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INFLUENCE OF BREED AND SEASON ON THE FATTY ACID COMPOSITION OF GOAT MILK

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Abstract

It was analyzed how the content of fatty acids in the milk of Saanen goats and goats of Ukrainian breeding depended on the breed of goats. The experiment was based on a comparison of the content of fatty acids in the milk of 20 goats, of which 10 were Saanen goats and 10 were of Ukrainian local selection. Milk samples were taken monthly and analyzed for total and individual fatty acid content. The content of individual fatty acids was determined using the ion-exchange liquid column chromatography method. The results of the experiment showed that the profile of individual fatty acids was significantly affected by breed and season, but the amount of unsaturated fatty acids was unchanged throughout the year in Saanen and Ukrainian local breed goats. Goats of local Ukrainian selection gave milk with a higher content of monounsaturated fatty acids compared to their counterparts. The content of unsaturated fatty acids, including polyunsaturated acids, increased in warm months in goats of both breeds.

Key words**:** *goat's milk, fatty acid profile, saturated fatty acids, unsaturated fatty acids*

INTRODUCTION

Such a component of the diet of many people, as goat milk and dairy products from it, is complete and balanced in terms of micro and macro elements [8]. The content of fatty acids in goat milk directly affects the quality of dairy products [32]. One of the ways to determine the effect of goat milk on the functioning of the human body is to study its fatty acid composition, which is very different compared to cow's milk in terms of the amount of saturated and unsaturated fatty acids. Also, the milk of goats and cows has a different content of individual fatty acids, which have a noticeable effect on the nutritional value of milk and the human diet [6]. Determining the quality and biological value of goat milk includes the analysis of its fat profile [26]. The antimicrobial, anti-inflammatory and anti-carcinogenic function of goat milk is formed by smaller fat and casein micelles, as well as an increased concentration of short and medium-chain both free and bound acids, which are the fat-forming component of milk [25, 30].

Previously, it was stated that the hypoallergenicity of goat milk is based on the low content of s1-casein (a protein that has the highest degree of allergenicity). But these judgments were refuted, and instead it was found that the hypoallergenicity of goat milk does not depend on the content of s1-casein, which still causes allergic reactions in goat milk, even at a lower level than in cows. At the same time, it turned out that the genetic polymorphism of milk proteins is related to the mass proportions of certain fatty acids, and in the future it will be possible to select animals with the required ratio of fatty acids to allergenic proteins [2, 5, 24]. Goat milk is characterized by a unique ratio between the

mass fractions of lauric and capric fatty acids. Not only is this ratio two times lower than that of cow's milk, but because of the small variation in the average value, it can be used to demonstrate that goat's milk is adulterated by cow's milk [12]. The study of the properties of milk fat, especially the triglycerides of fatty acids, opens wide possibilities for research on the properties useful for humans and the criteria for authenticity of dairy products from goat milk. The composition of the fat content in milk fat is influenced by the goat breed [10], its lactation period [11], feeding conditions [7, 16] and seasonal factors [1, 3].

It is known that the composition of milk fat is subject to significant seasonal variations, especially when comparing summer and winter periods, mainly due to the introduction of green grass [33] in the feed ration. The content of stearic and oleic acids increases in summer, and that of myristic and palmitic acids in winter [4]. The content of biologically important polyunsaturated fatty acids (linoleic, linolenic and arachidonic) is higher in spring and summer than in autumn and winter, but at the same time the degree of oxidation of these acids increases. Therefore, it is necessary to have information about the natural antioxidants of milk, such as carotenoids and tocopherols, in order to control the biological value of milk (A, D, E) [23, 27]. The greatest differences were found in the concentration of α-linolenic acid (C18:3n3), which was almost double. The content of this acid was higher in summer than in winter [17, 18]. These data are consistent with similar data from foreign researchers, who assume that the use of green fodder in summer, when the grass is actively growing, contributes to the accumulation of the proportion of polyunsaturated fatty acids in both goats [28] and other ruminants [13].

