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

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| A | SOCIAL SCIENCES         |
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## **A SOCIAL SCIENCES**

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|----|---|
| 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                                      |

## MEAT AND DAIRY PRODUCTIVITY OF JABE KAZAKH HORSES OF DIFFERENT FACTORY LINES

<sup>a</sup>MARAT OMAROV, <sup>b</sup>AMIN AKIMBEKOV,  
<sup>c</sup>TOLEGEN ASSANBAYEV, <sup>d</sup>ALMA TEMIRZHANOVA,  
<sup>e</sup>USSENOVA LYAILYA, <sup>f</sup>ZHASTLEK UAHITOV, <sup>g</sup>LEILA  
 KASSYMBEKOVA

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

email: <sup>a</sup>marat-bura@bk.ru, <sup>b</sup>asanbaev.50@mail.ru,  
<sup>d</sup>alma.temirzhanova.74@mail.ru, <sup>e</sup>07041963@mail.ru,  
<sup>f</sup>zhassankozgan@mail.ru

**Abstract:** Productive horse breeding in Kazakhstan has now practically formed an independent branch of livestock faced by specific objectives - production of horsemeat and koumiss. This industry requires scientific and practical solutions to many issues including those related to the problem of increasing the productivity of animals. The successful solution to this problem, to a large extent is dependent on the increase in efficiency of breeding due to the wide introduction in practice of the achievements of population genetics, to improve the methods of selection and recruitment, identification and implementation in the production of genetic potential of productivity and breeding qualities of horses, with further improvement of existing and developing new species, types and lines.

**Keywords:** Jabe horse breeding, line, meat, carcass, milk, lactation.

### 1 Introduction

Currently, the improvement of the Kazakh horses such as the toad is carried out by pure breeding. It creates a new type of factory with three factory lines Bracelet, Zadornov, and Pamir, corresponding to modern requirements of breeding horses' productive directions.

Extreme importance has been played by the Kazakh horse type of foal by folk selection over many generations for the Jabe horse breeding in productive directions. These horses occupy the largest share in the structure of the rocks used for the production which is 34.5% of the total number of horses in the country. They are very valuable for the adaptation to habitat conditions, endurance, meat, and milk quality. Only one summer grazing 2.5 colts reach a live weight of 370 kg, which ensures highly efficient production of their meat.

Research and practice for conducting productive horse breeding industry show that at present, the most desirable horse of new plant types and lines with intensive growth, preserves the adaptability for the year-round maintenance of a herd that combines earliness with great stature, tends to give heavy carcasses with a uniform fat content in the carcass watering. Breeding of a new type in Seletinsky factory and factory lines Bracelet, Zadornov and Pamirs in the breeding farms of Kazakhstan will enhance the competitiveness of horse meat, which is the actual problem, especially in a market economy.

**The purpose and objective of the research.** The purpose of research is to improve the genetic potential productivity of Kazakh horses with high stallions of the new Seletinsky type and factory lines Bracelet, Zadornov, the Pamirs, the rationale breeding and genetic selection of parameters and selection at improving Kazakh horses.

The objectives of the study included:

- Establishing breeding and genetic parameters of selected features Seletinsky factory type Kazakh horses;
- The study of the relationship and the degree of variability of selected traits;
- Clarification of the various selection options used in the selection process;
- Study of meat and milk production factory horses of Seletinsky type and factory lines.

**Scientific novelty of research.** For the first time in the conditions of a steppe zone of the north-east of Kazakhstan to the year-

round grazing without changing the content of the technology, there is the possibility of a significant increase in meat and milk production of Kazakh horses such as the foal through the use of highly productive genotypes and their wider replication.

**Practical significance.** The use of highly productive stallions-producers of the newly created factory and factory lines of Kazakh horses, such as toads with high genetic potential, contributes to further economic strengthening of productive horse breeding based on the qualitative improvement of local herd horses, and aimed to improve the efficiency of breeding herd and greenback horse breeding with higher productive and adaptive qualities.

### 2 Materials and Methods

The article examines the meat and milk productivity of Jabe Kazakh horses such as foal of different lines, which are the standard for a herd of horses. They are extremely valuable for fitness, endurance, meat, and milk quality. With the lowest cost of labor and resources in a pasture content of 2.5 years of age, they produce cheap meat - horse meat. With the same carcass weight, they reach 210-230 kg, slaughter yield - 57%. Kazakh mares of high type foal milk, average milk yield of 15.5-16.2 l and milking for 105 days of lactation equals 1623-1701 liters.

