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9

2019

issue 1, special V.

AD ALTA

Journal of Interdisciplinary Research

AD ALTA: Journal of Interdisciplinary Research

Double-Blind Peer-Reviewed

Volume 9, Issue 1, Special Issue V., 2019

Number of issues per year: 2

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MAGNANIMITAS Assn.

## AD ALTA: JOURNAL OF INTERDISCIPLINARY RESEARCH

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SPECIAL ISSUE NO.: 09/01/V. (VOL. 9, ISSUE 1, SPECIAL ISSUE V.)

ADDRESS: CESKOSLOVENSKE ARMADY 300, 500 03, HRADEC KRALOVE, THE CZECH REPUBLIC, TEL.: 498 651 292, EMAIL: INFO@MAGNANIMITAS.CZ

ISSN 1804-7890, ISSN 2464-6733 (ONLINE)

AD ALTA IS A PEER-REVIEWED JOURNAL OF INTERNATIONAL SCOPE.

2 ISSUES PER VOLUME AND SPECIAL ISSUES.

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## **A SOCIAL SCIENCES**

AA	PHILOSOPHY AND RELIGION
AB	HISTORY
AC	ARCHAEOLOGY, ANTHROPOLOGY, ETHNOLOGY
AD	POLITICAL SCIENCES
AE	MANAGEMENT, ADMINISTRATION AND CLERICAL WORK
AF	DOCUMENTATION, LIBRARIANSHIP, WORK WITH INFORMATION
AG	LEGAL SCIENCES
AH	ECONOMICS
AI	LINGUISTICS
AJ	LITERATURE, MASS MEDIA, AUDIO-VISUAL ACTIVITIES
AK	SPORT AND LEISURE TIME ACTIVITIES
AL	ART, ARCHITECTURE, CULTURAL HERITAGE
AM	PEDAGOGY AND EDUCATION
AN	PSYCHOLOGY
AO	SOCIOLOGY, DEMOGRAPHY
AP	MUNICIPAL, REGIONAL AND TRANSPORTATION PLANNING
AQ	SAFETY AND HEALTH PROTECTION, SAFETY IN OPERATING MACHINERY



## **G AGRICULTURE**

GA	AGRICULTURAL ECONOMICS
GB	AGRICULTURAL MACHINES AND CONSTRUCTION
GC	PLANT GROWING, CROP ROTATION
GD	FERTILIZATION, IRRIGATION, SOIL TREATMENT
GE	PLANT CULTIVATION
GF	DISEASES, PESTS, WEEDS AND PLANT PROTECTION
GG	ZOOTECHNICS
GH	NUTRITION OF FARM ANIMALS
GI	FARM ANIMAL BREEDING AND FARM ANIMAL PEDIGREE
GJ	BDISEDAISES AND ANIMAL VERMIN, VETERINARY MEDICINE
GK	FORESTRY
GL	FISHERY
GM	FOOD INDUSTRY

# THE CREATION OF THE BESTAU FACTORY TYPE OF THE KAZAKH DHZABE HORSE BREED AND A LINEAR BREEDING AS A KAZAKH HORSE BREED PRODUCTIVITY INCREASING METHOD IN THE NORTH EAST KAZAKHSTAN CONDITIONS

<sup>a</sup>TOLEGEN ASSANBAYEV, <sup>b</sup>ALZHAN SHAMSHIDIN,  
<sup>c</sup>NABIDULLA KIKEBAYEV, <sup>d</sup>LEILA KASSYMBEKOVA,  
<sup>e</sup>TOLYBEK RZABAYEV, <sup>f</sup>KULSARA NURZHANOVA

<sup>a,d</sup>S. Toraighyrov Pavlodar State University, 140000, 64 Lomov Str., Pavlodar, Kazakhstan

<sup>c</sup>“Kazakh Tulpar” LLP, 11, Lenina Str., 111108, Zarechny village, Kostanay district, Kostanay region, Kazakhstan  
<sup>e</sup>“Aktobe Agricultural Experimental Station” LLP, 030014, Aktobe, Kazakhstan

<sup>f</sup>Shakarim State University of Semey, 071412, 20A Glinka Str., Semey, Kazakhstan

email: <sup>a</sup>asanbaev.50@mail.ru, <sup>b</sup>270180@mail.ru,  
<sup>c</sup>aza938@yandex.ru

**Abstract:** According to the Kazakh and English scientists' collective researches, the Kazakh horse breed has been existed about ten thousand years ago on the modern Kazakhstan territory and is one of the most ancient horse breeds in the world. According to international experts it is the only one breed in the world that has a wild horse gene, in favor of this, although indirectly, is illustrated the fact that in the Kazakh breed modern spawn the animals which color suit reminds old tarpan ancestors – mousey, dun, with dark or light belt on the back, having some zebra coloring on the limbs, may meet.

**Keywords:** horse breed, linear breeding, Bestau factory, Dzhabe horse, feed conditions.

## 1 Introduction

The relevance of the topic. The centuries-old natural selection under the severe climate and feed conditions influence, by the extensive horse-breeding in conducting the herd, and the artificial selection, on the most desirable features, as applied to the nomadic household horse were the main factors of the Kazakh horse formation. Their especially valued dignity was a high year-round pasture chiseled content fitness, excellent accruing and forage qualities, good fertility, the young animals exit on each hundreds of mares not less than 80-90%, not infrequently to 100% by the stud breeding method. The high biological stallion stud instinct did not allow cover close by blood uterus (the mother, the sister, the daughter), that prevented from the inbreeding-depression, finally from the breed degeneration in total. The conditions of the horse-breeding in the herd did not change during many centuries, though the Kazakh horse breed survived without significant changes. On the Kazakh horse breed base a Kustanay riding-harness, Mugalzhar, Kushum meat, and dairy breeds were created, a Kabinsk Kazakh meat horse type, according to experts, does not have analogs in the world by the productivity. Undoubtedly, the Kazakh horse breed possesses a world gene pool and can serve as the other animal breed improver by adaptive qualities, the fertility, the productivity, the endurance. Until yet the record by the range of the daily run under the saddle for a distance of 354 km, set by the Adayev Kazakh breed horse in 1956 is still intact. Describing the Kazakh horse breed advantages in details, we hope that we will draw the attention of other regions and countries horse-breeders for the collective scientific work.

