

STUDY OF SOME INFLUENCE FACTORS OF CATTLE SLAUGHTER INDICATORS

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Abstract

The influence of breed and body weight on the technical indicators of slaughter in cattle was studied. In this sense, 30 males from „Bălțată cu Negru Românească” and „Brună” breeds were slaughtered, respectively, falling into three weight groups (300-350 kg, 350-400 kg; 400-450 kg), establishing the slaughter yield. and the weight of the main anatomical portions in the carcass. From the obtained data it resulted that, in the Bălțată cu Negru Românească breed, the carcass weight was higher by 2.75-5.11%, hence a higher slaughter yield by 1.90-3.57% than in the breed Brown. Also in the Bălțată cu Negru Românească breed, there were higher weights for the anatomical parts included in specialties (by 0.26-0.46%), in those of superior quality (by 0.11-0.83%) and, respectively, in those of quality I (0.24-0.47%). Of the two breeds of cattle studied, the best slaughter indicators were made by Bălțata cu Negru Românească, especially by the specimens from the weight group 400-450 kg.

Key words: cattle, breed, weight, slaughter yield, anatomical portions

INTRODUCTION

Globally, meat consumption is on an upward trend, given its importance in balancing the protein balance of human consumers [5, 8].

In many parts of the world, meat from cattle has a well-defined place in human consumption, being appreciated for its low fat content (205-210 calories / 100 g.), High content of amino acids, vitamins and minerals [4, 8].

In cattle, the biological value of the meat and the yield at slaughter are influenced by a whole range of endogenous and exogenous factors, including breed [3], type of cross-breeding practiced [6], sex, age [1], fattening status. [7], the quality of the food administered [2] etc.

In our country, most of the cattle slaughtered for meat are represented by young people from mixed breeds or milk (or their crossbreeds), to which are added the reformed adult animals [5, 8].

Cattle in these categories are characterized by slaughter indicators much lower than those made by specialized breeds and by lower quality meat [5].

For the reasons mentioned, through this study we aimed to study the quantitative production of meat in two breeds of domestic cattle, classified in different weight groups.

MATERIAL AND METHOD

The biological material was represented by 60 chapters. male bovine youth from the Bălțată cu Negru Românească (BNR) and Brună (B) breeds, respectively, structured on three weight categories, as follows:

- group „300-350 kg” (10 BNR+10 B);
- group „350-400 kg” (10 BNR+10 B);
- group „400-450 kg” (10 BNR+10 B).

The slaughter indicators that were in our attention were the yield at slaughter and, respectively, the weight in the composition of the carcasses of the cut assortments.

We mention that the determination of the carcass weight and, respectively, their cutting into anatomical parts was determined after a period of 36 hours of storage in refrigeration regime.

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The yield at slaughter was calculated as the ratio of the percentage of carcass weight to live animal weight.

The commercial assortments resulting from the carcass cutting were distributed on the four quality categories specific to cattle:

- Specialties (muscle);
- Upper (entrecote, sparrow, thigh, back with arm); Clasa I (chest to chest, face-to-face, face-to-face countertop, withers, flint, front brace, back brace, front key, back key);
- Class II (neck with bead, string of entrecote).

The cut portions were weighed individually, after which their average weight was determined, and at the end the share of the average weight of the carcass from the respective breed and weight category was calculated.

The main experimental data obtained were statistically processed, calculating: average (\bar{X}); standard mean error (\pm) and coefficient of variation ($V\%$).

RESULTS AND DISCUSSIONS

1) Slaughter indicators for cattle in the group "300-350 kg". At the time of reception in the slaughterhouse, the average live weight of the specimens of the BNR breed was 315.7 ± 6.59 kg, and of those of the B breed of 318.6 ± 6.37 kg. The carcasses obtained from the slaughter of the animals were stored in refrigeration for a period of 36 hours, after which their weight was determined, recording values of 162.82 ± 3.65 kg in the case of carcasses from the BNR and 158.33 ± 3.88 kg for those obtained from the B breed.

The average slaughter yield calculated for the BNR breed was $51.56 \pm 0.15\%$ (with variations in the range of 50.79% -minimum and 52.10% -maximum), and that established for the B breed of only $49.66 \pm 0.35\%$ (oscillation limits in this case were between a minimum of 48.08% and a maximum of 51.99%).

The coefficient of variation calculated for the three analyzed parameters showed low values both in the BNR breed ($V\% = 0.91-7.10$) and in the B ($V\% = 2.21-7.75$), which indicates their good homogeneity (tab. 1).

