COMPARATIVE ANALYSIS OF ECONOMIC RESULTS OF MILK PRODUCTION IN HOLSTEIN AND SIMMENTAL CATTLE BREEDS ON A MODERN FARM IN BOSNIA AND HERZEGOVINA

Said Karić[1], Merima Makaš[2], Emir Bećirović[2]

Original scientific paper

Abstract

This paper presents a comparative analysis of the production and economic results of Holstein-Friesian and Simmental cows on a modern dairy farm in Bosnia and Herzegovina. The research was conducted on a sample of 30 pregnant heifers of each breed, imported from Denmark and Austria, and kept under identical farm conditions. The analysis included age at first calving, milk production in the first lactation, revenue structure, variable costs, and gross margin. Data were obtained from the farm's electronic production database, while descriptive statistics, a two-sample t-test, and gross margin analysis were used.
The results showed that Holstein-Friesian cows achieved higher milk production, with an average daily yield of 34.52 litres compared to 28.39 litres in Simmental cows. This difference was statistically significant. Holstein-Friesian cows also achieved a higher total milk yield and higher gross margin. However, the Simmental breed generated higher additional income from the sale of male and female young cattle and culled cows, confirming the economic relevance of its dual-purpose character. Feed costs were the dominant variable cost category in both breeds.

Keywords: *Holstein-Friesian, Simmental, milk production, gross margin, variable costs*

INTRODUCTION

According to data from the Ministry of Foreign Trade and Economic Relations, animal husbandry accounts for about 37% of the total value of agricultural production, and cattle breeding is considered one of the key segments of livestock production in BiH. The Holstein-Friesian breed is bred in the territory of the entire FBiH, the largest part of the population is located on large dairy farms with intensive breeding. The extensive breeding method for this breed is less common, given that it has extremely demanding nutritional and breeding requirements.

[1] Farma Spreča, d.o.o. Kalesija
[2] University of Sarajevo, Faculty of Agriculture and Food Sciences
*Corespodence: e.becirovic@ppf.unsa.ba

Estimates indicate that Holstein-Friesian cattle in the FBiH territory today account for 15% of the total cattle population in BiH (MPVŠ FBIH, 2018). There are no official data on the number of breeds per breed, and the available sources from the Federal Ministry of Agriculture, Water Management and Forestry provide only estimates. Estimates indicate that the Simmental breed of cattle in the territory of FBiH accounts for 45% of the total cattle population in BiH today (MPVŠ FBIH, 2018).

Studies have been conducted in Bosnia and Herzegovina on Holstein-Friesian and Simmental cattle, most often on production and reproductive characteristics. The studies were conducted at different times and under different feeding and housing conditions. Examination of production and reproductive characteristics of two breeds of cows, conducted in Semberija through lactation seasons in the period 1990 to 1998. In milk production, the Holstein-Friesian breed had average production of 4,795 kg in the first, 5,334 kg in the second, and 5,417 kg in the third standard lactation. The Simmental had an average production: 4,084 kg in the first, 4,440 kg in the second and 4,483 kg in the third lactation. The Holstein-Friesian breed had better milk production results than the Simmental (Budimir *et al*., 2011). The authors state that the research was conducted under poor nutritional conditions, as reflected in the amount of milk produced. This research showed higher milk yield in Holstein-Friesian cattle than in Simmental cattle. On the other hand, this research showed that Simmental had better predispositions for weight and meat production, consistent with previous research. The highest average weight before slaughter, as well as the mass of hot and cold carcasses, was recorded in male Simmental cattle, then in females of the Simmental breed, and then in young male bulls of the same breed. The lowest average weight before slaughter was recorded in Holstein-Friesian cattle. Carcass utilisation percentage (meat yield) was higher in cattle with higher pre-slaughter weight. Cooling losses of the studied carcasses were variable (Lukić *et al.*, 2016).

