

**POSSIBILITIES FOR INCREMENT OF LIVE STOCK BREEDING  
COMPETITIVENESS ON THE TERRITORY OF BELGRADE CITY**

**LANA IVANOVIĆ**

Institute of Agricultural Economics,  
Belgrade, Serbia.

E-mail: [ivlanaa@yahoo.com](mailto:ivlanaa@yahoo.com)

**MARKO JELOČNIK**

Institute of Agricultural Economics,  
Belgrade, Serbia.

E-mail: [marko\\_j@mail.iep.bg.ac.rs](mailto:marko_j@mail.iep.bg.ac.rs)

**BOJANA BEKIĆ**

Institute of Agricultural Economics,  
Belgrade, Serbia.

E-mail: [bojanabekic@yahoo.com](mailto:bojanabekic@yahoo.com)



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## **POSSIBILITIES FOR INCREMENT OF LIVE STOCK BREEDING COMPETITIVENESS ON THE TERRITORY OF BELGRADE CITY<sup>1</sup>**

### **Abstract**

Belgrade, as administrative, economic and cultural centre of Republic of Serbia, covers total area of 3.224 km<sup>2</sup>. From this area, 69,1% is agricultural land, which represents fundamental base for establishment of agricultural production. Live stock breeding, on the territory of Belgrade city, as well as in entire Republic of Serbia, is the most important branch of agriculture. On observed territory animal products' processing industry (dairies and slaughter houses) especially is developed. Because of that, increment of total live stock breeding production is of great importance for this territory.

For growth of live stock breeding competitiveness, in this paper work concrete activities are suggested, such as specialization and increment of production intensity, accomplishment of better financial conditions, selection, accomplishment of better primary agricultural products purchase, etc.

In this paper work also are considered and described necessary measures which have to be done by governmental institution, local communities, agro complex companies and family husbandries, with main goal to increase livestock breeding production competitiveness.

**Key words:** competitiveness, live stock breeding, Belgrade city, agriculture

### **Introduction**

Live stock breeding production is of great importance for the territory of Republic of Serbia, as well as for the territory of Belgrade city. It mainly considers production of animal products which are being used in human alimentation (milk, meat, eggs). Beside that, live stock breeding has great importance as raw material resource for agro-food and processing industry (dairies, slaughter houses). Also, development of live stock breeding affects on development of associated agricultural industries, as fodder and animal medicaments production, machine and equipment industry, leather industry, etc.

Importance of live stock breeding comes from the fact that in Serbia small part of agricultural land is covered with irrigation systems, and that existing systems usually are used for irrigation of vegetable and fruit cultures. Because of that, for many agricultural husbandries, developed live stock breeding production is labelled as highly

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important, especially in years with unfavourable nature conditions for crop farming. Regarding this live stock breeding significantly affects on their business stabilization. However, lack of irrigation systems, limits development possibilities of live stock breeding production too.

Belgrade city area consists of 17 municipalities. It is partly located in lowland (Panonija lowland) and partly in highland areas of Šumadija. Northerly, above Danube and Sava rivers, is plain area in which is mostly organized crop production. Southerly, below Danube and Sava rivers, partly is plain and partly is hilly area. On that territory are organized both crop farming and fruit production.

Depending on natural conditions, structure of used agricultural areas, economic situation and local population structure, in some municipalities, in less, or high portion, certain animal production lines are developed. Although live stock breeding exists both in lowland area and in hilly area, municipalities with the biggest livestock funds are in lowland area, where are located the largest public and private companies from live stock breeding production branch.

### **State of live stock breeding production**

Frequent prices oscillations (as of animal products, as of auxiliary goods), instability of agricultural products' markets, as well as general social, political and economic situation, have led to great fall of heads number of almost all animal species in last fifteen years.

For perception of previous movement and present condition in livestock breeding production, as for creation of qualitative basement for projection of further live stock breeding production development, analysis of number of animal heads flow in period 1995-2007 is done. For better introspection into state and appropriate tendencies of this production, analysis of live stock fund considered territory of Republic of Serbia and territory of Belgrade city.