The fatty acid profile of milk depends on the breed of goat. One of the most common goat breeds in dairy goat breeding worldwide is the *Saanen* goat, in addition to which *Alpine* and *Nubian* breeds are also used in some farms. The German White goat was created by long-term crossbreeding of goats of local breeds in Germany with purebred goats of the *Saanen* breed. German White goats practically do not differ from Saanen goats, although the latter have a stronger constitution [44]. There is a widespread opinion among scientists that the genotype of goats and the composition of fatty acids in their milk are closely related [14, 41]. To confirm this view, the different fatty acid profile in the milk of goats of different breeds is often cited as an example. In particular, it has been demonstrated that the milk of *Saanen* goats has a higher saturated fatty acid content than that of goats of local breeds [11]. who studied the fatty acid composition of goat milk from the Saanen and Swedish Landrace breeds reported a difference in this indicator between the breeds. Thus, the Zaane breed had the highest content of non-fatty acids, and the content of palmitic acid and oleic acid were dominated by goats of the *Swedish Landrace* breed [43]. Some works show the dependence of fatty acid composition of goats' milk only on the lactation period [40] or exclusively on the characteristics of feeding [29, 33, 42] and to a lesser extent on the breed [37].

Although *Saanen* goats were bred in Germany in the mid-19th century [31], in the last 150 years they began to be kept in temperate latitudes around the world, including Ukraine. The goats of the *Saanen* breed spread to the western, central and southern regions of Ukraine and were initially used to improve the reproductive and performance characteristics of local goats of Ukrainian breeding [35]. However, today there are farms that exclusively use *Saanen* goats for milk production. In Ukrainian agriculture, these goats are mainly bred in small farms. The *Saanen* breed is appreciated by farmers for its productivity and the milk for its high quality, proven usability and moderate fat content [36]. Due to the general decline of goat breeding in Ukraine, the population of *Saanen* goats has recently decreased. Today, of the seven state goat breeders, three breed *Saanen* goats. Despite the war, the demand for these goats is recovering as there are government subsidies for farmers, which indicates a new potential for goat breeding in the future [15].

Since goats of different breeds differ significantly in terms of fatty acid composition of milk under the influence of seasonal factors, there is a need to make a comprehensive evaluation of these animals in order to use them in the most effective and targeted way for milk production throughout the year.

MATERIALS AND METHODS

The experiment was executed on twenty goats in their second lactation with an average weight of 50 kg and a milk yield of seven hundred kilogrammes. Three groups were formed from thirty goats: Control group I – 10 lactating *Saanen* goats, experimental group II – 10 lactating goats of a local Ukrainian selection. The goats were kept in the experimental vivarium of the Sumy National Agrarian University, Sumy region, Ukraine. Groups are formed according to the principle of pairs of analogs. The terms of the goats were the same. The goats were provided with free access to water. Feed was distributed 3 times a day. Experimental goats were offered diets for autumn-winter period and spring-summer period (Tables 1, 2) that corresponded to their individual nutritional needs.

Table 1. Diet of goats in the autumn-winter period of keeping (October-May)

Diet ingredient	Value
Hay, kg	2.5
Root vegetables (beetroot, carrot), kg	2.0
Grain (dry peas, barley, oats, corn, sprouted wheat), kg	0.9
Table salt, kg	0.01
Crushed chalk, kg	0.01

Source: Own calculations.

Table 2. Diet of goats in the spring-summer period of keeping (June-September)

Diet ingredient	Value
Green grass, kg	7.0
Root vegetables (beetroot, carrot), kg	2.0
Grain (dry peas, barley, oats, corn, sprouted wheat), kg	0.9
Table salt, kg	0.01
Crushed chalk, kg	0.01

Source: Own calculations.

The diet used in the experiment in both studied periods satisfied the energy and nutrient needs of the goats (Table 3).

