IMPORTANCE OF BEEF IN THE DIET AND PRODUCTION IN THE REPUBLIC OF SERBIA[1]

Slavica Arsić[2]

Abstract

The main socio-economic goals of the development of meat production (beef and veal) and meat products are the satisfaction of the nutritional needs of the population, provision of raw materials for the food industry, the creation of necessary commodity food reserves and the necessity of exporting meat and meat products.

Beef meat (beef and veal) is considered to be the best quality meat with the most suitable nutritional properties; therefore the price of this type of meat is generally higher than the prices of other types of meat.

Meat is a high-quality food that is essential in the human diet, and which contains the most important nutrients: protein 12-25%, fat 1-20%, carbohydrates about 1%, as well as minerals (especially calcium and iron), and vitamins (riboflavin, thiamine, niacin). The importance of meat in the diet is supported by the statement that about half of the fatty acids in meat are unsaturated. Among them there are fatty acids with "long" chains, which are important in the diet of the elderly, because they are unable to synthesize them from fatty acids with "shorter" chains.

The paper also provides an analysis of the production and consumption of beef (beef and veal) for the observed period from 2012 to 2021 in the Republic of Serbia, during which period there is a certain cyclicality in production and consumption. The production of beef in the Republic of Serbia in the observed time period reached its highest physical volume in 2012. (82,000 t) after which it decreases until 2017 and 2019 (71,000 t) and in the following year there will be a slight increase to 75,000 t., at which level it has remained and there is no hint of stabilization or increase in beef production in the Republic of Serbia.

Key words: *beef, analysis, production.*

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2 *Slavica Arsić*, Ph.D, Research Associate, Institute of Agricultural Economics, Belgerade, Volgina 15,11060 Belgrade, Serbia, e-mail: slavica_a@iep.bg.ac.rs

Introduction

The basic parameter from which to start when analyzing the supply of cattle and beef production is the number of heads. The total number of cattle, as one of the potentials for beef production, and heifers that provide new heads for fattening, in the observed period from 2012 to 2021, is in permanent decline. The general crisis in animal husbandry did not bypass the cattle industry either. Inconsistency, initially the price of inputs and final products of cattle breeding, contributed to the decrease in the number of cattle. The average number of cattle in the Republic of Serbia, in the observed period from 2012 to 2021, was about 898 thousand head, with a tendency to decrease at an average annual rate of 5.8% (2.5-3%), which is shown in table 1. and in graph 1. Only in 2021, compared to the previous year, there is a decrease in the number of cattle by 3%.

Table 1. *The movement of the number of cattle in the Republic of Serbia and the calculation of the base and chain index, in thousands.*

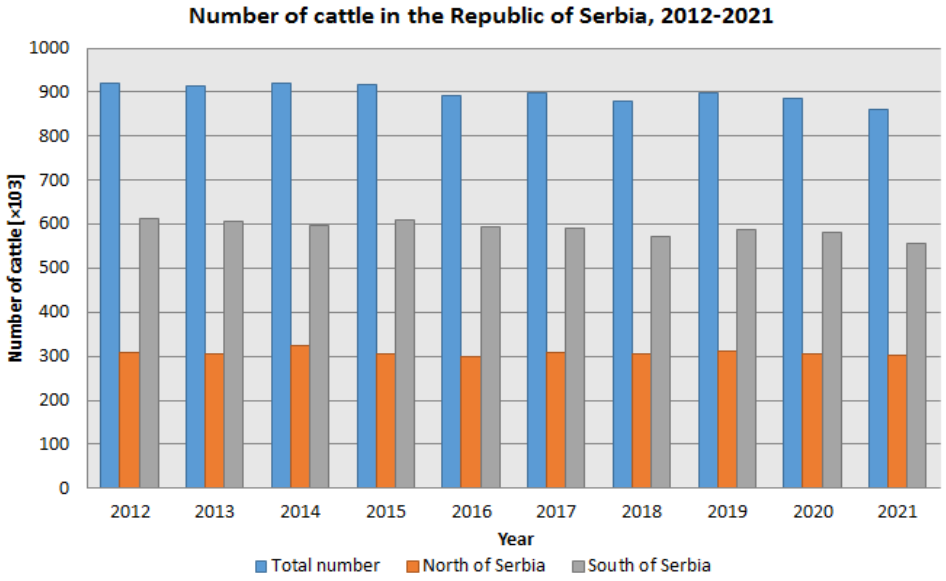
Republic Serbia - Total				Serbia North			Serbia South		
Year	**Cattle**	**Base index**	**Chain index**	**Cattle**	**Base index**	**Chain index**	**Cattle**	**Base index**	**Chain index**
2012	921			307			614		
2013	913	99.1	99.1	306	99.7	99.7	607	98.8	98.8
2014	920	99.9	99.9	323	105.2	105.5	597	97.2	98.3
2015	916	99.5	99.6	306	99.6	94.7	610	99.3	102.2
2016	893	97.0	97.5	299	97.4	97.7	594	96.7	97.4
2017	899	97.6	100.6	307	100.0	102.6	591	96.2	99.5
2018	878	97.6	97.6	305	99.4	99.5	573	97.0	96.9
2019	898	97.5	102.3	310	100.9	101.6	588	95.7	102.6
2020	886	96.2	98.6	306	99.7	98.7	580	94.5	98.6
2021	860	93.4	97.0	303	98.7	99.0	556	90.5	95.8
Aver-age	898			307			591	96.2	

