



Dairy Production in Bosnia and Herzegovina over The Past Quarter Century

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Abstract

The development of agricultural production is one of the economic priorities for Bosnia and Herzegovina. The dairy sector, including primary animal products and processed dairy foods, is a core sector for agricultural development. In 2006 the agriculture sector contributed about 10.4% of GDP, in 2008 8.4%, 2009 7.8%, 2011 8.7% and 2012 8.2%. Dairy farming dominates agricultural production and total livestock production contributes almost 60% of agricultural GDP. Milk production should be primarily directed towards cheaper and better quality of products. This is possible with active credit lines, more investment in the modernization and expansion of existing production capacity, as well as with construction of new large specialized farms, and new technologies, especially in the way of housing and handling of animals, nutrition, hygiene, etc. Current work is a brief review of the dairy sector at the past quarter century prepared by using data from different sources.

Özet

Son Çeyrek Yüzyılda Bosna Hersek'te Süt Üretimi

Tarımsal üretimdeki gelişim, Bosna Hersek için ekonomik önceliklerden birisidir. Tarımsal gelişimin sektörel kaynağını, işlem görmemiş ve işlem görmüş hayvansal ürünler olarak süt sektörü oluşturmaktadır. Tarımsal sektör, gayrisafi yurtiçi hasılanın (GSYİH) 2006 yılında %10,4, 2008 yılında %8,4, 2009 yılında %7,8, 2011 yılında %8,7 ve 2012 yılında %8,2'sini oluşturmuştur. Sütçü işletmeler, tarımsal üretime hakimdir ve toplam hayvansal üretim, tarımsal GSYİH'nin %60'ını oluşturmaktadır. Süt üretimi öncelikli olarak daha ucuz ve daha kaliteli ürünlerin elde edilmesine doğru yönlendirilmelidir. Bunun sağlanabilmesi ise aktif kredi limitleri, var olan üretim kapasitesinin daha fazla yatırım ile genişletilmesi ve modernleştirilmesi, özellikle barınak, bakım, besleme ve hijyen konularında uzmanlaşmış büyük yeni çiftliklerin ve yeni teknolojilerin kurulması ile mümkündür. Bu çalışma, farklı kaynaklardan elde edilen verilerin kullanılması ile hazırlanmış, süt sektöründeki son çeyrek yüzyılın kısa bir derlemesidir.

Introduction

Before the war (1992-95) in Bosnia and Herzegovina (B&H) agriculture contributed less than 10% of gross domestic product (GDP). Immediately after the war this figure rose considerably, reflecting the decline in industry and services and the fact that many people had reverted to subsistence and small-scale farming. Currently the economic importance of agriculture is

moving back to pre-war levels. In 2006 the agriculture sector contributed about 10.4% of GDP, 2009 7.8%, 2011 8.7% and 2012 8.2% (BHAS, 2009). Milk and meat are B&H's principal agricultural outputs, produced mainly by privately owned small farms. Dairy farming dominates agricultural production and total livestock production contributes almost 60% of agricultural GDP (IFAD, 2013).

The development of agricultural production is among the economic priorities for B&H in all strategic documents prepared during the last decade, with the dairy sector as one of the most important. The importance of the sector lies in several facts: more than 80% of the country has favorable conditions for livestock production; underutilized natural grasslands offer plenty of quality feed; there is a tradition of livestock farming; and livestock production is the most common form of agricultural activity and employs the majority of the rural population (Ognjenovic et al., 2012).

It is impossible to give an overview of the dairy sector in B&H without considering the war damage that devastated the sector almost completely. Before the war, in 1991, the estimated total number of cows in B&H was 623.000, and total milk production was 87.000 tons. The average annual milk yield was 1.410 liters per cow (Ognjenovic et al., 2012). During the war the number of cows fell by 60%, and total milk production by even more as the average milk yield also fell. Furthermore, the number of farmers also decreased because many of them became refugees and were displaced.

