sremska Mitrovica, Bačka Palanka, Vršac, Pančevo, Ub, Obrenovac, Ljig, Valjevo, Novi Sad, Kuzmin, Šid, Surčin and Kovilj (Krčedinska ada). It can also be found in traces on Stara Planina Mountain (Municipality of Dimitrovgrad), around Čačak and Kraljevo. When it comes to Mangalitsa, which is the most common of all the indigenous breeds in Serbia, it is necessary to make efforts to increase the number of animals in the population and control its productivity. This is the only way the breed can be preserved as an important genetic resource in pig production and breeding not only of Serbia, but also the entire region (*Petrović et al. 2007*).

Reproductive performance

Mangulica is a late maturity breed. It reaches the full maturity at the age of 9-10 months, but is not mated until the age of 1-1.5 years, and it is fully grown and mautre at the age of 3-4 years (*Briznej 1948*). In controlled herds in the four years (2011-2014), the average age at first farrowing was 556 ±176.65 days (*Radović et al. 2015*). Reproductive ability is poorly expressed, with a strong maternal instinct. The number of dairy nipples is most often 10. Fertility of the Mangalitsa females is relatively poor because it gives birth to 1-12 piglets, on average 4 to 5 piglets with an average of 1.25 kg body weight, varying from 0.8 to 1.8 kg (*Belić 1951*). Pigs at birth have characteristic stripes, which disappear in 10 days in white strain piglets, and in swallow belly strain in 3-4 months. Low productivity of the Mangalitsa is also reflected in the low farrowing index (1.21-1.81 litters/year). The poor rearing conditions and uncontrolled mating contribute to the poor reproductive parameters of this breed of pigs in Serbia (Table 2). However, the variability of fertility traits indicates the possibility for genetic improvement. Regardless of the low fertility properties, this breed should be preserved as an important genetic resource and be included in the selection program (*Petrović et al., 2013*). It is also necessary to have a plan of mating in a more precise manner so as to avoid inbreeding.

Table 2. Reproductive traits

Reference / Reproductive traits	**Annual Report** UNIBG, 2010 (Mean±SD)	**Annual Report** IAH, 2015 (Mean±SD)	**Study** Brinzej (1949)	**Study** Szabó (2002)	**Study** Petrović et al. (2013) (Mean±SD)
Number of sows recorded	28 litters	70 sows (85 litters)	10 litters	74 litters	53 sows (129 litters)
Sow parity[1]	2.04	3.45 (508.92±127.56 age at first farrowing)			
Litters/sow and year		1.21		1.81	1.77
Litter weight (kg)			6.99		
Piglets/litter	5.32±1.78 (1-9)	4.96±1.81	6.20	6.64	4.60±1.65
Piglets alive/litter	4.82±2.31 (0-9) 1of#4.45±2.23 2of4.50±1.69 3of5.11±2.89	4.73±1.78			
Piglets weaned/litter	4.92±2.24 (0-9)24 litters	4.48±1.84		5.90 (88.90%)	4.09±1.91
Duration of lactation (d)	50 days	47.05±8.38			52.57±15.24
Weaning to conception interval (d)					92.31±61.66 period farrowing-mating => WCI=92.31-52.57=39.74)

[1] Keep records classified according to this parameter, #-order of farrowing

BW – body weight of sow must indicate also the stage i.e. weaning, end gestation

Observing the size of the litter, there are no significant differences between the number of piglets in the litter established in the middle of the 20th century *(Briznej 1949)* and the beginning of the 21st century *(Szabó 2002*). Research of *Petrović et al. (2013)* as well as the *Annual Report (2009 and 2014)* show that a somewhat lower number of piglets per litter has been registered, which may be the result of inbreeding. *Petrović et al. (2013)* found the average number of piglets in the litter of 4.60, of which 4.09 weaned pigs with a suckling period of 52.57 days. The same group of authors calculated the duration of the weaning-conception period obtained by subtracting the farrowing-mating period (92.31 days) and the duration of lactation (52.57 days), which amounted to 39.74 days (Table 2).