Inside of this analysis are observed number changes of cows, pigs, sheep and poultry, while it is not presented number of goats and horses, because importance of these live stock breeding branches in Serbia is mostly negligible.

First part of analysis considers territory of entire Republic and it shows that number of most important species and categories of animals was decreasing during observed period (Table 1). Number of cattle in 2007 in Serbia in compare with 1995 was fallen for 19,7%, while number of cows and breeding heifers were decreased for 22,69%.

In pig breeding, as in cattle breeding too, there was significant decrease of heads number. Total number of pigs decreased for 6,21%, and number of sows and gilts for 33,76%.

Total number of sheep was reduced for 13,28%, while number of breeder sheep reduced for 14,59%.

Comparing all live stock branches, the most decrement of head number was in poultry production, around 26,21%.

**Table 1** – Changes of number of basic domestic animal species on the territory of Republic of Serbia, 1995-2007. (on the date of 15<sup>th</sup> of January)

| Year    | Cattle    |                                  | Pig       |                       | Sheep     |                    | Poultry total |
|---------|-----------|----------------------------------|-----------|-----------------------|-----------|--------------------|---------------|
|         | Total     | Cows and breeding heifers (in %) | Total     | Sows and gilts (in %) | Total     | Breeder ewe (in %) |               |
| 1995.   | 1.353.802 | 61,92                            | 4.085.811 | 20,33                 | 1.852.062 | 75,34              | 22.256.132    |
| 1996.   | 1.335.293 | 62,00                            | 4.344.165 | 19,96                 | 1.833.821 | 75,65              | 22.806.174    |
| 1997.   | 1.317.697 | 62,43                            | 4.119.454 | 20,85                 | 1.757.902 | 75,71              | 22.365.117    |
| 1998.   | 1.296.035 | 63,95                            | 4.057.830 | 21,01                 | 1.644.800 | 78,25              | 22.599.656    |
| 1999.   | 1.299.493 | 64,82                            | 4.292.896 | 20,88                 | 1.598.195 | 78,11              | 23.278.109    |
| 2000.   | 1.272.275 | 66,29                            | 4.065.911 | 21,82                 | 1.611.159 | 76,54              | 20.372.508    |
| 2001.   | 1.186.932 | 68,41                            | 3.615.193 | 21,86                 | 1.489.473 | 79,61              | 19.289.931    |
| 2002.   | 1.176.906 | 68,06                            | 3.587.172 | 22,77                 | 1.447.675 | 78,08              | 18.804.143    |
| 2003.   | 1.161.506 | 67,98                            | 3.634.274 | 22,69                 | 1.515.561 | 74,73              | 17.676.609    |
| 2004.   | 1.101.951 | 67,34                            | 3.438.662 | 20,11                 | 1.585.645 | 72,95              | 16.280.292    |
| 2005.   | 1.079.020 | 66,78                            | 3.164.986 | 20,68                 | 1.575.907 | 74,19              | 16.630.948    |
| 2006.   | 1.096.185 | 64,75                            | 3.211.597 | 21,33                 | 1.609.239 | 73,50              | 17.905.052    |
| 2006.** | 1.105.988 | 60,98                            | 3.998.927 | 15,54                 | 1.555.864 | 75,03              | 16.595.204    |
| 2007.** | 1.087.077 | 59,62                            | 3.831.894 | 14,36                 | 1.606.156 | 74,20              | 16.421.755    |

\* In 1994. was not done regular registration of animals. \*\* State on 1<sup>st</sup> December.

Source: Statistical yearbook, Municipalities in Serbia for specified Year, Statistical institute of Republic of Serbia

Second part of analysis considers territory of Belgrade city. In distinction to Republic level, where is within all animal species accomplished decrement of heads number, at the Belgrade city level in same period situation was better (Table 2). In that area came to reduction of cattle and pig heads number, while number of sheep and poultry showed rising tendency in observed period.