The constant stable demand for horses inside the country and on the foreign markets stimulated the horse breeding, that always took the first place among all animal husbandry industries by the importance.

From the ancient times, the horses on the Kazakhstan territory were breed in a herd-chiseled way, it means that all year animals were in the open air, in the cold and in the heat, being satisfied with the pasture feed only, and in the winter time doing the thirst with the snow. It was the most economical way that allows growing a cheap and unpretentious horse.

The horse-breeding in the herd as the way of the horse breeding and rearing to XXI century set into a well-used technology. More than a one century experience. The only thing is that this technology gave the failures in the time of “dzhuts” when the horse could not get the feed on the winter pasture because of the very deep (50 cm) dense snow or the icy crust on the snow.

In the productive horse-breeding of Kazakhstan, the important role occupies the Dzhabe Kazakh horse breed. These horses constitute 34,5% in the structure of the other productive direction breeds. The animal development degree of the dzhabe is an index of the productive horse-breeding in Kazakhstan. Though the condition and conductive breeding–tribal work with the Kazakh Dzhabe horse breed meet the highest requirements.

The successful decision of productive horse-breeding problems depends largely on the breeding work efficiency increasing at the expense of the introduction in practice the last achievements of the population genetics, the selection methods improving, the potential productivity identification and horses' tribal qualities. One of the key tasks in this direction is the scientific justified breeding methods development of the new lines, families and factory types in the Kazakh nature creation, capable in steppe- and semi-steppe zone conditions with year-round pasture maintenance give cheap and ecologically clean horseflesh and koumiss, is getting quite relevant not only in Kazakhstan, but in all regions of the world with similar natural and climatic conditions and the herd horses breeding method.

The research key and tasks. In actual work there was made a methods development of the Kazakh fabric Dzhabe horses creation and the fabric lines, the breeding-genetic selection parameters grounding on different levels of the Kazakh nature improvement.

The research objective was:

- a scientific grounding, the methods development of the new Bestau fabric type and three stallion lines of the Kazakh Zhabe horse creation;
- research of effective selection methods and their use by new fabric type and lines creation;
- research of the created type and lines horse meat productivity;
- a definition of the Kazakh new type zhabe horses breeding economic efficiency.

A scientific novelty lies in the fact that in Kazakhstan's north-east conditions with year-round pasture maintenance, without the key maintenance technology change, there were produced more zhabe horse production at the expense of a desirable genotype allotment and further larger high genetic material using in breeding.

## 2 Materials and Methods

The improvement work of Kazakh zhabe horse breed tribal and productive qualities was conducted on “Akzhar-Ondiris” stud farm in Mayskiy rayon of Pavlodar oblast in 1975. The work was conducted under the guidance of professor B.K. Sadykov, associate professor M.G. Dadebayev, household specialist T.S. Asanbayev etc.

The main task was the methods development of the fabric type lines creation in the horse breeding. The work began on the Akshiman tribal state stud farm in Mayskiy rayon of Pavlodar oblast numbering at that time about 5 thousand horse heads of the local breed. Currently, it is “Akzhar-Ondiris” stud farm that grows the Kazakh zhabe breed. Tribal stallions and mares from “Mugalzhar”, “Taldyk”, “Kulandin” stud farms and other tribal households, among them were representatives of the outstanding Zaur fabric line (born in 1929), stallions Zontik (Umbrella) 140-

70 and Zov (Call) 113-75 from Mugalzhar stud farm in Aktobe oblast and a stallion called Asem-151-76. Those stallions laid the foundation for new genealogical lines of stallions known as Zontik (Umbrella) 140-70, Zov (Call) 113-75, Asem-151-76, which were the most typical zhabe horse representatives.

## 2.1 Breed lines and tribal work with them

By genuine breeding, the linear method is largely used. The line is a high productive group of animal generations, originating from one outstanding ancestor, having similar exterior and productivity hereditary particularities, steadfastly transferring these qualities by inheritance.

By the linear breeding are applied:

1. Homogeneous selection – a pairing of the same type animals, which possess similar heredity and belonging to the same line (related pairing) or similar by type representatives of different lines;
2. Heterogeneous selection – a different lines representative combination, that differ by type and heredity. Such combination enriches the line with new useful qualities, increase the vitality and the efficiency of representatives.

The important element in the tribal work with Kazakh horses like zhabe is the selection method development for increasing tribal and productive qualities in pasture maintenance conditions. In this regard, the tribal work organization with zhabe horses, the selection work efficiency increasing and the valuable animals breeding, which can give the cheapest, the most ecologically clean, treatment-prophylactic horseflesh and a koumiss in steppe and semidesert zone conditions with year-round pasture maintenance, is getting special actuality.

The modern selection group of TOO “Akzhar-Ondiris” stud farm has appropriate genealogical structure – three created again fabric lines of stallions known as Zontik (Umbrella) 140-70; Zov (Call) 113-75; Asem 151-76.

