

The monitoring outcomes of the meat productivity of cattle processed at “Uvinsky meat factory” OOO of the Uvinsky district in the Udmurt Republic

*E.V. Khardina**, *O.A. Krasnova*, *M.I. Vasilyeva*, and *S.S. Vostrikova*

Izhevsk State Agricultural Academy, Studencheskaya Street, 11, 426069, Izhevsk, Russia

Abstract. We performed have performed a comprehensive analysis of the meat productivity of cattle received for slaughter and primary processing at “Uvinsky meat factory” OOO of the Uvinsky district in the Udmurt Republic. The studies were carried out based on data from plumb lines for 2020. During the research, it was revealed that only two districts (Uvinsky and Vavozhsky) had got cattle in 2020, from which they obtained carcasses of the “super” category (21 pieces). This is the highest grade in terms of categorization. Meanwhile, the main range of carcasses of young cattle was assessed in the categories “extra”, “excellent” and “good” (1311 carcasses). However, there were also farms from which carcasses of the “low” fatness category were obtained (Uvinsky, Seltinsky and Vavozhsky districts) (42 carcasses). Based on the results of the commodity evaluation of carcasses of adult cattle, it is worth noting that most of the carcasses were quite well-fed and were rated in the first category. By the end of 2020, the company has obtained meat in carcasses from young cattle in the amount of 608.8 tons. Meanwhile, 917.5 tons of meat were produced in live weight. The meat volume in the carcasses of adult cattle was 180, 1 ton. In live weight, 386, 5 tons were obtained. Given the percentage of beef sales per year and the maximum yield of boneless meat, the company is not capable of fully meeting the needs of all high-level processing shops.

1 Introduction

In the Russian Federation, the level of beef production and consumption is not growing today. This branch of animal husbandry has been in a stagnant condition for the last twenty years. In 1991, the level of beef production was at least 4.0 million tons per year. In today's world, this figure does not surpass 1.6-1.7 million tons per year. The current condition could not be improved even by two programs for the development of beef cattle breeding, developed by the Ministry of Agriculture of the Russian Federation since 2009. During these programs, about 90 billion rubles were invested in the industry [1, 2, 3].

The main meat processing companies prefer only high-quality meat raw materials. As the volume of production of cattle meat covers the demand for it by only 80%, meat processing

* Corresponding author: chydo.izhevsk@rambler.ru

enterprises pay for the shortage of raw materials through imports. Certainly, the preference is given to meat breeds. Due to the inadequate amount of high-quality Russian meat raw materials, the refiners are forced to import it from Uruguay, Paraguay, Brazil, Belarus and Argentina [4, 5, 6].

The Federal Program for the development of beef cattle breeding for 2013-2020 plans to reach the share of beef from meat breeds of cattle in 24% of total production. However, in fact, this share has reached only 15%. It is reasonable to suppose that not everything is going well in the current model of the beef cattle breeding sector. It should be noted that many regions in the Russian Federation are an ideal place for the development of the meat cattle breeding sub-sector. This is because most of them have lands that are unsuitable for efficient farming, but good for cultivated grasslands.

It is also known that today farmers are disturbed by a high degree of consumer interest in marbled meat, associated in the mind of the layman only with the Angus breed. There are also situations when farmers have to sell their breeding cattle to the Omsk and Tomsk regions, just because the center of Russia is “hooked” on Angus. Nevertheless, it is quite complicated to explain to the consumer that “marbling” is the result of a certain technology and fattening scheme, and not the predilection of the breed. It is also essential to understand that the choice of consumers in favor of meat from angus is often due to the lack of a culture of meat consumption as a gourmet product. It is a residual effect of the Soviet times [7, 8, 9].

Currently, the key strategy for the development of farming, and particularly meat farming, is not confined only to increased food production. The social problem also is of significant importance – to provide employment to the rural population and to save rural landscapes [10, 11, 12, 13].

At present, the level of beef production in the Udmurt Republic is about 30.1 thousand tons per year. Meanwhile, as of February 01, 2021, 33 farms were registered in the meat cattle breeding industry. The total number of beef cattle is 2,181 heads, including 30 heads of seed bulls, 897 heads of young animals, and 262 heads of heifers. The animal yield was 19 heads, 11 of which were heifers. The average daily weight gain of young animals is 994 grams. 1,047 tons were sold in live weight. There is an awareness that the development of beef cattle husbandry in the Udmurt Republic has some positive dynamics. Nevertheless, this meat amount is not enough to eliminate its deficit of at least one medium-sized enterprise [14, 15, 16].

