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STATUS OF MILK PRODUCTION SECTOR IN MONTENEGRO

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Invited paper

Abstract: Quantitative and qualitative parameters of the milk production sector in Montenegro, addressing both production and processing have been evaluated. In Montenegro, livestock production is focused on cattle, sheep and goats and to lower extent pig and poultry. Montenegro dairy sector characterised by small-scale farming. Milk production based on about 26270 farms with average herd size of 2.9 cows and milk yield 2700 kg/cow has a very different structure to that in the EU-27. The small-scale structure of Montenegrin milk production results in the sector operating with a number of inefficiencies at the production level. Regarding processing diary industry there have been the positive changes: new dairies were established, collection area is enlarged, range of products is also widened. Maybe the most promising change is cheese production and its presence in many markets. Total self-sufficiency rate of milk and dairy products is at a level of about 60%. The remaining needs are imported, which is around 30 million euros. In order to strengthen production and market position of domestic dairy products and to further develop dairy sector, as very specific and sensitive one, the efforts should be focused on remove weak points and to make stronger the whole value chain. In addition to the domestic support schemes, pre-accession EU support (IPARD) should target investments in primary production of milk and processing sector.

Key words: milk production, quantitative and qualitative parameters, Montenegro

Introduction

Agriculture is a very important sector in the Montenegrin economy, since it participates in total Gross Agricultural Output (GAO) by 8.3% and plays a multifunctional role. In spite of agricultural resources available (about 0.80 ha of agricultural land per capita), the country is highly dependent on import of food. This goes also for meat and milk as the main products of animal origin. Livestock production is with around 170,000 tons of milk production (23% of GAO) and 17,000 tons of meat production (28% of GAO) per year the largest contributor to Montenegro's agricultural economy. Most significant farm products are cattle, sheep and goat's milk and the production of lamb with traditional breeds as well as veal and beef meat of cattle.

Montenegrin milk production has traditionally been concentrated in the private sector. Before nineties of last century, few collective or state farms – known as 'agricultural holdings or combinats'' had been existed. During transition in nineties, some of them were collapsed (closed completely), few continued to function and passed privatization. Nowadays, all milk production comes from privately owned farms. One of the main characteristics of Montenegrin dairy sector is small share of milk processed by the dairy industry, still less than 15%. Significant part of the milk goes to the calves feeding (20-25 %). The major part of the milk produced is retained on the farms. It is used in households for making home-made dairy products (different types of cheese, yoghurt and specific autochthonous products like kajmak, sour milk etc.) or for family member's consumptions as fluid milk. Major product sold directly from the households is cheese, then kajmak follows. However, the quantity of fluid milk sold directly to consumers does not play significant share in the total quantity.

Very important for further development of the dairy sector is fact that Montenegro currently has the status of candidate country to become member of the European Union (EU) and it fully implements the Stabilization and Association Agreement (SAA), signed in October 2007 and entered into force as Interim Agreement in January 2008. Furthermore, the harmonization with the World Trade Organization (WTO) principles and the implementation of the regional Central European Free Trade Agreement (CEFTA) are currently important issues for Montenegro.

Structure of milk production at primary level - Livestock sector

Rearing of ruminants dominates in the Montenegrin livestock sector, primarily due to the fact that meadows and pasture have a very high participation in total agricultural land. Montenegro does not fully use its production potential in the livestock sector. Total number of livestock units (LSU[1]) is about 110,000. If it is compared only to the total area of meadows (127,000 ha), even ratio is bellow 1. By adding only 1/3 of pasture available to the area of meadows, result for livestock density is about 0,5 LSU/ha, which is very low. Regarding size of the population, all species of livestock have shown downward trend in period 2000-2009.

