

**STATE and TRENDS of DEVELOPMENT of CATTLE  
BREEDING in BULGARIA DURING the PERIOD  
2015-2019**

**N. Ts. Markov**, Doctor PhD,  
Assoc. Prof.  
e-mail: ncm64@mail.bg

Research Institute of Mountain Stockbreeding and Agriculture,  
5600 Troyan, Republic of Bulgaria

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**Summary.** *Factor, descriptive and comparative, graphical analysis was used to establish the trends in the development of cattle breeding in the Republic of Bulgaria in the period 2015-2019. The analysis covers the level and dynamics of the indicators that determine it. The objective of the present paper are the following indicators: number of dairy cows, average milk yield, total production of cow's milk, number of beef cows, production of beef by slaughter weight, subsidization of cattle breeding. The number of dairy cows decreases at a relatively faster rate than the increase in average productivity. There was a consolidation of farms during the study period. The number of beef cows was increasing. At the same time, the number of dairy farms and their number of cows was significantly reduced. Milk production marked a steady downward trend during the study period.*

**Keywords:** farms, milk yield, cows, subsidies, slaughter weight.  
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**СТАН І ТЕНДЕНЦІЇ РОЗВИТКУ СКОТАРСТВА  
В БОЛГАРІЇ В ПЕРІОД З 2015 по 2019 року**

**Н. Ц. Марков**, Доктор PhD,  
Доц. професор  
e-mail: ncm64@mail.bg

Науково-дослідний інститут гірського тваринництва і сільського господарства, 5600 Троян, Республіка Болгарія

**Резюме.** Факторний, описовий та порівняльний, графічний аналізи були використані для встановлення тенденцій розвитку тваринництва в Республіці Болгарія в період 2015-2019 рр. Аналіз охоплює рівень і динаміку показників, які його визначають. Предметом дослідження цієї роботи є наступні показники: кількість молочних корів, середні надої молока, загальний обсяг виробництва коров'ячого молока, кількість корів м'ясного напрямку продуктивності, виробництво яловичини відповідно до забійної маси, субсидування тваринництва. Кількість молочних корів зменшується швидше, ніж збільшується їх середня продуктивність. Протягом періоду дослідження відбулася консолідація господарств. Кількість корів м'ясного напрямку продуктивності збільшувалася. У той же час кількість молочних ферм і, відповідно, кількість корів молочно-мясного напрямку продуктивності значно скоротилося. Виробництво молока характеризувалося стійкою тенденцією до зниження протягом періоду дослідження.

**Ключові слова:** ферми, надої, корови, дотації, забійна маса.  
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## **СОСТОЯНИЕ И ТЕНДЕНЦИИ РАЗВИТИЯ СКОВОДСТВА В БОЛГАРИИ В ПЕРИОД С 2015 ПО 2019 ГОДЫ**

**Н. Ц. Марков**, Доктор PhD,  
Доц. профессор  
e-mail: [nct64@mail.bg](mailto:nct64@mail.bg)

Научно-исследовательский институт горного животноводства  
и сельского хозяйства, 5600 Троян, Республика Болгария

**Резюме.** Факторный, описательный и сравнительный, графический анализы были использованы для установления тенденций развития животноводства в Республике Болгария в период 2015-2019 гг. Анализ охватывает уровень и динамику показателей, которые его определяют. Предметом исследования настоящей работы являются следующие показатели: количество молочных коров, средние надои молока, общий объем производства коров'ячего молока, количество коров мясного направления продуктивности, производство говядины в соответствии с убойной массой, субсидирование животноводства. Количество молочных коров уменьшается быстрее, чем увеличивается их средняя продуктивность. В течение периода исследования произошла консоли-

*дация хозяйств. Количество коров мясного направления продуктивности увеличивалось. В то же время количество молочных ферм и, соответственно, количество коров молочного направления продуктивности значительно сократилось. Производство молока характеризовалось устойчивой тенденцией к снижению в течение периода исследования.*