Research and development work to improve the breeding and productive qualities of Jabe horses was conducted at the farm of Seletinsky Irtysh district of Pavlodar region (now stud Altai Karpykov, Saidaliev-Sartoka). An important element of this work was to develop a method to create a new type of Seletinsky factory and factory lines of Bracelet, Zadornov, Pamir, which was launched in the 1970-1975 period of the last century. In this period, the former state farm Seletinsky imported colts and fillies of the outstanding genealogical lines Berkut, Zaur, writer of Mugalzharsky stud Aktobe region. From imported stallions, new genealogical lines were laid in Bracelet, Zadornov, the Pamirs, which are the most typical representatives of the Kazakh horses.

At the initial stage of creating the Seletinsky factory type (1975-1985), a massive selection by origin and typicality, measurements of body weight, conformation, adaptation to the conditions of a herd of content and quality of the offspring was performed. A selected group of breeding mare stallions was selected from Mugalzharsky stud with identified genotypes outstanding stallions and mares with laying lines and uterine families.

In the second phase of work (1986-1996), continued selection of high-horses, was fought against in order to secure the homogeneous selection of economically useful traits, as well as heterogeneous selection to correct some of the deficiencies identified in the selection process.

In the third phase (1997-2008), highly productive factory line was created. Zadornov, Pamir meat, meat-and-milk type and serial type of seletinsky Kazakh horses. The Intellectual Property Committee on the Rights of the Ministry of Justice of the Republic of Kazakhstan dated 29.03.2013 was issued patents for № 288, 289, 286, 287 as the selection achievements in the industry for productive horse breeding.

To study the efficiency of the Kazakh horse meat in different factory lines, controlling the slaughter carried out on 2.5-year-old colts at slaughter houses stud farm "Altai Karpykov Saydaly-Sartoka" VNIKonevodstva the procedure, and in accordance with the technological instructions adopted in the meat industry. (1)

Quality of carcass evaluated for the development of muscle tissue, the presence on the surface of fat (watering), and the thickness of fat on the abdominal wall. Also studied: the ratio

between the mass of meat (flesh) and the bones in the carcasses and cuts; the ratio of individual cuts in the carcasses. (2)

For a more objective assessment of the marketability of the meat, cutting horse carcasses on the scheme adopted for the state trading network in Kazakhstan PCT 725-72 was held. For the manufacture of delicious products from the national crest of neck fat produced stings. A part with abdominal muscle and fat was used for the manufacture of kazi, and the last false ribs with a layer of flesh and fat of the finished product - telshik. Cutting from the outside of the spinal lumbar used for the manufacture of a sur. The top layer of muscle tissue with fat from the hips of the curtain was to manufacture products zhaya. Muscle tissue and the other cuts the fat used for the production of sausage products - shuzhuk.

The milk yield of linear and nonlinear mares was calculated taking into account the milk suckled foal at night, under the I.A. Saygin's formula. (3)

All experimental data were processed by the method of biometrics by N.A. Plohinsky. (4)

Pavlodar region, where horses are bred for Kazakh type of foal, is located in the north-eastern part of Kazakhstan and occupies 124,700 square kilometers. In the north it borders with Omsk, in the north-east - with Russia Altai Territory, in the south - East Kazakhstan and Karaganda, in the west - Akmola and Kokshetau region.

Water resources of the region are made up of surface flow of rivers and lakes, groundwater. The total number of rivers and streams is more than 120, which are placed unevenly on the field. Stagnant lakes are typical for the region. It accumulates runoff falling rivers and temporary streams which is 68% of the 1,200 salt lakes. The volume of annual runoffs is made up of the transit flow of the Irtysh River to 28.9 billion. M3, river runoff and ephemeral streams in 300 million. M3 and local runoff 722 million. M3.

The agroclimatic against Pavlodar region is divided into three zones: moderately-arid, arid and dry.

The territory of the stud farm "Altai Karpykov, Saidaliev-Sartoka" Irtysh area is located in the temperate arid zone. The amount of rainfall during the year is 260-310 mm. During the warm season, fall 220-245 mm, and the period of intense vegetation (May-July) of 120-140 mm. The frost-free period of 3.5 months. The height of the snow cover at the end of the winter of 20-25 cm.

The soil cover of Irtysh area - a plain with numerous hollows and deep, rolling hills and manes. Within the valley, plains are allocated small rivers (Selety, Olenty, Shiderty) and the valley of the Irtysh River. The soil consists mainly of sand with layers of sandy loam, loam, and clay. In the northern part of the common carbonate loess loam. They are characterized by a high content of silt particles, and some carbonates containing sulfuric acid and chlorides. On the left bank of the Irtysh there Paleogene and Neogene clays, characterized by carbonate content and soil salinity.