Table 1 Slaughter yield for cattle in the "300-350 kg" group

Breed	Indicatory	Statistical estimators:			
		$\bar{X} \pm s_{\bar{x}}$	V%	Min.	Max.
BNR (n=10)	Live weight (kg)	315.7±6.59	6.60	280.0	347.0
	Cold housing weight (kg)	162.82±3.65	7.10	144.2	180.8
	Slaughter yield (%)	51.56±0.15	0.91	50.79	52.10
B (n=10)	Live weight (kg)	318.6±6.37	6.32	290.0	349.0
	Cold housing weight (kg)	158.33±3.88	7.75	143.6	175.2
	Slaughter yield (%)	49.66±0.35	2.21	48.08	51.99

From the cutting of the carcasses obtained from the cattle in the weight group 300-350 kg it resulted that the highest share (50.63% in the BNR breed and 50.42% in the B breed) was in the assortments from the high quality class. The assortments from the first class of quality followed, with 36.48%

for the BNR breed and 36.01% for the Brown breed, those from the second quality class with 10.92% for the BNR breed and 11.88% for the breed Brown and, respectively, specialties, with 1.97% in the BNR breed and 1.69% in the Brown breed (tab. 2).

Table 2 Weight and weight of carcasses cut from carcass for cattle in the group "300-350 kg"

Quality class	Assortment	BNR			Brown		
		Weight (kg)	Weight (%)	Total class (%)	Weight (kg)	Weight (%)	Total class (%)
Specialities	Tenderloin	3.2	1.97	1.97	2.68	1.69	1.69
Upper	Entrecote	13.57	8.33	50.63	13.12	8.29	50.42
	Sirloin	10.16	6.24		9.80	6.19	
	Pulp	43.33	26.61		42.05	26.56	
	Back with arm	15.39	9.45		14.86	9.38	
Quality I	Chest to chest	14.88	9.14	36.48	14.70	9.29	36.01
	Blet with face	6.62	4.06		6.48	4.09	
	Blet without a face	6.23	3.83		6.00	3.79	
	Withers	13.23	8.13		13.12	8.29	
	Meatloaf	9.95	6.11		9.48	5.99	
	Brush your face	2.93	1.80		2.52	1.59	
	Rasol back	2.60	1.60		2.52	1.59	
	The front key	1.47	0.90		1.10	0.69	
The quality a II	Neck with a bead	15.58	9.57	10.92	16.43	10.38	11.88
	Anchovy string	2.19	1.35		2.37	1.5	
Total		162.8	100.0		158.33	100.0	

2) **Slaughter indicators for cattle in the "350-400 kg" group.** The live weight of the Bălțată cu Negru Românească breed was 374.2 ± 4.75 kg, and in Brună of 373.3 ± 4.74 kg, while the weight of the refrigerated carcasses was 198.75 ± 2.79 kg at BNR and 188.59 ± 2.99 kg at Bruna; the two characteristics were homogeneous, the values established for the coefficient of variation being 4.12-4.44% for the BNR breed and 4.02-5.01% for the Brown breed. The slaughter yield calculated for the BNR breed

ranged between a minimum of 52.61% and a maximum of 53.51%, resulting in an average value of $53.11 \pm 0.09\%$; In the case of breed B, the slaughter yield showed a minimum of 49.69% and a maximum of 51.10%, the average value being $50.50 \pm 0.18\%$. The slaughter yield was presented as a homogeneous character in both breeds, the proof in this respect being the very small values of the coefficient of variation, of only 0.56-1.11% (tab. 3).

Table 3 Yield at slaughter in cattle of the group "350-400 kg"

Breed	Indicators	Statistical estimators:			
		$\bar{X} \pm s_{\bar{x}}$	V%	Min.	Max.
BNR (n=10)	Live weight (kg)	374.2 ± 4.75	4.12	354	397
	Cold housing weight (kg)	198.75 ± 2.79	4.44	187.3	212.0
	Slaughter yield (%)	53.11 ± 0.09	0.56	52.61	53.51
Brună (n=10)	Live weight (kg)	373.3 ± 4.74	4.02	354	395
	Cold housing weight (kg)	188.59 ± 2.99	5.01	176.4	201.5
	Slaughter yield (%)	50.50 ± 0.18	1.11	49.69	51.10

In the carcasses coming from the bulls from the Bălțată cu Negru Românească breed, a weight of 1.96% was found for the specialty category, of 50.76% for the superior

quality category, of 36.68% for the anatomical assortments of quality I and of 10.6% for those in the second quality class.

In the males of the B breed, the share in the carcass of the cut assortments was 1.70% for specialties, 50.65% for the high quality ones, 36.25% for the anatomical parts classified in quality class I and 11.4% for the second quality ones (tab. 4).

Table 4 Weight and weight of carcasses cut from carcass in cattle of the group "350-400 kg"

Quality class	Assortment	BNR			Brună		
		Weight (kg)	Share (%)	Total class (%)	Weight (kg)	Share (%)	Total class (%)
Specialities	Tenderloin	3.89	1.96	1.96	3.20	1.7	1.70
Upper	Entrecote	16.99	8.55	50.76	16.33	8.66	50.65
	Sirloin	13.52	6.80		12.56	6.66	
	Pulp	53.30	26.82		50.78	26.93	
	Back with arm	17.08	8.59		15.84	8.4	
Quality I	Chest to chest	17.77	8.94	36.68	16.48	8.74	36.25
	Blet with face	8.99	4.52		7.48	3.97	
	Blet without a face	8.39	4.22		7.92	4.2	
	Withers	15.08	7.59		15.08	8.0	
	Meatloaf	10.87	5.47		10.70	5.67	
	Brush your face	4.22	2.12		3.77	2.0	
	Rasol back	4.02	2.02		3.58	1.9	
	The front key	1.78	0.90		1.69	0.9	
The quality a II	Neck with a bead	18.29	9.20	10.6	18.48	9.8	11.4
	Anchovy string	2.78	1.40		3.01	1.6	
Total		198.75	100.0		188.59	100.0	

