

## COMPARATIVE ASSESSMENT OF THE PRODUCTIVE POTENTIAL OF BLACK AND RED ABERDEEN ANGUS TAURINE YOUTH POPULATION IN OCNITA FARM, BISTRITA-NASAUD COUNTY

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### **Abstract**

*Bovine meat is a complete aliment, with a high protein content and special organoleptic characteristics, the chemical composition of bovine carcasses showing differences based on various influencing factors such as species, breed, age, body weight and fattening status. Aberdeen Angus is a well-known breed, specialized for meat production, widespread all over the world, very resistant to diseases, unpretentious, which easily adapts to pasture system, showing a rapid maturation and a very good conversion of feed into meat, that have shown an important increment in Romania, mainly based on its specific production traits and breeding conditions. This work aimed to evaluate the productive potential of the Aberdeen Angus cattle population in Ocnita farm from Teaca village, Bistrita-Nasaud county, Romania, for identifying the possibilities of beef production improvement and optimization. The results related to the body development of the taurine youth male obtained in this study are relatively low, maybe as a consequence of several factors related to breeding, adaptability and genetics. indicating the need of a professionally farm management including animal improvement programmes.*

**Key words:** Aberdeen Angus, youth male, meat production, performance control, local conditions.

### **INTRODUCTION**

Nowadays, major concerns are addressed for ensuring the consumption requirements of the human population in order to continuously increase the living standards (Socol et al., 2015). In recent years, the worldwide production of bovine meat, of which 90-92% is from cattle, has increased by 80% and is constantly increasing, these statistics underlying the importance of cattle meat (Velea et al., 2012).

Bovine meat is a complete aliment, with a high protein content and special organoleptic characteristics, the chemical composition of bovine carcasses showing differences based on species, breed, age, body weight and fattening status (Hoffmann, 2010). The meat production in cattle has globally increased, by approx. 22.92% (12659.0 tons) during 2000-2020, mainly due to the increase of the body mass at slaughter and of the slaughter randament, the improvement of the productive performances and the

continuous improvement of the breeding and nutrition technologies specific to the targeted category (Ologun et al., 1981; Gociman et al., 2022). In the high developed countries for cattle meat production in Europe, the ratio has significantly decreased, reaching in 2020 a meat production with -9.15% lower than it was produced in 2000 (-1059.1 thousand tons) (STATISTICA, 2021; FAO, 2022). The EU forecasts for beef production is expected to decline moderately in the following years, mainly due to a reduction of the beef and dairy livestock farming sector, combined with lower demand of food services (Socol et al., 2021).

Regarding the meat production in cattle (carcass weight), during the time frame, 2000-2020, Romania has recorded a decrease of -45.99%. In 2020, Romania ranks 13th, having a beef production of 87490 tons, France, Germany, Italy, Spain, etc. being above this level. In 2020, the total livestock of cattle slaughtered for meat at national level registered a drastic decrease compared to 2000, respectively by -55.28% (-771100 heads). At the same time, carcass weight showed a very significant, but insufficient increase, specifically by 20.75%, from 116.1 kg to 140.2 kg in 2020, compared to 2000 (www.madr.ro, FAO, 2022).

Aberdeen Angus is a well-known breed, specialized for meat production, widespread all over the world, very resistant to diseases, unpretentious, which easily adapts to pasture system, showing a rapid maturation and a very good conversion of feed into meat (Gagaoua et al., 2017; Karpaten Meat, 2018) The Angus breed and the Angus crossbreeds represent more than 60% of the number of cattle raised for meat production (www.aberdeen-angus.co.uk). Worldwide, it registers a herd of 1.3 billion head of cattle distributed as follows: 37% in Asia, 18% in South America, 13% in Europe, 12% in North America, Africa, Oceania, Australia and Central America. Of the worldwide total number of Aberdeen Angus breed, 75% of this breed is found in Australia, North America and South America.

In Romania, in the last years the Aberdeen Angus breed have exhibited an important increment, due to the specific traits both related to production and breeding conditions. Simultaneously, breeders' associations of breeders have been developed for this breed, which are in charge of the official control for meat production as well as the genealogical register of the registered livestock herds (Socol et al., 2019; ANZ, 2020). This work aimed to evaluate the productive potential of the Aberdeen Angus cattle population in Ocnita farm from Teaca village, Bistrita-Nasaud county, Romania for identifying the possibilities of improvement and optimization of meat production.

## **MATERIAL AND METHOD**

The study was carried out in Ocnita farm from Teaca village, Bistrita Nasaud County, having a herd of 181 cattle of Aberdeen Angus breed, both the black and the red varieties. The biological material targeted consisted of 27 heads youth taurine of the Aberdeen Angus breed, comprising 15 heads of the black variety and 12 heads of the red variety.