The vegetation cover of the Irtysh region is grass-spreading steppes, which are the richest on the growth of grass in the Pavlodar region. The soil surface is covered with vegetation at 90-70%. Here, common birch and aspen-birch forests.

The overwhelming importance in the grassy cover covers cereals and forb-grass association (wheat grass, foxtail, brome, meadow phlomis, burnet pharmacy, spark vulgaris, etc.). The bed of the Irtysh River is bordered by thickets of shrubby willows. On the banks of oxbow lakes and streams are common sedge and reeds at the marsh and meadow-bog soils.

Climatic conditions of Pavlodar region - a sharp continental with long and cold winter (5-5.5 months), hot summers and short (3 months). The average annual temperature of 1°C to 3°C. The

warmest month is July, the average temperature of which ranges from 20-22°C.

The winter period is characterized by a predominance of cloudy and cold weather. It begins with the first decade of November and lasts until the first decade of April. The coldest month - January, the average temperature is minus 17-19°C. For the winter months are characterized by great instability of temperature on some days there may be deviations from the norm in the 8-11°C in one direction or another. Sometimes the temperature may drop to -40°C, and even up to 45 and minus 49°C.

The number of days with frost below -20°C for 70-80 year, from minus to 30°C (extreme cold) and lower in very cold winters can reach 25-30 days.

Snow cover appears in the last ten days of October, at the beginning of November. Approximately on the 10-15th of November produced steady snow | yukrov, which lasts until early April. The number of days with snow cover is 130-155 days.

In winter, the prevailing winds are of the western and southwestern departments. The number of days with drifting snow in the winter can reach 30-35degrees. As a rule, a snowstorm in the winter there is strong and protracted - up to 3-5 days.

By the spring months include April-May. And sometimes in May is a transition month from spring to summer.

May and June are the driest months of the year. The amount of rainfall in June is 40-60 mm, the temperature ranges from 17 to 19°C.

The summer season lasts from June to August. The hottest month - July, the average temperature is 20-22°C. Maximum precipitation occurs in winter. In June 20-50 mm fall in July - 25-60 mm and August - 25-45 mm. Precipitation in the summer showers is in nature. The number of days with precipitation equal to 9-12 per month, of which more than 5 mm precipitation 1-3 days.

By the autumn months should include September and October. September is colder than August 8-9°C, October is colder than September 10-1, the average temperature in September is 12-14°C, October - 2-4°C.

The first frost in the air, there are on average in the second half of September. Autumn rainfall is much less than in the summer. In September falls 15-30 mm, 15-25 mm in October. Rainfall is subject to large fluctuations. In some years, they may be almost absent, sometimes fall to 80-100 mm per month.

### 3 Results and Discussion

In conditions of extensive horse breeding, Kazakh horse did improve a little and changed under the influence of interbreeding with improving breeds. An important link in the breeding work with Jabe horses such as the foal was the development of breeding methods to improve breeding and productive qualities in the conditions of year-round pasture content at pure breeding.

The main method of improving animal at pure breeding is the method for breeding lines, which was first used to create Orlov trotter breed horses, as well as in the practice of thoroughbred horse breeding.

Since the mid 50-ies of the last century, the term "meat breeding" as a developing horse-breeding sub-sector has strongly entered into everyday life. During this period, many scholar's livestock raised the question not only of improving the productivity of meat of horses, but also the creation of specialized breeds and types.

So, Y.N. Barmintsev writes about the need to organize the work on the removal of specialized meat breeds, which must adapt to



the conditions of a herd as the rational use of pastures in unproductive deserts and semi-deserts and in conditions of profitable meat horse breeding. (5)

Selection and breeding of Kazakh horses such as the foal in the former state farm "Seletinsky" Irtysh district of Pavlodar region were launched in 1970. Local Kazakh horse which existed in the economy characterized by low growth; wide exterior is typical of steppe horses. Height mares on average amounted to 136.5 cm. Starting with the 1970-1971-ies to improve breeding and productive qualities of the purchased breeding fillies and colts of Mugalzarsky stud Aktobe region, where the best horse's toad population was concentrated and available in Kazakhstan. At the initial stage of selection and breeding work (1970-1975), the mass selection was used. It was based on the following criteria: measurements, body type, body weight, adaptability. Since the vast majority of mares and young stock were installed without origin, the selection for this trait began to lead since 1971, after the importation of breeding colts and fillies of the Aktobe region. During this period, along with a massive selection of existing and individual selection. The selection of animals led by a complex of symptoms in different animals with lower body weight and poor adaptability to a herd of content. As a result of

breeding work by 1993 thoroughbred mare Kazakh horses such as the toad had larger measurements (see 140-147-175-18) and live weight of 405 kg.