3) Slaughter indicators for cattle in the "400-450 kg" group. In the BNR breed, the average weight at the entrance to the slaughterhouse was 445.0 ± 12.36 kg, and the weight of the refrigerated carcasses was 245.63 ± 6.30 kg, which led to a slaughter yield of $55.23 \pm 0.14\%$, with very small limits of variation (minimum = 54.5%; maximum = 55.8%); the three characteristics were homogeneous, an aspect confirmed by the small values of the coefficient of variation ($V\% = 0.80-8.78$). In the case of the B breed, the average live weight was 453.9 ± 10.44 kg (minimum = 403 kg; maximum = 507 kg), that of the carcasses 234.51 ± 5.52 kg (minimum = 205.9 kg; maximum = 261.1

kg), and the slaughter yield of $51.66 \pm 0.14\%$ (minimum = 50.9%; maximum = 52.2%); and in this situation we can talk about a good homogeneity of the analyzed characteristics, the coefficient of variation being of 0.86-7.45% (tab. 5). For this weight group, the share of specialties in carcass composition was 2.12% for the BNR breed and 1.66% for the Brună breed, that of the specialty category of 51.35% for the BNR breed and 50.52% for the B breed, the share of quality I assortments of 36.69% for the NBR and 36.45% for the B, and that of the second quality parts of 9.84% for the BNR and 11.37% in B (tab. 6).

Table 5 Yield at slaughter in cattle of the group "400-450 kg"

Breed	Indicatory	Statistical estimators:			
		$\bar{X} \pm s_{\bar{x}}$	V%	Min.	Max.
BNR (n=10)	Live weight (kg)	445.0±12.36	8.78	401.0	502.0
	Cold housing weight (kg)	245.63±6.30	8.11	223.6	273.6
	Slaughter yield (%)	55.23±0.14	0.80	54.5	55.8
Brună (n=10)	Live weight (kg)	453.9±10.44	7.28	403.0	507.0
	Cold housing weight (kg)	234.51±5.52	7.45	205.9	261.1
	Slaughter yield (%)	51.66±0.14	0.86	50.9	52.2

Table 6 Weight and weight of carcasses cut from carcass in cattle of the group "400-450 kg"

Quality class	Assortment	BNR			Brună		
		Weight (kg)	Share (%)	Total class (%)	Weight (kg)	Share (%)	Total class (%)
Specialities	Tenderloin	5.21	2.12	2.12	3,90	1.66	1.66
Upper	Entrecote	21.64	8.81	51.35	19,80	8.44	50.52
	Sirloin	16.81	6.84		14,50	6.18	
	Pulp	66.07	26.90		65,50	27.93	
	Back with arm	21.61	8.80		18,70	7.97	
Quality I	Chest to chest	21.07	8.58	36.69	21,20	9.04	36.45
	Blet with face	10.63	4.33		12,10	5.16	
	Blet without a face	9.82	4.00		10,20	4.35	
	Withers	20.87	8.50		16,30	6.95	
	Meatloaf	14.73	6.00		13,65	5.82	
	Brush your face	4.66	1.90		4,60	1.96	
	Rasol back	4.64	1.89		4,60	1.96	
	The front key	1.96	0.80		1,40	0.60	
The quality a II	Neck with a bead	20.84	8.48	9.84	22,06	9.41	11.37
	Anchovy string	3.36	1.36		4,60	1.96	
Total		245.63	100.0		234.51	100.0	

CONCLUSIONS

The data obtained by us on the factors influencing the slaughter indicators in males belonging to two indigenous breeds of cattle led us to the following conclusions:

- the weight of refrigerated carcasses was higher by 2.75-5.11% in the BNR breed, although the weight of live animals was higher in the B breed in two weight groups (by 0.9-1.96%);
- the slaughter yield in the young bulls from BNR and B increased in parallel with the body weight, from 49.66-51.56% as it was in the 300-350 kg category, to 51.66-55.23% in the weight group 400-450 kg;

- the males from the BNR breed had a higher slaughter yield by 1.90-3.57% than those from the Brună breed;
- the share of the portions cut from the carcasses was higher in the males of BNR, both in the case of specialties (by 0.26-0.46%) and of those of superior quality (by 0.11-0.83%) and assortments classified as quality I (0.24-0.47%);
- in the Brown breed, higher participation quotas were found by 0.80-1.53% only for the anatomical pieces included in the second quality class.

Based on the above, it can be stated that the yield at slaughter for cattle depends on the breed and body weight of the specimens slaughtered. The conclusion of our study was

that, of the two breeds of cattle studied, the best slaughter indicators were made by males from the Bălțată cu Negru Românească breed, especially those belonging to the 400-450 kg weight group.

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