Therefore, the aim of the study was to analyze the meat productivity of cattle processed at “Uvinsky meat factory” of the Uvinsky district in the Udmurt Republic.

The objectives of the research included the following:

1. Describe the production activity of the enterprise.
2. To identify the raw material base of the enterprise.
3. To set the number of livestock received from different districts and enterprises by the end of 2020.
4. Based on the weighing, determine the fatness categories of cattle carcasses of different sex and age groups.
5. To identify the amount of meat received from the carcasses of young cattle.
6. To identify the amount of meat in live weight gained from young cattle.
7. To identify the amount of meat in live weight gained from young cattle.
8. To identify the amount of meat in live weight gained from adult cattle.
9. To determine the total amount of beef gained in 2020.

2 Materials and methods

The studies were performed based on weighing received from the results of slaughter and commodity evaluation of cattle carcasses. The product assessment of cattle carcasses was

conducted to meet the requirements of GOST 34120-2017 “Cattle for slaughter. Beef and veal in carcasses, half-carcasses and quarters. Technical requirements”. The object of research was meat carcasses of cattle of all sex and age groups received as a result of its slaughter and primary processing. The study period was from January to December 2020.

3 Results

“Uvinsky meat factory” OOO is one of the largest companies of the agro - industrial complex of the Udmurt Republic. The company's range includes more than 200 types of meat products – sausage products, semi-finished meat products, cooled and frozen, semi-finished meat products in a dough shell, products in jelly, offal, melted drippings, as well as pork and beef half-carcasses and quarters. The company has introduced and works an integrated food safety management system ISO 22 000, based on the guidelines of the HACCP system.

By the results for 2020, the company has accepted cattle from the following districts: Seltinsky district, Uvinsky district, Vavozhsky district, Grakhovsky district and from the Kirov region.

By the end of 2020, “Uvinsky meat factory” OOO has accepted and slaughtered 2,459 heads of cattle of different sex and age groups (Figure 1). Figure 1 presents the distribution of incoming livestock from the districts. In particular, the leading position is occupied by the Vavozhsky district; the second place belongs to the Kirov region.

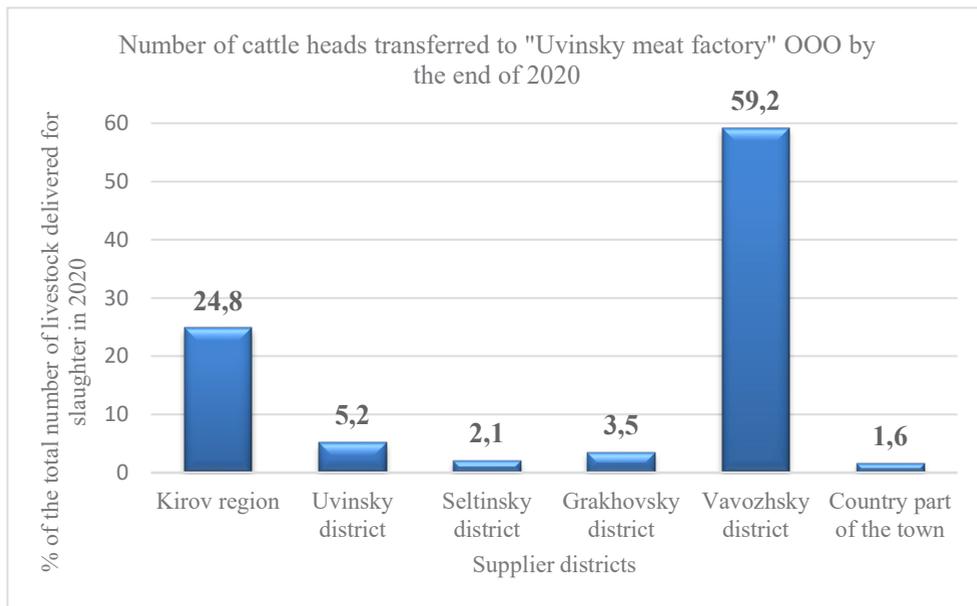


Fig. 1. The number of livestock accepted by “Uvinsky meat factory” OOO from different districts in 2020.