The farm holds 90 ha of agricultural land (arable: 40 ha; pasture: 37 ha; meadows - 13 ha). The farming system used is that of the "cow-calf" line. Thus, the breeding of the mother cows and the rearing of calves represents one technological unit (the beef cow-calf line), since the calves until the weaning (at the age of 6-7 months) are kept together with their mothers. At the weaning age, the calves are separated from the mothers and are reared separately by sex until the age of 8 months, when the males have to be sold to fattening companies and the females kept for breeding purposes. A comparative study related to the body development of the youth males was performed in both varieties (black and red). The body development of the taurine youth male consisted in: the live body weight at birth, at 90 days, at 180 days and at delivery, the average daily gain (ADG) for the entire period (kg), the total weight gain (TWG) (kg), the relative weight gain (%), the growth intensity (I) %, the growth coefficient (C) %, the age at delivery (days). All data were processed and interpreted statistically, the differences between the mean values and their significance, being tested using the Student test (t).

## **RESULTS AND DISCUSSION**

Romania is a country with a very high agricultural potential with favorable environmental conditions for the breeding of cattle for meat production. Throughout the increase of the number of cattle specialized for meat production, it could become one important sectors of agriculture in Romania, related to the necessity of high quality meat required at European and global level. In Romania, the disappearance of the large fattening units and livestock at national level after the 1990s, next to the decrease in the general interest for cattle farms due to the decapitalization, the high production costs as well as the derisory valorization prices of the cattle meat, concurred to a considerable decrease of beef production (Socol et al., 2019). Despite these, in the last years, the activity of cattle breeding exclusively for beef has seen a significant development in Romania. This was made possible throughout the import of pure-bred animals of specialized breeds for meat production, but also by a tremendous increase in the number of cross-breeding using frozen semen from beef bulls (Gociman et al., 2020).

In this context, the productive traits of the Aberdeen Angus population of bulls in Ocnita farm from Teaca village, Bistrita-Nasaud county were evaluated in order to identify some possibilities to improve the herd and to optimize meat production.

Data related to the body development of each individual and the average indices of the weight gain registered in the young taurine evaluated from both varieties, is presented below. Thus, the dynamics of the body weight and of the average daily gain in the youth male analyzed are shown in figures 1 and 2.

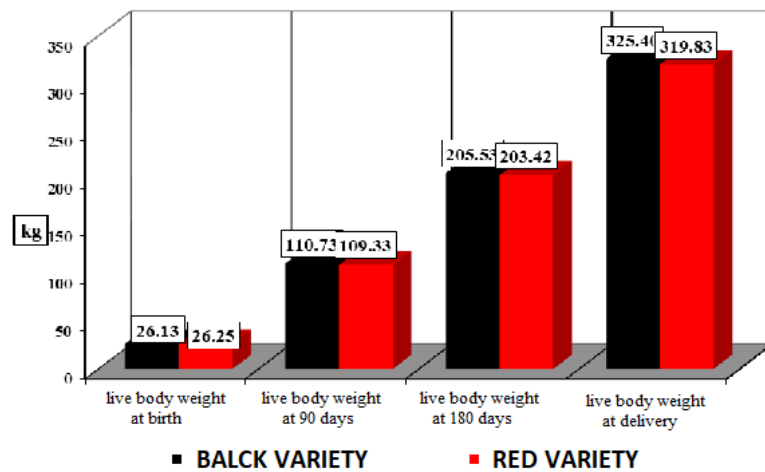


Fig. 1. The live body weight in Aberdeen Angus young bulls

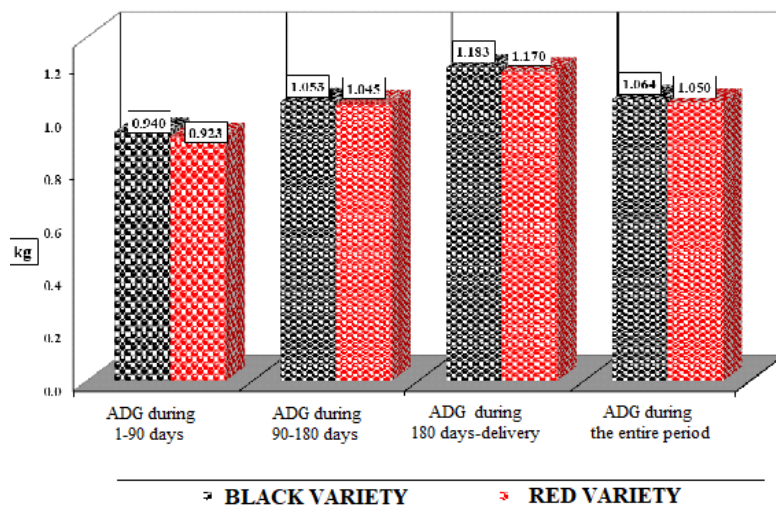


Fig. 2. The average daily gain in Aberdeen Angus young bulls

The differences related to the body development and their significance in the taurine male youth were obtained by comparing the data achieved from the two varieties, using the Student test (test t). Data related to the body development of the young male bulls from Aberdeen Angus breed, that was the subject of this study is shown in Table 1.