Profitability is the primary driver of any production activity, including livestock production. Therefore, a system that is not profitable cannot survive. Krupová *et al*. (2009) found that Holstein cows are more profitable than Slovenian Simmentals and Pinzgau cows. In another study comparing the profitability of Holstein and Jersey cows, Cunha *et al*. (2010) concluded that Holstein cows are more profitable than Jersey cows due to lower total production costs and higher gross milk income resulting from higher milk yield per lactation. Nutrition is one of the most important factors determining the production performance and health status of cows. Cow rations should contain high-quality roughage, a balanced ratio of grains and protein, and vitamins and minerals. In their study, Demerican *et al*. (2006) reported that feed cost was the dominant variable cost, accounting for more than 50% of total production costs. Furthermore, El-Awady *et al*. (2013) found in their research that food costs, as part of variable costs, accounted for 86.74%, 89.56%, and 89.34% at different levels of production.

In previous studies, the calving advantage has been found more strongly in Simmentals. Moderate assistance was present in both breeds. Roche *et al*. (2023) investigated the impact of dystocia (difficult calving) on the future health and productivity of Holstein dairy cows in the province of Alberta, Canada. Data were collected from 2,159 cows on

21 commercial dairy farms. Dystocia was defined in four categories: no assistance, light pulling, heavy pulling, and moderate-to-very-heavy pulling/surgery. Cows that required moderate to very heavy assistance or surgery produced 4.0 kg/day less milk, 0.18 kg/day less milk fat, and 0.14 kg/day less protein compared to cows without assistance ($p < 0.05$). These cows also had higher somatic cell counts. Cows requiring only light pulling produced 0.03 kg/day less milk fat and were 1.7 times more likely to retain the placenta compared to unassisted cows. The results show that a higher degree of assistance during calving has significant negative consequences for milk production, udder health, reproduction, and cow survival in Holstein herds.

Age at first calving (AFC), Torshizi (2016) reported that a range of 24 to 26.5 months of age at first calving represents the optimal calving age for Holstein heifers to maximise 305-day milk yield. In this study, they used data from 72,946 heifers from 724 farms, with a total of 638,063 daily control records, that calved between 2001 and 2011. These data were analysed to determine the influence of age at first calving and calving season on Wood's lactation curve parameters. The genetic trend of lactation curve parameters across different calving years was also assessed. Increasing the age at first calving by one month, from 18 to 26 months, increased the 305-day milk yield by about 138 kg, whereas increasing the age from 27 to 32 months decreased the yield by about 61 kg. Therefore, the optimal age range at first calving in research for the Holstein-Friesian breed is 24 to 26.5 months. They also state that in certain ranges, increasing the age by one month can increase milk production. When it comes to the recorded ages at the moment of first calving in Simmental and Holstein-Friesian breeds at Farma Spreča in the observed research, they may be the result of different factors and priorities that inseminators in the countries from which they originate worked.

This paper presents the economic indicators for purchased pregnant heifers imported from Denmark (Holstein-Friesian) and from Austria (Simmental). From both groups, 30 individuals were selected by random sampling to monitor pregnancy status, calving, age at calving, milk production in the first lactation, and variable costs. As a result of the analysis, economic results were presented as gross margin for both observed breeds. The aim of the paper is to determine and compare the production and economic results of Holstein and Simmental cows on a modern farm in Bosnia and Herzegovina.

MATERIAL AND METHODS

The research includes samples of 30 pregnant heifers from both groups, kept under modern dairy farm conditions in 2025. Parameters related to the degree of pregnancy, age at first calving, calving success, production in the first lactation, and variable costs of their keeping were analysed. The data were downloaded directly from the electronic database, i.e. software that contains and monitors numerous elements and parameters in animal production on this farm. The methods used for data processing were descriptive statistics, a t-test to determine differences in milk production between these two breeds, and economic indicators of production, including income, variable costs, and the gross margin.