Nowadays, dairy sector has been recording achievements and development in most of indicators, but they are still on the level that keeps B&H on the bottom of the list when compared with EU countries (Figure 2). Governments in both B&H entities also emphasizes that agriculture and the dairy sector are strategic for the country but the level of regulation is far behind the EU member states. According to Dayton Constitution Bosnia and Herzegovina is consisted of two entities: Federation of B&H and Republic of Srpska, and Brcko District (DB).



Figure 1. Administrative units in Bosnia and Herzegovina.
Şekil 1. Bosna Hersek'teki idari birimler.

On July 1 2013, Croatia officially became a part of the EU, which has significantly impacted the trade of agricultural products in the region. The dairy sector has been affected the most, since B&H exported significant quantities of milk to Croatia. Some dairy producers have increased exports to other countries in the region but the export volumes are unlikely to be at the same level as those achieved with Croatia.

The aim of the study was to make a brief review of the dairy sector in B&H over the past quarter century using data from different sources, with special focus on the past decade. After detecting the main problems within the sector, authors also wanted to offer some recommendations for the future development.

Discussion

Number of farms

A farm register has not been set up in B&H yet, so it is difficult to get reliable data on number of farms including the breed structure. Table 1 presents data for Federation of Bosnia and Herzegovina (FB&H) while data for entity Republic of Srpska (RS) and, thus, for whole B&H are not available. Concerning unofficial sources and field experience, the authors expect that situation is similar in both entities.

Table 1. Dairy farms structure in FB&H in 2007.

Tablo 1. Bosna Hersek'te 2007 yılında sütçü işletmelerinin yapısı.

Specification	Farms			Cows			
	No. farms	% of total	Cum. %	No. farms	% of total	Cum. %	Average/Farm
TOTAL	25,057	100.00		58,334	100.00		2.32
1-2 head	19,071	76.12	76.12	28,319	48.55	48.55	1.48
3-4 head	4,404	17.58	93.70	15,013	25.74	74.29	3.4
5-10 head	1,367	5.45	99.15	9,197	15.77	90.06	6.72
11-30 head	190	0.75	99.99	3,162	5.42	95.48	16.64
31-100 head	18	0.07	99.97	830	1.42	96.9	46.11
>100 head	7	0.03	100.00	1,813	3.10	100.00	259

Data presented in Table 1 include farms that sell milk to dairies and received a government premium for milk. Figures clearly show an unfavorable structure of the milk industry at primary level, in which very small and small farms dominate. The share of large farms with more than 30 cows is only 0.1% of total (Alibegovic-Grbic, 2009). The average herd size in FB&H was 2.32 heads in 2007, which is far below other EU countries. Such unfavorable structure has numerous consequences on the performance at farm level and on the system of collection of milk, as the situation creates difficulties in organization of milk collection.

According to FB&H statistics there were total 159,000 of milking cows in 2007, but only 58,339 (36.7%) were supported by premium (Institute for Statistics of FB&H, 2011). The rest of the milking cows is not supported. These unsupported farms do not deliver milk to dairies. They sell it locally or process it by themselves instead, or produce milk for their own needs.

Milk Production

Milk production in 2012 was 653 million of liters (Agency for Statistics of B&H, 2013). One of the key characteristics of dairy sector, and one of the most serious obstacle is very low share of milk collected by

dairies in total milk production. This share was as low as 12% in 1990 (Loza, 2011) and has been constantly increasing ever since. However, it was still unsatisfactory in 2011 reaching 29% (31% in FB&H, 28% in RS and 34% in DB). Low share of collected milk in total produced amounts is a consequence of many factors but most important ones among them, common for the whole country are: big number of very small and dispersed farms with poor infrastructure, lack of cooling storage capacities and inefficient organization of milk producers. The major part of milk is processed into fresh products, especially into UHT milk. Production of butter and milk powder is very low and insignificant. Production of cheese is increasing each year (Ognjenovic, 2012).

Consumers' needs are partly satisfied by import of milk products in B&H. Only small quantities of products are exported, but the export is growing each year (Loza, 2011).