Number of cattle on the territory of Belgrade city in 2007 was decreased, comparing to 1995, for 33,05%. Reduction of cows and breeding heifers number was smaller, around 31,90%. Above mentioned shows that fall of cattle heads was more significant on Belgrade, than on the Republic level.

Total number of pigs also shows reduction tendency, herewith in observed period oscillations are more expressed. In 2007, comparing to 1995, number of pigs has fallen up to 4,63%, while number of sows and gilts even achieved fall of 36,30%.

From all underlined animal species, it comes to increase of sheep and poultry number. Total number of sheep is enlarged for 36,16%, while number of breeder sheep increased for 6,87%. In poultry production, which is presented in many husbandries, total number of heads, in analysed period, increased for 7,63%.

Goats and horses are bred on the territory of Belgrade city in really small number. They are explicitly held by individual agricultural husbandries, so similarly like on Republic level, they do not have higher economic importance.

**Table 2** - Changes of number of basic domestic animal species on the territory of Belgrade city, 1995-2007. (on the date of 15<sup>th</sup> of January)

| Year    | Cattle |                                  | Pig     |                       | Sheep  |                    | Poultry total |
|---------|--------|----------------------------------|---------|-----------------------|--------|--------------------|---------------|
|         | Total  | Cows and breeding heifers (in %) | Total   | Sows and gilts (in %) | Total  | Breeder ewe (in %) |               |
| 1995.   | 83.671 | 58,56                            | 246.880 | 22,81                 | 49.275 | 77,50              | 912.504       |
| 1996.   | 83.205 | 59,38                            | 263.721 | 21,30                 | 49.996 | 78,09              | 1.065.915     |
| 1997.   | 86.153 | 56,94                            | 253.447 | 22,37                 | 45.578 | 79,20              | 1.065.382     |
| 1998.   | 80.458 | 58,96                            | 256.971 | 21,99                 | 45.983 | 82,08              | 1.118.914     |
| 1999.   | 81.746 | 58,75                            | 272.127 | 21,24                 | 47.371 | 81,28              | 1.104.706     |
| 2000.   | 79.092 | 59,52                            | 280.866 | 21,64                 | 50.234 | 77,90              | 1.095.455     |
| 2001.   | 70.201 | 59,67                            | 245.186 | 21,37                 | 48.038 | 80,10              | 1.070.077     |
| 2002.   | 68.504 | 59,10                            | 273.426 | 20,15                 | 48.612 | 77,95              | 1.059.835     |
| 2003.   | 68.615 | 59,97                            | 273.721 | 20,11                 | 52.458 | 68,65              | 963.228       |
| 2004.   | 64.922 | 62,13                            | 237.115 | 21,14                 | 63.142 | 66,93              | 1.115.024     |
| 2005.   | 62.991 | 58,27                            | 190.227 | 23,49                 | 62.292 | 65,07              | 1.000.554     |
| 2006.   | 62.708 | 56,07                            | 205.521 | 20,53                 | 62.746 | 70,30              | 1.042.232     |
| 2006.** | 60.744 | 59,25                            | 255.020 | 16,59                 | 69.386 | 72,29              | 1.122.546     |
| 2007.** | 56.016 | 59,57                            | 235.452 | 15,24                 | 67.092 | 60,83              | 982.095       |

\* In 1994. was not done regular registration of animals. \*\* State on 1<sup>st</sup> December.

Source: Statistical yearbook, Municipalities in Serbia for specified Year, Statistical institute of Republic of Serbia

Institute for statistic and informatics of Belgrade city, collects data about certain live stock products connected to city territory. Momentarily available is data for 2006 and 2007. Based on that fact, similar data are presented for Republic level too (Table 3).

Production of cow milk, one of elementary provisions, decreased in this period for 2,4% on Republic, and for 3,1% on Belgrade city level. At other side, it came to increase of milk production per milked cow, on Republic level for 0,7% and on city level for 4,1%.

