

IMPORTANCE OF MILK PRODUCTION IN INCREASING OF COMPETITIVENESS OF SERBIAN AGRO-FOOD SECTOR¹

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Abstract

Cattle production is the most present traditional branch of agriculture in Serbia, and special consideration was given to milk production as essential ingredient for the food security of the country. After World War II, since 1949 development of dairy industry in the former Yugoslavia began. From then on, in the field of milk production and processing many changes have occurred. However, due to accession to the European Union, in the following years this sector will go through significant changes because of harmonization with strict standards laid down in EU member states. Adoption of regulations and the compliance with the standards in the field of agriculture, agro food industry will get better quality raw material that will increase its competitiveness.

The paper analyzes the current situation in milk production and standards that are needed to improve the quality of milk, with the aim of improving the competitiveness of milk production and the competitiveness of the food industry, which relies on this production.

Key words: milk production, competitiveness, agro-food sector

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Introduction

Milk production is one of the most important branches of livestock production in the Republic of Serbia. Significance of milk production is reflected through importance of milk and dairy products as one of the basic groups of food products in human nutrition, as well as important factor for food security of the state. Development of livestock production is important factor for the development of overall economy. Especially significant impact has on development of agro-food (processing) industry.

In Serbia there are over 280.000 farmers involved in milk production. In recent years total milk production has made significant decrease, so produced volume of milk was reduced for 6,12%. During 2009 were produced 1.488 million liters of milk, what represents a decrease for 97 million liters in compare to 2000, when were produced 1.585 million liters. Within production structure dominant share achieved cow's milk, with 99,3%, while sheep's milk had share of only 0,7% of total milk production.

On milk production affect a number of factors, as there are: natural conditions that have impact on yields; prices of crop products used for feeding of milking cows; prices of other inputs in production, prices of final products; subsidies; raised races; etc.

In last few years, State gave certain financial assets for development of milk production. However, gained results are still on unsatisfactory level, so it is necessary to continue with allocation of assets from the budget for these purposes, how production will be led to a satisfactory level (Table 1.).

Table 1. – Allocation of financial assets from agrarian budget for the measures in milk production (in million RSD)

Measures/year	2004.	2005.	2006.	2007.	2008.	2009.
Market measures	3.078	3.194	2.348	1.406	1.294	402
Structural measures	-	121	144.5	-	10,1	569

Source: National program for rural development for the period 2011-2013.

Structural measures include support for rising of dairy farms, purchase of equipment in the dairy industry (lacto freezers and milking machines), and the budgetary allocations for these purposes in 2009 compared to the previous year significantly increased.

In analyzed period cash outflows from the budget for market measures are in constant decrease (these measures imply premium for milk and export subsidies). Structural measures include financial support for dairy farms establishment and purchase of equipment needed in milk production (lacto-freezers and milking machines). Budgetary allocations for mentioned purposes in 2009, in compare to previous year were significantly increased.

Competitiveness of milk production is largely dependent on access to price-competitive and high quality inputs of feed, quality of dairy cattle and inputs related to hygiene in the production and processing.

Working material and method

As a data resources in paper are used statistical publications, regulations related to quality and hygiene of raw milk and data from individual agricultural husbandries.

In paper are used method of calculations of variable costs coverage, where contribution margine is gained after substracting of variable costs from production value.

Results and disscusion

In EU countries the average number of cows on farms involved in milk production ranges from 30 to 50 animals. Milk production in Serbia is mostly done on the farms of individual farmers which include small number of dairy cows. According to the Agricultural census in 2002, agricultural farms owned 87% of the total number of cows in the Republic of Serbia, of which 97.61% of agricultural holdings had from 1 to 5 dairy cows. After the year 2002, due to the policy of some dairies not to purchase milk from small farms, there was an increase in average farm size and total quantity of milk produced per farm.

End of 2010 and the beginning of the 2011 was an important period for the milk producers, namely in that time there was an increase in purchase prices of milk and an increase in premiums per liter of milk. To demonstrate the cost of production in the dairy sector, calculations of milk production, based on variable costs, was made (Table 2). Data for calculations were obtained from the individual farm which has Simmental cows. Key assumptions were: duration of lactation is 305 days, value of culled caw is 710.37 EUR/animal, life span of the cow is 8 years and 0.9 calves per cow per year.