**Ключевые слова:** фермы, надои, коровы, дотации, убойная масса.

**DOI:** <https://doi.org/10.33694/2617-0787-2020-1-13-384-394>

**Introduction.** Cattle breeding in Bulgaria, developing under market conditions, is influenced by various factors: the need to apply the principles and mechanisms of the common agricultural policy, European standards, strong external and internal competition etc. In recent years, the agricultural policy of our country is aimed at synchronizing and unifying the Bulgarian legislation with that of the EU. European cattle breeding shows some fluctuations in the sector. They are the result of rising costs for land, cultivation, feed, medicine, fuel and energy and lagging behind beef and milk prices, as well as reduced state support (Dimitrov, 2012; Mihailov, 2012; Vulkanov, 2013; Ivanov and Stoychev, 2018; Mihailov, 2020).

According to Stoychev (2014), the lower average productivity of animals than the EU average leads to lower profitability, reduces competition and is the reason for the reduction of the cattle population. The tendency of convergence of the domestic with the average prices for the EU predetermines the future of the dairy farms in Bulgaria on the basis of greater efficiency.

It is necessary to accelerate the process of modernization of farms in order to increase the production of quality and competitive raw material (Mladenova, 2008; Atanasov, 2009; Markov, 2013).

The dairy sector in Bulgaria is experiencing acute problems related to structural fragmentation, low productivity and lack of horizontal and vertical integration, with small and medium-sized farms between 20 and 150 cows being most at risk. Another significant difference in the purchase prices of milk and live animals among farms of different sizes and places of residence is a problem for farms (Ivanov and Stoychev, 2018).

The aim of the present article is based on the changes in the number of cows, average milk production and milk and meat produced, specialized breeds, associations, selection and subsidies to analyze and compare trends in cattle breeding in the Republic of Bulgaria over the past five years and to recommend measures for its improvement.

**Material and methods.** Our idea of the development trend of cattle breeding covers a period of time that does not allow short-term events and factors. The trends in the cattle breeding development in the Republic of Bulgaria are related to the synchronization of Bulgarian conditions with the EU requirements. The following were analyzed: total cow's milk production and total beef and veal production.

With the help of the Index Factor Analysis was established the specific impact of both factors - number of dairy cows and average milk yield per cow on the total production of cow's milk in the Republic of Bulgaria and number of cows and meat produced on average for the country in 2015-2019.

$$S = x \cdot y,$$

where S - is the total milk production, respectively meat

x - is the average milk, respectively meat productivity

y - is the number of cows

$$S = S_1 - S_0$$

0 – base year (2015)

1 – index year (2019)

S – change in the total production of cow's milk, respectively beef

Descriptive and comparative graphical analyses were also applied. To achieve this goal, summarized data on Bulgarian cattle breeding in the period 2015-2019 was used.

The information used is mainly from statistical publications of FAO, MAFWE, NSI, Customs Agency, Agrostistics, Agricultural reports and reports for marketing and market analysis. The article quotes moments from papers by Bulgarian and foreign authors. The results are presented in tables and figures.

## **Results and discussion.**

### ***Trends in the number of animals***

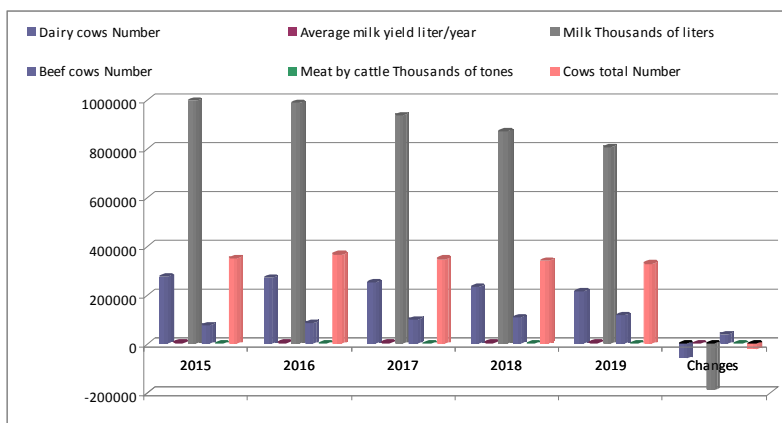
The number of animals is the most important indicator when a business year starts (Mihailov, 2020). By number of cattle Bulgaria with its 530,000 cattle is 129th place out of 209 countries breeding this species. In first place is India with about 50 million, followed by the EU with 23.5 million, Brazil with 20.7 million, Turkey with 13.9 million, the United States with 9.3 million, China with 8.7 million, Russia with 8.1 million, etc. (FAO, 2017).

