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АГРОНОМИЯ, ВЕТЕРИНАРИЯ ЖАНА ЗООТЕХНИЯ**

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**АНАЛИЗ ПЛЕМЕННЫХ И ПРОДУКТИВНЫХ КАЧЕСТВ ДВУХ
ГЕНЕАЛОГИЧЕСКИХ ЛИНИИ КАЗАХСКИХ ЛОШАДЕЙ ТИПА ЖАБЕ**

КАЗАК ЖЫЛКЫСЫНЫН ЖАБЕ ТИПТЕГИ ЕКИ ТЕГЕН ТИЛИНИН ТУКТУК ЖАНА
ӨНДҮРҮҮЛҮК САПАТЫН ТАЛДАУ

ANALYSIS OF PEDIGREE AND PRODUCTIVE QUALITIES OF TWO GENEALOGICAL
LINES OF KAZAKH HORSES OF ZHABE TYPE

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ANALYSIS OF PEDIGREE AND PRODUCTIVE QUALITIES OF TWO GENEALOGICAL LINES OF KAZAKH HORSES OF ZHABE TYPE

Abstract

The article presents body measurements, live weight, as well as data on meat and milk productivity of linear horses of the toad type. The main purpose of line breeding is not only to preserve the hereditary qualities of the ancestor, but also to enrich the line by accumulating new valuable heredity over several generations. The special value of linear animals lies in the fact that they more steadfastly retain their high productive and breeding qualities in their offspring. Horses of the Zymyran line are distinguished by pronounced meaty forms, have an elongated body and a girth chest. According to the results of control slaughter, mares and colts of the Zymyran line, both in terms of the mass of carcasses obtained and in terms of slaughter yield, are characterized as highly productive meat animals, carcass weight (240.20-202.14) and slaughter yield (53.3-56.4%). And in the Arda line, both in terms of the mass of carcasses obtained and in terms of slaughter yield, it is characterized as meat and dairy animals, carcass weight (225.10-197.00) and slaughter yield (52.3-56.2). Studies have shown that Kazakh mares of the toad type of two lines had unequal milk production. Mares of the Arda line (1787.1 kg) had a higher milk productivity under pasture conditions, while mares of the Zymyran line (1664.2 kg) had a higher milk productivity.

Keywords: horse breeding, type, line, measurements, live weight, meat and milk productivity.

КАЗАК ЖЫЛКЫСЫНЫН ЖАБЕ ТИПТЕГИ ЕКИ ТЕГЕН ТИЛИНИН ТУКТУК ЖАНА ӨНДҮРҮҮЛҮК САПАТЫН ТАЛДАУ

Аннотация

Макалада бака тибиндеги линиялык жылкылардын дене өлчөөлөрү, тирүү салмагы, ошондой эле эт жана сүт продуктуулугу боюнча маалыматтар берилген. Линдик асылдандыруунун негизги максаты ата-бабанын тукум куучулук сапаттарын сактоо гана эмес, бир нече муун бою жаңы баалуу тукум куучулукту топтоо аркылуу тукумду байытуу болуп саналат. Сзыктуу жаныбарлардын өзгөчө баалуулугу алардын тукумунда жогорку продуктуулук жана асыл тукумдук сапаттарын туруктуураак сактоодо. Контролдук союунун жыйынтыгы боюнча Зымыран линиясынын бээлери жана төлдөрү алынган эттердин массасы боюнча да, союунун түшүмү боюнча да жогорку продуктуулугу эт багытындагы мал, этинин салмагы (240,20-202,14) жана союлган продуктуулугу боюнча мүнөздөлөт. (53,3-56,4%). Ал эми Арда линиясында алынган эттин массасы боюнча да, союлган малдын өнүмдүүлүгү боюнча да эт-сүт багытындагы мал, өлүктүн салмагы (225,10-197,00) жана союу продуктуулугу (52,3-56,2) катары мүнөздөлөт. Изилдөөлөр көрсөткөндөй, эки линиядагы бака тибиндеги казак бээлеринин сүтү бирдей эмес болгон. Арда тукумундагы бээлер (1787,1 кг) жайыттын шарттарында сүт продуктуулугу жогору болсо, Зымыран тукумундагы (1664,2 кг) сүт продуктуулугу жогору болгон.

Ачык сөздөр: жылкы чарбачылыгы, түрү, линиясы, өлчөөлөрү, тирүү салмагы, эт жана сүт продуктуулугу.