Production of sheep milk on City territory is done strictly at individual producers'

husbandries. Development of total sheep production could be visible through the growth of sheep milk production. Also it came to increase of milk production per one sheep for 166,7%. On the territory of Republic, comparing to City territory, it is accomplished decrement of total milk production, as milk production per sheep too. From other sheep products, volume of sheared wool statistically was evidenced, at which increase of total production is accomplished, as on Republic, as on City level.

Average eggs production per layer in Belgrade increased for 27,5%, but it came to decrement of layers number, so total eggs production decreased for 24,8%. This big reduction of layers' flock is result of unfavourable ratio between prices of fodder and consume eggs. In Republic number of produced eggs has also decreased. Beside decrease in layers number, also smaller production per layer was accomplished.

**Table 3** - Production of cow and sheep milk, eggs and wool, on the territory of Belgrade city and Republic of Serbia in 2006 and 2007.

| Production                                 | Republic of Serbia |            | Belgrade city |         |
|--------------------------------------------|--------------------|------------|---------------|---------|
|                                            | 2006.              | 2007.      | 2006.         | 2007.   |
| Production of cow milk, (000 l)            | 1.587.000          | 1.549.000  | 132.341       | 128.259 |
| Average volume of milk per milked cow, l   | 2.645              | 2.663      | 4.145         | 4.317   |
| Production of sheep milk, l                | 15.000.000         | 14.000.000 | 58.890        | 793.258 |
| Average volume of milk per milked sheep, l | 50                 | 47         | 30            | 80      |
| Wool production, kg                        | 2.493.000          | 2.499.000  | 78.113        | 100.005 |
| Average volume of wool per sheep, kg       | 1,9                | 1,9        | 1,75          | 1,88    |
| Eggs production, (000 pcs)                 | 1.456.000          | 1.364.000  | 143.558       | 107.927 |
| Average eggs per layer                     | 139                | 135        | 109           | 139     |

Resource: Statement 40/2008, city headquarters, Institute for informatics and statistic, Belgrade

As most important live stock breeding production, parallel in Republic and on territory of Belgrade city, cattle breeding is standing out. Last 15 years have seen changes into the cattle breeding types, which brings increased production per head. In cattle breeding production, husbandries which are oriented to milk production, usually have in possession cows of Holstein Frisian type, accomplishing production growth of milk per head in that way. Husbandries which have organized combined production, milk-meat type, retain ennobled domestic cattle of Simmental type, herewith they still are dealing with their further interbreeding with Simmental. As result of this kind of crossing it came to improvement of meat quality and higher growth per head.

According to data of Direction for veterinary medicine of Ministry of agriculture, forestry and water plant management, on Belgrade city territory (during 2008), in total number of cattle heads around 60% were heads of Simmental race, then about 35% of

Holstein Frisian race, while other races (combined race, Hereford, etc.) were presented in little portion, around 5% of total cattle number.

Besides in cattle breeding, it came to significant changes of breeding types into the pig and sheep breeding too. In pig production individual producers have reacted to market demand introducing Pietren pig breed, whose main characteristic is lower content of fat into meat. Underlined change of breeding type was intensive in last few years, creating much more pigs of this breed or pigs interbreed with this breed on the territory of Belgrade city and Serbia. But, having in mind that Direction for veterinary medicine of Ministry of agriculture, forestry and water plant management does not possess data about breeding types and pigs number on observed territory, it is impossible to define incidence of certain breeds.

If focus is on sheep breeding, more and more inter-crossing of domestic sheep race Pramenka with exported one, Virtemberg, has occurred, with the main aim in meat quality and volume production improvement. Besides this, flocks of sheep breed Ile-de-France are more often present on farms. They are used also for intensive crossing with domestic heads of sheep, in order to achieve better production characteristics.

Considering that agro-food industry, as one segment of animal products processing, is strongly developed just on the territory of Belgrade city, growth of total production of livestock breeding products on the observed territory would be much more significant, because it has great impact on depreciation of transport costs and increment of production efficiency of companies in this sector.

