



Production and trade of milk and dairy products in Serbia

Jasna Đorđević^{a*}, Tijana Ledina^a, Marija Kovandžić^a and Snežana Bulajić^a

^a University of Belgrade, Faculty of Veterinary Medicine, Bulevar oslobođenja 18, 11000 Belgrade, Serbia

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ABSTRACT

Milk plays a significant role in human nutrition, and more than 6 billion people worldwide consume milk and dairy products. In 2019, total milk production in Serbia reached 1,597 million litres, cow's milk accounting for almost 95%. Out of the total amount of cow's milk produced in 2021, 58.2% was purchased. The share of milk delivered to dairies increased by over 50% in the previous decade. The results in the dairy sector are directly influenced by dairy cattle farming in Serbia, which has been experiencing a decrease, but there has been a consistent increase in milk yield over the past few years. Production of dairy products in Serbia recorded a decrease during the last ten years, except for dry products (cream powder, whole and partially-skimmed milk powder), which recorded an increase. Trade in dairy products is very volatile, as dairy trade flows can be affected by the overall economic situation in a country, fluctuations in supply and demand, changing exchange rates and political measures. The largest dairy product trade in Serbia is conducted in milk and cream, followed by cheese, and then milk and cream powder.

1. Introduction

More than 6 billion people worldwide consume milk and dairy products (Visioli and Strata, 2014; Grandsir et al., 2023). Milk plays a significant role in human nutrition, contributing approximately 8 to 9% of the dietary energy supply, 19% of the dietary protein supply and 12 to 14% of dietary fat supply in Europe (FAO, 2013).

In 2021, global milk production amounted to approximately 928 million tonnes, reflecting a 1.3% growth compared to 2020. This increase in production was observed across various geographical regions, except for Europe and Oceania, which experienced a decline in milk production. Milk production in Europe in 2021 underwent a slight decrease of 0.4% compared to 2020. This decline can be attributed primarily to decreases in production within Ukraine (OECD-FAO, 2021; FAOSTAT,

2022). Out of the total global milk production, cow's milk contributes to 81% of the milk, followed by buffalo's (13%), goat's, sheep's and camel's milk combined (4%; FAO, 2019). In Europe, raw milk production in 2021 amounted to 161 million tonnes, of which 96.4% was cow's milk, 1.9% ewe's milk, 1.5% goat's milk and 0.2% buffalo's milk (Eurostat, 2022). Developing countries have witnessed a remarkable increase of their share in global production of milk. Additionally, there has been an increase in per capita milk and dairy products consumption (Hemme, 2003; Knips, 2005). Most of the milk quantity (80 to 90%) in developing countries is processed by small-scale processors who produce a variety of milk products. The type of processing can vary depending on country and region, and relates to local tastes, dietary habits, culinary traditions and market demand (FAO, 2023).

*Corresponding author: Jasna Đorđević, jasna.djordjevic@vet.bg.ac.rs

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2. Milk and dairy product production in Serbia

Household consumption of milk and dairy products in Serbia is shown in Table 1. The annual per capita milk consumption in Serbia decreased by 33% from 2012 to 2019 (55.1 litres in 2012; 36.4 litres in 2019). The consumption of white cheese is higher compared to other dairy products in Serbia, with an average of around 10 kg per person annually from 2012 to 2019, followed by consumption of approximately 1 kg of kajmak per person per year and consumption of butter ranging from 0.1 to 0.3 kg per person annually.

The total milk production in 2019 in Serbia on agricultural holdings amounted to 1,597 million litres, with cow's milk production reaching 1,509 million litres, accounting for almost 95% of milk

produced (Table 2; *Statistical Office of the Republic of Serbia*, 2022). The overall milk quantity includes all the milk obtained through milking, as well as colostrum which is used as animal feed.

Production of cow's milk contributes 6.3% of the total value of agricultural production, making it one of the most money-making products of Serbian agriculture. Out of the total amount of cow's milk produced (estimated at around 1,473 million litres), approximately 858 million litres or 58.2% were purchased in 2021. The share of milk delivered to dairies increased by over 50 percent in the previous decade (in 2012 — 49.4%; in 2011 — 47.5%; *Statistical Office of the Republic of Serbia*, 2022). However, a significant amount of milk (approximately 35%) still remains to be sold on farm, which is substantially more in comparison to the European Union, where almost 94% of

Table 1. Household consumption of milk and dairy products in Serbia*

Type of product	Measurement unit	2017	2018	2019	2021
Milk (raw, pasteurized and sterilized)	L	90.8	102.6	97.5	91.3
Fermented dairy products	L	78.8	83.6	83.5	88.8
White cheeses	kg	22.7	25.9	25.0	21.2
Other dairy products	kg	22.1	20.4	22.3	28.1

*Due to the COVID-19 pandemic, the Statistical Office of the Republic of Serbia suspended the "Household Consumption Survey" field research in mid-March 2020

Data are from the Statistical Office of the Republic of Serbia (2022)

Table 2. Production and use of cow's, sheep's and goat's milk from 2013 to 2021 (million litres)

Year	Cow's milk	The amount of cow's milk used for human consumption and processing	Ewe's milk	The amount of sheep's milk used for human consumption and processing	Goat's milk	The amount of goat's milk used for human consumption and processing
2013	1,451	1,416	18	18	34	32
2014	1,492	1,457	20	19	38	37
2015	1,501	1,470	19	19	44	43
2016	1,504	1,467	17	16	37	36
2017	1,506	1,467	14	13	33	32
2018	1,493	1,457	18	17	34	33
2019	1,509	1,467	11	11	31	30
2020	1,495	1,457	9	9	34	33
2021	1,473	1,441	10	10	34	34
2022	1,425	1,394	9	8	34	33

Statistical Office of the Republic of Serbia, 2022.