Examining the volume of livestock supplies under the farms for each district, it is worth noting the following.

By the end of 2020, the Agroindustrial firm “Podgortsy” took the leading position among the suppliers of the Kirov region in “Uvinsky meat factory” OOO, and the volume of livestock supplies from this company amounted to 89.4%. It is equal to 625 heads of different sex and age groups (figure 2).

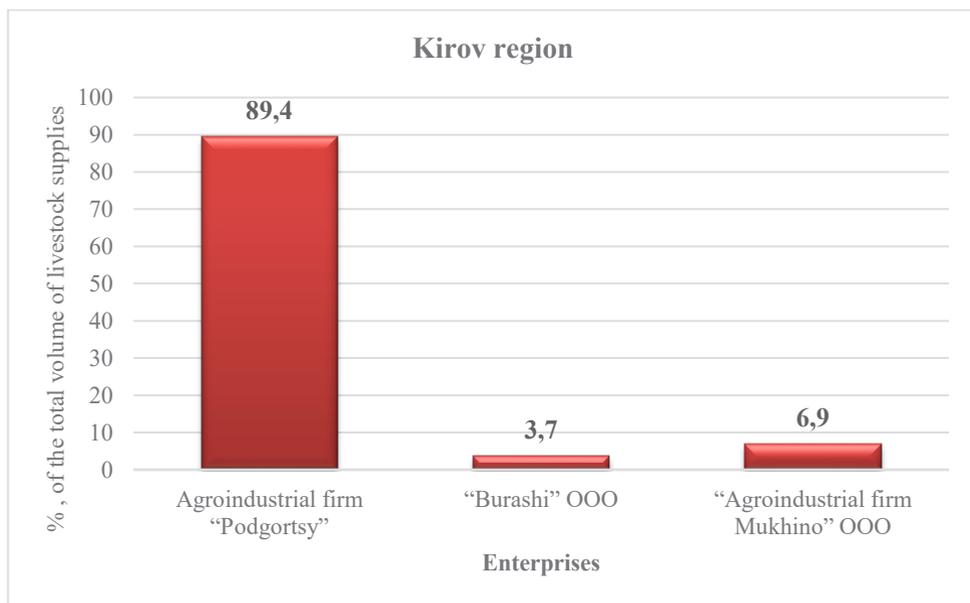


Fig. 2. The number of livestock accepted by "Uvinsky meat factory" OOO from Kirov enterprises in 2020.

From the Uvinsky district, the supply of livestock was made from such enterprises as Agricultural production co-operative company "Udarnik", Agricultural Production Co-operative company "Pobeda". In 2020, the prevailing share of deliveries was performed from Agricultural production co-operative company "Udarnik" - 64.8% (83 heads of cattle) (figure 3).