The tribal and productive qualities of the Kazakh zhabe horses research was carried out by individual appraising and weighing data, the definition of horses' quality content and class – according to “Instruction of the local horses' breed appraising”.

The main goal of the organization and selection-tribal work in household conducting is the preservation, the improving and the reproduction of the best individuals derived from the breeding linear method in round-year pasture maintenance conditions. Keep valuable biological qualities of water, increase the living mass, the fertility, meat, and dairy productivity quality, grow high-productive and high-class youth for replenishment productive content and tribal realization.

A new Kazakh Bestau fabric zhabe horse breed created on the base of three linear stallions (Zontik (Umbrella) 140-70, Zov (Call) 113-75, Asem 151-76) by means of purposeful selection, by genuine breeding, during four generations.

The initial material was elite stallions and mares of the Kazakh zhabe horse breed from the Akshiman tribal-state farm, Akzhar tribal stud farm, taken between 1975-1985 from Mugalzhar, Tal'dyk, and Kulandin stud farms and other tribal households.

Stallions Zontik (Umbrella) 140-70 and Zov (Call) 113-75, of Zaur fabric line, born in 1929, and Asem 151-76 were kept in herds as producers for quite a long time. A stallion Zontik (Umbrella) 140-70 was delivered in a former Akshiman state farm in 1973 and at the age of 17 in 1987 he was removed from the stud and replaced by a younger stallion. Zontik (Umbrella) 140-70 made over 200 foals, which undoubtedly were the region's horse livestock improvers. Currently a stallion-producer Zapal (Fuse) 11-03 (the herd's nickname Tapal) deserves attention, surveys: 146,0-156,0-187,0-20,0, living weight 521,0 kg. This stallion is the repeated winner of the Republican breeding animals contest.

Fabric line's development scheme, created by Zontik (Umbrella) 140-70

Zontik (Umbrella) 140-70                      Zalet 16-76-Zlat-17-81

Zavet 20-76 - Zatir 2-82 - Zamir 13-89 Zapal 11-03

Zenit 15-80 Zvon 3-90-55-99 (Kaldy Kula)

Fabric line's development scheme, created by Zov (Call) 113-75

Zov (Call) 113-75                      Zakor 19-80 - Zatir 22-89 (Chapay)

Zubr 2-82 - Zakir 77 - Zapoi 90 - Zov II 99-04 (Slon)

Zamer 101-83 - Zubok 35-91 - Zamir 112-99

Fabric line's development scheme, created by Asem 151-76

Asem 151-76                      Asyl 12-82 - Ampir 3-90 - Atar 10-02

Aral 6-84 - Arka-mol 5-94 - Arasha 15-03

Airkulak 9-88 - Aktas 20-97 - Aygyr-zhiren 18-08

A fabric type breeding methodical feature was that it had a phased character depending on the main task, set in each phase.

In the first creation phase (1975-1985), a mess breeding by the origin and the typicality, surveys and the living mass, the exterior, the fitness to the herd conditions maintenance and the posterity quality practiced. Outstanding stallion and mare genotypes for lines' and uterus families' backing were revealed.

In the second work phase (1986-1996), a selection of highly productive animals for an economic signs' fixing continued, partially a heterogeneous selection for the correction of certain exterior drawbacks, revealed during the selection.

In the third phase (1997-2013) high productive lines of Zontik (Umbrella) 140-70, Zov (Call) 113-75 and Asem 151-76 stallion, of meat and dairy productivity directions, and the Bestau Kazakh zhabe horse fabric type. The line and fabric type standards, that exceed minimal instruction requirements of the local horses boning, were developed, a genotypic and phenotypic variability of selected signs was defined, their hereditability and repeatability.

In the fourth phase, from 2013 until the present, work on the herd structure improvement, the live mass increasing, the mare milkiness, and the herd maintenance fitness is conducted.

Bestau fabric type animals differ Kazakh zhabe horses massive with a high live mass and a meat forms severity, a harmonic physique, a hard backbone, a great stallion instinct (there are about 30 mares in one stallion), a high fertility (90%) and a milkiness (for one lactation the average milk productivity constitutes 2300-2500 kg of milk).

It has high accumulation and adaptive qualities in year-round pasture maintenance conditions. The main color suit is bay, red and dun.

A stud farm's breeding work further provides:

1. The increasing of high productive stallions and mares' strength, received from a line method breeding.
2. The effectuation of an order pairing selection with the aim of high productive animals' valued quality fixing.
3. The research of phenotypic and genotypic variability, heredity, a main selection signs correlation by purebred breeding and the definition of genetic population parameters using importance, the creation of the new type of the breed with the regard to this breeding zone.
4. The research of different selection methods efficiency, providing the breeding impact.
5. The research of a lines compatibility character and their evolution pattern.



In the process of a new fabric type creation, there were developed creation lines standards and a type itself, that exceed instruction requirements of boning on a reliable value.

Main parameters of the Bestau horses' fabric type were developed, line and non-line horses' productive qualities were studied, the young animals' growth and development, on which a young animals' development scale was developed.

With the aim of a line and non-line horses' meat productivity research, there was conducted a control slaughter of 2,5 years old stallions and adult defective animals on a household's slaughter station by the method of a stud farm's research institute and in accordance with technology instructions, accepted in the meat industry.

The carcass quality was assessed by muscle tissue development, a body fat on the surface and a fat thickness on an abdominal wall. Moreover, there were studied: a correspondence between a meat mass and bones in a carcass.

All experimental data were processed by Plokhinsky N.A. method.