Table 1. Total population size of the main livestock species and milk production

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cattle, 000	180	179	178	183	175	117	118	115	107	101
- cows and heifers in calf	128	121	120	124	127	86	83	80	73.4	71
Sheep, 000	306	293	244	241	257	255	249	222	209	200
- breeding ewes	236	230	195	192	193	191	198	170	161.0	160
Goats, 000										40*
Total milk production, 000 t	202.5	203.5	208.8	198.3	191.3	193.8	184.7	182	169.6	162.7
Cows milk , 000 t	188.3	191.5	198.0	186.8	178.2	180.3	173.0	167.9	157.2	150.4
Sheep milk, 000 t	14.2	12.0	10.8	11.5	9.1	9.5	8.7	9.1	7.4	7.3
Goat milk, 000 t					4	4	4	5	5	5.0*
Milk delivered to dairies, t					19.3	21.4	22.1	20.5	23.8	22,1
% of milk delivered to dairies					10.1	11.1	12	11,2	14,0	13,6

Source: *MONSTAT*, * Goat population size and milk production is estimation of Biotechnical faculty

The cattle breeding is the largest sub-sector in the livestock production and most important sector for milk production. Total cattle population has decreased in recent 10 years and it counts 101,000 heads in 2009, while cows and heifers participate by 70% in it. Annual milk production is 150,000 tones and meat is approximately 6,800 t. The total value of cattle production is estimated on around 80 million euro. Cattle production is present at majority of agricultural holdings. Dual purpose production is prevailed. Only cca 15% of total milk production is delivered to dairies. The rest is used in households; significant part for fattening of calves, while rest is used for making dairy products. Average farm size is about 3 breeding heads which is very different from the size structure of the old EU member states, where the average is around 30, ranging from 14 cows per holding in Greece and Austria to 86 in Denmark (Eurostat). This makes the dairy sector in Montenegro a typically small scale family business.

According to data of identification and registration of cattle done by the Veterinary Directorate of Montenegro, the Montenegrin dairy herd in 2008 counts

[1] Livestock unit is equivalent for aggregation of the different livestock species and poultry. One adult cattle is 1 LSU, one animal of cattle young stock is up to 0,6 LSU, 8 adult sheep or 10 adult goats are equivalent to 1 LSU.

75,284 cows and heifers in calf at 26,270 of holdings (Table 2). Major difference exists between the country's performance of cow yields on average (2700 kg/cow) and the yield at the farms in regular milk recording control. Relatively small part of the population included in regular milk recording scheme (around 3%) achieved much higher milk yield. In 2010, average milk yield in standard lactation (305 days) was 5216 kg, for 1989 lactations completed.

There is know clear distinction between dairy and beef breeds of cattle. Majority of the population (close to 50%) belongs to the different type of crosses used for dual purposes, milk and meat production. However, there is no category of suckler cows in Montenegro; the whole population of cows is used for milk production. Majority of the farmers produce milk in the less favoured hilly-mountain areas. An increase of the percentage of pure-bred animals (Holstein-Friesian, Brown and Simmental breed) would result in increase of yields of milk in the future. Only small percentage of the farmers, around 15% of all dairy cows of Montenegro on their farms, are presumably the bigger and more commercially oriented farms. These farms have largely Holstein-Friesian or Brown breed cows and use much more concentrates feed than the typical small-scale farms.

Table 2. Size structure of the livestock farms in 2008

	FARMS		COWS & HEIFERS IN CALF		
	No. of farms	% of total	No. of head	% of total	Average farm size
TOTAL	26,270	100.0	75,284	100.00	2.9
1 – 2 heads	15560	59,3	22600	30.0	1.45
3 – 4 heads	6622	25.2	22285	29.6	3.4
5 – 6 heads	2357	8.9	12685	16.9	5.4
7 - 8 heads	916	3.4	6793	9.0	7.4
8 – 10 heads	747	2.8	7497	8.5	10
11-15 heads	309	1.2	3805	5.1	12.3
16-20 heads	75	0.3	1332	1.8	17.8
21-30 heads	42	0.2	1058	1.4	25.2
31-50 heads	19	0.1	725	1.0	38.2
>51 heads	4	0.02	562	0.8	140.5

Source: Veterinary Directorate of Montenegro

Sheep breeding sector is characterized by the semi extensive way of production. It is based on rearing of local breeds (pivska and sjenicka as most important), used for milk and meat while wool has neglected economic value. Sheep breeding is most present in distant rural areas which face problem of abandonment of vital workforce. Annual volume of output is about 3,600 t of meat and 7,000 t of milk. Total annual value of sheep production is approximately 18 millions euro.