Table 3. Energy nutritional content of the goat diet during the experimental period per goat per day

Indicator	Value
Exchange energy, MJ	18.0
Dry matter, kg	2.0
Crude protein, g	282.0
Digestive protein, g	171.0
Table salt, g	15.5
Calcium, g	8.5
Phosphorus, g	6.1
Magnesium, g	0.9
Sulphur, g	5.2
Iron, mg	89.0
Copper, mg	15.5
Zinc, mg	89.1
Cobalt, mg	0.86
Manganese, mg	87.9
Iodine, mg	0.67
Carotene, mg	20.9
Vitamin D, MO	918.0

Source: Own calculations.

The goats were milked manually twice daily during the lactation period of 305 days. Milk samples for evaluation of fatty acid composition were collected from healthy goats once a month in each seasons according to ISO 707:2008 [22], filtered and chilled to a temperature of +6±2 ºC. Analysis of selected milk samples for the content of fatty acids and their profile was carried out within 24 hours after collection using the ion-exchange liquid column chromatography method (ISO 18252:2006) [20]. Volatile fatty acids of milk were determined by the method of gas-liquid chromatography (ISO 15885:2002) [19] in the laboratory of the Institute of Animal Breeding of the National Academy of Sciences of Ukraine in Kharkiv, which is accredited according to the requirements (ISO /IEC 17025:2006) [21], Accreditation Certificate No. 2T621 issued by the National Accreditation Agency of Ukraine, Kyiv.

The keeping and handling of the goats during the experiment was humane and in accordance with the policy set out in Council Directive 86/609/EEC [10].

Statistical data analysis was performed using MS Excel 2016 based on generally accepted biometric methods of data evaluation. The reliability of exceeding the average values was determined using the Student's t-test.

RESULTS AND DISCUSSIONS

The study of the content of saturated fatty acids in goat milk in winter showed a higher content of myristic acid, palmitic acid and behenic acid of 1.75%, 0.65% and 0.05%, respectively ($p<0.01$) in representatives of *Saanen* breeds. However, in the summer season, *Saanen* goats had higher levels of undecylic, lauric, margaric, and arachidic acids by 0.01%, 0.77%, 1.46%, and 0.05%, respectively ($p<0.01$) (Table 4).

It should be noted that the analogues of local Ukrainian selection during the hot summer months had higher values of caproic and pentadecanoic acids by 0.02% and 0.12% ($p<0.001$). In the winter season, goats of local Ukrainian selection were distinguished by a higher content of myristic acid by 1.24% ($p<0.001$), palmitic acid by 1.47% ($p<0.001$), stearic acid by 1.71% ($p<0.001$), behenic acid by 0.07% ($p<0.001$), tridecanoic acid by 0.01% ($p<0.05$). In the summer season, goats of Ukrainian local selection had a higher content of undecyl acid in milk by 0.02% ($p<0.01$), lauric acid by 0.68% ($p<0.05$), arachinic acid by 0.21% ($p<0.05$), tridecanoic acid by 0.02% ($p<0.001$) and pentadecanoic acid by 0.22% ($p<0.001$).

Table 4. The content of saturated fatty acids in goat milk, %, (n=24)