АНАЛИЗ ПЛЕМЕННЫХ И ПРОДУКТИВНЫХ КАЧЕСТВ ДВУХ ГЕНЕАЛОГИЧЕСКИХ ЛИНИИ КАЗАХСКИХ ЛОШАДЕЙ ТИПА ЖАБЕ

Аннотация

В статье приведены промеры тела, живая масса, а также данные по мясной и молочной продуктивности линейных лошадей типа жабе. Основная цель разведения по линиям - не только сохранение наследственных качеств родоначальника, но и обогащение линии путем накопления в течение нескольких поколений новой ценной наследственности. Особая ценность линейных животных состоит в том, что они более стойко сохраняют в потомстве свои высокие продуктивные и племенные качества.

Лошади линии Зымырана отличаются ярко выраженными мясными формами, имеют удлиненное туловище и обхватистую грудную клетку. По результатам контрольных убоев кобылы и жеребчики линии Зымырана как по массе полученных туш, так и по убойному выходу характеризуются как высокопродуктивные мясные животные, масса туши (240,20-202,14) и убойный выход (53,3-56,4%). А у линии Арда как по массе полученных туш, так и по убойному выходу характеризуется как мясо-молочные животные, масса туши (225,10-197,00) и убойный выход (52,3-56,2).

Исследования показали, что казахские кобылы типа жабе двух линии имели неодинаковую молочную продуктивность. Более высокой молочной продуктивностью при пастбищных условиях содержания обладали кобылы линии Арда (1792,2 кг), в то время как у кобыл линии Зымырана (1664,2 кг).

Ключевые слова: коневодство, тип, линия, промеры, живая масса, мясная и молочная продуктивность.

Introduction

Productive horse breeding is a promising, profitable direction in the branch of animal breeding. At present, productive horse breeding has gained importance, having reserves for increasing meat and milk productivity to meet the needs of the population in food products. The greatest development of productive horse breeding has received in Kazakhstan, Kyrgyzstan, Uzbekistan, Bashkiria and Yakutia. The main breeds of horses of meat direction of productivity include local breeds, formed under the influence of artificial and natural selection in conditions close to natural, in which breeding in herds.

Breeding work in productive horse breeding is the most complex and multifaceted. It is aimed not only at improvement of existing breeds, but also at creation of new highly productive lines and types. At purebred breeding the accumulated productive qualities are firmly transmitted from generation to generation in lines and types. Purebred breeding with appropriate selection and selection of animals with emphasis on the best producers gives a good result in increasing the productivity of the breed. Up to now, an important stage of breeding work in horse breeding has been the selection of the best animals for reproduction during boning [1].

The main purpose of line breeding is to make the most efficient use of an outstanding individual with the greatest possible impact on the breed. This method of transformation of individual features into group features, in which there is a saturation of the pedigree with the most outstanding ancestors, displacing the heredity of mediocre ancestors. The basic principles of line breeding were formulated by E.A. Bogdanov [2], they provided for selection - allocation of the best animals and selection - application of mating according to a certain scheme.

A breeder, polished in its type, is a highly productive group of animals, which is in kinship with the ancestor - an outstanding producer. There are two sides of line breeding: economic and biological. The economic value consists in the fact that this breeding allows the most rational use of individual outstanding animals and their groups for herd improvement. Biological essence consists in reliable fixation of hereditary qualities of animals by appropriate selection and selection in favorable environmental conditions.

To obtain highly productive lines, it is necessary to observe a number of conditions: directed breeding of young animals and creation of the most favorable feeding and housing conditions for animals; reliable evaluation of animals during selection; sufficiently large number of the breed and wide area of its breeding; selection and selection based on deep knowledge of individual characteristics of animals, their pedigree and family ties within the herd and the breed as a whole. All these activities should be purposefully accompanied by breeding work. Productive horse breeding today is a profitable branch of animal breeding. Especially Kazakh horses of Zhabe type differ from local horses of Kazakhstan by their higher live weight and large measurements. They quickly adapt to the external conditions of the breeding area [3].

Under these conditions, Kazakh horses of the zhabe type, which are well adapted to the conditions of pasture and tebenevochnyh content, hardy, with high meat and milk qualities, are of exceptional importance [4].