Income took into account the quantities of milk produced, the amount of beef sold from production, and the value of culled cows. Production costs include food, health care, water and energy, reproduction costs, and other costs. Human labour was not taken into account because the entire workforce is permanently employed on the farm, making it a fixed cost. Head depreciation was not performed, because replacement is carried out from the own herd, from the obtained female calves.
During the research period, no heads had reached the end of their productive lives and were ready for sale, as the research focused on heifers in the initial phase of production. However, for the purposes of the economic analysis, the estimated value of the culled animal at the end of the production life was used. The assessment was based on the average body weight of adult cows and the market price of live weight in Bosnia and Herzegovina. The basic assumption was that, based on this farm's experience, the Holstein breed is culled after five years and the Simmental after six years of use. In this context, the analysed calculations assumed that 5 Simmental cows and 6 Holstein-Friesian cows are selected from the 30 cows per year.
The gross margin (GM) was defined as the difference between total income and total variable costs per hectare (Kay *et al*., 2015):

$$GM = Revenue - Variable\ cost$$

Data consolidation and all necessary calculations have been done in MS Excel.

RESULTS AND DISCUSSION

The modern concept of keeping dairy cows on the Spreča farm is based on the free way of keeping cows in barns. This method is beneficial for the cows because they have the opportunity to move, choose a place to lie down, gain and maintain fitness, and increase production levels. All operations in the barns are separated. This means that feeding, watering, and milking are carried out in different places, which positively affects the cows' health and fitness and their more adequate grouping. The age at first calving (age at first calving/AFC) on the farm is an important indicator for a large number of reasons, one of which is whether the heifer had its first successful insemination in the optimal interval. In these specific situations, we had a case in which the average age of the Simmental at the time of calving was 27.4 months, while the average age of the Holstein-Friesian at the time of first calving was 24 months.
So, there is already a difference between these two breeds of pregnant heifers; one could say a significant difference. So the average age of Holstein-Friesian heifers at calving was 3.4 months lower than that of Simmental heifers. Of course, this does not necessarily indicate a characteristic of the breed, but rather a characteristic of the work of the inseminator with the heifers and the staff working on reproduction. Holstein-Friesian heifers were successfully inseminated earlier, which enabled earlier calving or earlier entry into production. It is possible that this is a targeted approach by the inseminators, indicating that they had specific intentions regarding calving planning, but calving heifers at 24 months is of great importance to the farm, because after calving,

that heifer has already entered production and, over the next 3.4 months, produces 3,570 litres of milk. If we take into account that this is a number of 30 heifers, that is 107,100 litres of milk.

Table 1. Comparison of milk production in the first lactation of Holstein and Simmental breeds based on a sample of 30 cows for each breed

Description	Holstein	Simmental
Average daily production (l)	34.52	28.39
Average duration of lactation (days)	302.6	302
Total milk yield per cow in the first lactation (l)	10,446	8,574

The value of Holstein-Friesian production is 104,958 KM plus subsidies of 54,578 KM. The later the heifers calve and enter production, and the shorter their gestation period, the longer they need to be fed. The Holstein-Friesian breed is a dairy breed, so it was expected that the result in terms of milk production would be on their side (10,446 l per head). However, the Simmental also achieved a result (8,574 l per head) that met the farm's expectations, especially considering that it is a combined breed whose calves achieve more satisfactory results in fattening, as do the cows themselves in the case of slaughter. The Holstein-Friesian cows had an average production of 34.5 l per day, while the Simmental had an average production of 28.39 l. On the other hand, the Simmental, as a combined breed, has an advantage in the sale of fattened calves and steers. The meat of this breed is more highly valued in the market, so it commands higher prices when sold than Holstein-Friesian meat.

Table 2. Descriptive statistics for the observed Holstein and Simmental breed cattle in milk production

Description	Holstein	Simmental
Mean	34,5	28,4
Median	34.2	27.9
Mode	34.2	25.3
Standard Deviation	3.0	2.8
Minimum	28.3	23.0
Maximum	40.5	34.7
Count	30	30
Coefficient of variation	8.6	9.8

Median and mode values for the Holstein breed were very close to the arithmetic mean, which indicates a relatively symmetrical and even distribution of production. In the Simmental breed, the arithmetic mean and median are also relatively close, but the modal value is lower, which may indicate a slightly higher concentration of heads at a lower production level.

The standard deviation was 3.0 in the Holstein and 2.8 in the Simmental breed. Although the absolute variability is slightly higher in the Holstein, the coefficient of variation

shows that milk production is relatively more stable in the Holstein breed. The coefficients of variation of 8.6% in Holsteins and 9.8% in Simmentals indicate low variability in both breeds, but also slightly higher production uniformity in Holstein necks.