*Source***:** SORS Statistical yearbooks from 2012 to 2021, Belgrade and author's calculation

The region of Serbia South has the largest number of heads, with an average of around 560,000 heads, which is 64.6% of the total number in the Republic of Serbia, while Serbia North participates with 35.3%. The north of Serbia has a smaller number of cattle, but in the observed period, it shows a slight increase, which is a consequence of the appearance of more organized farming units than in other areas of the Republic of Serbia and attempts to harmonize the potential of cattle production and installed processing capacities.

Beef meat (beef and veal) is considered to be the best quality meat with the most suitable nutritional properties, therefore the price of this type of meat is generally higher than the prices of other types of meat. Beef has excellent dietary properties, it is easily digestible, and 85-90% of it is used in the body (Lazarević et al., 1995).

Graph 1. *Research of author's according statistical data*



According to Gavrilov (2009), beef contains 123-310 calories (515-1298 KJ), 4-25 grams of fat (expressed per 100 grams of edible portion), and 19-21 grams of protein. Unlike beef, veal meat has better nutritional properties and contains 118-180 calories, is less fatty (3.1-11 grams of fat), and has a higher proportion of protein (19-22 grams), also per 100 grams of edible part.

Meat represents one of the most important foods, because it is the best source of high-quality proteins, and it contains all the necessary amino acids necessary for the construction of its own proteins. According to Ljubisavljević (1992), the energy value of meat depends mainly on its fat content, and if it is fattier, it has a higher energy value (table 2).

However, as a rule, fatty meat contains excess fat at the expense of protein, and protein is the most important component of meat. For these reasons, less fatty meat, with a lot of protein, is more valued, because using meat as an

energy source is very uneconomical, since energy from bread, sugar, oil, margarine, fat and other foods is much cheaper.

According to Čobić and Antov (2002), the examination of the demands of consumers of agricultural products in Germany showed that their primary concern is the safety of the origin of the product and in second place the healthy keeping of animals. The favorable price of the product was even in fifth place, built environment protection and care for the environment.

Table 2. *Ingredients and energy value of 100 grams of beef and veal meat*

Type of meat		Water gr.	Proteins gr.	Fat gr.	Energy value KJ
Beef	Leg ham	71,2	21,2	7,2	627,00
	Plate	67,6	20,8	9,8	714,78
	Flank	65,2	22,2	12,3	836,00
	Shoulder	69,5	20,8	9,3	698,06
Veal	Leg ham	75,4	22,3	0,8	401,28
	Plate	74,8	22,7	1,7	422,18
	Flank	72,0	22,8	3,5	514,14
	Shoulder	74,8	21,4	2,4	447,26

Source: Ljubisavljević, 1992.

Meat is a good source of "B" complex vitamins, but it is poor in fat-soluble vitamins. According to Lončiškar and Milojević (1987), in developed countries protein of animal origin accounts for about half of the total protein. For example, vitamin "B12" is excluded from animal products, as well as most other vitamins ("B2", "B6"), and about 80% of calcium and 70% of phosphorus also come from animal products. (S. Arsić, 210.)

Production of beef meat

Data on the amount of beef produced in the Republic of Serbia for the period from 2012 to 2021 are given in table 3 (SORS). Also, the calculated values of base and chain indices of meat production are given.

The base indices for the Republic of Serbia show the greatest trend of production decline, in 2013 by 14.6% compared to the previous base year of 2012. Production dropped from 82,000 tons of meat to 70,000 tons, which is 12,000 tons less than in 2013, and there is also a decrease in production in 2017 and 2019 compared to the base year by 7.3%.

According to the calculation of chain indices, which shows the movement of meat production, cyclical production can be achieved, because in some years there is a decrease and then a slight increase, the night decrease is in 2013, in 2013, in 2013. 14.6%), while in the rest of the observed period there is an increase or stagnation of production, the biggest drop is in 2017 of 7.8% and in 2019 of 6.6%.