Growth traits

Literary data on the production performance of the breed are shown in various production systems (open and closed, extensive, semi-intensive and intensive system of rearing), of nutrition and gender (Table 3 and 4).

Table 3. Production system, nutrition, gender and number of animals in the trial

	Literature source			
	Brinzej (1949)	Belić and Mitić (1954)	Radović et al. (2017)	Brinzej (1956)
Number of pigs	10 litters (62 piglets)	74 animals in each group	12	32
Pol	♂/♀	♂/♀	castrated ♂ animals and ♀ animals	castrated ♂ animals (after weaning) and castrated ♀ animals (one month before the beginning of the fattening)
Production system/ Nutrition	Milk and supplemental diet (peas and wet barley) from 4 weeks of age	Two weeks after birth, the piglets are fed at will, barley and fresh green alfalfa during the summer or alfalfa flour in winter.	Semi-Intensive System (grazing and maize)	Intensive nutrition with maize and barley

Depending on the intensity of the rearing system and the nutrition, there are differences in the rate of growth within and between gender of piglets/fatteners (Table 4). Differences in the growth characteristics exist among groups of piglets born in different seasons. The birth weight varies in the range of 700 to 2000 g,

which is similar to today's allochthonous breeds. The average daily gain during the suckling period is around 120-130 g, which depends on the lactation period, the piglets gender and the season of birth. In the intensive rearing system, mangalitsa animals can achieve high average daily gains of 830 g, as demonstrated by the results of the research by *Brinzej (1956).* Unlike the above mentioned research, study by *Radović et al. (2017)* conducted on fatteners grown in semi-intensive system, show much lower potential in terms of the growth rate (about 267 g). Possible reasons for this difference in gain are differences in the intensity of rearing, in the final body weight, but also in the differences in the genetic structure of fatteners, since the time distance of the conducted researches is about 60 years.

Table 4. Body weight at birth and gain

Trait	Literature source						
	Brinzej (1949)		Belić and Mitić (1954)			Radović et al. (2017)	Brinzej (1956)
Body weight (BW)	At birth	1130g	♂		♀	133*	158 (132-174)*
			At birth (g)	1205	1170		
				1220	1270		
			At weaning (kg)	9.61	9.97		
				9.50	9.54		
Average daily gain (ADG),g	1-4 weeks	120	137 spring 138 autumn		146 spring 137 autumn	267,86	830
	5-8 weeks	130					
	Total suckling period	125					

*slaughter BW

Brinzej (1949) states in his study that the average body weight of piglets at birth was 1130 g (females - 1080 g while males have a slightly higher birth weight of 1180 g); average daily gain of piglets in the first 4 weeks of life is 120 g, from 5 to 8 weeks of age - 130 g, i.e. for the total suckling period of 8 weeks on average it is 125 g; from 5-8 weeks, the average daily gain is from 84-153 g, with the female animals showing gain of 77-150 g and a males 100-157 g. According to *Belić and Mitić (1954)*, the body weight of the male piglets at birth is 1205 g, with variations of 800-1900 g for piglets born in the spring, and 1220 g with variation of 700-1900 g for piglets born in autumn, whereby on the day 60 (weaning), the body weight ranged from 6 to 13 kg (average 9.61 kg) for piglets born in the spring, and in the range of 7-15 kg (average 9.50 kg) for piglets born in autumn. The average daily gain from birth to weaning at body weight of 1.22-9.48 kg was 137 g for piglets born in the spring and 138 g for piglets born in autumn. At birth, the average weight of female piglets is 1170 g, with variations of 700-1800 g for piglets born in the spring, and 1270 g with an interval of variation of 700-2000 g for piglets born

in autumn, whereby on day 60 (weaning), body weight ranged between 6-13 kg (average 9.97 kg) for piglets born in the spring, and 7-14 kg (average 9.54 kg) for piglets born in autumn. The average daily gain from birth to weaning at body weight of 1.22-9.48 kg is 146 g for piglets born in the spring and 137 g for piglets born in autumn. *Radovic et al. (2017)* examined animals with pre-slaughter body weight of 133 kg, with a gain of 267.86 g (the animals were 30 kg at the start of the trial, and the final body weight reached 150 kg) and the fat thickness of 50.0 mm. Contrary to this study, *Brinzej (1956)* examined animals with pre-slaughter weight of 158 kg (132-174 kg) and obtained the following results: gain of 830 g (59 to 158 kg).