At other side, non organized purchase and unstable prices, as on Belgrade city territory, as on area of whole Republic, affect in decrease of heads number, and represent one of the limitation factors for live stock breeding development.

Large concentration of consumers and nearness of the market have great importance, as for the sale of primary agricultural products of family farms to the processing industry, as for the sale of manufactured agricultural products, which are processed on local husbandries. This is especially expressed at sensible and easy damageable products, in other words products which do not bear longer transportation, as milk and some dairy products.

Having in mind incalculable importance of livestock breeding for development of whole agro complex, state of production base, and market potentials of the City, there is a big necessity to stop negative tendencies in live stock breeding production.

For restraining negative tendencies in live stock breeding, improvement in production competitiveness is needed. At first, it refers to cattle breeding production, as most important branch of livestock breeding production on the territory of Belgrade city. Having this aim in mind different measures can be applied.

### **Measures for improvement of live stock breeding production**

It could be underlined that the most important measures for improvement of live stock breeding production competitiveness are:

- Household enlargement;
- Establishment of modern facilities and equipment;
- Increment of production per head;
- Improvement of breeding types;
- Specialization;
- Arrangement of inputs and final live stock breeding products market;
- Better conditions for financing of live stock breeding production.

One of the fundamental problems in live stock breeding production is expressed fragmentation of land estates. By the measures of agricultural policy government should stimulate enlargement of husbandries, because it is known that it reflects in improvement of economic effects, which is precondition for development of all live stock breeding branches. Estates enlargement would be done, as in resizing of ground areas, as in increment of cattle's number on the farms.

Extremely high investments are needed for husbandries enlargement. Bigger part should be financed from subsidized credits, and smaller part from means of payment of individual producers. Having that fact in mind Ministry of agriculture produced set of measures for agricultural production financing, during 2009. This programme consists of:

- 1) subsidizing of interest at short term crediting of agricultural husbandries - for individuals;
- 2) long term credit financing of agricultural production and processing industry at agricultural husbandries - both companies and individuals.

Among long term credits, that have the utmost importance for husbandry enlargement, Ministry provides 40% of assets, and commercial banks provide 60% of assets among total financing sources. Effective interest rate for part of credit that is provided by commercial bank is determined by bank itself according to its business policies. Interest rate can be six month EURIBOR +8% per annum at most. Interest rate is not accounted on part of assets financed by Ministry of agriculture, and intercalary interest is not charged.

Long term credits have grace period up to 12 months, unless they were granted for production of perennial plants, where grace period is set to be up to 3 years. Instalments for long term credits have to be paid within 5 years after grace period, unless for production of grape vine or core fruits, where deadline is set at 8 years.

Household enlargement in cattle breeding requires modernization of facilities and equipment used in direct production. For the purpose of increment of cattle, pig,

sheep and poultry breeding competitiveness on the domestic and international market, production modernization through the building of new and refreshment of existing facilities, purchase of actual equipment and agricultural mechanization for fodder production, should be carried out.

For achieving increase of total production and production per head, adequate conditions for all live stock species accommodation should be secured. Besides influence on increase of produced quantum, this will also influence decrease of health protection and heads curing costs too. Accommodation facilities should be modernized, because they increase work efficiency, and decrease total financial investments. Additionally, purchasing of certain equipment and agricultural mechanization for crop production is also necessary.

Possibilities for cattle production growing have to be looked at first on individual husbandries. On experience from previous period, small farms besides all problems they are faced with, appear as really flexible, regarding to modernization of production processes. Most of larger husbandries, according the dairy plants requests, succeeded to improve milk quality, so they are delivering extra and first class milk.

Ministry of agriculture encourages milk production of certain quality with premium per delivered litre at 1,4 RSD in year 2009. It is important to say that premium is significantly lower compared to previous years, which has negative impact on family husbandries' business operations. Premium reduction was among all caused by decrease in available assets in state budget, which was greatly impacted by global economy crisis.