Milk yield per cow in B&H has been recording a constant, but very modest increase during the last decade (Table 2). Thus, average yield of 2.490 liter per cow in 2012 was by 50% higher than the one in 1996.

Table 2. Cattle numbers and milk production for period 2000-2012.

Tablo 2. 2000-2012 yılları arasında sığır sayısı ve süt üretimi.

Livestock/product	Units	2000	2002	2004	2006	2008	2010	2012
Cattle	000 head	462	410	453	515	459	462	445
Number of milk cows	000 head	297	244	291	313	296	277	262
Total milk production	(mIn lit.)	544	518	601	683	737	693	653
Yield per milk cow	lit.	1781	2192	1999	2103	2485	2499	2490

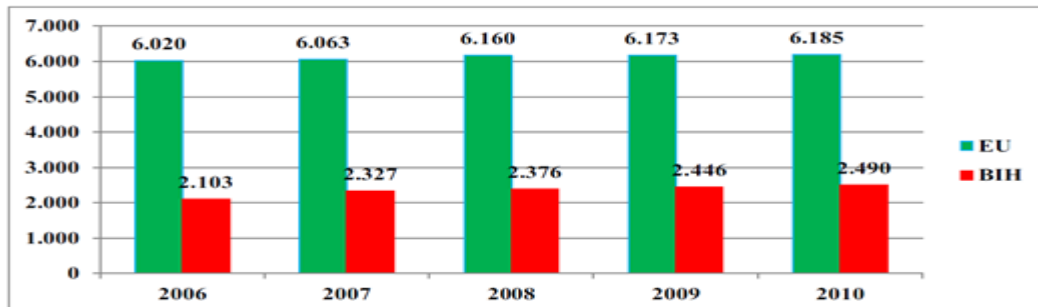


Figure 2. Milk productions liter/per cow/year in B&H and EU 27, from 2006 to 2010.

Şekil 2. 2006-2010 yılları arasında Bosna Hersek ve AB 27'de litre/inek başına/yıl olarak süt üretimleri.

Regarding the milk yield in 2006, it was only 50% of the lowest country average in EU (Lithuania) and 32% of the EU average (ARCOTRASS – Consortium, 2006). Over the first decade of post-war recovery, cca 50% of cows' fund was recovered, but cows number decreased slowly since 2006, so in 2011 it amounted only 43% of the pre-war number. Yet, milk production in 2011 reached 76% of the pre-war level. Milk yield increase was the result of improved breed composition and farmers knowledge in the field of milk production.

Reasons for such poor productivity on the farm level as well as low milk production per cow can be looked for among many reasons, including poor breed composition of the herds, low level of knowledge of the farmers, poor organization of labor on farms, improper animal nutrition and lack of modern machinery for soil preparation, sowing and forage preservation. The most farms function as a social category where milk production is their tradition, a way of life, and less the business activity.

Table 3. Supply/demand balance sheet on dairy production (in mln kg of milk equivalent)¹.

Tablo 3. Süt üretiminde arz/talep bilançosu (milyon kg'daki süt eşdeğeri)¹.

	2000	2002	2004	2006	2007
Usable production	529.0	535.0	545.0	629.0	724.0
Import	150.6	121.5	159.3	128.0	131.4
Export	1.3	1.6	4.5	8.0	8.7
Human consumption/capita (lit.)	136.3	129.9	148.8	156.0	168.3
Self-sufficiency ² , %	78.0	81.7	79.0	84.6	85.5

¹Figures refer to cows' milk

²The self-sufficiency rate is calculated as production divided by supply available

It was very hard to provide reliable data about milk consumption because they are not recorded by any official source. Data presented in Table 3 are estimated on the basis of products available (production and import minus export). The consumption of all milk products increases gradually each year. In 2009 the average milk consumption was 157 kg per capita (Helgi Library, 2013). This increase is not enough to satisfy domestic needs, therefore, the import of dairy products is still significant. On the other side, the export of dairy products also started to grow on a very high annual rate after the signing of several regional and international trade agreements.