The production range for the Holstein breed was 12.2, while for the Simmental breed it was 11.7. The minimum production of the Holstein was 28.3, which is almost equal to the average production of the Simmental breed of 28.4. This data additionally confirms that the distribution of milk production in the Holstein breed is shifted towards higher values.

The results confirm the expected superiority of the Holstein breed in milk production. However, the final economic evaluation cannot be based solely on the amount of milk, because the Simmental breed can generate significant additional income through the sale of calves/heifers and the higher value of cows produced. Therefore, in the continuation of the analysis, it is necessary to include the structure of income and expenses by breed.

Table 3. Comparison of Milk Yield between Holstein and Simmental Cows Using a Two-Sample t-Test

Description	**Holstein**	**Simmental**
Mean	34.5	28.4
Variance	8.8	7.8
Observations	30	30
Hypothesized Mean Difference	0	
Df	58	
t Stat	8.24	
P(T<=t) two-tail	2.43E-11	
t Critical two-tail	2.00	

To determine the statistical significance of the difference in average milk production between the Holstein and Simmental breeds, a two-sample t-test was used. Given that the variances in the observed groups were relatively similar, i.e. that the variance in the Holstein breed was 8.83, and in the Simmental breed 7.78, a t-test was applied assuming equal variances. The test results showed that the average milk production in Holstein cows was statistically significantly higher than in Simmental cows ($t = 8.24$; $df = 58$; $p < 0.001$). These results confirm that the Holstein breed in the observed sample achieves significantly higher milk production.

For the purpose of analysing the economic results of milk production, a calculation of variable costs and revenues was made for a herd of 30 Holstein heifers (Table 4). The gross margin represents the difference between total revenue and variable costs, indicating how much remains to cover fixed costs and potential profit.

The revenue structure for the Holestein breed clearly shows that milk sales are the main source of income. Revenue from milk sales amounted to 307,105 KM, or approximately 57.7% of total revenue. Milk subsidies also had a very important role, amounting to 162,954 KM, or about 30.6% of total revenue. This indicates that the farm's economic performance depends not only on market-based milk sales but also significantly on the agricultural support system. Additional revenues were generated from the sale of male and female young cattle, as well as from the estimated value of culled cows. Although these revenues are lower than those from milk and subsidies, they represent an important complementary component of the overall economic result, particularly in production systems where the value of animals is also economically relevant.
A particularly important part of the analysis is the structure of variable costs. Total feed costs amounted to 267,774 KM, which represents approximately 81.3% of total variable costs. This is a very high share, clearly indicating that feed is the dominant cost category in milk production. In practical terms, the profitability of this production is largely determined by feed prices, ration quality, and the efficiency with which feed is converted into milk. Any increase in feed prices or any decline in feed efficiency can therefore have a direct and significant impact on the final economic result of the farm.

Table 4. Determination of gross margin for the Holstein-Friesian breed based on a sample of 30 animals, expressed in BAM

Opis	Jedinica	Količina	Cijena	Ukupno
A) REVENUE				
Milk	l	313,373	0.98	307,105
Subsidise	l	313,373	0.52	162,954
Sale of bullocks (510 kg)	No.	15	2,397	35,955
Sale of heifers (450 kg)	No.	8	2,115	16,920
Value of culled animals	No.	6	1,595	9,570
Total revenue				**532,504**
B) VARIABLE COSTS				
B1. Food				
Corn silage	kg	226,950	0.1	21,560
Concentrates	kg	110,540	1.2	132,648
Hay	kg	72,624	1.2	84,970
Straw	kg	22,695	1.3	28,596
B2. Water and energy				
Water	m³	650	1.7	1,105
Electricity	kWh	8,669	0.2	1,387
B3. Health care				
Vaccinations	No.	30	60	1,800
Antiparasitic drugs	No.	30	190	5,700
Interventions	usluga	30	250	7,500
B4. Reproduction				
Genetic material	doza	45	50	2,250