## 2.2 A natural and climatic characteristic of the household

TOO AF "Akzhar-Ondiris" in Mayskiy rayon of Pavlodar oblast was organized in 2002 on the base of former Akzhar and Akshiman state farms' households and on the south is bordered with Karaganda oblast, on the South-East with Bayanaul rayon. In the household, a common land use area constitutes 180336 hectares. Of them, 180336 hectares of agricultural lands, including:

1. Arable lands – 2076 hectares.
2. Haymakings – 20000 hectares.
3. Pastures – 158260 hectares.

A distance to the oblast's center is 120 km.

An agricultural company "Akzhar-Ondiris" is a diversified household. Along with a horse-breeding industry, in the household, they breed a Kazakh half-coarse wool sheep's breed, a Mountain Altaic down goats' breed, which in this breeding conditions revealed high adaptive qualities and equal high fertility. Delivered in 2006 to the number of 600 heads, currently, constitutes around 4 thousand heads.

The particularity of this region's climate is its sharp continentality, demonstrated in big yearly temperature fluctuations and relatively in small quantities precipitation. The enterprise territory belongs to a moderate warm arid agro-climate region by a heat availability, moisture availability and an unprotected period duration. According to Pavlodar meteorological station an average monthly temperature of the warmest month, July, is +35°C, and the coldest month, January, is -45,8°C.

A frost-free period duration constitutes 50-70 days, a vegetative period – 120-130 days (from 5 May to 20 September).

According to long data, the annual precipitation does not exceed 203 millimeters, including a snow reserve – 67 millimeters. The biggest wind speed is observed in May up to 10 meters per second. The depth of soil freezing up to 10 centimeters occurs in the first decade of October, and the thawing – at the end of June on 90-150 centimeters. With the beginning of the soil plastic state (ripeness), it's necessary to start presowing processing (in the average from 10-15 of May) and a cereals sowing. It's recommended to finish the cereals sowing not later than 5 May, and the planting seedlings of vegetables – not later than 20 June. The average date of the pasture beginning is the third decade of May (25 May), the end – last days of September. The average duration of the stall period constitutes 240 days, in particular, years – 250-255 days.

## 2.3 The vegetation and the soil cover

The main vegetation in a household is a hillock, thorn slopes on chestnut soils. Fescue, feather-sagebrush-fescue, caragana-fescue and feather grass vegetative associations are spread here.

Tops of Kalmak-Kyrgan mountains are covered with outcrops of rocks, here in crevices the Cossack junipers, the bloodroot and honeysuckle bushes can be met. In the valleys of rivers and in the low hillock descents meadow chestnut soils exist, sagebrush-fescue and terraced-fescue vegetation are growing from them.

From weed plants, the most spread is an oat weed, a sow thistle, tall tumble mustard, lamb's quarters, a wormwood etc.

On the household territory soils have been developed on soil-forming substances of the next origin:

1. Eluvial diluvial gravelly dryers;
2. Ancient eluvial sediment;
3. Tertiary clays and its resediment products;
4. Lake sediments.

The main part of the household territory is located in a chestnut soils' subzone in light-chestnut subzone a minor part of the territory is located. A nominal border between these two subzones goes by Tunduk river.

From the land using characteristic it's seen that TOO "Akzhar-Ondiris" concerns an animal livestock direction, that is based on the natural feed land use. Exclusively a pasture method of the horses' maintenance is practiced in the household and the maximal long maintenance in the pasture conditions of a small cattle (sheep and goats).

## 2.4 A breed direction

TOO Akzhar-Ondiris is occupied in horse breeding of zhabe type, which has certain demand inside rayon and oblast households, and also outside as a local Kazakh horse improver.

The stud farm's main task is breeding high-class stallions and mares of the Kazakh zhabe breed, which have stable heredity and high environment adaptability. As for 01.01.2016, in TOO Akzhar-Ondiris were 1927 horses, including stallions-producers – 60 heads, mares – 869 heads.

Table 1. Breed and Class Content of Stud Farm's Horses

Sex and age group of horses	Breed	Total	By classes		
			elite	I class	II class
Stallions-producers	Kazakh zhabe	60	60	-	-
Mares	Kazakh zhabe	869	347	434	88

The mare share in a horse herd's structure constitutes 45,1%, that completely responds zootechnical normative.

## 3 Results and Discussion

In the extensive herd horse breeding's conditions, the Kazakh horse improved himself and changed a little under the crossing influence with improving breeds. The important element in a breeding work with Kazakh zhabe horse was the development of

breeding methods for increasing breed and productive qualities in year-round pasture maintenance conditions by purebred breeding.

The main animal improving method by purebred breeding is the method of breeding by lines, first applied for the Orel trotted horse's creation, and also in purebred stud farm's practice.

Beginning from the mid 50's, the concept of "meat horse breeding" as developing horse breeding sub-sector firmly entered in the parlance. In this period many scientists-zootechnicians raise the question not only about the horse meat productivity increasing but about the specialized breeds and types creation.

Thereby, Y.N. Barmintsev writes about the necessary to organize the work of the specialized meat breeds raising, which surely

need to be adapted to herd conditions, as the rational using of marginal pastures deserts and semi-deserts – is an indispensable condition of meat horse breeding profitability. For such work, he recommends the Kazakh zhabe horse.

During the breeding work period in the household with Kazakh zhabe horses, some progress has been made. It can be judged (Table 2), compiling an average data of adult zhabe horses and a new Bestau fabric type.