In 1993, on the basis of the former state farm "Seletinsky" organized farm "Altai Karpykov, Saidaliev-Sartoka", which focuses on the main breeding group of mares (196 goals) and 21 head of purebred stallions of Kazakh horses.

In the subsequent (1993-2009) work with the horses on the type of foal breeding farm "Altai Karpykov, Saidaliev-Sartoka" began to pay special attention to the selection of breeding pairs based on their phenotype and genotype. Selection of mares to stallions was aimed at consolidating wide and massive physique, high adaptability to pasture maintenance and development of such advantages as higher growth and body weight. To consolidate these desirable traits to the best stallions, the best mares were chosen.

During the period of breeding, work on the farm with the Kazakh horses such as toad achieved some success. This can be seen in Table. 1 making the average data toad adult horses of the original group and the new factory Seletinsky type.

Table 1. Measurements of Body Weight and the Type of Toad Horses of the Original Group and the Type of Plant Seletinsky

| The measurements and live weight | Indicators                          | The initial group |            |            | Seletinsky factory a type |
|----------------------------------|-------------------------------------|-------------------|------------|------------|---------------------------|
|                                  |                                     | 1970              | 1993       | 2009       | 2013                      |
| Stallions                        |                                     |                   |            |            |                           |
| Headcount                        | N                                   | 24                | 21         | 47         | 63                        |
| Height, cm                       | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 139,1±0,61        | 143,4±0,53 | 145,2±0,49 | 145,9±0,57                |
|                                  | Cv                                  | 2,16              | 1,69       | 2,31       | 3,10                      |
|                                  | Td                                  | —                 | 5,3        | 6,1        | 8,2                       |
| oblique length torso cm          | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 145,3±0,69        | 149,6±0,71 | 151,5±0,64 | 154,2±0,62                |
|                                  | Cv                                  | 2,33              | 2,17       | 2,89       | 3,19                      |
|                                  | Td                                  | —                 | 4,3        | 9,7        | 10,0                      |
| chest girth, cm                  | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 172,6±0,77        | 177,1±0,68 | 184,3±0,75 | 185,8±0,69                |
|                                  | Cv                                  | 2,18              | 1,76       | 2,79       | 2,95                      |
|                                  | Td                                  | —                 | 4,4        | 10,9       | 12,8                      |
| metacarpus, cm                   | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 18,5±0,23         | 19,1±0,21  | 19,5±0,19  | 19,7±0,12                 |
|                                  | Cv                                  | 6,11              | 5,03       | 6,67       | 4,82                      |
|                                  | Td                                  | —                 | 2,0        | 3,3        | 5,0                       |
| live weight, kg                  | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 412,6±3,6         | 435,2±3,1  | 461,4±2,6  | 511,3±4,6                 |
|                                  | Cv                                  | 4,27              | 3,26       | 3,86       | 7,20                      |
|                                  | Td                                  | —                 | 4,76       | 10,99      | 16,9                      |
| Mares                            |                                     |                   |            |            |                           |
| Headcount                        | N                                   | 280               | 196        | 375        | 920                       |
| Height, cm                       | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 136,5±0,47        | 140,3±0,51 | 143,1±0,39 | 144,2±0,42                |
|                                  | Cv                                  | 5,76              | 5,09       | 5,28       | 8,83                      |
|                                  | Td                                  | —                 | 5,5        | 10,8       | 12,2                      |
| oblique length torso cm          | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 141,1±0,58        | 147,7±0,62 | 149,3±0,48 | 151,6±0,50                |
|                                  | Cv                                  | 6,87              | 5,88       | 6,22       | 10,00                     |
|                                  | Td                                  | —                 | 7,8        | 10,9       | 13,6                      |
| chest, cm                        | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 171,2±0,61        | 175,4±0,59 | 180,2±0,42 | 182,6±0,57                |
|                                  | Cv                                  | 5,96              | 4,71       | 4,51       | 9,47                      |
|                                  | Td                                  | —                 | 4,9        | 12,2       | 13,7                      |
| metacarpus, cm                   | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 17,5±0,219        | 18,1±0,20  | 18,5±0,17  | 18,7±0,06                 |
|                                  | Cv                                  | 18,7              | 15,47      | 17,78      | 9,73                      |
|                                  | Td                                  | —                 | 2,1        | 3,8        | 6,0                       |
| live weight, kg                  | $\bar{\mathbf{X}} \pm \mathbf{m}_x$ | 380,4±3,4         | 405,8±2,7  | 447,1±3,8  | 468,3±3,02                |
|                                  | Cv                                  | 4,95              | 9,31       | 16,45      | 19,56                     |
|                                  | Td                                  | —                 | 5,85       | 13,08      | 19,3                      |