Fatty acids	Breed			
	Group I – *Saanen*		Group II – Local Ukrainian selection	
	Spring-summer period	Autumn-winter period	Spring-summer period	Autumn-winter period
Caproic acid	0.07±0.005	0.06±0.004	0.07±0.002^{a3}	0.05±0.003
Caprylic acid	1.11±0.004	1.12±0.010	1.09±0.008	1.11±0.009
Capric acid	4.78±0.255	4.39±0.196	5.41±0.232	5.34±0.227^{b2}
Undecyl acid	0.04±0.003^{a1}	0.03±0.003	0.06±0.005^{b2}	0.05±0.004^{b3}
Lauric acid	5.75±0.232^{a1}	4.98±0.216	6.43±0.212^{b1}	6.83±0.286^{b3}
Myristic acid	15.01±0.109^{b3}	16.76±0.112^{a3b3}	12.99±0.144	14.23±0.149^{a3}
Palmitic acid	19.14±0.189^{b3}	19.79±0.123^{a2b3}	17.40±0.173	18.87±0,154^{a3}
Margaric acid	1.49±0.098	1.31±0.076	1.55±0.090	1.67±0.011^{b3}
Stearic acid	14.56±0.071^{a3b3}	13.10±0.064^{b3}	13.85±0.052	12.14±0.047
Arachinic acid	0.80±0.012^{a2}	0.75±0.008	1.01±0.093^{b1}	1.2±0.101^{a3b3}
Behenic acid	0.51±0.012^{b3}	0.56±0.010^{a2b3}	0.43±0.009	0.50±0.010^{a3}
Pelargonic acid	0.03±0.004	0.02±0.005	0.04±0.003	0.03±0.004
Tridecanoic acid	0.12±0.002	0.12±0.001	0.14±0.002^{b3}	0.15±0.003^{a1b3}
Tetradecadienoic acid	0.79±0.064	0.75±0.035	0.98±0.075	0.87±0.058
Pentadecanoic acid	2.02±0.008	2.01±0.007	2.24±0.007^{a3b3}	2.12±0.008^{b3}
The sum of saturated fatty acids	66.22±2.223	65.75±2.083	63.69±2.108	65.16±2.220

^{a1} – $p<0.05$; ^{a2} – $p<0.01$; ^{a3} - $p<0.001$ – comparison between seasons within the same breed.
^{b1} – $p<0.05$; ^{b2} – $p<0.01$; ^{b3} – $p<0.001$ – comparison between breeds within one season.
Source: own calculations.

In the warm season, *saanen* goats differed from their counterparts of Ukrainian local breeding by a higher content of myristic acid by 2.02% ($p<0.001$), palmitic acid by 1.74% ($p<0.001$), stearic acid by 0.71% ($p<0.001$), behenic acid by 0.08% ($p<0.001$).

In the winter season, the analysis of milk samples from goats of Ukrainian local breeding compared to *Saanen* goats revealed a higher content of capric acid by 0.95% ($p<0.01$), undecyl acid by 0.02% ($p<0.001$), lauric acid by 1.85% ($p<0.001$), margaric acid by 0.36% ($p<0.001$), arachinic acid by 0.45% ($p<0.001$), tridecanoic acid by 0.03% ($p<0.001$) and pentadecanoic acid by 0, 11% ($p<0.001$). Goats of the *Saanen* breed in the

cold season compared to peers of local Ukrainian selection who were distinguished by a higher content of myristic, palmitic and stearic acids by 2.52%, 0.92% and 0.96% ($p<0.001$).

Our analysis of the unsaturated fatty acids of goat milk of both breeds showed that the *Saanen* breed during the winter months had a higher content of Myristooleic acid by 0.15% ($p<0.05$), pantadecenoic acid by 0.01% ($p<0.05$) and in addition higher content of genicosanic, erucic, docosatetraenoic acids by 0.01%, 0.07% ($p<0.001$) and 0.01% ($p<0.05$), respectively (Table. 5). In the warm season, the control herd of the *Saanen* breed had a higher milk content of oleic acid by 2.05% ($p<0.001$), isocaprylic acid by 0.01% ($p<0.01$), linoleic acid by 0.94% ($p<0.001$), linolenic acid by 0.21% ($p<0.001$), arachidonic acid by 0.02% ($p<0.05$). According to the amount of unsaturated fatty acids, the milk of *Saanen* goats had a higher content in the summer season by 3.17% ($p<0.001$), of which the higher content in this period was polyunsaturated by 1.23% ($p<0.05$).