Materials and methods

The material of scientific research was the population of linear horses of the farm "Orazaly" of Zhanaarka district of Ulytau region. The following methods were taken as a basis for the study: instructions for the boniting of local and factory horses (2014), primary zootechnical documents, breeding certificates of stallions-producers, cards of breeding mares, statements of the results of boniting and own data obtained during the research [5] were used. In order to study the meat productivity of linear horses, we carried out control slaughter of 2.5-year-old stallions and adult cull mares at the slaughterhouse of the farm according to the methodology of the All-Russian Research Institute of Horse Breeding [Methods of determining the meat productivity of horses.-M., 1974] and in accordance with the technological instructions adopted in the meat industry[6]. Marketable milk yield of mares was determined monthly during lactation by the method of control milk yields, twice a month on two adjacent days. Milk productivity was calculated taking into account the milk sucked at night by the foal, according to the formula of Professor (Saygina I.A. Meat and dairy horse breeding.-Ufa, 1954) [7].

Results and discussions

The task of scientific and practical work with Kazakh horses of zhabe type is to preserve valuable hereditary adaptive and productive qualities of animals and significantly increase their population. In solving this important task, one of the main breeding farms for breeding horses of zhabe type is the breeding farm "Orazaly" of Zhanaarkinsky district of Ulytau region, where 2200 heads of horses are concentrated, including 55 heads (2.5%) of stallions-producers, 700 heads (31.8%) of females. All stallions are purebred and elite class, mares are elite class 250 head (35,7%), I class 300 head (42,8%), II class 150 head (21,4%).

Breeding and productive qualities of Kazakh horses of the type of zhabe of "Orazaly" breeding farm are improved by breeding of forming breeding lines on the basis of productive system of selection and selection of horses on the complex of breeding traits. On the breeding farm two lines of Kazakh horses of zhabe type were created on the basis of progressive branches of factory lines Zymyрана 101-76 and Arda 17-00. Animals by measurements, live weight and development exceed the requirements of the standard of Kazakh horses of the zhabe type (Table 1, Figure 1).

The stallions of the Zymyрана line were characterized by height at the withers (146.1 cm), oblique body length (152.9 cm), chest girth (186.7 cm), heel girth (20.1 cm), high live weight (481.5 kg) and massiveness (massiveness index 158.4). In the mare, these indices were 142.8-150.6-182.7-18.8-457.3kg and massiveness (157.1), respectively. The stallions exceed the breed standard by 3.1 cm in withers height, 4.9 cm in oblique length, 9.7 cm in chest girth, 1.1 cm in heel girth and 51.5 kg in live weight. Mares are superior in measurements by 2.8; 4.6; 7.7 and 0.8 cm, respectively, and 47.3 kg in live weight. The genetic potential in live weight of stallions of Zymyрана line reaches 515 kg, adult mares - 465 kg.

Table 1. Measurements and live weight of adult stallions and mares of the forming line of Kazakh horses Zhabe

Indicators	Stallions		Mares	
	M±m	class I standard	M±m	class I standard
Zymyрана line 101-76				
Number of heads	7	-	40	-

Height at withers, cm	146,1±0,36	143	142,8±0,43	140
Torso oblique length, cm	152,9±0,47	148	150,6±0,55	146
Chest circumference, cm	186,7±0,87	177	182,7±0,76	175
Heel girth, cm	20,1±0,10	19	18,8±0,08	18
Live weight, kg	481,5±4,49	430	457,3±5,70	410
Massiveness index	158,4	147,3	157,1	149,6
Arda Line 17-00				
Number of heads	12	-	50	-
Height at withers, cm	145,5±0,40	143	143,4±0,56	140
Torso oblique length, cm	151,6±0,48	148	149,8±0,69	146
Chest circumference, cm	183,0±0,81	177	180,5±0,98	175
Heel girth, cm	19,5±0,07	19	18,5±0,13	18
Live weight, kg	460,3±5,40	430	445,1±6,22	410
Massiveness index	150,6	147,3	150,9	149,6

As can be seen from the data in Table 1, horses of the Zymyrana line are characterized by pronounced meat forms, have an elongated body and girthy chest. The mass index of Zymyrana stallions is rather higher than that of Arda: 158.4, and that of mares, respectively, 157.1 [8].

At five years of age Arda had a withers height of 145.5 cm, oblique torso length of 151.6 cm, chest girth of 183 cm, heel girth of 19.5 cm and a live weight of 460.3 kg.

Arda stallion breeders exceed the breed standard in measurements by 2.5 cm in withers height, 3.6 cm in oblique length, 6.0 cm in chest girth, 0.5 cm in heel girth and 30.3 kg in live weight. Mares outperform by 3.4; 3.8; 5.5 and 0.50 cm in measurements, respectively, and 35.1 kg in live weight. The genetic potential in live weight of stallions of Arda 17-00 line reaches 490 kg, adult mares - 460 kg.