As can be seen from Table 1, the mare Seletinsky factory type exceed the original group of 1970 with height at the withers by 7.7 cm,

Group 2009 by 1.1 cm, oblique body length of 10.5 and 2.3 cm, chest circumference of 11.4 and 2.4 cm, and body weight of 87.9 and 21.2 kg. In stallions Seletinsky factory type height at the withers increased by 6.8 and 0.7 cm, oblique body length of 8.9 and 2.7 cm, chest girth of 13.2 and 1.5 cm, live weight of 98.7 and 49.9 kg respectively. According to measurements and body

weight all the difference in performance as the stallions and mares statistically significant.

It should be noted that the value of the coefficient of variation in the animals of all groups higher on live weight and girth measurements of the pastern. The high variability of these features creates more favorable conditions for further selection and breeding work, increasing its efficiency.

The above material shows that the current stock of stallions and mares in Seletinsky factory type of Kazakh horse stud farm "Altai Karpykov, Saidaliev-Sartoka" differs from the original group of horses the best forms of meat and high body weight.

Finally, pure breeding horses of Kazakh foal type allows you to save the gene pool of horses and is an important event, not only now, but also for further work in the future.

The stud farm established three factory lines Kazakh horse's toad from the descendants of prominent stallions Bracelet 13-74, 51-76 and Pamir Zadornov 127-78 which provided worthy successors to the 4th generation, a significant part of them has a specific phenotypic and genetic similarity to ancestors. Low volatility in a number of measurements in the offspring indicates their prepotent fathers (Table 2).

Table 2. The Measurements and Live Weight of Adult Stallions and Mares of Different Lines of Kazakh Horses Toad

| Indicators              | Stallions         |      |                  | Mares             |      |                  |
|-------------------------|-------------------|------|------------------|-------------------|------|------------------|
|                         | $\bar{X} \pm m_x$ | Cv   | Class I standard | $\bar{X} \pm m_x$ | Cv   | Class I standard |
| Bracelet Line 13-74     |                   |      |                  |                   |      |                  |
| Headcount               | 11                | -    | -                | 53                | -    | -                |
| Height, cm              | 145,1±0,8         | 0,43 | 143              | 143,6±0,23        | 1,16 | 141              |
| oblique length torso cm | 151,7±0,27        | 0,59 | 148              | 149,3±0,42        | 2,05 | 147              |
| chest, cm               | 184,9±0,37        | 0,66 | 177              | 182,1±0,51        | 2,04 | 176              |
| metacarpus, cm          | 19,7±0,08         | 1,32 | 19               | 18,5±0,15         | 5,89 | 18               |
| live weight, kg         | 471,0±1,69        | 1,19 | 430              | 453,8±4,37        | 7,01 | 415              |
| Mass index              | 154,4             | -    | 147,3            | 153,3             | -    | 148,2            |
| Zadornov Line 51-76     |                   |      |                  |                   |      |                  |
| Headcount               | 8                 | -    | -                | 50                | -    | -                |
| Height, cm              | 144,9±0,29        | 0,57 | 143              | 143,2±0,37        | 1,82 | 141              |
| oblique length torso cm | 151,2±0,41        | 0,77 | 148              | 150,4±0,46        | 2,16 | 147              |
| chest, cm               | 187,7±0,41        | 0,62 | 177              | 184,7±0,49        | 1,87 | 176              |
| metacarpus, cm          | 19,7±0,09         | 1,37 | 19               | 18,7±0,13         | 4,92 | 18               |
| live weight, kg         | 484,9±2,43        | 1,42 | 430              | 463,6±3,77        | 5,75 | 415              |
| massiveness index       | 159,5             | -    | 147,3            | 157,7             | -    | 148,2            |
| Pamir Line 127-78       |                   |      |                  |                   |      |                  |
| Headcount               | 11                | -    | -                | 73                | -    | -                |
| Height, cm              | 144,7±0,24        | 0,54 | 143              | 142,3±0,21        | 1,26 | 141              |
| oblique length torso cm | 150,1±0,37        | 0,81 | 148              | 148,1±0,42        | 2,42 | 147              |
| chest, cm               | 181,6±0,34        | 0,62 | 177              | 178,7±0,51        | 2,43 | 176              |
| metacarpus, cm          | 19,3±0,07         | 1,29 | 19               | 18,4±0,09         | 4,18 | 18               |
| live weight, kg         | 462,4±2,24        | 1,61 | 430              | 437,6±2,38        | 4,64 | 415              |
| Mass index              | 152,6             | -    | 147,3            | 151,9             | -    | 148,2            |

As can be seen from Table 2, the linear measurements on animals and live weight exceed the requirements of the development of the standard of Kazakh horse foal.