Goats breeding is also an important sector, especially in the karst region. There is no official figure on total population number, however in 2010 there were 409 flocks, raising more than 10 animals in flock, which were eligible for subsidies, with total of 19,500 animals. Our estimation says that total number is close to 40,000 breeding animals. Annual volume of output is about 550 t of meat and 5,000 t of milk. Total annual value of goat production is about 6 millions euro.

Industry structure at processing level

General characteristic of the dairies is very limited capacities, majority of them are operating at a very small scale. There is a seasonality in production of raw milk (due to seasonality in cows' calving) as well as in total consumption (a pick of the tourism season in summer months causes increase in consumption). Due to that fact, some of the dairies still relay to the significant extent on the purchasing of raw or pasteurized milk from Serbia.

The farmers used to sell milk directly without intermediation of cooperative or the association. Only one dairy in the north-eastern part of the country organizes purchasing milk from the milk collection centres, owned by the farmers groups. Collection of milk is organized as a ''so called'' line collection, which means that dairies collect milk from every individual farmer directly at farm gate, what increases collection costs.

The quality of the milk in terms of its content (butterfat 3.96% and protein 3.23%) is satisfied, but from the hygienic point of view, it is not (somatic cells count 572,000 and total bacteria count 4,981,000) – Biotechnical faculty - Milk Laboratory Annual Report 2009. The main reason for that is small scale production, majority of the small producers do not have appropriate facilities for milking and cooling milk before delivering to the dairies. Even, all dairies still do not have appropriate tracks for collection and transport milk from farms to the processing facilities. In recent years the share of milk delivered to dairies has been increased from 19,308 t in 2004 to 22,318 t in 2010. It contributes to the increase of intake of milk by dairies in total quantity produced, from 10% to 14%.

This shows that extremely small part of the Montenegrin milk production has become commercial. A major part of milk is processed into the yoghourt, than fresh milk and sour cream. Industry production of cheese has positive trend in last few years. Last 13 dairies in table 3, with small capacities, produce only cheese. Many small cheese factories have started to operate, but total production, in spite of very positive upward trend, is still modest (around 500 t of cheese in 2010). Around 130 million litres of milk production retains on the farms. A major part of this volume – some 73.5% - is used in households, either for consumption as liquid (milk and yoghurt) or for processing into different dairy products, mainly different types of cheese. Major quantity of the locally produced cheese in retail chains still comes from the households' production. The other 26.5% is used for feeding of calves.