Carcass and meat quality traits

The Mangalitsa is an extremely fatty pig breed (*Teodorović and Radović, 2004*). While adipose tissue is about 65–70% of the carcass, lean meat is less than 35% *Rátky et al (2013)*. The carcass side quality traits vary depending on the nutrition and the housing system (Table 5). The slaughter weight is different and ranges from about 101 to 150 kg. In the earlier period, pigs were fattened to higher body weights, which affected the higher content of fat tissue in the carcass. Today consumers' demands are focused on the higher meat content of the carcass sides, which caused pigs to be fattened to lower body weights, similar to those in the intensive rearing system (about 100-110 kg). The slaughter yield ranges from 76 to 83%. The fat thickness varied in the presented researches depending on the body weight of the pigs at slaughter and the location on the carcass on which it was measured. *Petrović et al. (2010)* found the thickest fat on the ridge - 61.85 mm while the lowest was measured in the middle of the back - 43.78 mm. In the research of *Petrović et al. (2012)* the maximum values of fat thickness at withers determined was 85 mm and the lowest value was 48 mm, while for fat thickness at the middle of the back (between 13th and 15th vertebrae) max. value was 55 mm and the lowest measured value was 27 mm.

Table 5. Carcass traits

Reference	Petrović et al. (2010)	Brinzej (1956)	Petrović et al. (2012) LSM	Parunović et al. (2012)* LSM±SE	Petrović et al. (2014) LSM±SE
Nº pigs recorded	10	32	23	22 CO-12+FR-10	16 (balanced ratio of gender)
Production system (extensive, intensive, mixed…)[2]	semi-intensive	intensive	open & closed	conventional (CO) & free range (FR)	farm free range (conventional mixture)
Type of housing/ no. of animals per group	10			CO (six pigs per cage, 4 m^2 per animals) FR	surface of 150 m^2: 110 m^2 open + 40 m^2 cover section (4.8 m^2 of surface area per animal)
Slaughter weight (kg)	101,22	158	103.83	CO 102.06±3.70 FR 98.06±4.06	107.14±2.85 $337.1\pm7.83^{\text{age (days)}}$
Carcass weight (kg)	73,90		82.31 warm; 80.22 cold	CO $80\pm0.43^{\text{warm}}$ FR $76.8\pm0.47^{\text{warm}}$ CO $78.1\pm0.46^{\text{cold}}$ FR $74.7\pm0.49^{\text{cold}}$	
Carcass yield (% live weight)	73			CO 77.4±0.46 FR 73.9±0.51	
Carcass length (cm) os pubis-atlas os pubis-1st rib	88,74 72,80		92.78 76.26	CO 89.3±0.63 FR 89.2±0.69	

*CO-conventional mixture, FR-pasture, acorns and grains; After reaching a 60 kg of live weight both groups fed with conventional mixture.

Table 6. Total mass in four major carcasses parts and backfat thickness

Reference	Brinzej (1956)	Petrović et al. (2010)	Petrović et al. (2012)	Parunović et al. (2012)*
Ham weight (kg)		7.760	open 8.25 closed 7.83	
Shoulder weight (kg)		4.170	open 4.45 closed 4.82	
Loin weight (kg)		6.268	open 6.52 closed 6.62	
Belly-rib (kg)		4.73	open 4.60 closed 4.38	
Backfat thickness (cm)	ridge 10.2; loins 7.90; rump 8.10	ridge 6.18; loins 4.38; rump 5.19	ridge 6.17; loins 4.27; rump 4.78	CONV #6.19; 5.46; 6.01 FR #5.84; 5.18; 5.65

*CONV-conventional mixture, FR-pasture, acorns and grains; after reaching a 60 kg of live weight both groups fed with conventional mixture.
#Above the *M. gluteus medius* at the carcass split-line, on the three positions.