Horse line bracelet and Zadornov differ from pronounced forms of meat and have an elongated body and chest. Massive index of horses these lines is quite high: 154.4 and 159.5, and 153.3 respectively, mares and 157.7

Stallions and mares Pamir line are of a lighter weight type and are characterized by high dairy, they have well-developed mammary veins and are cupped udder with flat nipples. The average daily milking mare line of Pamir equals 16.2 kg, milk yield and 105 days of lactation was 1701.0 kg. They excel in the milk of mare lines of bracelets and Zadornov at 208.95 and 269.85 kg.

The most consistent results are variable (Cv) from stallions on all lines and observed on the height at the withers (0.43; 0.57; 0.54), oblique body length (0.59; 0.77; 0.81) and chest (0.66; 0.62; 0.62). In line mares observed the same trend.

Higher volatility as in stallions and mares have been on the circumference of the pastern and the live weight, which is the basis for conducting effective selection for these characters in the further selection and breeding work.

The main features which held selection and breeding work with Kazakh horses such as foal are the type, exterior, measurements, body weight, adaptability to a herd of content, milking mares and offspring quality, which differ varying degrees of phenotypic diversity (Table 3).

Table 3. Variation of Selected Features such as Horses Toad

| Genotype               | floor | n   | Height |                | Length of body |                | Girth  |                |         |                | Live weight |                |
|------------------------|-------|-----|--------|----------------|----------------|----------------|--------|----------------|---------|----------------|-------------|----------------|
|                        |       |     | Б      | C <sub>v</sub> | б              | C <sub>v</sub> | breast |                | pastern |                | Б           | C <sub>v</sub> |
|                        |       |     |        |                |                |                | б      | C <sub>v</sub> | б       | C <sub>v</sub> |             |                |
| Seletinsky serial type | land. | 63  | 4,52   | 3,10           | 4,92           | 3,10           | 5,48   | 2,95           | 0,95    | 4,82           | 36,81       | 7,20           |
|                        | cob.  | 920 | 12,73  | 8,83           | 15,16          | 10,0           | 17,29  | 9,47           | 1,82    | 9,73           | 91,60       | 19,56          |
| Bracelet line          | land. | 11  | 0,63   | 0,43           | 0,90           | 0,59           | 1,22   | 0,66           | 0,26    | 1,32           | 1,32        | 1,19           |
|                        | cob.  | 53  | 1,67   | 1,16           | 3,06           | 2,05           | 3,71   | 2,04           | 1,09    | 5,89           | 31,80       | 7,01           |
| Zadornov line          | land. | 8   | 0,83   | 0,57           | 1,16           | 0,77           | 1,16   | 0,62           | 0,27    | 1,37           | 6,89        | 1,42           |
|                        | cob.  | 50  | 2,61   | 1,82           | 3,25           | 2,16           | 3,46   | 1,87           | 0,92    | 4,92           | 26,65       | 5,75           |
| Pamir line             | land. | 11  | 0,79   | 0,54           | 1,22           | 0,81           | 1,12   | 0,62           | 0,25    | 1,29           | 7,45        | 1,61           |
|                        | cob.  | 73  | 1,79   | 1,26           | 3,59           | 2,42           | 4,35   | 2,43           | 0,77    | 4,18           | 20,32       | 4,64           |

As can be seen from Table 3, the highest variability was observed in body weight, which is equal to 7.20 at the stallions and mares 19.56, then metacarpus - respectively 4.82 and 9.73. According to measurements of the height at the withers, oblique body length and chest girth characterized by more stable performance variability in stallions Seletinsky plant type 3.1; 3.19 and 2.95 and 3.83 respectively in mares; 10.00; 9.47.

Between the linear animals, there are some differences in variability indices. Height at the withers with higher volatility (0.57; 1.82) was observed in animals of Zadornov, and on the metacarpus and the live weight on higher levels of variability were mares line Bracelet (5.89; 7.01). By oblique body length and chest girth, high variability observed in mares Pamir line compared with animals from other lines (2.42 and 2.43). The above material shows that in Seletinsky factory style and selection on body weight, bony, body length and chest girth give positive results in the breeding work to improve these symptoms.

A correlation between signs, providing the productivity of farm animals are of great importance in breeding. The theoretical basis of this section is a selection of the doctrine of a self-governing body as an integrated system, the relationship, and interdependence of all its parts.

Selecting on any one feature, increasing the specific productivity of animals, we always call the variability of other features.