Dairies

The number of dairies increased from six (pre-war situation) up to 60 in 2002. All dairies are private companies. Major part of small dairies had wide set of business problems, including poor quality and shortage of milk, inadequate product assortment and packaging, inefficient marketing, and so on. Therefore, a number of small dairies stops operating each year and, in the same time, some new were opened. Consequently, in the last ten years the number of dairies varied a lot. Also, reliable or official data about active dairies number is missing. According to USAID LAMP project (USAID LAMP, 2005) there are 53 dairies with total working (installed) capacity of 1.945.000 liter of milk per day. But, the sector is consisting mostly of small or middle sized dairies, as 46 of them have installed

capacity of less than 100.000 liter of milk per day. These facts indicate sector fragmentation in number of small and middle sized dairies. Also the capacity is utilized only by less than a half - production is 875.000 tons.

In the last few years the sector becomes very attractive for foreign direct investment (FDI). Currently, six big dairies are owned by companies from the EU. The importance of FDI is outlined by many authorities, especially its spill-off effects for sector competitiveness, but those effects are not visible yet in B&H. Most of foreign companies, except Meggle, kept B&H brand name and did not make any change in product design, assortment, or marketing strategy.

Quality management is of the highest priorities for dairies and they are trying to upgrade it. HACCP system was implemented in ten dairies in 2008, and seven more are introducing it. Two of them are certified by ISO 22000, while eight dairies have implemented ISO 9001:2000. Export number has been awarded to 11 dairies in B&H so far. These implemented standards suggest strong improvement in the quality of production within the sector in general.

The increase of specialization and capacity with simultaneous decrease in number of active dairies are expected in forthcoming years. Small dairies could be sold to big ones or stop their production, or will be specialized either in designing some special products or to serve very local market.

Milk price, government policy and assistance in agriculture

Price of raw milk paid to farmers has been stable during the recent years. The price was 0.26 Euro/lit. throughout the period in FB&H and was slightly higher than in RS where it has been 0.22 Euro/lit. since 2005. If government premium is added, then the farmers get 0.33 Euro/lit. or 0.28-0.29 Euro/lit. in FB&H and in RS, respectively.

The major elements that must be underscored in analyzing B&H agricultural policy are the absence of consistent uniform policy at the national level and the lack of institutional capacity to develop and coordinate agricultural policy and legislation. According to the constitutional setting of B&H, all the existing public administration levels (state, entities, district, cantons and municipalities) are involved in agricultural legislation and administration (ARCOTRASS-Consortium, 2006). Duties and responsibilities at the state level are limited to the competencies emphasized by the Constitution, including policy and international agreements, foreign trade policy, and custom policy. Any function or power which is not expressly assigned in the Constitution belongs to the Entities.

As there is no common agricultural policy between the two entities and DB, farmers are in different economic position and get different support depending on the place they live and run their business in. Thus, the highest premium for 2005 and 2006 was in DB, 0.076 Euro/lit. of milk (on the basis of 3.2% milk fat) while it amounted 0.072 Euro/lit. in FB&H. In RS it was 0.057 Euro/lit. for milk from flatland and 0.072 Euro/lit. for milk produced in mountainous region. In 2007 premiums decreased in both entities, so it amounted 0.057 Euro/lit. of milk in FB&H and 0.059 Euro/lit. in RS. If a farmer wants to get government premium in FB&H, he must deliver minimum of 1200 liters of milk to dairies quarterly. There is no such condition in RS. Furthermore, some of the Cantonal governments in FB&H also support milk production with 0.05 Euro/lit. Government of FB&H supports offspring with 102-127 Euros per head, while farmers in RS don't get this support. On the other side, Government of RS supports fuel (40 l/ha) and semen (1.5 Euro/doses). Since 2008, Federal Development Bank supports investments in agricultural production with 25% of investment and interest rate by 6%. Unfortunately, credit procedures are too complicated and demanding that most of the small dairy farmers can not benefit from this support (Milkprocessing, 2007).