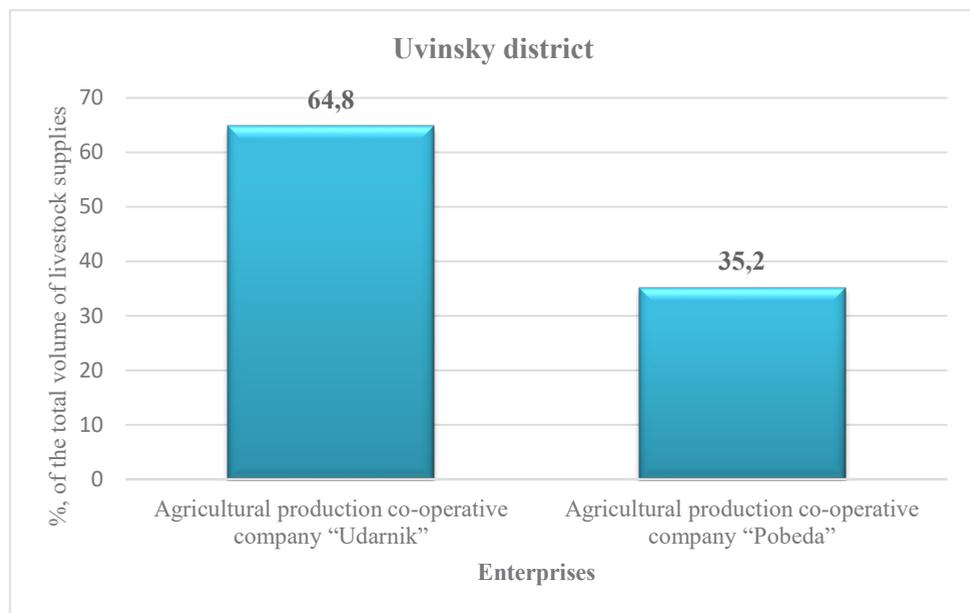


Fig. 3. The number of livestock accepted by "Uvinsky meat factory" OOO from the enterprises of the Uvinsky district in 2020.

From the Seltinsky district, the Agricultural production co-operative company “Niva” can be regarded as the leader in the supply of cattle to “Uvinsky meat factory” OOO in 2020. The volume was-66.7% (41 heads) (figure 4).

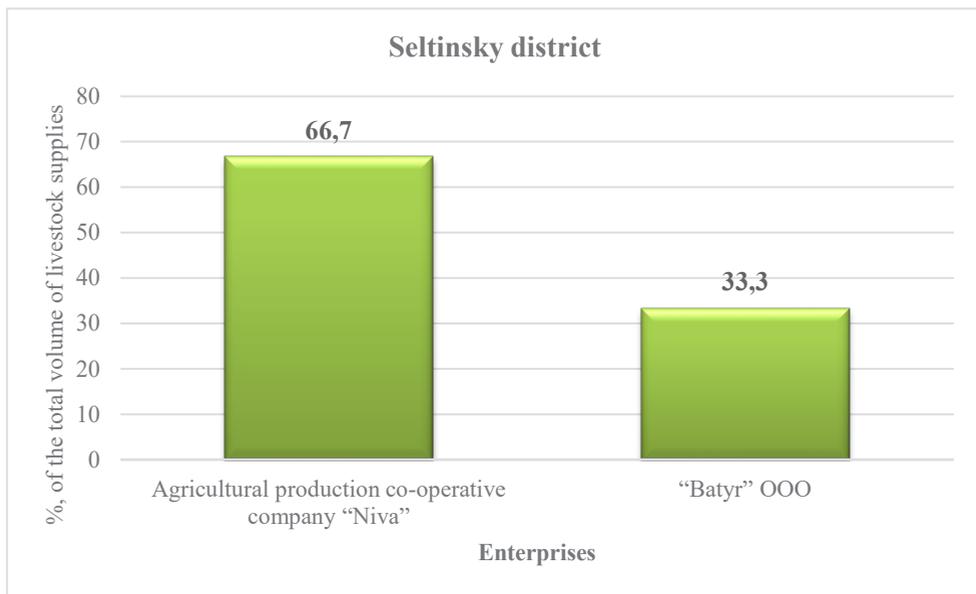


Fig. 4. The number of livestock accepted by “Uvinsky meat factory” OOO from the enterprises of the Seltinsky district in 2020.

The Grakhovsky district in 2020 supplied cattle to the meat factory from two enterprises: “Mercury” OOO, “Grakhovsky Horse Breeding Plant” OOO. The prevalent share of cattle came from “Grakhovsky Horse Breeding Plant” OOO: 92.9% (79 heads) (figure 5).