Insemination	No.	45	40	1,800
Pregnancy US examination	No.	90	30	2,700
B5. Other expenses				
Consumables	v	30	505	15,150
Fertilizer disposal	m³	30	470	14,100
Veterinary expenses	No.	30	270	8,100
Total variable costs				**329,366**
GROSS MARGIN (A-B)				**203,138**

Within feed costs, concentrates are the largest individual cost item, at 132,648 KM. They account for around 40.3% of total variable costs and almost half of total feed costs. Hay is the second most important feed cost item, with a total value of 84,970 KM, representing approximately 25.8% of total variable costs. Straw and maize silage have smaller, but still relevant, shares in the overall cost structure. This cost distribution shows that the farm is strongly dependent on feed inputs, especially concentrates and hay, which should be carefully monitored in economic planning.

The data shows that the farm has a positive gross margin and that milk production remains economically sustainable within variable costs. However, the significant proportion of feed costs underscores the importance of feed management as a key area for enhancing economic efficiency. Consequently, future analysis should focus on the connection between milk yield, feed expenses, and gross margin.

Table 5. Determination of gross margin for the Simental breed based on a sample of 30 animals, expressed in BAM

Opis	Jedinica	Količina	Cijena	Ukupno
A) REVENUE				
Milk	Lit	257,213	0.98	252,069
Subsidise	KM	257,213	0.52	133,751
Sale of bullocks (570 kg)	Kom	15	4,161	62,415
Sale of heifers (520 kg)	Kom	9	3,796	34,164
Value of culled animals	Kom	5	3,010	15,050
Total revenue				**497,449**
B) VARIABLE COSTS				
B1. Food				
Corn silage	Kg	226,950	0.10	21,560
Concentrates	Kg	110,540	1.20	132,648
Hay	Kg	72,624	1.17	84,970
Straw	Kg	22,695	1.26	28,596
B2. Water and energy				
Water	m³	650	1.70	1,105
Electricity	kWh	8,669	0.16	1,387
B3. Health care				
Vaccinations	Kom	30	60	1,800
Antiparasitic drugs	Kom	30	190	5,700
Interventions	usluga	30	250	7,500
B4. Reproduction				

Genetic material	Doza	45	50	2,250
Insemination	kom	45	40	1,800
Pregnancy US examination	Kom	90	30	2,700
B5. Other expenses				
Consumables	Kom	30	505	15,150
Fertilizer disposal	m^3	30	470	14,100
Veterinary expenses		30	270	8,100
Total variable costs				
GROSS MARGIN (A-B)				**168,083**

The calculation of the gross margin for the Simmental breed shows that total revenue was 497,449 BAM, while total variable costs were 329,366 BAM. Based on these values, the gross margin was 168,083 BAM. This indicates that production achieved a positive economic result at the variable-cost level, although the margin is relatively lower than in systems with higher milk production. In relative terms, variable costs accounted for approximately 66.2% of total revenue, while the gross margin accounted for about 33.8%.

The revenue structure confirms that milk production remains the main source of income, even for the Simmental breed, which has a dual-purpose production profile. Revenue from milk sales amounted to 252,069 BAM, representing around 50.7% of total revenue. Milk subsidies amounted to 133,751 BAM, or approximately 26.9% of total revenue. Together, milk sales and subsidies generated 385,820 BAM, which represents about 77.6% of total revenue. This clearly shows that the farm's economic results are still primarily based on milk production and the support system linked to delivered milk quantities.

However, the Simmental breed also generates a significant part of its income from animal sales. Revenue from the sale of male fattened cattle amounted to 62,415 BAM, while the sale of female young cattle generated 34,164 BAM. In addition, the estimated value of culled cows amounted to 15,050 BAM. These three categories together generated 111,629 BAM, or about 22.4% of total revenue. This is an important result because it confirms that the economic value of the Simmental breed cannot be assessed only through milk yield. Its dual-purpose character provides additional income through fattening and the higher market value of animals.

Since practically identical technology is used as in Holstein, the cost structure is identical to Holstein's; therefore, the main differences arise from the structure and amount of income.