High body weight and meat productivity of Kazakh horses such as foal, has the following main features: height at the withers, body length, chest girth, cannon bone girth, exterior, style, and massive physique. By themselves, these signs are complex inheritance and are in a various interdependent relationship as a sign of total body weight, and with each other.

We studied the correlative relationship between the basic measurements and live weight of horses.

Table 4. Coefficients of Correlations Between Soundings and Live Weight

| correlated signs                       | Stallions, n=13 | mares, n=217 | Colts 2.5 years, n=65 | Filly 2.5 years, n=57 |
|--|-----------------|--------------|-----------------------|-----------------------|
| Height - live weight                   | 0,135±0,184     | 0,168±0,066  | 0,509±0,108           | 0,497±0,117           |
| Bias length of the torso - live weight | 0,211±0,181     | 0,293±0,066  | 0,602±0,101           | 0,518±0,115           |
| Bust - live weight                     | 0,329±0,175     | 0,337±0,060  | 0,714±0,088           | 0,617±0,106           |
| Metacarpus - live weight               | 0,343±0,174     | 0,351±0,059  | 0,764±0,081           | 0,752±0,088           |

As can be seen from Table 4, there is a positive correlation between all the soundings and body weight in all age and gender groups, but the value of these bonds varies. The greatest correlation with body weight is the chest girth and cannon bone girth, then oblique body length and height at the withers. Therefore, the selection of horses on live weight was selected primarily for chest girth and cannon bone girth.

The study of the correlation of basic economic beneficial signs in mares (Table 5) shows a degree of linear supplies leading to different associated symptoms. This pattern is set as a result of the analysis of the relationship of 4 variants of the following features: body weight, height at the withers, slanting body length, chest girth, cannon bone girth.

Table 5. The Correlation Coefficient Between Soundings and Live Weight of Linear Mares

| correlated signs                    | Coefficient correlation r±mr | Criterion reliability tr | value likelihood P |
|-------------------------------------|------------------------------|--------------------------|--------------------|
| Bracelet Line 13-74 (n=53)          |                              |                          |                    |
| height at the withers - live weight | 0,203±0,137                  | 1,48                     | 0,90               |
| Length of body - live weight        | 0,331±0,132                  | 2,51                     | 0,95               |
| chest girth - live weight           | 0,462±0,124                  | 3,71                     | 0,999              |
| metacarpus - live weight            | 0,485±0,122                  | 3,93                     | 0,999              |
| Zadornov Line 51-76 (n=50)          |                              |                          |                    |

|                                     |             |      |       |
|-------------------------------------|-------------|------|-------|
| height at the withers - live weight | 0,216±0,141 | 1,55 | 0,90  |
| Length of body - live weight        | 0,327±0,136 | 2,41 | 0,95  |
| chest girth - live weight           | 0,458±0,128 | 3,56 | 0,999 |
| metacarpus - live weight            | 0,461±0,127 | 3,58 | 0,999 |
| Pamir Line 127-78 (n=73)            |             |      |       |
| height at the withers – live weight | 0,193±0,116 | 1,66 | 0,90  |
| Length of body - live weight        | 0,312±0,113 | 2,77 | 0,99  |
| chest girth - live weight           | 0,367±0,110 | 3,25 | 0,999 |
| metacarpus - live weight            | 0,405±0,108 | 3,71 | 0,999 |

The stud farm “Altai Kapryk, Saidaliev-Sartoka” results of intra-line uniform (homogeneous) matching horses with a maximum severity of selected traits and mating of stallions from the mares, from which the value of signs expressed to a lesser extent in line within (diverse and heterogeneous selection), show that the

studied traits in the lines are best manifested in the offspring of homogeneous selection of their parents than from the heterogeneous. Thus, depending on the severity of the linear characteristics, productivity resulting progeny was greatest in the line where the respective symptoms are of selected leading (Table 6).

Table 6. Productivity Daughters (30 months old) Line Stallions with Different Selection Options

| Indicators                 | Uniform selection | diverse selection |
|----------------------------|-------------------|-------------------|
| Bracelet Line 13-74        |                   |                   |
| Headcount                  | 25                | 21                |
| Height, cm                 | 139,2             | 136,4             |
| the length of the body, cm | 141,7             | 137,5             |
| chest girth, cm            | 162,8             | 160,2             |
| metacarpus, cm             | 17,3              | 17,1              |
| live weight, kg            | 353,6             | 340,4             |
| Zadornov Line 51-76        |                   |                   |
| Headcount                  | 30                | 27                |
| height at the withers, cm  | 140,3             | 138,2             |
| Length of body, cm         | 142,4             | 139,3             |
| chest girth, cm            | 167,1             | 164,7             |
| metacarpus, cm             | 17,5              | 17,5              |
| live weight, kg            | 367,2             | 358,2             |
| Pamir Line 127-78          |                   |                   |
| Headcount                  | 40                | 33                |
| Height, cm                 | 136,8             | 136,1             |
| Length of body, cm         | 137,9             | 136,6             |
| chest girth, cm            | 160,7             | 158,3             |
| metacarpus, cm             | 17,1              | 16,8              |
| live weight, kg            | 349,0             | 338,7             |