Table 3. *Production of beef in the Republic of Serbia and calculation of base and chain index, in thousands of tons*

Republic Serbia				
Year	**Beef**	**Base index**	**Chain index**	**Meat consumption/ inhabitant**
2012	82	**Base year**		11.4
2013	70	85.4	85.4	9.7
2014	73	89.0	104.3	10.2
2015	77	93.9	105.5	10.7
2016	77	93.9	100.0	10.7
2017	71	92.7	92.2	9.9
2018	76	86.6	107.0	10.6
2019	71	92.7	93.4	9.9
2020	75	91.5	105.6	10.5
2021	75	91.5	100.0	10.5
Average	**75**	**90,8**	**99,3**	**10,4**

Source: Own calculation based on statistical data from statistical yearbooks for the analyzed period, SORS, Belgrade

The general conclusion, in relation to the base and chain indices, for the observed time period from 2012 to 2021, would be that there is a certain cyclicality in the movement of production, but that there is no hint of stabilization or increase in beef production in the Republic of Serbia.

Cycles have a very negative effect on the quality of cattle breeding in a country. The most vulnerable are small farms that completely abandon production in the period of contraction, and in the period of expansion including cattle of untested quality in breeding.

To achieve production growth, it is necessary to build a set of anti-cyclical measures and instruments, to mitigate the cycles that are inherent in livestock production. Primarily, we are referring to regulatory - intervention measures on the market, which would be calculated to eliminate market disturbances. The primary prerequisite is to reserve, both animal products and animal feed.

According to Ivanović (2018) the possibility of increasing the volume of beef production can be implemented by mass production in the cow-calf system. In this system, production is with a low level of investments and with the use of available natural resources, however, on the other hand, it is not economically justified without public subsidies, i.e. it is associated with a high level of investment risk.

Production of veal meat

In order to get a true picture of consumption, in addition to household consumption, the consumption of other large consumers (schools, hospitals, catering facilities, etc.) should be taken into account, but this is impossible due to the lack of statistical data.

The data presented in SEEDEV (2020) related to the production of beef meat produces about 50% for an unknown customer, 20% for own needs, and about 30% for an organized market chain.

Household member, was 10.4 kilograms, with notable cyclicality. In the last year, compared to the initial consumption, it was 0.9 kilograms less. The biggest drop in beef consumption was recorded in 2013, 2017, and 2019. The decrease in beef consumption was influenced by numerous factors, among which the most significant are: a decrease in consumer purchasing power, relatively high retail price, certain substitution with pork and beef, changes in market supply, consumer habits, tastes, etc.

The average consumption of beef in the observed period from 2012 to 2021 in the The consumption of livestock products from own production is very pronounced, and in recent years it has been increasing, which in itself is not a significant incentive to increase production.

There are significant differences in beef consumption by socio-economic household category. The highest consumption is in non-agricultural households, followed by mixed ones, and the lowest in agricultural households. The average consumption of beef (beef and veal) and meat products is 10.4 kilograms per inhabitant per year. It is five kilograms less than the European average per inhabitant. Serbia is in 17th place in Europe, ahead of Portugal and behind Great Britain. In the structure of meat consumption, in our country, it participates with 23% and is in second place after pork. Comparing the retail prices of beef with pork and poultry meat, it should be noted that this

type of meat is more expensive, on average by about 50% than pork, and even by 280% than chicken meat, which will still affect the lower consumption of this type of meat.

Data on the consumption of beef in the Republic of Serbia, for the period from 2012 to 2021, are given in table 3.

The general conclusion for the observed time period from 2012 to 2021 would be that there is a certain cyclicality in consumption, and that there is no hint of stabilizing and increasing the consumption of beef in the Republic of Serbia. In the observed period, the present serious economic crisis, led to a decrease in the purchasing power of consumers, as has already been established, there was a significant decrease in the consumption of this type of meat, and the export of beef as an important export item also decreased. In the coming period, we can, unfortunately, expect a further decrease in the consumption of beef meat due to the increase in the consumption of cheaper types of meat (primarily pork and poultry meat), as well as the consequence of the high share of imported quantities of other types of meat and meat products.

Conclusion

Despite favorable natural conditions, the Republic of Serbia has seen a decrease in the number of cattle (calves and calves) at an annual rate of 2-3% in the last decade. During the research period, the number of cattle is decreasing, which also results in reduced production. The production of beef in the Republic of Serbia in the observed period reached its highest physical volume in 2012. (82,000 t) after which it decreases until 2017 and 2019 (71,000 t) and in the following year there will be a slight increase to 75,000 t., at which level it has remained.

Beef consumption increases or decreases cyclically due to relatively high prices and declining living standards. Consumption of beef in the observed time amounted to 10.4 kilograms, and together, beef and meat products amounted to 12 kilograms. The level of the market price of beef (beef and veal) meat is of great importance for meat consumption (especially in conditions of low consumer income). An increase in the price of this product leads to greater or lesser demand and consumption of this product.

In the end, as a general conclusion, our agriculture, and with it the production of beef, is in a fairly independent position. And if we were to compare

that production with foreign-world production, then the ratings are even more negative. With new measures, the Government of the Republic of Serbia is trying to contribute to the improvement, which still requires a longer period.

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