Table 2. Surveys and a Live Mass of Zhabe Horses and a New Bestau Fabric Type

Surveys and live weight	Indexes	Initial group	Bestau fabric type
1	2	1970	2015
Stallions-producers			
Amount, heads	n	17	43
Height at withers, cm	M±m	138,3±0,61	145,3±0,49
	Cv	2,16	2,31
	td	–	6,1
Slanting length of trunk, cm	M± m	145,0±0,69	153,6±0,64
	Cv	2,33	2,89
	td	–	9,7
Chest girth, cm	M±m	173,6±0,77	183,7±0,75
	Cv	2,18	2,79
	td	–	10,9
Girth of metacarpus, cm	M±m	18,4±0,23	19,8,0±0,19
	Cv	6,11	6,67
	td	–	3,3
Live weight, kg	M± m	410,6±3,6	473,3±2,6
	Cv	4,27	3,86
	td	–	10,99
Mares			
amount, heads	n	168	347
Height at withers, cm	M±m	136,5±0,47	143,1±0,39
	Cv	5,76	5,28
	td	–	10,8
Continuation of Table # 2			
Slanting length of trunk, cm	M± m	143,0±0,58	150,0±0,48
	Cv	6,87	6,22
	td	–	10,9
Chest girth, cm	M±m	171,2±0,61	180,2±0,42
	Cv	5,96	4,51
	td	–	12,2
Girth of metacarpus, cm	M±m	17,5±0,19	18,5±0,17
	Cv	18,17	17,78
	td	–	3,8
Live weight, kg	M± m	390,4±3,4	458,1±3,8
	Cv	14,95	16,45
	td	–	13,08

As it can be seen from the Table 2, Bestau fabric type stallions exceed the initial group mares of 1970 by the height at withers on 7,0 cm, a slanting length of a trunk on 8,6 cm, a chest girth on 10,1 cm and by a live weight on 62,7 kg. Mares of Bestau fabric type increased the height at withers on 6,6 cm, a slanting length of a trunk on 7,0, a chest girth on 9,0 cm, a live weight on 68,1 kg. By surveys and live weight, all indexes are statically accurate.

It should be noticed that the vibration coefficient value of all animal groups is much bigger by live weight and by a girth of the metacarpus. High variability of these signs creates favorable conditions in further breeding work, by increasing its efficiency.

From cited materials it's seen, that the modern stallion and mare livestock of Bestau Kazakh zhabe fabric type horses from "Akzhar Ondiris" stud farm differs from the initial horse group with better meat forms and high live weight. Finally, purebred Kazakh zhabe horses breeding allow save a powerful gene pool of these horses, and will allow use as a herd horses of the world

improver by such qualities as productive dairy and meat horse breeding typicality, a fitness to year-round pasture maintenance, reproductive and other qualities.

### 3.1 A horse meat productivity of zhabe type's different lines

Horse meat qualities are judged by live weight indexes, animals' surveys, and also by physique, calculated with a justification of surveys. As is known, these indexes do not give the full characteristic of the horse meat productivity. In this regard, for an objective assessment of the animal productivity, it's appropriate to use slaughter mass and slaughter exit indexes.

To establish a horse meat productivity of different lines in December 2013 on the "Akzhar-Ondiris" stud farm's slaughter station there was conducted a slaughter of autumn grazier 2,5-years old studs.

Animals, specific for each line with close live weight indexes to the average data by lines were selected for control slaughters.

The control stallion slaughter data is presented in Table 3.

Table 3. The Control Stallion Slaughter's Results

Lines	n	Pre-slaughter live weight, kg	Carcass weight, kg	Slaughter exit, %
Zontik (Umbrella) 140-70	6	387,5 ± 2,8	217,6±2,1	56,1±0,2
Zov (Call) 115-75	7	396,2±2,2	226,8±1,8	57,2±0,3
Asema 151-76	7	368,6±2,3	199,8±1,8	54,2±0,1
Nonlinear	10	357,3± 2,4	187,8±1,9	52,7±0,1
average	30	377,4±2,5	208,0±1,9	55,0±0,2

As it's seen from the Table 3 data, by the carcass weight nonlinear stallions gave way to the Zontik (Umbrella) animal line on 29,8 kg, to Zov (Call) line on 39,0 kg and Asem line on 12 kg.

The index of the slaughter exit by nonlinear studs was relatively lower, than by linear animals and in the average constituted

52,7%, while by Zontik (Umbrella) and Zov (Call) stud line the slaughter exit equaled 56,1 and 57,2%. The Asem line horses by the slaughter exit gave way Zontik (Umbrella) and Zov (Call) animal line, but in comparison with nonlinear animals, their slaughter exit was higher on 1,5 % (the difference is reliable  $t_d = 10,7$ ).

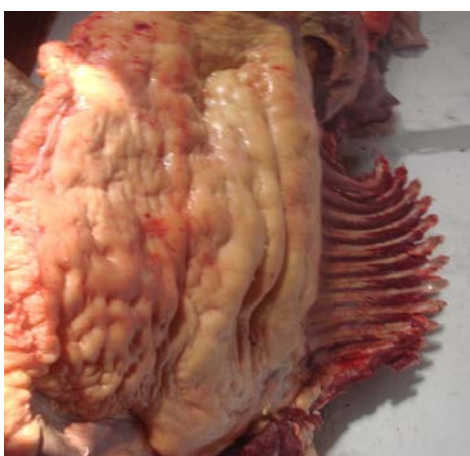


Figure 1. A Fatty Watering of Linear Studs' Rib Part



Figure 2. A Fat of Linear Studs

A market demand on high-quality horse meat causes the necessary of getting carcasses with a big meat exit, an equable fat distribution between muscles and inside the muscles, with thick rib abdominal fat layer for making "kazy", a relatively small specific gravity of bones and tendons in the carcass. So, the morphologic content research is an important index of the carcasses' assessment.