Table 3. List of the dairies, with their share in milk intake (2004-2010), %

Dairies company	2004	2005	2006	2007	2008	2009	2010
Mljekara PG	35.67	25.06	19.15	16.09	8.05	1.45	0.00
"Mljekara NIKA"	7.09	13.99	18.33	16.23	13.24	15.83	17.47
"Srna" - Niksic	15.85	15.68	14.87	17.83	15.80	17.85	17.76
ZZ "Kooperativa" - Pljevlja	6.48	5.81	5.98	5.56	6.30	8.09	7.16
Mljekara "Zora" – Berane	11.80	12.77	13.55	12.50	11.20	7.48	3.57
Šimšić Montmilk – Danilovg.	15.09	14.97	13.28	14.83	14.07	20.81	26.86
'Arena Milk" - Ulcinj	0.20	0.70	1.57	2.04	2.73	2.64	2.87
Mljekara "Žir" – Bijelo Polje	2.74	2.22	1.82	1.95	1.02	1.28	1.21
'Iković kompani" – Danilovg.	3.26	1.94	1.42	0.13	0.00	0.00	0.00
Ital produkt - Podgorica	0.00	0.42	0.48	0.87	0.78	0.00	0.00
Doo "Amiprom" – Rozaje	0.00	2.82	3.35	3.04	2.73	2.68	3.00
AD "Krisma-mlik" - B. Polje	0.00	0.67	0.39	1.04	7.04	0.32	0.00
Doo "San Nikola" - Ulcinj	0.00	0.00	3.80	6.04	7.91	5.57	1.12
ZZ "Dona" - Danilovgrad	1.33	1.96	1.28	0.12	0.00	0.00	0.00
ZZ "Čevo" - Cetinje	0.29	0.61	0.12	0.20	1.12	1.69	2.07
ZZ Cijevna - Podgorica	0.05	0.37	0.61	0.63	0.62	0.69	0.73
Vulaš-Čevo - Cetinje	0.00	0.00	0.00	0.39	1.42	2.61	2.83
Niksen trade - Cetinje	0.00	0.00	0.00	0.46	0.11	0.00	0.90
Rm Komerc - Pljevlja	0.00	0.00	0.00	0.05	2.36	3.50	3.64
Dinoša-Bubulj - Podgorica	0.00	0.00	0.00	0.00	3.51	6.68	5.71
Bajički pištet - Cetinje	0.00	0.00	0.00	0.00	0.00	0.80	2.01
S-Modus-Proplanak - Niksic	0.00	0.00	0.00	0.00	0.00	0.05	0.27
Milmarcgroup - Cetinje	0.00	0.00	0.00	0.00	0.00	0.00	0.38
Eko Mont-Korita - Bijelo Polje	0.00	0.00	0.00	0.00	0.00	0.00	0.19
HM Durmitor – Zabljak	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Milka - Bijelo Polje	0.00	0.00	0.00	0.00	0.00	0.00	0.16
Total, %	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total milk delivered to dairies, t	19307.9	21410.3	22061.2	20477.7	23830.3	22047.1	22317.9

Source: Ministry of Agriculture and Rural Development

Production, consumption and trade developments

The supply and demand balance sheet presented in table 4. summarizes the key data about developments in production, consumption and trade for the period 2004-2009. Production has been slowly decreased in the mentioned period, especially in last two years. However, domestic production is still lag behind total consumption, thus Montenegro has a big deficit in the dairy sector. It is a net importer, more than 30 million of euros go to the import of milk and dairy products annually. The rate of import has increased and rate of self-sufficient has decreased after 2006 because after independence import of dairy products from Serbia has started to register as import, what was not case before that.

Table 4. Supply/demand balance sheet on dairy products 2002 – 2009 (in tons equivalent of 3.5% fat milk)

	2004	2005	2006	2007	2008	2009
Production	192,486	195,811	187,791	189,000	175,088	166681
Imports	36,284	39,590	44,152	71,410	95,379	92,250
Exports	185	287	258	145	115	2.5
Supply available	228,585	235,114	231,485	260,258	270,345	258,812
Human consumption *	165,015	169,852	176,024	215,410	226,249	215,128
Avg. Cons. Per capita, l	255	260	265	265	265	265
Self-sufficiency rate (%)	84.2	83.3	81.1	66.8	58.2	57.0

* - Includes consumption of local population and the tourists.

Production and imports together, minus exports and stock changes give available supply for domestic consumption. Montenegro is a net importer of agricultural products generally; the same goes to the dairy products. The imports of dairy products have steadily been grown in recent years (table 4). In addition to the growing tourist's presence, significant number of the foreigners, as temporarily employed persons, have been staying over the year (5-7% of total population), in recent years.

Consumption of milk and milk products is relatively high, and it reached about 265 kg/capita in recent years (130 kg of milk and 17,5 kg kg of cheese). Reason for this very high consumption is that Montenegrin inhabitants traditionally consume a lot of dairy products like cheese, locally produced yoghourt, cream – so called kajmak and the other dairy products. It is not reflection of the improvements in living standard; it is rather traditional habit and pattern of nutrition in many parts of the country.

Comparisons with other EU-27 countries indicate that the average consumption per capita of cheese in Montenegro is much close to the EU average

(17.5 kg per capita in Montenegro, 18.4 in EU25), as well as consumption of liquid milk is above the EU-27 average (130 kg in Montenegro, 92.6 kg in EU) - (Source: International Dairy Federation, Bulletin 423/2007).