Cattle breeding in Bulgaria is specialized as a priority in the dairy farming - 65.2% of the raised cows are for milk and 34.8% are for meat. In 2015, the number of dairy cows was 276160, and the number of beef cows was 76411. At the end of 2019, the number of dairy cows decreased to 215100 or a decrease of 22.11%, and the number of beef cows increased to 116000 or an increase of 34.14%.

**Table 1. Number of animals, average milk yield and milk and meat production 2015-2019**

Indicators	Measure	2015	2016	2017	2018	2019	Changes
Dairy cows	Number	276160	271329	252056	234055	215100	-61060
Average milk yield	liter/year	3595	3645	3729	3728	3999	+404
Milk	Thousands of liters	998093	988900	939978	872596	808875	-189218
Beef cows	Number	76411	85870	99635	106763	116000	+39589
Meat by cattle	Thousands of tones	13,19	17,25	17,25	16,16	17,69	+4,5
Cows total	Number	352571	367199	348691	340818	329 977	-22594

In terms of number of cows per capita, Bulgaria occupies an average position, 1 cow per 29 people. Here the championship is for New Zealand 1.1 cow per 1 person, Belarus, one cow per 6 people, Brazil 1 cow per 10 people, Austria 1 cow per 15 people, Armenia, Russia, Luxembourg and Ukraine, one cow per 20 people and etc. (FAO, 2019)

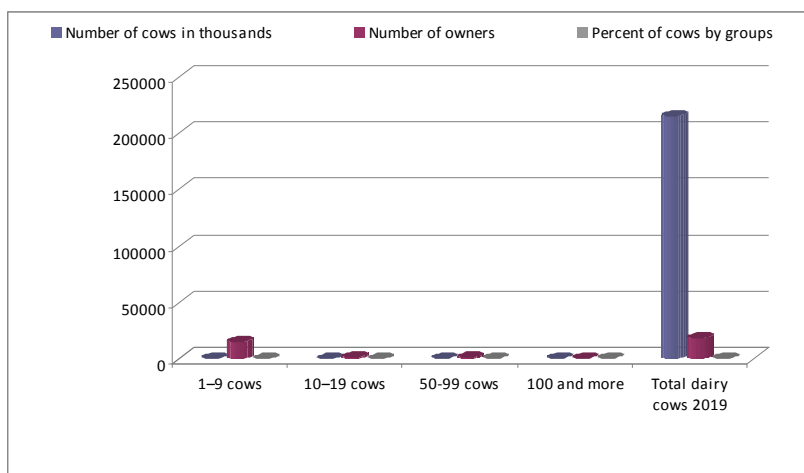


**Fig. 1. Number of animals, average milk yield and milk and meat production 2015-2019**

**Table 2. Distributions of dairy cows on farms in 2019**

Cows in different farms	Number of cows in thousands	Number of owners	Percent of cows by groups
1–9 cows	24,0	15085	11,18
10–19 cows	17,6	1392	8,19
50-99 cows	61,5	796	28,59
100 and more	111,9	382	52,04
Total dairy cows 2019	215100	17655	100

There is a consolidation of cattle farms in the dairy sector. Small farms and holdings, 1-9 cows, raise 24,000 dairy cows, which is 11.81% of the number of cows. Farms of 100 or more cows are in the hands of 392 people and represent 52.04% of the total number of dairy cows, or 111,900 individuals.