During the morphologic content research in each cut and in general, the correspondence of the veined meat and bones was determined by the carcass. In Table 4 the research results are revealed.

Table 4. A Carcass's Morphological Content of Different Lines Horses (n = 3 heads)

Lines	Average carcass weight, kg	Carcass content			
		Meat		Bones	
		Kg	%	kg	%
Zontik (Umbrella) 140-70	217,6	177,8	81,7	39,8	18,3
Zov (Call) 113-75	226,8	187,6	82,7	39,2	17,3
Asem 151-76	199,8	160,8	80,5	39,0	19,5
Nonlinear	187,8	149,8	79,8	38,0	20,2

Table 4 demonstrates the difference in the various horse lines carcasses' morphological content

The meat output in horse carcasses of Zontik (Umbrella) line on 28,0 kg, Zov (Call) line on 37,8 kg and Asem on 11 kg higher in comparison with nonlinear animals.

Moreover, the bones' content in carcasses of linear horses is lower than in nonlinear animals.

The production of mares' marketable milk (koumiss) in the household

To produce necessary production each household waste certain resources in their production, that determines a product's cost price.

Table 5. A Cost Price of the Herd Horse Breeding Production

TOO Akzhar-Ondiris

Expenditures	2014	2015	± to 2014
1	2	3	4
Material costs	57450	68174	+10724
Stern	31500	37380	+5880
Fuel	635	895	+260
Petroleum products	1165	1840	+675
Additional parts and materials	1020	1700	+680
Payment for services and works	29100	34532	+5432
Salary	50000	50000	0
Profit	550	580	+30
Depreciation	3055	2950	-105
Others	2245	2460	+215
Total	176720	200961	+24241

During the horse breeding production's analysis, a cost price is observed, as the animal breeding production is costly, many factors are presented here, including the livestock increasing, but it doesn't mean that the production of this industry is economically ineffective. The production's cost price level significantly depends on the production technology. The intensive technologies introduction of the animals' growing allows increasing the production volume with simultaneous decrease of labor inputs and material resources per production unit.

The koumiss is a fermented milk drink from the mare milk, obtained in the result of the fermented milk and alcohol fermentation by means of Bulgarian and acidophil bacillus and yeasts. The drink is frothy, of a whitish color, with a pleasant taste, refreshing, sour-sweet. A koumiss is recognized as a useful restorative remedy.

There are 869 horse uteruses in the household, daily 70 mares are milked. 350 liters of marketable koumiss is being received

every day. The average koumiss market price in the region varies between 500 tenges per liter. In the household, mares are milked for 5 months, with 5 liters yield of milk per day.

70 heads x 5 liters = 350 l./per day

350 l. x 500 tenges = 175.000 thousand tenges/per day

175.000 thousand tenges x 30 days = 5.250.000 tenges/per month

5.250.000 thousand tenges x 5 month = 26.250.000 tenges

Only for the koumiss realization, in the mares lactation period, TOO "Akzhar-Ondiris" gets 26.250.000 tenges. With that, the household realizes breeding young animals in the amount of 100 heads annually. The average price of the realized breeding young animals by the region constitutes 200.000 thousand tenges.

In total proceeds from products of the herd horse breeding constitutes 26.250.000 from the koumiss realization and 20.000.000 from the breeding young animals' sale, the total constitutes 46.250.000 thousand tenges.

Table 6. The Strength Structure of TOO "Akzhar-Ondiris" Workers

Workers	Amount
Constant workers	13
Horse-breeders	11
Other workers	5
Leadership	3
Specialists	3
In total:	35



The analysis of the supply of labor resources. In public production development and its efficiency increasing the main role is played by labor resources. Exactly labor resources are the

main production element and the main production power. As it's seen from Table 7 labor resources are distributed evenly, all workers succeed with their work's volume.

Table 7. Features of Groups

Indicators	2015
Total gross output, thousand tenges	46.250.000
The number of workers	35
Gross output per 1 worker, thousand tenges	1.321.428,5

The gross output is an indicator that characterizes in monetary terms a total production volume of particular enterprises, unities, branches, national economy etc. On the assumption of Table 7, the conclusion can be made that the gross output per 1 worker constitutes 1.321.428,5 tenges, that evidence about the high productivity per 1 worker.

### 3.2 The herd horses' grazing technology in the "Akzhar Ondiris" stud farm

In market conditions, meat animal breeding is one of the agricultural production resources, based on natural feed lands in different natural economic regions of the country. In each region there are districts with more effective and accessible methods of the agricultural animals breeding, at the core defined with the feed base state, it means feed volumes and structure, feeding types and systems, the animals' maintenance. It's especially important for agricultural formations with different forms of ownership formed again. Their available capabilities are due to the most maximal using of natural feed lands, especially that are difficult to access for other livestock. Considering such conditions, one of the animal breeding's high profitable industries, having actual value, is the herd horse breeding, the most adopted and receiving different forms of the pasture system feeding and maintenance. So, in new economic conditions, from the variety of urgent tasks relevant to the horse breeding industry, is the explanation and the revealing of facts, which influence on the herd horses amount state, including feeding and maintenance systems in different natural economic regions of Pavlodar oblast. Long since the horse breeding as an industry is developing with the herd horse breeding method throughout the oblast. Significant experience of the horse growing is accumulated here. Different horse livestock is kept in various regions of the oblast because of the natural economic conditions' diversity.