Poor hygienic practice, inefficiently organized milk collection system and the lack of institutional and legal framework put B&H dairy producers in very unfavorable position. Regulations for both raw milk and dairy products quality differ between two B&H entities, and it is particularly unsatisfactory for dairy business in FB&H.

Four new laws on the quality of milk throughout milk chain are introduced. These regulations included EU standards for milk and dairy products quality that would allow B&H export to EU countries. Unfortunately, B&H has not yet fulfilled all the conditions for the export. On a positive note, the recent signing of a cooperation protocol between B&H state and entity-level institutions on veterinary inspection, including dairy products, could address the EU concerns in veterinary inspection area and may result in the approval of the export of pasteurized milk and dairy products made from pasteurized milk to the EU.

There are some active projects to assist producers to implement EU standards and training of veterinary inspectors. Agrolink (a local organization which has been supported by USAID/SIDA - FARMA Project and the Embassy of Norway to develop a traceability system) held practical demonstrations of the software solution for traceability that allows the customers to have direct access to relevant information about the products along with lectures on EU export requirements. To help achieve recognition of the food control system in B&H by the EU, as well as to enable export of products of animal origin to EU countries, USAID/SIDA - FARMA Project and the B&H State Veterinary Office organized seminars for veterinary inspectors on the control of facilities for the export of the products. Seminars included topics such as: implementation of the new regulation which introduces the "EU Hygiene Package in B&H", conducting controls in accordance with the "EU Hygiene Package" (risk assessment, the role of veterinarians, financing control functions, etc.), controlling HACCP systems in facilities (practical application), practical implementation of the EU Regulation 2073/2005 on microbiological criteria for foodstuffs, etc. Seminars also included "simulation of the inspection control" of dairy processing facilities and dairy farms. Experts from the Veterinary Office of Slovenia conveyed their experiences to B&H inspectors, who received detailed information about proper interpretation and implementation of the national and EU regulations in this area (USAID/SIDA - FARMA Project, 2013).

The EU's Food and Veterinary Office (FVO) conducted a mission in B&H from 21-31 January 2014.

The mission assessed and evaluated the controls carried out by the competent authorities of B&H over the production chain and processing of dairy products intended for export to the EU, and hence whether the country's specific milk businesses are ready to be listed for exporting to the EU (Anonymous, 2014). In the meantime, many B&H dairies increased their exports to other neighboring non EU countries. Some dairy factories are looking further east to access new markets, however, accessing these markets also involves overcoming institutional and other obstacles, which are significant and time consuming. Fortunately, the three largest dairies in B&H (Mlijekoprodukt, Meggle and Milkos) recently (July 15, 2013) obtained permission from the Government of Turkey to export dairy products to Turkey as they have met the technical and hygienic criteria that were assessed during the official inspection of these facilities by Turkish inspectors.

Conclusion

Although dairy sector in B&H has been recording achievements and development in most of indicators during the last ten years, it is still far below high standards required by the EU. Domestic needs are also not being satisfied and, therefore, the import of dairy products is significant. The main barriers to more efficient development of the sector are inappropriate agricultural policies on the national level and the lack of institutional and legal framework for the dairy business in general.

Milk production should be primarily directed towards cheaper and better quality of products. This is possible with active credit lines, more investments in the modernization and expansion of existing production capacity, as well as construction of large specialized farms, introducing new technologies, especially in the way of storing and handling of animals, nutrition, hygiene, etc. Milk production per cow should be confronted to profit per unit of capital investment.

It is necessary to modernize conventional production systems adapted to small farms (specialized family dairy farms) with 30-50 dairy cows. These farms could make an average production of 5000-6000 liters of milk per cow per year. Furthermore, it is recommended to establish a system of large commercial dairy farms (with more than 100 cows in the herd), which could provide more than 6000 liters of milk per cow per year. Milk production on smaller farms should be gradually directed to organic, indigenous and healthier production.

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