During three summer months, experimental local goats of Ukrainian breeding demonstrated higher content indicators of oleic acid by 2.09% ($p<0.001$), isocaprylic acid by 0.01% ($p<0.05$), lauroleic acid by 0.08% ($p<0.05$), isopalmitic acid by 0.03% ($p<0.01$), heptadecenoic acid by 0.03% ($p<0.01$), linoleic acid by 0.87% ($p<0.001$), linolenic acid by 0.19% ($p<0.001$), erucic acid by 0.03% ($p<0.001$), docosatrienoic acid by 0.01% ($p<0.05$). The analysis of winter milk showed a comparatively higher content of such unsaturated fatty acids as pentadecenoic and eineicosanoic acids by 0.01% each ($p<0.001$).

Table 5. The content of unsaturated fatty acids in goat milk, %, (n=24)

Fatty acids	Breed			
	Group I – *Saanen*		Group II – Local Ukrainian selection	
	Spring-summer period	Autumn-winter period	Spring-summer period	Autumn-winter period
Myristooleic acid	2.32±0.057	2.38±0.041^{a1}	2.46±0.040	2.51±0.038^{b1}
Palmitoleic acid	3.25±0.074	3.30±0.062	4.20±0.060^{b3}	4.25±0.058^{b3}
Oleic acid	19.16±0.164^{a3b3}	17.11±0.142^{b3}	17.44±0.148^{a3}	15.35±0.122
The sum of monounsaturated fatty acids	24.73±0.775	22.79±0.752	24.10±0.653^{a1}	22.11±0.642
Isocaprylic acid	0.06±0.003^{a2}	0.05±0.003	0.06±0.002^{a1}	0.05±0.003
Isolauric acid	0.05±0.004	0.06±0.003	0.06±0.005	0.05±0.006
Lauroleic acid	0.46±0.011	0.48±0.010^{b2}	0.47±0.021^{a1}	0.39±0.026
Isomyristic acid	0.19±0.011	0.20±0.012^{b1}	0.16±0.010	0.15±0.017
Pentadecenoic acid	0.12±0.003	0.13±0.002^{a1}	0.14±0.001^{b3}	0.15±0.002^{a3b3}
Isopalmitic acid	0.30±0.004	0.31±0.005	0.37±0.003^{a2b3}	0.36±0.004^{b3}
Hexadecadienoic acid	0.74±0.015	0.72±0.014	0.94±0.027^{b3}	0.96±0.026^{b3}
Heptadecenoic acid	0.46±0.006^{b3}	0.45±0.007^{b3}	0.41±0.007^{a2}	0.38±0.006
Linoleic acid	3.25±0.033^{a3}	2.31±0.024	3.92±0.027^{a3b3}	3.05±0.025
Linolenic acid	1.25±0.011^{a3}	1.04±0.012	1.26±0.015^{a3}	1.07±0.013
Geneicosanoic acid	0.14±0.001^{b3}	0.15±0.002^{a3}	0.13±0.002	0.14±0.001^{a3}
Arachidonic acid	0.11±0.006^{a3}	0.09±0.005	0.14±0.031	0.10±0.022
Erucic acid	0.36±0.002^{a3}	0.29±0.002	0.37±0.001^{a3b3}	0.34±0.002^{b3}
Docosadienoic acid	0.16±0.006^{b1}	0.15±0.007	0.14±0.004	0.15±0.005
Docosatrienoic acid	0.08±0.003	0.07±0.004	0.09±0.002^{a1b1}	0.08±0.003
Docosatetraenoic acid	0.04±0.003	0.05±0.002^{a1}	0.05±0.004	0.05±0.003
Docosahexaenoic acid	0.18±0.007	0.17±0.010	0.24±0.003^{b3}	0.23±0,005^{b3}
The sum of polyunsaturated fatty acids	7.95±0.399^{a1}	6.72±0.399	8.91±0.290^{a2}	7.70±0.265
The sum of unsaturated fatty acids	32.68±0.871^{a1}	29.51±0.871	33.01±0.924^{a2}	29.81±0.336

^{a1} – $p<0.05$; ^{a2} – $p<0.01$; ^{a3} - $p<0.001$ – comparison between seasons within the same breed.
^{b1} – $p<0.05$; ^{b2} – $p<0.01$; ^{b3} – $p<0.001$ – comparison between breeds within one season.
Source: own calculations.