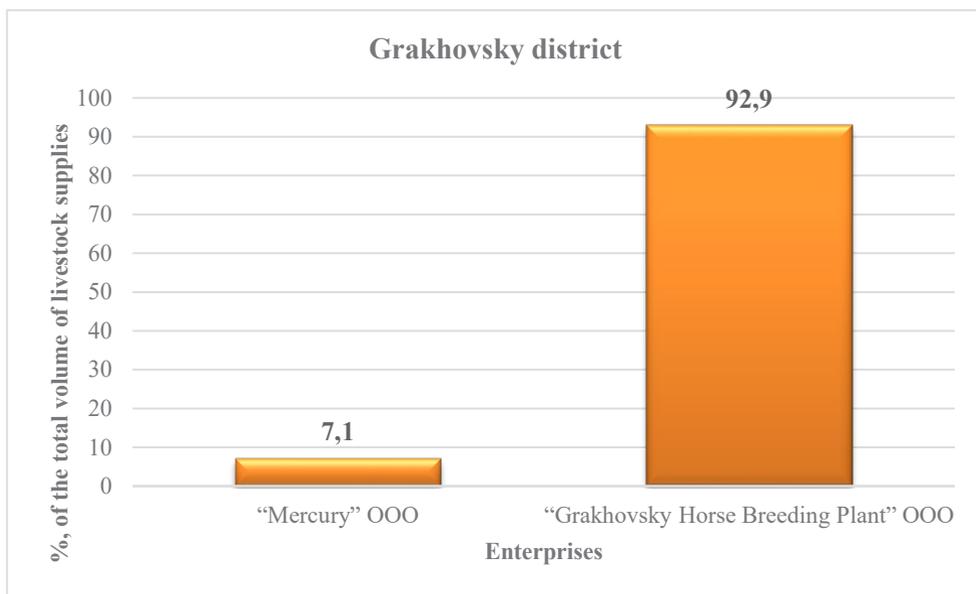


Fig. 5. The number of livestock accepted by “Uvinsky meat factory” OOO from the enterprises of the Grakhovsky district in 2020.

The suppliers of livestock from the Vavozhsky district to “Uvinsky meat factory” OOO in 2020 were: Agricultural production co-operative company “Kolos”, “Kamenny klyuch” OOO; Integrated agricultural production centre “Gorod Oktyabr”, collective farm (Integrated agricultural production center) named after Michurin, Agricultural production co-operative company “Luch”. Meanwhile, the main share of livestock came from the Agricultural production co-operative company “Kolos”: 42.4% (617 heads).

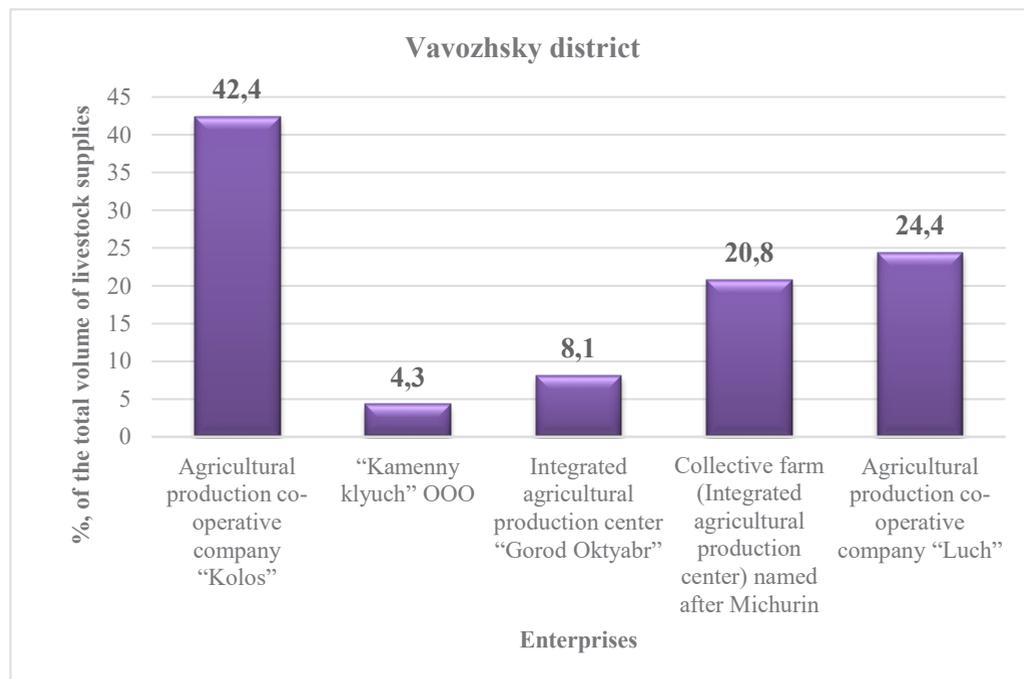


Fig. 5. The number of livestock accepted by “Uvinsky meat factory” OOO from the enterprises of the Vavozhsky district in 2020.

By the results of the commodity assessment of the carcasses of young cattle which were accepted for processing, it can be noted that not all enterprises (districts) are recognized for the high quality of the meat obtained (table 1).