Petrović et al. (2012) found in the open system the thigh weight (Table 6) of 8.25 kg (with 3.75 kg of muscle tissue), while in the closed system the weight of the thigh is 7.83 kg (with 3.75 kg muscle). The weight of the shoulder is 4.45 kg in the open system (2.13 kg muscle tissue) and 4.82 kg (muscle tissue 2.19 kg) in the

closed system. The wight of back-loin section in the open system is 6.52 kg with 1.76 kg of muscle, in the closed system 6.62 kg with 1.91 kg of muscle tissue. The backfat thickness at the ridge is 6,17 cm, at the middle of the back 4,27 cm and on the sides 4.78 to 5.37 cm (*Petrović et al., 2012*). *Parunović et al. (2012)* state that the thickness of backfat in conventional nutrition at three points respectively is: 6.19; 5.46; 6.01, and in the free farm system 5.84; 5.18; 5.65 cm.

Table 7. Meat quality traits longissimus dorsi muscle

	Study	**Study**	**Study**	**Study**	**Study**
Reference	Stanišić et al. (2015)[#] Mean±SD	Radović et al. (2017)[##] LSM±SE	Petrović et al. (2007) LSM±SD	Parunović et al. (2012)[###] LSM±SE	Tomović et al. (2016) Mean±SD
Nº pigs recorded	7	12	13:10	12:10	15
Production system (extensive, intensive, mixed…)	intensive	intensive	open (O) & closed (C)	conventional (CON) & free range (FR)	intensive
pH 45		6.11±0.13	O 6.04±0.10 C 6.32±0.32	CON-6.12±0.05 FR-5.89±0.06	
pH 24	5.47±0.66	5.50±0.06		CON-5.80±0.06 FR-5.41±0.06	5.56
CIE L*	38.19±1.92	40.13±1.48			48.39
CIE a*	10.58±2.50	11.77±1.04			10.13
CIE b*	2.68±0.88	3.73±0.45			4.14
Drip loss %					
Cooking loss	29.60±1.82				
Tenderness (kg)	5.05±1.13				
Water holding capacity	13.20±2.15				

WBSF: Warner-Bratzler shear force test; IMF intramuscular fat content

[#]Water Holding Capacity measured according to the method of Weiss et al. (1953). Cooking loss was determined in the following manner: a sample size of 3 x 4 x 2 cm is weighed and placed into a beaker of boiling water and cooked for 10 minutes; the difference in mass of the sample before and after cooking is the mass loss during the heat treatment, expressed as a percentage. The samples used to determine the mass loss and the cooking were used to determine the meat cutting force (kg): muscles are cut into pieces the size of 1 x 1 cm in the direction of extension of the muscle fibers; tenderness of meat, expressed forcibly cutting, measured Volodkevich instrument (Volodkevich, 1938); read more value on the instrument representing more cutting force values, and firmer flesh. Surface color just the cut of meat from the color stabilization time of 30 min (the samples were stored in contact with air at 4 ° C) was measured by a portable Minolta colorimeter CR-400 (light source D65, the geometry of the observation angle 0). Values are based on a spectrum of color CIEL* a* b* (CIE, 1976).

Meat value pH *musculus longissimus* (MLD) and *m. semimembranosus* (SM) was determined 45 minutes (pH_1) and 24 hours post mortem (pH_2) by pH-meter (Hanna, HI 83141). The color of MLD was determined 24 hours *post-mortem* measured (between 3. and 4. rib, from caudo-cranial point of view) using Chromameter CR-400 (Minolta Co. Ltd, Tokyo, Japan).
###pH measurment-Testo 205 pH meter (±0.02 pH, ±0.4°C, Germany, 2007).

