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EFFICIENT TECHNIQUES OF ESTIMATION AND ENHANCING MILKING CAPACITY OF THE KAZAKH BACTRIAN CAMELS

Abstract. The effective techniques for assessing and increasing the milk yield of a camel of the Kazakh Bactrian of the South Kazakhstan type were determined. It was established that in the third month of lactation, Kazakh Bactrian camels with a cup-shaped udder produce more milk by 11.8% compared with peers of the rounded and lobular udder shapes, by 18.8% with flat udder forms.

It was found that for 150 days of lactation, the maximum milk yield of 943.7±17.1 kg is observed in female camels with a full-value lactation degree of 75-84%.

Female camels with a coefficient of milkiness of up to 1.4 produce 385.7 ± 17.3 kg in 120 days of lactation, with 1.5-1.9 coefficient - 529.4±15.7 kg, and with 2.0 and higher - 623.1±24.5 kg

Camels with a fertility index up to 42% are able to produce milk 684.8±23.2 kg in 120 days of lactation, with the index of 42-47% - 857.6±17.9 kg, and with 47% and higher - 879.4±28.1 kg.

Keywords: camel milk, the full-value of lactation degree, coefficient of milkiness, wool clipping coefficient.

The relevance of the topic. Camel breeding is a profitable branch of productive animal breeding, which successfully develops in the desert and semi-desert zones of the south-east of the Republic of Kazakhstan.

Camel breeding in the Almaty region is successfully combined with herd horse breeding and meat-greasy sheep breeding. According to A. Baimukanov et al., Kazakh Bactrians are capable of producing milk of high technological quality, which are superior to Arvan breed of camels by biochemical parameters [1]. Moreover, Kazakh Bactrians of the South Kazakhstan type are of particular interest as milk camels [2].

The specific vegetation of semi-deserts and deserts - saltwort, sagebrush, wormwood, sclerocaulous graminaceous plants, and others form a large forage reserve, which is perfectly eaten by camels [2]. Therefore, according to D.A. Baimukanov, Yu.A. Yuldashbayev, D.A. Doshanov [4], a variety of feed promote the expansion of the distribution area of camels.

According to FAO/UNEP [5], purebred Kazakh Bactrians are the most valuable in their productive qualities, well adapted to the sharply continental climate of Kazakhstan.

In the conditions of the Almaty region, Kazakh Bactrians of the South Kazakhstan type, most popular for the selection process, are of particular interest.

Kazakh Bactrians are a unique breed of two-humped camels, which is widely distributed in Kyzylorda, Mangystau, Atyrau, Turkestan regions. There has been a positive increase dynamic in the population of camels of the Kazakh Bactrian breed of the South Kazakhstan type in Zhambyl and Almaty regions.

On January 1, 2019, the population of camels in the Almaty region for the first time in 25 years reached 7,106 animals [6]. The main livestock is concentrated in agricultural formations - 4,458 animals or 62.7% of the total livestock in the Almaty region.

One of the topical issues in camel breeding is the fruit-bearing long term of camels of the Kazakh Bactrian breed and a low fertility rate of up to 42%. Despite the existing selective breeding results in relation to the Kazakh Bactrian, effective technique of assessing milk, meat and wool productivity has not yet been developed. Rational techniques for the reproduction of the breeding stock of camels with regard to the technological parameters of productivity have not been worked out.

In connection with the above-mentioned, the choice of the direction of research to improve the breeding efficiency and to increase the capacity by means of the targeted selection and breeding of purebred camels of the Kazakh Bactrian under the conditions of Bayserke – Agro Educational center is correct.

The studies were carried out according to the program of the Ministry of Agriculture of the Republic of Kazakhstan for 2018-2020. URN: BR06249249-OT-18 Development of a complex system of enhancing productivity and improving the breeding qualities of farm animals, by the example of Bayserke-Agro LLP.

The aim of the research. To determine the dairy productivity of breeding stock of the Kazakh Bactrians depending on the technological parameters of the udder;

Methods of research. The research work was carried out on the camel breeding farm of the Kerbulak branch of Bayserke-Agro LLP in the Talgar district, Almaty region

The object of the study was the purebred Kazakh Bactrian breed of the South Kazakhstan type.

It was studied milk productivity in female camels according to the Instructions for the bonitation of camels [7], taking into account the duration of active lactation, the average daily milk yield in the third month of lactation; the actual milk yield for the entire period of lactation; the full-value of lactation degree and coefficient of milkiness.