Government policy in the dairy sector

Since 2000 Montenegro has been trying to improve milk sector by implementing international standards. The Livestock Selection Service (LSS) was established in 2000, since that it has performed milk recording on the larger commercial farms, according to the ICAR rules (International Committee for Animal Recording). Since 2002, has been implementing new payment scheme for row milk, based on four parameters: butterfat and protein content, Somatic Cells Count (SCC) and Total bacteria count (TBC), instead of just butterfat content previously used. The analyses of these parameters are carried out by the national Milk laboratory, belongs to the Biotechnical Faculty in Podgorica. The lab is properly equipped with sufficient capacity for the whole sector. The dairies are obliged to implement criteria for determine raw milk price according to four mentioned parameters, adopted by the Government in 2002.

There are several support measures implementing with the aim at to improve competitiveness of the milk production sector. There is a milk premium of 0.05 euros to producers for each litre of milk collected by the dairies. Farmers also receive premiums per head of cows and heifers (it ranges from 60 to 70 euros per head). In addition, there is a support of 0.025 euros per litre of milk collected to the dairies, as a compensation for collection costs of the dairies. The dairies are also supported to implement hygienic standards, i.e. HACCP, up to 50% of their costs are covered from the budget.

Conclusion

In summary, main characteristic of Montenegrin dairy sector at primary level are:

- a small scale production, especially in the hilly-mountain areas, which is very labour intensive;
- low average yields on small-scale farms in many instances due to the fact that low productive crosses of different breeds are reared (used for milk and meat production);
- high costs of production,

As far as the milk processing sector is concerned:

- in recent years several new small dairies have been established, but their position on market is still weak;
- majority of new dairies are oriented to produce plain yoghurt, without diversification of the product range;

- the dairy processing industry lacks product specialisation and targeted marketing;
- the scale of the processing industry is generally too small to face international competition.

Based on presented data, it can be concluded that Montenegrin dairy sector has certain advantages and disadvantages. Presented characteristics of Montenegrin dairy sector indicate that its competitiveness is rather weak. The small scale farm structure, law milk yields, the deficiencies of the milk collection system, the low hygienic level of raw milk production and the difficulties in the access to financial means, all appear to be weak elements in the competitiveness of the Montenegrin dairy sector.

Developmental policy should be focused on remove certain bottlenecks and be more cost effective on production and distribution levels; search for value added by new product development and invest in marketing of existing 'special' products. Pre-accession EU support (IPARD) should target primary production of milk and processing sector too. This policy, funded by the EU, will become increasingly important in encouraging economic developments in rural areas, where agricultural income and employment decline over time.

Stanje mlekarskog sektora u Crnoj Gori

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Rezime

U radu su proučavani i prezentovani osnovni kvantitativni i kvalitativni parametri mlekarskog sektora u Crnoj Gori, posmatrani i sa aspekta primarne proizvodnje i prerade. Stočarska proizvodnja u Crnoj Gori dominantno je usmerena na gajenje goveda, ovaca i koza, a u manjoj meri svinja i peradi. Osnovna karakteristika proizvodnje mleka jeste proizvodnja zasnovana na malim farmama. Proizvodnja koja se odvija na oko 26270 farmi sa prosečnom veličinom farme 2,85 grla i mlečnošću od 2700 kg/kravi veoma se razlikuje od strukture primarnog sektora u EU-27.

U sektoru prerade mleka došlo je do pozitivnih promena: osnovane su nove mlekare, povećan je obuhvat područja sa kojih se vrši otkup, a takođe je proširen asortiman proizvoda. Najznačajniji pomak učinjen je u segmentu proizvodnje sira i njegove zastupljenosti u mnogim prodavnicama i ugostiteljskim objektima.

Ukupna samosnabdevenost mlekom i mlečnim proizvodima je na nivou od oko 60%. Preostale potrebe se podmiruju uvozom koji je u vrednosti od oko 30 mil. evra.

U cilju jačanja tržišne pozicije domaćih mlečnih proizvoda i daljeg razvoja mlekarskog sektora, kao vrlo specifičnog i osetljivog, treba se usmeriti na jačanje celokupnog lanca proizvodnje i prerade mleka kroz obezbeđenje i korišćenje domaće podrške, pretpristupnih fondova EU (IPARD).

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