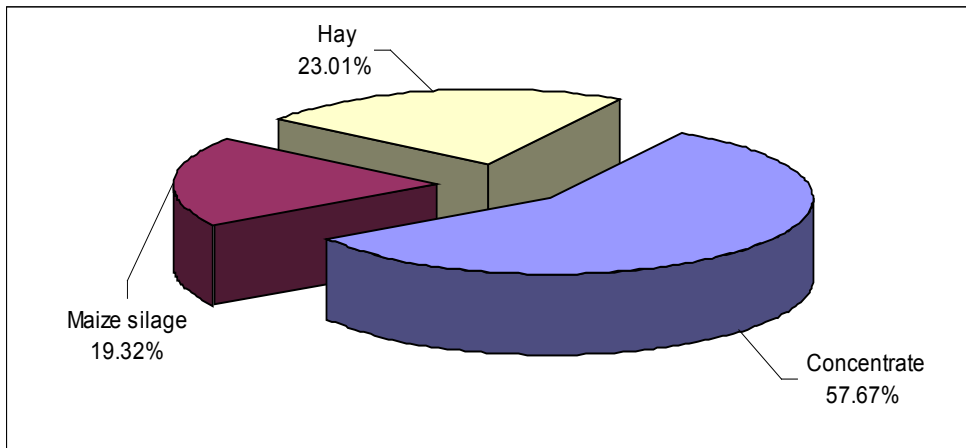
Table 2. Calculation based on variable costs in milk production

Description	Quantity	Unit	Price by unit	Total (RSD/cattle)	Total (EUR/cattle)	%
I Incomes (1.+2.+3.+4.+5.+6.)				350,500.00	3,458.11	100.00
1. Milk	6,000	lit	31.00	186,000.00	1,835.12	53.07
2. Calf (10 days old)	75	kg	300.00	22,500.00	221.99	6.42
3. Culled caw	600	kg	120.00	72,000.00	710.37	20.54
4. Manure	10	t	1,500.00	15,000.00	147.99	4.28
5. Premium for milk	6,000	lit	5.00	30,000.00	295.99	8.56

Description	Quantity	Unit	Price by unit	Total (RSD/cattle)	Total (EUR/cattle)	%
6. Regress for registered animal			25,000.00	25,000.00	246.65	7.13
II Variable costs (1+2+3+4)				253,436.31	2,500.46	100.00
1. Feed				118,944.45	1,173.53	46.93
2. Costs of operating machines				73,591.45	726.07	29.04
2. Veterinary services			7,285.00	7,285.00	71.87	2.87
3. Straw	1,095	kg	5.00	5,475.00	54.02	2.16
4. Other costs				48,140.42	474.96	18.99
III Margin to cover variable costs (I-II)				97,063.69	957.65	

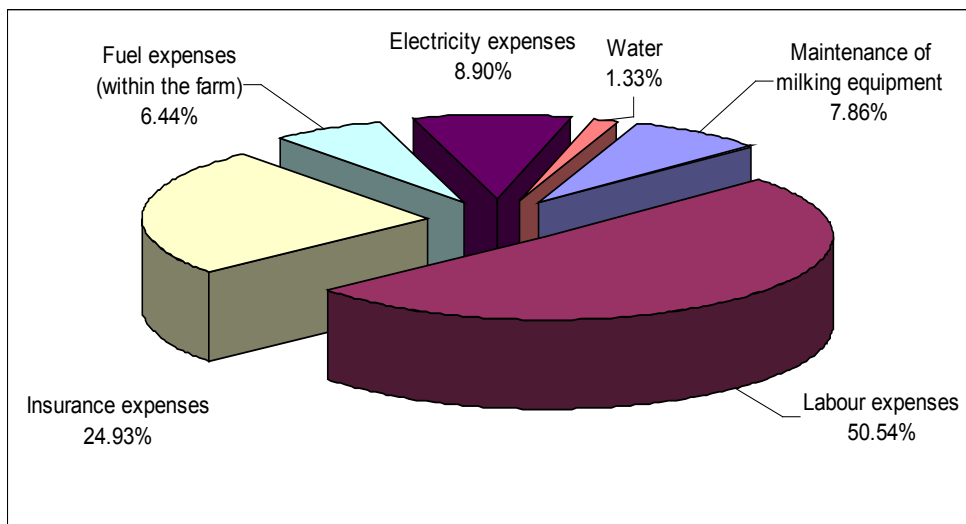
Competitiveness of milk production is largely dependent on access to price-competitive and high quality feed inputs and quality cattle. In the variable cost structure, the most significant are the costs of animal feed, whose share is 46.93%, than the costs of operating machines (29.4%) and other costs (18.99%), while the costs of veterinary services and straw are less than 3%. Graph 1 shows the structure of animal feed costs, as the most important item of variable costs.