Comparative analysis of gross margin calculations shows that the Holstein-Friesian breed achieved a higher total revenue and higher gross margin than the Simmental breed. Total revenue for Holstein-Friesian cows amounted to 532,504 BAM, while the Simmental breed generated 497,449 BAM. Since total variable costs were the same in both calculations, amounting to 329,366 BAM, the difference in gross margin was entirely determined by the revenue structure. Holstein-Friesian cows achieved a gross margin of 203,138 BAM, compared to 168,083 BAM for Simmental cows.

The most important difference between the two breeds is visible in the structure of revenues. In the Holstein-Friesian breed, milk sales and milk subsidies generated 470,059 BAM, representing 88.3% of total revenue. In the Simmental breed, these two categories amounted to 385,820 BAM, or 77.6% of total revenue. This confirms the strong advantage of Holstein-Friesian cows in milk-oriented income, primarily due to higher milk yield.

The Simmental breed achieved considerably higher revenue from animal sales. Income from male and female young cattle and culled cows amounted to 111,629 BAM, or 22.4% of total revenue, while the same categories in Holstein-Friesian cows generated 62,445 BAM, or only 11.7%. This clearly reflects the dual-purpose character of the Simmental breed.

Although Simmental cows partly compensated for lower milk production through higher animal-related revenues, this was not sufficient to offset the higher milk and subsidy income achieved by Holstein-Friesian cows.

It is important to note that in the analysed year (2025), there was no mortality among the observed individuals, so the calculations were performed accordingly. However, it should be emphasised that mortality is expected to range from 1-3%, depending on breeding conditions and the herd's genetic predispositions.

CONCLUSION

The results of this research confirm clear differences in production and economic performance between Holstein-Friesian and Simmental cows kept under the same conditions on a modern dairy farm in Bosnia and Herzegovina. Holstein-Friesian heifers calved earlier, with an average age at first calving of 24 months, compared with 27.4 months in Simmental heifers, enabling earlier entry into milk production. Holstein-Friesian cows also achieved significantly higher milk production, with an average daily yield of 34.52 litres, compared to 28.39 litres in Simmental cows. The difference in milk yield was statistically highly significant, confirming the expected dairy superiority of the Holstein-Friesian breed.

The economic analysis showed that Holstein-Friesian cows achieved higher total revenue and gross margin. Total revenue amounted to 532,504 BAM, while the gross margin reached 203,138 BAM. In the Simmental breed, total revenue amounted to 497,449 BAM, with a gross margin of 168,083 BAM. The main advantage of Holstein-Friesian cows was generated through higher milk sales and milk subsidies. However, the Simmental breed achieved considerably higher income from the sale of young male and female cattle and culled cows, confirming the importance of its dual-purpose production characteristics.

In both breeds, feed costs were the dominant variable cost category, accounting for approximately 81.3% of total variable costs. Therefore, feed management represents the key factor for improving economic efficiency. Overall, Holstein-Friesian cows achieved better economic results, while Simmental cows partially offset lower milk yield with higher animal-related revenues.

LITERATURE

Agencija za statistiku Bosne i Hercegovine. (2012). Bosna i Hercegovina u brojkama. Sarajevo: Agencija za statistiku Bosne i Hercegovine.

Bijeljac, S. & Sarić, Z. (2005). Autohtoni mliječni proizvodi sa osnovama sirarstva. Sarajevo: Poljoprivredni fakultet Univerziteta u Sarajevu.

Budimir, D., Plavšić, M. & Popović-Vranješ, A. (2011). Production and reproduction characteristics of Simmental and Holstein Friesian cows in Semberija area. Biotechnology in Animal Husbandry, 27(3), 1343–1350.

Demircan, V., Binici, T., Koknaroglu, H. & Aktas, A. R. (2006). Economic analysis of different dairy farm sizes in Burdur province in Turkey. Czech Journal of Animal Science, 51(1), 8–17.

El-Awady, H. G., Salem, A. Y. & Shoaib, A. (2016). Effect of level of milk production on profitability in lactating Egyptian buffaloes. Journal of Sustainable Agricultural Sciences, 42(2), 105–114.