The study of the interbreeding difference in the profile of unsaturated fatty acids in goat milk in the summer period made it possible to state that the content of palmitoleic acid in the Ukrainian local breeding stock was higher by 0.95% ($p<0.001$), pantadecenoic acid by 0.02% ($p<0.001$), isopalmitic acid by 0.07% ($p<0.001$), hexadecadeic acid by 0.2% ($p<0.001$), linoleic acid by 0.67% ($p<0.001$), erucic acid by 0.01% ($p<0.001$), docosatrienoic acid by 0.01% ($p<0.05$), docosahexaenoic acid by 0.06% ($p<0.001$).

The study of the profile of unsaturated fatty acids revealed that its indicators were higher in goats of the *Saanen* breed in the summer season by the content of oleic acid by 1.72% ($p<0.001$), heptadecenoic acid by 0.05% ($p<0.001$), geneicosanoic acid by 0.01 %. ($p<0.001$), docosadienoic acid by 0.02% ($p<0.05$).

Analysis of the profile of unsaturated fatty acids in the winter period found a higher content of myristoleic acid by 0.13% ($p<0.001$), palmitoleic acid by 0.95% ($p<0.001$), pentadecenoic acid by 0.02% ($p<0.001$), isopalmitic acid by 0.05% ($p<0.001$), hexadecadeic acid by 0.23% ($p<0.001$), erucic acid by 0.05% ($p<0.001$), docosahexaenoic acid by 0.08% ($p<0.001$).

The study of the content of unsaturated fatty acids during the cold season of the *Saanen* breed showed a higher content of oleic acid by 1.76% ($p<0.001$), lauroleic acid by 0.09% ($p<0.01$), and isomyristic acid by 0.05% ($p<0.05$), heptadecenoic acid by 0.07% ($p<0.001$).

During the summer season, goats of Ukrainian local selection showed a 3.2% advantage in the amount of unsaturated fatty acids over their counterparts ($p<0.01$). At the same time, goats of the Saanen breed were inferior to goats of Ukrainian local breeding in the content of polyunsaturated fatty acids and monounsaturated fatty acids by 1.21% ($p<0.01$) and 1.99% ($p<0.05$), respectively.

The population of goats in Ukraine has a tendency to decrease over the last 8 years be 12.17% (Fig. 1).

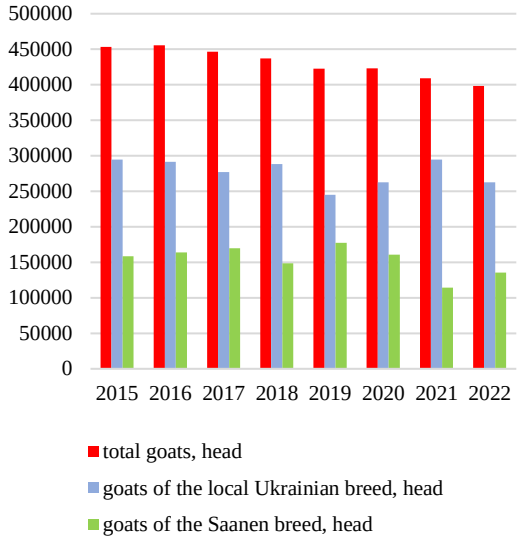

Fig. 1. Dynamics of the goat population in 2015-2022, heads
Source: 38, 39.

Over the past 3 years, the total number of goats of all breeds has also decreased by 5.95%. The population of goats of the *Saanen* breed decreased from 2015 to 2022 by 14.68% and decreased by 15.85% in 2022 compared to 2021.