**Fig. 2. Distributions of dairy cows on farms in 2019**

### ***Milk productivity***

In 2019, the production of cow's milk in Bulgaria decreased compared to 2018, by 63,721 liters, or by 8.1% and represented 94.4% of the total milk yield for the year. There was a decrease in the number of

dairy cows by 18955 compared to 2018, to 215011, which was partially offset by an increase in average milk yield by 9.3% to 3999 liters. For the studied five-year period, the production of cow's milk in Bulgaria decreased by 189218 liters.

In 2019, the share of dairy cows in the total number of cows in Bulgaria decreased to 65.2%, compared to 74.0% in 2016, taking into account the growth of beef cows with 34.8%. In Bulgaria, 18,800 heifers are bred, over two years of age, which are extremely insufficient for the implementation of the necessary repairs of the herds.

Analyzing the production indicators for Bulgaria, total yield of cow's milk and average milk yield, we find that there was a decrease in total milk yield by 7.3% per year and an increase of 207 kilograms per year in average milk yield.

Productivity in cattle breeding is the most important measure of the degree of biological potential and other production factors. Compared to the increase of the average milk yield in the EU, where the average milk yield in the leading countries is: for the Netherlands 9155 liters, for the Czech Republic 9099 liters, for Germany 8907 liters, for Austria 8000 liters etc., the growth in Bulgaria is still low and unsatisfactory. Despite the good genetic abilities of the dairy cattle breeds in Bulgaria for 6500-7500 liters and more productivity, the average milk yield for Bulgaria remains low - 3999 liters and increases by 271 liters or 6.78%. The average milk yield in Bulgaria is low compared to other European countries such as Russia, where the average milk yield is 6492 liters and Ukraine with an average milk yield of 6041 liters. There is an array of 45-50 modern farms in the country, which achieve an average milk yield of over 8000 liters.

A good trend is that the cows in the group of farms with 50-99 cows increased to 28.59%, and the number of cows in the group of farms with 1-9 cows decreased to 11.8%. The result shows a decrease in the number of small farms, and the relative share of farms with more than 100 cows increases, 111900 cows are raised by 382 owners or more than half of the cows, 52.04% are raised in consolidated, modern farms.

In EU countries, the purchase price of milk in 2019 ranged from 29.8-31.8 eurocents in summer to 34.2-35.56 eurocents in winter. In Bulgaria, the price in winter reached 62 to 70 stotinki in January and collapsed to 50-55 stotinki in the summer months. This significant drop in the milk price has led to problems in the organization of the technological process, prevention, veterinary care and selection of animals.

### ***Meat productivity of cows***

The number of farms raising beef cows is maintained, and the number of cows in them increased to 116,000 or 34.8% of all cows. Of

these, 90,000 are purebred animals and 26,000 are high blood cross-breeds. The trend shows an increase in the number of beef cows as a promising alternative to dairy farming. The number of purebred animals of the specialized English and French meat breeds is increasing.

In Bulgaria, slaughter is carried out in 80 regulated slaughterhouses, registered as commercial companies, of which 43 declare that they slaughter cattle. For the studied period, Bulgaria showed an increase of 4.5 thousand tons of beef. 26650 cattle were slaughtered, which is 7650 fewer than in 2018. A slaughter yield of 47% was achieved. 5480000 kg of meat was obtained, which was less than 1 kg per capita. Compared to 2012, when this figure was 4,134 kg per capita, this decrease is a worrying factor. In many EU countries and the United States, a cow produces up to 200 kilograms of meat a year. The analysis of the results shows that in 2019 in Bulgaria we received 44 kilograms of cow meat. Result, also significantly low and disturbing, as a factor.