In arable farming regions (Zhelezinsk, Irtysh, Kachir, Uspensk), the number of horses reaches about 30 thousand heads. In the households of this region, such as TOO "Lugansk", "MKHK "Mayak", OPKH "Irtyshskoe", KKH "Akkain", KKH "Musin" and others, two maintenance systems are applied: stable – for the working horses' maintenance, and cultural-herd – for the fabric breeds and breed horses' maintenance. So, in households of these regions, three main feeding types are used, first: hay – fodder with succulent feed-stuff, second: hay – a straw – fodder with grain-growing waste additives, third: pasture-hay – with grain-growing additives. With favorable weather conditions, herds are kept on pastures with fescue-wormwood and herbage-cereal grass year-round, with close proximity to the source of watering and settlements. In the winter period, they create assurance reserves of coarse feed 10-15 hundredweights and a grain-growing 3 hundredweights based on one animal head.

Forms of the herd horse breeding conducting depend on the natural pasture lands' area, the breed content, adaptive qualities of breeding horses to region's natural-climatic and feeding conditions. (14)

In households of central, southwest and south regions of the oblast, on Baynaul, Maysk, Liabzhinsk, Ekibastuzsk regions' territory, which have large pasture lands and where the number of horses is over 44 thousand heads, own particularities of horses' maintenance and feeding are working. In the agricultural

lands' structure, 98,6% are in natural pastures and natural haymakings. The year-round pasture extensive form of the meat herd horse breeding obtained greater prominence here.

The growth of the horse livestock in the republic, in particular in Pavlodar oblast, is caused, first of all, by the production cheapness and increasing market horse demand, a high nutritious kumiss, main economic profit sources from horses rearing on natural pasture feeding lands. Herewith, there are revealed some features, inherent to the extensive form of the herd horse breeding, in form of the horses' herd annual migration on the seasonal spring and autumn pastures, migration destinations from settlements could constitute from several dozen to hundred kilometers one-way (for example TOO "Akzhar-Ondiris", Mayskiy district). Another feature is that the distribution elements and the grazing order of particular parts of pasture by year's seasons, considering the relief, the botanic content and an area's vegetation cover quality are applied. The grass, used on cereal-wormwood-saltwort pastures is presented by different varieties of herbage, including a Kochia, a eurotia, saltwort, a biyurgun, wormwood, Russian wild rye, a ceratocarpus arenarius, a feather grass, a camphor-fume, a goosefoot, a calligonum. In general, plants with dissected and omitted leaves, discarded in the summer period. They consist of 100 kg of a dry feed 40-50 units and 8-10 kg of proteins, about 6,3-9,0 MJ of the exchange energy, many salts, and sucrose, vitamins. The productivity of such pastures during the summer constitutes 2,4 – 3,7 hundredweight/hectare, with grass edibility to 85%. In winter most of these grasses are well saved under the snow and are willingly eaten by horses. In spring they have a capability of the early regrowth for using, and in autumn – supply a fast fattening on them. During the summer period, the live weight of horses can increase by 20% and more. Such soil-feeding capacity of natural pasture lands with the rotation grazing using in arid steppe and semi-desert conditions create the cattle breeding capability of sheep and horses to a larger scale. The established extensive conducting system, based on animals' biological features and natural feeding conditions, allows decreasing well labor inputs on a service, a fodder preparation, a production cost in zone's households. (15-16)

Extensive territories of winter and summer pastures favor the development of this industry especially in the arid steppe and semi-desert part of southwest and south districts of the region. With that a social-economic side of a horse rearing high profitability in comparison with other kinds of agricultural animals must be noticed, considering the horse meat costs in herd horse breeding districts 1,5 times lower of the mutton cost, twice lower of the beef cost. (17)

Large perspectives of the breeding work in the productive horse breeding are conditioned with the realization of horses' gene pool potential biological capabilities in reaching high productivity indexes.

Main selective attributes in the productive horse breeding are horse's typicality, its live weight, a milk productivity level, that is closely connected with high adaptive qualities in the herd maintenance conditions.

In modern conditions the increasing of the dairy and meat horse breeding efficiency is conducted in two ways: a) the increasing of productive qualities through breeding; b) the industry

intensification – the improving of horses' feeding and maintenance conditions, and applying the newest technology of the mechanization and automation in the horse breeding production recycling. From young horses' skins fashionable sheepskin coats, elegant boots, hats from different colored leather flaps and wall mats, used for reupholstering furniture can be produced.

Female cosmetics, that have rejuvenating attributes because of essential amino acids content, are produced from the mare's milk. Various bioremediations are produced from the blood and the serum. The developing of this technology will allow managers to increase more the horse breeding industry's profitability and the region's economics in general.

Concerning the breeding work content of the region's horse breeding, some liveliness is observed here. The breeding animal livestock (9107 heads) with regard to common horse livestock of the oblast constitutes 6,4%, the minimal index, that provides a successful improvement of horse breeds, is 7-10% of breeding animals from the total amount. Currently, 8 breeding households were created in the oblast, including 2 stud farms of the Kazakh zhabe horses rearing. One of those households is TOO "Akzhar-Ondiris", established on the basis of two households (Akshiman (5 thousand) and Akzhar (2 thousand), which had about 7 thousand heads of the Kazakh horse breed at the time.

Scientifically justified breeding work on these households is conducting since 1980. In 2008 the commission of the Ministry of the agriculture in Kazakhstan the agricultural enterprise TOO "Akzhar-Ondiris" was established as a stud farm of the Kazakh zhabe horses breeding.