The body development of the youth male taurine consisted in: the body weight at birth, at 90 days, at 180 days and at delivery, the average daily gain (ADG) for the entire period (kg), the total weight gain (TWG) (kg), the relative weight gain (%), the growth intensity (I) %, the growth coefficient (C) %, the age at delivery (days). All data were processed and interpreted statistically, the differences between the mean values and their significance, being tested using the Student test (t).

By analyzing the dynamics of body development in the taurine youth male, it was found that the black variety had an average live body weight at birth of 26.13 kg and at delivery (281.47 days) of 325.40 kg, the average daily gain for the entire period was of 1.064 kg and the average total weight gain of 299.27 kg; the average relative growth gain was of 1153.52%, the average growth intensity (I) of 170,25 % and the average growth coefficient (C) of 54,23 %.

The taurine youth male of the red variety had the average body weight at birth of 26.25 kg and at delivery (279.58 days) of 319.83 kg, the average daily gain during the entire period was of 1,050 kg and the average increase of total weight gain of 293.58 kg; the average relative growth gain was of 1122.16%, the average growth intensity (I) of 169,65 % and the average growth coefficient (C) of 53,31 %.

*Tabelul 1*

Testing of the differences between the average values using the "t" test in Aberdeen Angus taurine youth males

Indices	Variety	n	X	s <sup>2</sup>	Difference (kg)	d (%)	SD	t	Significance
Live body weight at birth (kg)	Black	15	26,13	5,267	-0,12	-	0,83	-	ns
	Red	12	26,25	4,023					
Live body weight at 90 days (kg)	Black	15	110,73	26,495	1,40	1,28%	1,93	0,725	ns
	Red	12	109,33	23,515					
Live body weight at 180 days (kg)	Black	15	205,53	111,981	2,12	1,04%	4,43	0,478	ns
	Red	12	203,42	145,902					
Live body	Black	15	325,40	182,400	5,57	1,74%	6,14	0,906	ns

weight at delivery (kg)	Red	12	319,83	307,061					
ADG during 1-90 days (kg)	Black	15	0,940	0,003	0,02	1,83%	0,02	0,987	ns
	Red	12	0,923	0,001					
ADG during 90-180 days (kg)	Black	15	1,053	0,005	0,01	0,76%	0,03	0,256	ns
	Red	12	1,045	0,008					
ADG during 180 days - delivery (kg)	Black	15	1,183	0,006	0,01	1,14%	0,03	0,504	ns
	Red	12	1,170	0,004					
ADG during the entire period (kg)	Black	15	1,064	0,003	0,01	1,28%	0,02	0,607	ns
	Red	12	1,050	0,004					
TWG (kg)	Black	15	299,27	174,924	5,68	1,94%	5,84	0,973	ns
	Red	12	293,58	269,538					
Relative weight gain (%)	Black	15	1153,52	13397,358	31,36	2,79%	37,03	0,847	ns
	Red	12	1122,16	5736,455					
Growth intensity (I) (%)	Black	15	170,25	5,951	0,60	0,35%	0,81	0,740	ns
	Red	12	169,65	3,122					
Growth coefficient (C) (%)	Black	15	54,23	5,067	0,93	1,74%	1,02	0,906	ns
	Red	12	53,31	8,529					
Age at delivery (days)	Black	15	281,47	20,552	1,88	0,67%	2,00	0,942	ns
	Red	12	<b>279,58</b>	31,538					

The results obtained regarding the body development of the taurine male youth are relatively low compared to other records in this breed ([www.aberdeenangus.ro](http://www.aberdeenangus.ro)). According to the Association of breeders "Aberdeen Angus Romania" the live body weigh in Aberdeen Angus young bulls is at least of 50% of the live body weight of the cows at the age of 205 days (270 -300 kg), and the average daily gain recorded during this period exceed 1000 grams ([www.aberdeenangus.ro](http://www.aberdeenangus.ro)). We consider that the present results may be due to the breeding and feeding technology used in this farm.

The analysis of the differences related to the body development and their significance in the taurine youth male of the two varieties, indicated

that there are slight differences of the indices studied, in favor of the black variety, but not significant ascertained statistically.

Consequently, the results obtained indicated that the animals included in the study, have shown some overall body development ratios related to a poorly proportioned body development, since the body lengths are driving only to the partially framing into the morpho-productive type of meat.

The explanation of these results could reside both in the breeding technology used, the breed adaptability at the specific local conditions from Bistrita-Nasaud county, Romania and the existing genetics of the animals.

## CONCLUSIONS

The results related to the body development of the taurine youth male obtained in this study are relatively low, maybe as a consequence of the breeding technology applied in this farm, Aberdeen Angus population from Ocnita farm from Bistrita-Nasaud county, Romania, adaptability at the specific local conditions and the existing genetic background of the animals. The differences related to the body development in the Aberdeen Angus young bulls of both varieties assessed, point out a certain superiority of the black variety, but not statistically ascertained. Based on the results of this study, an improvement of the parameters values for meat production is targeted in the future.

For a higher efficiency on the farm and for making this farm more profitable, a professionally farm management is needed, aiming the entire activity of the farm, from the implementation of an animal improvement programmes, next to the rearing and the breeding one of the existing herd.

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