Figure 1. Zymyrana's grandson grandson is a nester stallion Sauynker, Kazakh horses of zhabe type, live weight-508 kg

To determine the meat productivity of linear horses of the type of zhabe at the slaughterhouse of the breeding farm "Orazaly" in December 2021, the slaughter of cull mares and 2.5 year old stallions was made (Table 2, Figure 2).

Table 2. Meat productivity of horses of toad of different lines

Forming lines	n	Pre-slaughter live weight, kg	Carcass weight, kg	Slaughter yield %
Cull mares by age (birth 2001)				
Zymyrana 101-76	3	450,5	240,20	53,3
Arda 17-00	4	430,2	225,10	52,3

Foals 2.5 years old (birth 2019)				
Zymyrana 101-76	3	358,4	202,14	56,4
Arda 17-00	4	350,5	197,00	56,2

For control slaughters, animals characteristic for each line with close live weight index to the average data for the lines were selected.

According to the results of control slaughters mares and stallions of Zymyrana line are characterized as highly productive meat animals, carcass weight (240,20-202,14) and slaughter yield (53,3-56,4%). And the Arda line is characterized as meat-milk animals, carcass weight (225,10-197,00) and slaughter yield (52,3-56,2) by both carcass weight and slaughter yield.

Milk productivity of mares of different lines were studied under conditions of extensive pasture keeping at the breeding farm "Orazaly". The method of milking mares (n=30) was manual. Milk productivity was determined by actual milk yields by carrying out daily control milkings. The value of single milk yield was measured with a milk meter. Studies have shown that Kazakh mares of type Zhabe of two lines had unequal milk productivity. Mares of Arda line had higher milk productivity under pasture conditions (1792.2 kg), while mares of Zymyrana line had higher milk productivity (1664.2 kg).



Figure 2. Continuer of the line Arda 17-00 son brown stallion Akzhal 15-08 Kazakh horse toad, live weight 465 kg

Higher productivity of animals was observed in 2-3 months of lactation, then milk yield gradually decreased, and more sharply towards the end of lactation. In the second month of lactation milk yield of mares of Arda line was 17.02 kg and Zymyrana line 15.87 kg, and by the end of lactation respectively 12.68 and 10.25 kg. These data are confirmed by the studies of Prof. Duisembayev K.I. [9] and Danilenko L.I. [10], who note that the highest milk production in mares is observed in 2-3 months of lactation.

Conclusion

Thus, purposeful selection and breeding work on improvement of pedigree and productive qualities of animals to increase meat and milk productivity in herd horse breeding, by line breeding is carried out in Ulytau and Karaganda regions. Stallions-producers of Zymyrana line surpass the standard of the breed in height at the withers by 3.1 cm, oblique length of the body by 4.9 cm, chest girth by 9.7 cm, heel girth by 1.1 cm and live weight by 51.5 kg. Mares exceed the measurements

by 2.8; 4.6; 7.7 and 0.8 cm and live weight by 47.3 kg, respectively. The mass index of the stallions of the Zymyрана line is rather higher than that of the Arda line: 158.4, and of the mares 157.1, respectively.

Horses of the Arda stallion breeding line exceed the breed standard by 2.5 cm in withers height, 3.6 cm in oblique length, 6.0 cm in chest girth, 0.5 cm in heel girth and 30.3 kg in live weight. Mares exceed in measurements by 3.4; 3.8; 5.5 and 0.50 cm, respectively, and in live weight by 35.1 kg.

According to the results of control slaughters mares and stallions of Zymyрана line are characterized as highly productive meat animals, carcass weight (240,20-202,14) and slaughter yield (53,3-56,4%). And the Arda line is characterized as meat-milk animals, carcass weight (225.10-197.00) and slaughter yield (52.3-56.2) both by carcass weight and slaughter yield.

The studies have shown that Kazakh mares of the type Zhabe of two lines had unequal milk productivity. Mares of Arda line had higher milk productivity under pasture conditions (1792.2 kg), while mares of Zymyрана line had higher milk productivity (1664.2 kg).

The breeding of line horses of Kazakh breed of type Zhabe for breeding purposes is highly profitable and has a significant impact in increasing the production of horse meat and koumiss in commercial farms, where they are used as improveers of local Kazakh horses.

Kazakh horses of type Zhabe of breeding farm "Orazaly" are characterized as animals with high meat and milk productivity.

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