Milk production had negative dynamics and showed a steady decline (Fig. 2).

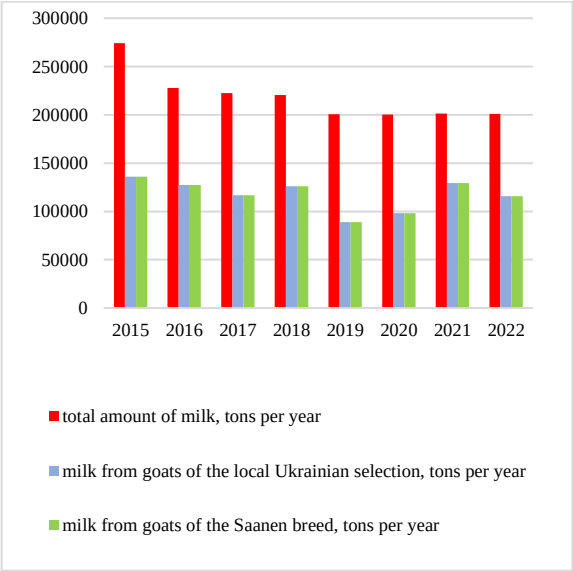

Fig. 2. Production of goat milk in 2015-2022, tons per year
Source: 38, 39.

Milk yield of *Saanen* breed goats decreased by 14.62% in 2022 compared to 2015, due to the general decrease in the population of this

breed. In general, 14.97% of milk was not obtained from goats of the local Ukrainian breed in 2022 compared to 2015, which is also related to the decrease in the local goat population.

However, it should be noted that the milk yield per goat per year did not significantly decrease by 2.36% in the last 3 years (Fig. 3).