In *Longissimus dorsi muscle* of fatteners kept in closed system *Petrovic et al. (2012)* established higher water content (70.71:68.49%; *p*=0.0069), lower content of total fats/lipids (5.45:8.09%; *p*=0.0081) and higher ash content compared to animals reared in the open housing system (1.09:1.02%; *p*=0.0392). Lower values for the share of water (64.3%), protein (21.1%) and ash (0.95%) with a fat content of 13.5% in *musculus longissimus lumborum et thoracis* (MLLT) are reported in the research of *Parunović et al. (2013)* compared to research by *Petrović et al. (2012)* and *Tomović et al. (2016).* In the study of *Parunović et al. (2013)*, Mangalitsa (Swallow-bellied and White Mangalitsa) pigs showed higher levels (55.1% and 58.0%) of MUFA (*P* <0.001) in the *MLLT* than Swedish Landrace pigs (44.9%). A higher percentage of unsaturated fatty acids, which are purportedly less harmful to human health, were measured in WM and SBM breeds, whereas the percentage of saturated fatty acids was proven to be significantly higher in Swedish Landrace pigs (*Parunović et al. 2013).*

Conclusion

Mangalitsa is a late and extremely fatty pig breed with low fertility, long suckling period and a very weak-slow growth. From the research it can be seen that there is lower or higher variability for individual characteristics and therefore potential for selection-improvement of these properties. With such features, its cost-effectiveness is in low-investment in housing facilities with as large areas for pasturing and acorn nutrition, preferably if an organic breeding system is possible and the production of traditional high-value products (ham, kulen and sausages) and their marketing as highly valuable organic products or products protected by a geographical indication. Only the presence of local breeds of domestic animals makes the production of food safe in the dynamic change of the production environment, especially in the predicted and expected climatic changes. It should not be forgotten that precisely native/autochthonous breeds are adapted to different environmental conditions, resistant to various illnesses and modest in terms of housing and nutrition. Due to all this, it is necessary to work primarily on increasing the number of the population, increasing the number of breeders in the organic production system and the formation of Gene Bank (semen), because it does not exist in Serbia. It is also necessary to continue research with different

breeding systems and their impact on the quality of meat and meat products of the Mangalitsa pigs.

TREASURE – Mangulica, lokalna rasa svinja u Srbiji

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Rezime

Glavni cilj ovog rada prikaz rezultata istraživanja genotipa Swallow belly Mangalitsa u poslednjih šest decenija. U skladu sa istraživanjima plotkinje polnu zrelost dostižu sa uzrastom od 9-10 meseci ali se pripuštaju sa uzrastom od 1-1.5 godine. Average age at first farrowing is 556 days. Reproduktivna sposobnost je slabo izražena, sa snažnim materinskim instinktom. Plodnost mangulice je relativno slaba jer jer prasi između 1-12 prasadi, prosečno 4 do 5 prasadi sa prosečnih 1.25 kg telesne mase sa variranjem od 0.8 do 1.8 kg. Dojni period je oko 50 dana (od 47 do 53 dana). Pri trajanju laktacije od 60 dana telesna masa prasadi pri zalučenju bila je u intervalu od 6-13 kg (prosek 9,61 kg) za prasad rođena u proleće, i u intervalu od 7-15 kg (prosek 9,50 kg) za prasad rođena u jesen. U zavisnosti od sistema uzgija, početka tova i završne telesne mase prirasti su bili od 268 g do 830 g. Debljina slanine (prosečne mere) na grebenu je bila 10.2 cm, sredini leđa 7.9 cm i na krstima 8.1 cm u ranijim istraživanjima dok su u novijim istraživanjima te vrednosti debljine slanine nešto niže, s tim da je telesna masa pri klanju niža (greben 6.18 cm, sredini leđa 4.38 cm i na krstima 5.19 cm). Novija istraživanja mišića *Longissimus dorsi muscle* pokazala su sadržaj intramuskularne masti od 13.5%, sadržaj proteina od 21,1% sa specifičnim kvalitativnim osobinama (pH^{45}=6.11; pH^{24}=5.50; CIE L*=40.13; a*=11.77; b*=3.73). U *musculus longissimus lumborum thoracis* grla lasaste mangulice imala su veći udeo mononezasićenih masnih kiselina (55.1%) i niži nivo zasićenih masnih kiselina (SFA 35.3%) u odnosu na grla rase švedski landras.

Ključne reči: autohtona rasa, Swallow belly Mangalitsa, reproduktivne osobine, porast, kvalitet polutki i mesa

Acknowledgment

"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634476 (Project acronym: TREASURE). The content of this paper reflects only the

author‘s view and the European Union Agency is not responsible for any use that may be made of the information it contains."

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