Table 3. Products from cow's milk obtained in dairies for the market (in thousand tons)

Year	Milk ¹	SC	FP	CM	SMP	Butter	Cheese	CP/WMP/PSMP
2013	20.92	4.02	17.85	0.09	0.10	0.08	0.52	2.35
2014	19.77	2.50	16.73	0.04	0.2	0.17	0.70	2.81
2015	19.89	2.47	17.55	0	0.10	0.21	0.40	3.38
2016	19.64	2.48	18.22	0	0.40	0.16	0.33	3.68
2017	18.73	2.34	17.12	0	0.10	0.16	0.33	4.14
2018	19.08	2.29	16.46	0	cd	0.11	0.35	4.39
2019	17.84	2.41	16.60	0	cd	cd	0.44	4.67
2020	19.56	2.70	17.46	0	cd	cd	0.45	4.43
2021	17.41	2.74	18.39	0	0	cd	0.44	4.42
2022	17.59	2.70	17.62	0	cd	cd	0.41	4.25

¹Pasteurized and sterilized milk; SC- Sour cream; FP – Fermented products; CM – Concentrated milk (condensed and evaporated); CP – Cream powder; WMP – Whole milk powder; PSMP – Partially skimmed milk powder; SMP – Skimmed milk powder; cd – confidential data
Statistical Office of the Republic of Serbia

milk is delivered to dairies (Eurostat, 2022; Statistical Office of the Republic of Serbia, 2022).

The results in the dairy sector are directly influenced by dairy cattle farming in Serbia, which has been experiencing a decrease and noticeable decline in the number of milking cows. In brief, the number of milking cows in 2014 amounted to 437,000 (a short-term stabilization compared to the previous period), but in 2017, the decline in the number of milking cows had continued, reaching 429,000. By 2022, the number of milking cows had decreased further to 374,000. On the other hand, dairy cattle farming showed a slight, but consistent increase in average milk yield per cow over the past few years, which can be the result of improved breeding and selection of dairy cows, education and support of producers with supportive agricultural policies including subsidies, loans, and other, as well as improvement of nutrition and husbandry conditions (Statistical Office of the Republic of Serbia, 2022).

The milk delivered to dairies is processed into different dairy products. In September 2022, dairy production in Serbia recorded a decrease of approximately 6.4% compared to September 2021. Production of cream powder and whole and partially-skimmed milk powders increased, while production of sour cream and fermented products was relatively constant over the last ten years (Table 3). The inventory levels have increased by about 2.5%. However, the overall sales for the period from January to September 2022 were lower by 0.5% compared to the same period in 2021.

3. Trade of milk and dairy products

The dairy sector is highly localised, as milk is a perishable product, and dairy products are mostly consumed in the country or region of production. Only a small fraction of global production is traded internationally (Knips, 2005). One of the characteristics that makes the dairy sector unique is the differentiation between into non-tradable (fluid “drinking” milk) and tradable (“manufacturing” milk). Trade differs depending on the product and its suitability for trade. Hence, trade is of different importance depending on the product (and its suitability for trade), with milk powders globally having the highest share, as 30% of skimmed milk powder, 10 to 15% of butter and retail packed condensed milks, 3% of yogurt and other fresh dairy products, and less than 0.5% of packed cream and packed liquid milks is traded internationally (IDF, 2002). Whole and skimmed milk powders account for about half of the total dairy trade, and are almost exclusively imported by developing and transition countries (Knips, 2005). The limited participation of developing countries, in which Serbia belongs, can be partly explained by the fact that most countries in the region strive for self-sufficiency in food, despite the fact that milk production is very important in the region. Trade in dairy products is very volatile, as dairy trade flows can be affected by the overall economic situation in a country, fluctuations in supply and demand, changing exchange rates and political

Table 4. The trade of milk and dairy products in Serbia (quantity in tonnes and value in thousands of €)

	Product type		
	Milk and cream	Milk and cream powder	Cheese
Export			
2018			
Quantity (t)	28.847	1.475	14.903
Value (000 €)	1	1.640	45.490
2019			
Quantity (t)	76.347	1.118	15.789
Value (000 €)	24.349	1.578	47.587
2020			
Quantity (t)	45.789	532	15.104
Value (000 €)	15.549	768	45.043
2021			
Quantity (t)	36.980	92	15.685
Value (000 €)	15.639	279	47.126
Import			
2018			
Quantity (t)	33.064	5.727	6.034
Value (000 €)	18.191	10.984	23.061
2019			
Quantity (t)	37.061	3.226	7.769
Value (000 €)	20.623	7.061	29.957
2020			
Quantity (t)	41.658	4.618	9.393
Value (000 €)	23.428	19.443	35.632
2021			
Quantity (t)	35.282	3.857	11.523
Value (000 €)	22.269	9.363	45.520

*Statistical Office of the Republic of Serbia

measures. According to the data from the Statistical Office of the Republic of Serbia, trade varies from year to year. The largest trade is conducted in milk and cream, followed by cheese, and then milk and cream powder, and it varies from year to year (Table 4; *Statistical Office of the Republic of Serbia*, 2022).

4. Conclusion

The manuscript provides insights into the milk and dairy industry in Serbia, contributing to better understanding of production trends and trade dynamics.

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