Federalno ministarstvo poljoprivrede, vodoprivrede i šumarstva. (2018). Uzgojni program za holštajn-frizijsko govedo: Prijedlog mjera, stanje na terenu i dosadašnji rezultati istraživanja. Sarajevo.

Federalno ministarstvo poljoprivrede, vodoprivrede i šumarstva. (2022). Strategija poljoprivrede i ruralnog razvoja Federacije Bosne i Hercegovine 2021–2027. Sarajevo.

Federalno ministarstvo poljoprivrede, vodoprivrede i šumarstva. (2024). Program novčanih podrški u poljoprivredi i ruralnom razvoju za 2024. godinu. Sarajevo.

Federalno ministarstvo poljoprivrede, vodoprivrede i šumarstva. (n.d.). Preuzeto 19. decembra 2025. sa https://fmpvs.gov.ba/

Federalni zavod za statistiku. (n.d.). Preuzeto 19. decembra 2025. sa https://fzs.ba/

Katalinić, I. (1994). Govedarstvo. Zagreb: Hrvatska mljekarska udruga.

Kay, R., Edwards, W. & Duffy, P. (2015). Farm management (8th ed.). McGraw-Hill.

Koknaroglu, H., Demircan, V., Dalgic, A. & Cinar, I. (2021). Comparison of Holstein and Simmental cows in terms of performance, cost and profitability. Custos e Agronegocio, 17(1), 395–409.

Lukić, M., Ivanović, J., Starčević, M., Đorđević, J., Marković, R. & Baltić, M. (2016). Performanse trupova simentalskog i holštajn-frizijskog goveda u Srbiji. Biotechnology in Animal Husbandry, 32(4), 411–418.

Petričić, A. (1958). Mljekarski priručnik. Zagreb: Poljoprivredni nakladni zavod. Petričić, A. (1984). Konzumno i fermentirano mlijeko. Zagreb: Sveučilišna naklada Liber.

Roseg, Đ. (1995). Prerada mesa i mlijeka. Zagreb: Školska knjiga.

Torshizi, M. E. (2016). Effects of season and age at first calving on genetic and phenotypic characteristics of lactation curve parameters in Holstein cows. Journal of Animal Science and Technology, 58(1), 8. https://doi.org/10.1186/s40781-016-0089-1

KOMPARATIVNA ANALIZA EKONOMSKIH REZULTATA PROIZVODNJE MLIJEKA HOLSTEIN I SIMENTAL PASMINA GOVEDA NA SAVREMENOJ FARMI U BOSNI I HERCEGOVINI

Sažetak

Ovaj rad predstavlja komparativnu analizu proizvodnih i ekonomskih rezultata krava holštajn-frizijske i simentalske pasmine na savremenoj mliječnoj farmi u Bosni i Hercegovini. Istraživanje je provedeno na uzorku od 30 steonih junica svake pasmine, uvezenih iz Danske i Austrije, koje su držane u identičnim uslovima na farmi. Analiza je obuhvatila starost pri prvom teljenju, proizvodnju mlijeka u prvoj laktaciji, strukturu prihoda, varijabilne troškove i bruto maržu. Podaci su prikupljeni iz elektronske baze proizvodnje na farmi, dok su za obradu korištene deskriptivna statistika, t-test za dva nezavisna uzorka i analiza bruto marže.

Rezultati su pokazali da su krave holštajn-frizijske pasmine ostvarile veću proizvodnju mlijeka, sa prosječnim dnevnim prinosom od 34,52 litre u odnosu na 28,39 litara kod simentalskih krava. Ova razlika bila je statistički značajna. Holštajn-frizijske krave su također ostvarile veći ukupni prinos mlijeka i veću bruto maržu. Međutim, simentalska pasmina generisala je veće dodatne prihode od prodaje muške i ženske teladi te izlučenih krava, čime se potvrđuje ekonomski značaj njenog kombinovanog (dvonamjenskog) karaktera. Troškovi ishrane bili su dominantna kategorija varijabilnih troškova kod obje pasmine.

Ključne riječi: *Holštajn-frizijska pasmina, simentalska pasmina, proizvodnja mlijeka, pokriće varijabilnih troškova, varijabilni troškovi*