Table 1. Meat productivity of young cattle by the results of slaughter (assessment of the quality of carcasses in accordance with GOST 34120-2017 “Cattle for slaughter. Beef and veal in carcasses, half-carcasses and quarters”).

Young animals (bulls, heifers, first-calf cows), heads were scored and carcasses were collected from them	Super	Prima	Extra	Excellent	Good	Satisfactory	Low
	Kirov region						
	10	24	251	67	293		
Uvinsky district							
1		2	7	36	19	3	
Seltinsky district							
		3	5	9	3	7	
Grakhovsky district							
		2	4				
Vavozhsky district							
	20	79	421	347	116	31	32
Country part of the town							

		2	8	6	3		
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In the course of research, it was determined that only two districts (Uvinsky and Vavozhsky) obtained cattle in 2020, from which they got carcasses of the “super” category (21 carcasses). This is the highest grade in terms of categorization. Meanwhile, the main range of carcasses of young cattle was assessed in the categories “extra”, “excellent” and “good” (1311 carcasses). However, there were also farms from which they got carcasses of the “low” fatness category (Uvinsky, Seltinsky and Vavozhsky districts) (42 carcasses).

Under the results of the product evaluation of carcasses of adult cattle, it is worth noting that most of the carcasses were quite well-fed and were rated in the first category (table 2).

Table 2. Meat productivity of adult cattle based on the results of slaughter (assessment of the quality of carcasses in conformance with GOST 34120-2017 “Cattle for slaughter. Beef and veal in carcasses, half-carcasses and quarters”).

Adult cattle (cows, bulls), heads were slaughtered and carcasses were collected from them	VK1	VK2	VB1	VB2
	Kirov region			
	51	3		
	Uvinsky district			
	60			
	Seltinsky district			
	19			
	Grakhovsky district			
	77			
	Vavozhsky district			
	404			
	Country part of the town			
	21			

It should be noted that only cows were obtained for slaughter and primary processing. The bulls were not obtained for slaughter in 2020. Also, the supplies of calves and milkmen's calves were not registered.

In 2020, livestock was delivered in the same manner from the private sector, and its number from the total volume of obtained livestock amounted to 1.6% (25 heads). The prevalent share of livestock from the private sector was represented by adult animals (cows) – 21 heads.

Table 3. Meat productivity of young cattle based on the results of slaughter and the mass of carcasses obtained (total for all farms for 2020).

Young cattle							
	Super	Prima	Extra	Excellent	Good	Satisfactor y	Low
Amount	21	91	460	620	231	346	42
Total	1 811						

Carcass weight, kg	7049,4	26577,7	131868,9	132505,6	44688,2	81207	4817,1
Total, kg	608 854,1						

Table 4. Meat productivity of adult cattle based on the results of slaughter and the mass of carcasses obtained (total for all farms for 2020).

Adult cattle				
	VK1	VK2	VB1	VB2
Amount	632	16		
Total	648			
Carcass weight, kg	176796,4	3343,8		
Total, kg	180 140,2			

4 Discussion

Therefore, by the end of 2020, “Uvinsky meat factory” OOO received meat in carcasses from young cattle in the amount of 608.8 tons. Meanwhile, 917.5 tons of meat were manufactured in live weight. The amount of meat in carcasses from adult cattle was 180, 1 ton, and 386, 5 tons were received in live weight (table 3, table 4).

Understanding that about 40% of the beef obtained at the enterprise by the end of 2020 (788.9 tons) was sold for sale, then 238.2 tons remain for own consumption. According to the maximum standards of boneless meat yield and the quality of the meat received, the company is not able to fully meet the demand of all the high-level processing shops, which is at least 150 tons per year.

5 Conclusion

The studies performed are proving that it is not possible to satisfy the population's need for beef only at the expense of dairy or combined cattle. There is only one way out in this regard - the development of beef cattle breeding. Our country and the zone of the Western Urals have all the required conditions: the presence of natural forage lands and a sufficient amount of unused arable land; a low-cost intensive pasture technology of meat cattle breeding tested in many regions of the country; the resources of the breeding stock in meat and dairy herds for the organization of new meat farms for breeding and particularly commercial purposes.

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