Morphological and functional features of the udder of camels were investigated according to the method of A. Baimukanov (1972) [8].

The degree of full-value of lactation in camels was determined according to the recommendation of professor A. Baimukanov using the formula:

$$СПЛ = \frac{УФ \times 100}{УС \times n},$$

where СПЛ – full-value of lactation degree; УФ – the actual milk yield for the entire lactation period; УС – average daily milk yield in the third month of lactation; n – number of days of lactation.

The technological parameters of the selection of camels according to dairy productivity were determined by the degree of full-value of lactation and its impact on milk yield for 5 months of lactation and the fat content in milk.

The female camel gradation according to the degree of lactation full-value was carried out in three ranks: up to 65 - 74; 75-84; 85 and higher.

The coefficient of milkiness was determined at the requirement of the Patent of the Republic of Kazakhstan No. 22213 by the ratio of the actual milk yield for the active lactation period to the live weight.

$$КМ = УМ/ЖМ,$$

where КМ – coefficient of milkiness; УМ – milk yield for the lactation; ЖМ – live weight [9].

Gradation according to the coefficient of milkiness was performed in three ranks: up to 1.4; 1.5-1.9; 2.0 and higher.

The effect of the fertility index on actual milk yield in experimental Kazakh Bactrian female camels of the South Kazakhstan type was defined according to the generally accepted method [4]. The fertility index was determined by the formula proposed by professor A. Baimukanov:

$$П = 365 \times (n-1)\frac{100}{N},$$

where П – fertility index; n – number of coltings; N – the number of days between the first and last coltings.

Gradation according to the fertility index was carried out in three ranks: up to 42; 42 - 47; 47 and higher.

Biometric processing of digital materials was performed according to the common methods. [10].

Research results. The study of the technological parameters of the udder in dairy camel breeding is given focused attention. The technological parameters of dairy cattle are influenced by the shape and uniformity of the development of udder parts, the length and width of nipples, the distance between nipples [11, 12].

The length of the nipples in the experimental female camels was 3.0–6.0 cm, the width of the nipples was 2.0–4.0 cm, with a distance between the front nipples of 12–20 cm, a distance between the rear nipples of 10–18 cm, and a distance between the front and rear nipples of 1622 cm.

It was established that in the third month of lactation, Kazakh Bactrian camels with a cup-shaped udder produce more milk by 11.8% compared with peers with the rounded and lobular udder shapes, by 18.8% more than peers with flat udder shapes (table 1).

Table 1 – Average daily milk yield and fat content in milk in the third month of lactation in female camels

Udder shape	Number of animals	Average daily milk yield, kg			fat content, %		
		$\overline{X} \pm m_x$	Cv	δ	$\overline{X} \pm m_x$	Cv	δ
Cup-shaped	10	5.7±0.24	6.21	0.71	5.4±0.17	4.81	0.52
Rounded	10	5.1±0.36	10.47	1.07	5.4±0.17	4.79	0.51
Flat	5	4.8±0.34	10.62	1.02	5.1±0.10	3.04	0.31
Lobular	5	5.1±0.18	5.41	0.55	5.4±0.20	5.62	0.60

The effective techniques for assessing and selecting camels for milk production was developed.

The female camel gradation according to the degree of lactation full-value was carried out in three ranks: up to 65-74; 75-84; 85 and higher (table 2).

It was found that for 150 days of lactation, the maximum milk yield of 943.7±17.1 kg is observed in camels with a degree of lactation full-value of 75-84%.

Table 2 – Estimation of female camels according to the degree of full-value of lactation (n=5; ∑n=15)

Traits	degree of full-value of lactation, %		
	65-74	75-84	85 and higher
Milk yield for 150 days of lactation	765.3±22.7	943.7±17.1	845.4±25.3
Fat content in milk, %	5.4±0.09	5.5±0.05	5.4±0.07

Gradation according to the coefficient of milkiness was performed in three ranks: up to 1.4; 1.5-1.9; 2.0 and higher (table 3). Camels with the coefficient of milkiness of up to 1.4 are produced 385.7±17.3 kg of milk in 120 days of lactation, with 1.5-1.9 - 529.4±15.7 kg and 2.0 and higher - 623.1±24.5 kg

Table 3 – Estimation of female camels according to the coefficient of milkiness (n=5; ∑n=15)