Increase of cow milk production should be based at first on larger milk production per head. To accomplish this aim, way of alimentation should be changed, in other words adequate meal for cattle nutrition mostly based on silage of whole maize plant has to be created. According to that, adjustment in sowing structure is necessary. On that way it will be influenced on decrease of alimentation costs and milk price.

Possibility for other live stock breeding productions development also has to be found in increase of production per head and in breeding of races which have better production characteristics. Appliance of selection measures, by importation of quality genetic material, as with increase of poultry farm size, should have influence on increment of yearly eggs production per layer and better quality of chicken meat. By stimulations from Agricultural budget, it has to be affected on growth of live stock breeding production volume.

Improvement of breeding types is also one of the conditions for achieving production increment per head. Depending on production area (lowland, hilly, or mountainous area) and present breeding type, necessities for pure breeds' importation or improvement of domestic types by using of artificial insemination occur.

Ministry of agriculture of Republic of Serbia has passed on legal act on usage of assets to support development of rural regions, through enhanced competitiveness of agriculture

in 2009, by which incentive assets for obtaining quality breeding stock: breeding heifers, gilts, boars, goats and sheep up to 18 months old, poultry parent flocks, are determined. Incentive is 40% of value of obtained quality breeding stock (for marginal areas) or 30% (for other areas). This legal act also provides assets for obtaining mechanization for preparing and distributing of fodder at husbandry, then equipment for milking and storing milk, and equipment for distribution of manure. It represents yet another incentive for development of live stock production, and state participation is also 40% of price for marginal areas, and 30% of price for other areas. Among these things mentioned, legal act provides incentives for obtaining equipment for crop and vegetable farming, as for fruit growing and processing of certain agricultural products.

Improvement of breeding type would influence better fodder usage, decrease in slaughter waste, faster growth, etc.

Great problem is insufficient specialization of present production. Specialization of husbandries which are dealing with milk production can go into the two directions: 1) specialization on pure milk production; 2) directing on combined production, milk production and their own bullocks fattening. That way market nearness could be used for milk production, while bullock fattening would be directed, as to domestic market, to EU market as well. For correct specialization managing, support from state agro budget is necessary.

Redemption prices of live weight of all animal types are expressively unstable. Often price oscillations greatly affect decrease in producers' numbers, which are dealing with animal fattening, primarily pigs. Reason for frequent and big price changes in pig breeding is different way of pigs' alimentation, in other words using concentrated nutrients only. However, significant fodder price fluctuation affects in great portion on bullocks fattening and sheep production too.

Momentarily purchase of sheep and goat milk is not safe, and prices are unsatisfactory. Through building of small family capacities for processment of sheep and goat milk, it would be secured certain redemption and sale of raw milk and dairy products, and increment of these products prices.

For balancing live stock breeding production, it is necessary that government affects with agricultural policy measures on stabilization of crop cultures production quantum, which are used as fodder and on that way on stabilization of fodder prices and increase of live stock breeding production economy.

Together with collapse of textile industry problem of wool redemption appeared. Because wool purchasing practically does not exist, or purchasing prices are too low, sheep production efficiency has decreased. Revival of textile industry and handicraft, as production of wool products in rural areas, will enable employment of local population and increase in sheep numbers. Parallely, live stock breeding production value will grow too. Once wool products were much appreciated, but still big interest for clothes

produced from natural materials in EU countries exists. Production of such goods would make improvement of sheep production possible.

### **Conclusion**

Live stock fund and production volume on the territory of Belgrade city in the period 1995 - 2007 were in constant falling. For improvement in live stock breeding production in whole, at first development of cattle breeding production is necessary, as most important branch. Besides that, necessity for improvement of other branches of live stock breeding (pig, sheep and poultry breeding) is present, according to their development possibilities. Development of live stock breeding production and increase of animal products competitiveness could be accomplished by use of many measures, from which next are underlined: household enlargement, establishing of modern facilities and equipment, increment of production per head, arrangement of auxiliary goods and final animal products market, improvement of live stock breeding financing conditions, etc.

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