Initially, the breeding work with horses in the household was conducted on the bases of the massive animals' reproduction, with good meat forms. The improvement took a course of the purposeful reproduction, the fitness to the year-round pasture maintenance and the stallions and mares' qualitative progenies, and the strict sorting of worst mares by these criteria.

The annual horse valuation by selective attributes complex contributed to the correct selection.

In this way, the breeding work with zhabe horses in the TOO "Akzhar-Ondiris" household was directed on the high-class animals revealing and breeding, steadfastly transferring the qualities to the progeny. In the horses' maintenance technology particular receptions of the cultural herd method were introduced: such as the young animals' volume in spring at one-year-old age, the preparation of stallions-producers to the coupling. Special attention was given to the reproduction and the young animals growing.

On the condition of the young animals' fatness after the wintering, their adaptability to the pasture maintenance was defined, the young animals of weak fatness were rejected and transferred into the fattening group.

In uterus groups, only developed mares were transferred, without visible vices and drawbacks. Mares, which strongly decreased the fatness, and did not withstand winter pasture, were not allowed to the breeding.

For the normal growing and development of the young animals', the producer's consist preparation to the reproduction, the state and correct using of pastures plays an important role.

For the more rational using of pastures, during the year, the pasture rotation map is compiled in the household. Climatic conditions, the relief, the herbage's vegetation particularities are considered by seasons of the year.

At the core of the pasture division into seasonal, lies the herbage's edibility by horses, their phenology by seasons of the year. The best spring pastures for the herd horses in this zone are ephemeral-cereals (in April) and fescue-feather grass (in May, June). After the snow convergence and the beginning of the herbage's vegetation, the herds are grazed on the elevated areas of the steppe relief and the south mountain slopes of Kalmak-Kyrgan. With the regrowth of the fescue of the grass, herds are moved on plains or on the northern hillsides, they are grazed there until the beginning of the parching. In this period the spring fattening or the horses' grazier is conducted (50-60 days).

After the herbage's parching, herds are moved in lower reaches, where the herbage's vegetation is not completed.

In the middle or at the end of the summer herds are grazed on cereals and mixed herbs areas unsuitable for the haymaking, usually deep hollows, nearly source areas etc. This period of the autumn fattening continues until the cold period and the snow fall until December. The best pasture feed during the autumn fattening is considered the black sagebrush.

Cereal-sagebrush-saltwort lands' areas, not used in another season of the year, are allotted for winter pastures. All these arrays are inspected from the autumn, determined their fodder, constitute the route and using scheme with the reckoning that the last area was the closest to the early spring pastures, to the beginning of the mares' foaling time.

Winter pastures need to satisfy the following requirements:

1. They need to have enough area, productivity, and the pasture herbage's assortment. Depending on the productivity per a mare with a stallion, beginning from the middle of the December until the middle of the March, over 16-20 hectares of the pasture area is required
2. The productivity of pasture areas needs to be more than 3-3,5 hundredweight/hectare of dry weight.
3. On winter pastures it's desirable to have natural or artificial calms, for shielding herds during blizzards and snowstorms.

## 4 Conclusion

### 4.1 The novelty and prospects of the work

Scientific-based breeding work with the Kazakh breed in the region of North-East Kazakhstan, namely with breed horses in TOO "Akzhar-Ondiris", provides the receiving of following results:

1. The increasing of the elite individual's number of high productive fabric lines;
2. The bookmark of new lines and families and on their basis the creating of the fundamentally new domestic productive type of the Kazakh horses;
3. Preservation and reproduction of the gene pool of the Kazakh breed of year-round pasture contents cultivated in extreme conditions.
4. Cultivation of highly productive young stock for replenishment of reproductive composition of breeding horse farms and realization on a tribe with the purpose of increase of breeding and productive qualities of local herd horses.
5. Using the best male representatives, designed to transform the valuable hereditary qualities of the ancestor and its successors into the dignity of the largest possible number of animals.



Figure 3. Mares and Stallions used for Breeding 3 Lines and the New Bestau Fabric Type of Kazakh Horses and Their Modern Representatives

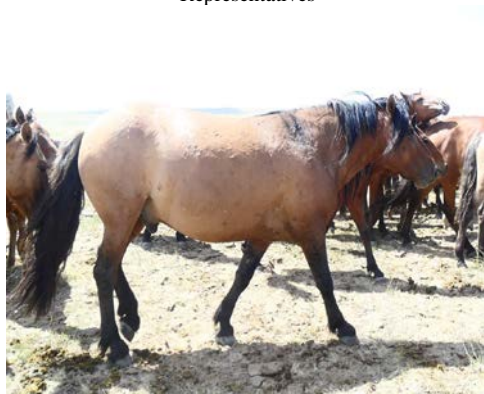


Figure 4. The Ancestor of the Line Stallion Zontik (Umbrella) 140-70 (Weighing)



Figure 5. The Continuer of the Zontik (Umbrella) Line 140-70 the Stallion Manufacturer Zapal 11-03 (Tapal) (146.0-156.0-187.0-20.0) - 521kg



Figure 6. Line Continuer Zov (Call) 113-75 Stallion Manufacturer Zov II 99-04  
(148.0-158.0-200.0-20.0) - 600 kg. Winner of the Republican Contest of Breeding Animals 2006, 2008, 2011  
(147.0-156.0-193.0-20.0) - 540kg



Figure 7. The Ancestor of the Line Stallion Producer Asem 151-76 (147.0-156.0-193.0-20.0) - 540kg



Figure 8. Mares of the Kulageki Bestau Fabric Type Vity



Figure 9. The line Continuer Asem, the Stallion-producer Aset No. 5-08, the Stud of Young Fillers of the Bestau Fabric Type

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