### ***Breeds, associations and selection***

The following dairy cattle breeds are raised in Bulgaria: Bulgarian Black and White Cattle (83%), Montbeliard, Simmental, Brown American Cattle, Bulgarian Rhodope Cattle. The breeding is conducted by 6 associations.

The following meat cattle breeds are raised in Bulgaria: Aberdeen Angus, Hereford, Simmental (meat cattle breed), Limousine, Galway, Obrak, Gascon gray cattle etc. and 26,000 meat-producing cross-breeds. Breeding activity is carried out and controlled by two associations.

Herds of autochthonous Gray cattle and Rhodope Shorthorn cattle are bred. The breeding is conducted by 3 associations.

Control over the activities of associations and farmers is exercised by the Executive Agency for Selection and Reproduction, with its local divisions. It is a state structure with the status of a control body.

### ***Subsidizing cattle breeding***

During the last five analyzed years, cattle breeding in Bulgaria has been supported under national co-payment schemes financed from the national budget and under specific support schemes financed by the European Agricultural Regulation Fund (ERDF), according to Art. 68 of Regulation No 73/2018. Payments are made in two tranches per year in the period from 1 December to 30 June of the following calendar year.

In 2019, the schemes from 2018 were extended. One of the eligibility criteria under the support schemes is the minimum number of animals kept in cattle breeding.



**Table 3. Amounts paid under schemes for national additional payments and specific support in animal husbandry 2015-2019**

Coupled support scheme for dairy cows	28751184 leva
Coupled support scheme of beef cows	18534590 leva
Scheme for coupled support of dairy or beef cows under selection control	542,28 leva/per animal
Transitional national aid scheme for cattle, non-coupled with production	181,44 leva/per animal
Coupled support scheme for dairy cows in the mountain regions	551,87 leva/per animal

The applied schemes are:

1. Coupled support scheme for dairy cows for 137697 animals. It is given as an aid to a certain number of animals - 250 individuals. Supports farms and farms in the dairy sector. Funds for support in the amount of BGN 28751184 have been utilized.

2. Scheme for coupled support of beef cows / heifers. Assistance in the amount of BGN 18534590 was received. The subsidy for one animal amounts to BGN 197.54.

3. Scheme for coupled support of dairy or beef cows under selection control. Support in the amount of BGN 36807035 has been utilized. The received subsidy for an animal is BGN 542.28.

4. Transitional national aid scheme for cattle, non-coupled with production. Transitional national aid for cattle was received by 4434 eligible farmers in the amount of BGN 38477240 for 197129 animals. The subsidy per animal amounts to BGN 181.44.

5. Coupled support scheme for dairy cows in the mountain regions for 2430 animals. The subsidy per animal is BGN 551.87. (Source - State Fund Agriculture-Paying Agency).

In 2019, two new investment-oriented schemes were launched:

1. Investments for the purchase of equipment for processing and/or processing of raw milk.

2. Investments for the purchase of a raw milk production facility and facilities for feeding newborn calves with milk.

The support is aimed at stabilizing production, increasing competitiveness, equitable distribution of value along the food chain and is in line with the saving of natural resources and adaptation of farms to climate change, as well as an opportunity to ensure social and financial prosperity of people engaged in cattle breeding.

**Conclusions.** The number of dairy cows decreases at a relatively faster rate than the increase in average productivity. The number of beef

cows and the share of beef production is increasing. At the same time, the number of dairy farms and their number of cows is significantly reduced. Milk production marked a steady downward trend during the study period.

Farm consolidation is observed. The main factor contributing to this is the support provided under direct payments – national co-payments and specific support.

Unprofitability of small and medium farms is reported. They fail to increase world production and revenue and reduce costs. Many of them do not have enough land to allow them to use direct payments and this has the effect of reducing the number of animals.

Specialized breeds in dairy and beef cattle breeding are an important factor in increasing production efficiency. The process of farm modernization continued at an accelerated pace. It is necessary to improve and balance the diet and to eliminate mistakes in the technological process in order to increase the average milk yield in Bulgaria.

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