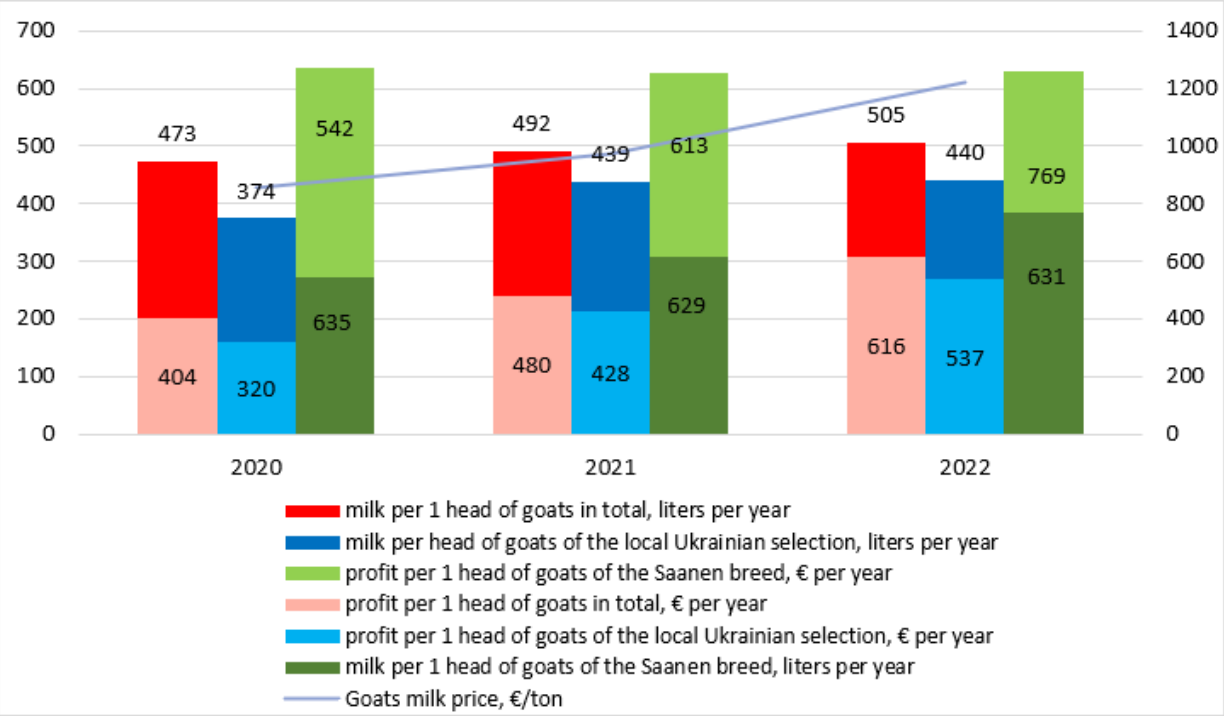

Fig. 3. Productivity of milk per 1 goat, litters per year and profitability per 1 goat, Euros per year
Source: own calculations and 38, 39

Milk productivity per 1 goat in total per year increased by 6.7%, per 1 goat of local Ukrainian breeding by 17.6% in 2022 compared to 2020. However, milk yield per 1 goat per year of *Saanen* breed decreased by 0.7% in three years. At the same time, the profit for 1 goat per year increased by 52.4% overall, 41.9% for 1 goat of local Ukrainian selection, and 68.0% for 1 goat of the *Saanen* breed, as the price of 1 liter of milk increased by 42.9% between 2020 and 2022. Milk productivity per 1 goat in total and per year increased by 6.7%, per 1 goat of local Ukrainian breeding by 17.6% in 2022 compared to 2020. However, milk yield per 1 goat per year of *Saanen* breed decreased by 0.7% in three years. At the same time, the profit for 1 goat per year increased by 52.4% overall, 41.9% for 1 goat of local Ukrainian selection, and 68.0% for 1 goat of *Saanen* breed, as the price of 1 liter of milk increased by 42.9% between 2020 and 2022.

Thus, even in the event of a greater decline in the goat population of the *Saanen* breed, the milk productivity of this breed can still ensure a higher profitability than that of goats of other breeds for some time.

Our data on the influence of goat breed on the fatty acid profile of their milk were in agreement with the general conclusions [9, 14, 41]. However, we found no agreement with the report [11] indicating a lower unsaturated fatty acid content in the milk of crossbred goats compared to *Saanen* goats. According to the results of our experiment, the total unsaturated fatty acid content did not differ by goat breed, but by individual fatty acids, similar to the data [43].

As a result of the experiment conducted, similar to other researchers [1, 3], we found that seasonal factors affect the profile of fatty acids in the milk of both breeds, especially when comparing the indicators of summer and winter seasons, which was also reported by

other authors [34]. The increase in stearic and oleic acid content in the warm season, reported in scientific work [14], was fully confirmed. It was also confirmed [14] that the growth of myristic and palmitic acid content in winter showed similar dynamics as the growth in our experiment. Our results coincided with the findings [23, 27] about an increase in the content of linoleic, linolenic and arachidonic acids in the warm season and their decrease in the cold months. It should be noted that the specified seasonal fluctuation of the indicators of the content of linoleic, linolenic and arachidonic fatty acids was detected both in goats of the *Saanen* breed and in goats of the Ukrainian local breed, which also coincides with the data of [17, 18], which obtained a similar result.

Our results are also in agreement with similar data [28], which assume that the use of more green forage in summer increases the accumulation of polyunsaturated fatty acid content. In our experiment, polyunsaturated fatty acids increased significantly during the summer period in goats of both genotypes.

CONCLUSIONS

The composition of fatty acids in the milk of *Saanen* goats and goats of local Ukrainian selection was influenced by both breed and seasonal factors.

In particular, goats of local Ukrainian selection and goats of the *Saanen* breed had different content of saturated and unsaturated fatty acids.

In summer, goats of both breeds had a lower content of saturated fatty acids and a higher content of unsaturated fatty acids.

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