Graph 1. Structure of feed expenses



In the structure of other costs (graph 2.) participate: labour expenses, insurance expenses, electrical energy expenses, maintenance of milking equipment, fuel expenses and water expenses.

Graph 2. Structure of other expenses



A number of dairies are buying milk on the territory of the Republic, of which one company has the share of 47.4% (Table 3.). Also, there are a large number of small family dairies dealing with buying and processing of milk which have a very small market share and in most cases only buy milk from the area in which they are located.

Table 3. Share of the milk purchase market of some dairies in Republic of Serbia

Dairy	Share of the milk purchase market
1. Danube food groups (5 dairies)	47.40 %
• Imlek, Impaz and Zemun	31.20 %
• Novosadska mlekara	8.20 %
• Mlekara Subotica	8.00 %
2. Mlekara Šabac	5.80 %
3. Mlekara Somboled	5.40 %
4. Mlekoprodukt Zrenjanin	3.90 %
5. Other	35.7 %

Source: National program for rural development for the period 2011-2013.

Competitiveness of milk production depends on the application of measures related to hygiene in the production and processing. In terms of quality of milk and dairy products, the Regulation on quality and other requirements for milk, dairy products, composite dairy products and starter cultures (Official Gazette of the FRY. 26, 2002.)

says that in Serbia, the upper limit of the total number of microorganisms / ml in cow's milk is 1,000,000 and the number of somatic cells is 400,000.

EU requirements regarding quality and hygiene of raw milk, says that raw milk must be tested for composition, total number of bacteria and somatic cells at least twice a month. Milk should not contain colostrum, antibiotics, added water, blood, any substance intentionally added and foreign bodies such as dust, straw and so on.

The amendment of Regulation (EC) no. 853/2004, no. 1662/2006 of 6 November 2006, states that the total number of microorganisms must be less than 100,000 ml/milk and somatic cells count can not exceed 400,000 ml/milk. In chemical terms content of dry matter without the fats above 8.5% and protein content above 2.8%.

Comparison of domestic raw milk legislation with EU legislation and the states in our surroundings, it can be seen that it is necessary to harmonize our regulations on hygienic quality of milk.

In practice it is difficult to fully comply with these regulations. Households in Serbia have a very small number of dairy cows and therefore low volume of production. For modern dairy farms to acquire modern milking systems and devices for cooling of milk after milking, which are one of the most important factors for milk hygiene, it is necessary to have significant financial resources that households with low volume of production can not obtain. Enlarging of production i.e. creation of family farms with 30-50 dairy cows, modeled by the dairy cattle farms in the EU, would allow the maintenance and development of family farms.

In order to comply with the regulations on quality and hygiene of raw milk, dairies in the EU have adopted the classification of milk by hygiene to stimulate producers to put a special emphasis on the treatment of raw milk after milking. Currently, only about 40% of milk is in the extra or the first class, which is allowed by EU rules, while other classes of milk would not be accepted to the dairies in the EU. In this way, the processing factories primarily dairies would get quality raw material for production of dairy products.

Conclusion

Based on analysis of the milk production variable costs, it can be seen that there was a positive margin of coverage on the basis of business data in 2011 year. Although in recent years, there is significant funding of the State in milk production, through market and structural measures, due to poor financial situation of agricultural producers, the total milk production declines in recent years. Consequently, more efforts are needed to improve the general situation in the industry and overall agricultural production. It is also necessary to increase the average size of farms, milk yield per cow, to improve the quality of raw milk in accordance with the standards that already exist in EU countries and so on.

By improvement of the quality of milk and production of the first class, plants from the food industry engaged in the processing of milk would receive quality raw material for processing and would increase competitiveness of production compared to neighboring countries.

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