Traits	Coefficient of milkiness		
	up to 1.4	1.5-1.9	2.0 and higher
Milk yield for 150 days of lactation	385.7±17.3	529.4±15.7	623.1±24.5
Fat content in milk, %	5.6±0.09	5.5±0.06	5.3±0.08

Table 4 – Estimation of female camels according to the fertility index (n=5; ∑n=15)

Traits	Fertility index		
	up to 42	42-47	47 and higher
Milk yield for 150 days of lactation	684.8±23.2	857.6±17.9	879.4±28.1
Fat content in milk, %	5.6±0.04	5.5±0.05	5.5±0.06

Gradation according to fertility index was performed in three ranks: up to 42; 42 - 47; 47 and higher (table 4). Camels with the fertility index of up to 42% are able to produce milk in 120 days of lactation of 684.8±23.2 kg, with 42-47% - 857.6±17.9 kg and with 47% and above - 879.4±28.1 kg.

Conclusion. In the breeding of the Kazakh Bactrian camel breed, it is necessary to tighten regulations for selecting breeding stock according to the degree of full-value of lactation, coefficient of milkiness and fertility index. The optimal parameters of selecting female camel of Kazakh Bactrian of the South Kazakhstan type according to the fertility index are from 42% and higher, according to the coefficient of milkiness from 1.5 and higher, according to the degree of full-value of lactation - from 75% and higher.

Д. А. Баймұқанов

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ҚАЗАҚ БАҚТРИАН ТҰҚЫМЫНЫҢ ТҮЙЕЛЕРІНІҢ СҮТТІЛІГІН БАҒАЛАУ МЕН АРТТЫРУДЫҢ ТИІМДІ ТӘСІЛДЕРІ

Аннотация. Оңтүстік Қазақстан типті қазақ бақтриан тұқымды түйелердің сүтін бағалау мен өсірудің тиімді тәсілдері анықталды. Үшінші айда кесе түріндегі желіні бар түйенің дөңгелек және жарты пішінді түрлерімен салыстырғанда сүтті 11,8% - ға, желіннің жазық түрлерімен салыстырғанда 18,8% - ға артық өндірілетіні анықталды. Лактацияның 150 күн ішінде 943,7±17,1 кг ең жоғары сауу лактация деңгейі 75-84% болатын түйелерде байқалады .

Сүт коэффициенті 1,4-ке дейінгі түйелер 120 күн ішінде 385,7±17,3 кг, 1,5-1,9 529,4±15,7 кг және 2,0 және одан жоғары 623,1±24,5 кг өнім шығарады.

Өсімталдық индексі 42%-ға дейінгі түйе сүттің 120 күн ішінде 684,8±23,2 кг, 42-47% 857,6±17,9 кг және 47% және 879,4±28,1 кг-дан жоғары өнім шығаруға қабілетті.

Түйін сөздер: түйе сүті, лактация дәрежесі, сүт коэффициенті, жүн қырқу коэффициенті.

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ЭФФЕКТИВНЫЕ ПРИЕМЫ ОЦЕНКИ И ПОВЫШЕНИЯ МОЛОЧНОСТИ ВЕРБЛЮДОВ ПОРОДЫ КАЗАХСКИЙ БАКТРИАН

Аннотация. Определены эффективные приемы оценки и повышения удоя молока у верблюдоматок породы казахский бактриан южно-казахстанского типа. Установлено, что на третьем месяце лактации верблюдоматки казахского бактриан с чашевидной формой вымени продуцируют молока больше на 11,8% в сравнении со сверстницами округлой и дольковидной формами вымени, на 18,8% с плоской формами вымени

Установлено, что за 150 дней лактации максимальные удои 943,7±17,1 кг наблюдаются у верблюдоматок со степенью полноценности лактации 75-84% .

Верблюдоматки имеющие коэффициент молочности до 1,4 продуцируют за 120 дней лактации 385,7±17,3 кг, 1,5-1,9 529,4±15,7 кг и 2,0 и выше 623,1±24,5 кг.

Верблюдоматки с индексом плодовитости до 42% способны продуцировать молока за 120 дней лактации 684,8±23,2 кг, 42-47% 857,6±17,9 кг и 47% и выше 879,4±28,1 кг.

Ключевые слова: молоко верблюжье, степень полноценности лактации, коэффициент молочности, коэффициент настрига шерсти.

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