So, when choosing a homogeneous parents' live weight, daughter stallions from the line of Zadornov are allocated, whose superiority on this basis, as compared with peers from other lines, ranging from 13.6 to 18.2 kg, i.e. up to 3.7 and 5.0%, and chest girth with a difference of 2.6 and 3.8%.

Comparison of body weight and measurements of the offspring with a uniform and diverse selection shows that the differences between them in the study lines were uneven. Thus, the filly from the selection of parents in the line of

Zadornov was superior to peers mating with each other by live weight of 9.0 kg or 2.5%. The Bracelet line exceeding this indicator former over the latter is 13.2 kg, in line Pamir -10.3 kg, respectively, or 3.7 and 3.0%.

Analysis of the data characterizing the daughters of linear zharebtsov-manufacturers obtained in different variants of selection for chest girth shows that the selection of uniform rates was higher among fillies' line of bracelets and Zadornov, who surpassed the contemporaries of Pamir lines 1.3 and 6.4 cm, and 1.3 and 4.0%.

Indicators of linear measurements in the offspring of homogeneous selection were higher than their peers from the heterogeneous selection. In line Bracelet: height at the withers by 2.8 cm (2.1%), oblique body length of 4.2 cm (3.1%), chest girth of 2.6 cm (1.6%), in Zadornov line respectively 2.1; 3.1 and 2.4 cm, or 1.5; 2.2 and 1.4%.



Thus, to explore options for selecting the type of foal Kazakh horses of different lines on the main economic-useful signs, indicate that a highly productive offspring obtained by a uniform selection of parents with a maximum (within the line) expression of selected features. In order to further improve the Kazakh foal type horses with linear breeding, as well as to better secure the progeny of selected attributes, it is appropriate to apply a substantially homogeneous selection in the corresponding lines

in the first place on the body weight, chest and oblique trunk length.

As a result of the control of slaughter colts, different factory lines found that the carcass weight of the non-linear colt inferior animal in Bracelet line at 29.8 kg (15.9%), Zadornov line at 39.0 kg (20.8%) and the Pamir line 10.3 kg (5.5%).

Table 7. Results of the Control of Slaughter Colts

| lines          | n  | Slaughter live weight, kg | Weight carcass kg | Slaughter yield, % | td   |
|----------------|----|---------------------------|-------------------|--------------------|------|
| Bracelet 13-74 | 10 | 384,5±2,8                 | 217,6±2,1         | 56,6±0,2           | 17,7 |
| Zadornov 51-76 | 12 | 395,2±2,2                 | 226,8±1,8         | 57,4±0,3           | 14,7 |
| Pamir 127-78   | 10 | 365,6±2,3                 | 198,1±1,8         | 54,2±0,1           | 10,7 |
| Nonlinear      | 15 | 356,3±2,4                 | 187,8±1,9         | 52,7±0,1           | -    |
| Average        | 47 | 374,2±2,5                 | 206,3±1,9         | 55,0±0,2           | -    |

An indicator of slaughter output from nonlinear colts was relatively lower than that of linear animals and averaged 52.7%. At colts' line, Bracelet and Zadornov slaughter yield amounted to 56.6 and 57.4%. Horse line Pamirs on slaughter yields of inferior animals in bracelet line and Zadornov in comparison with nonlinear animals they slaughter yields above 1.5% (the difference between authentic td = 10,7).

F. Popescu (5) notes that the yield of lean meat in horses is 45-50%, while the well-fed animals are up to 65%.

Studies by M. Tyny (6) and S. Kaninski S. (7) found that at slaughter horses with a live weight of 333 kg slaughter yield was 58.4%, and in horses with a live weight of 545 kg - 60.2%.

In the study of the morphological composition of each bran and the whole carcass was determined by the ratio of trimmed meat and bones. (8) The results are shown in Table 8.

Table 8. Morphological Composition of Carcasses of Horses of Various Lines (n 3 head)

| lines           | Average carcass weight, kg | The composition of the carcass |      |       |      |
|-----------------|----------------------------|--------------------------------|------|-------|------|
|                 |                            | pulp                           |      | bones |      |
|                 |                            | kg                             | %    | Kg    | %    |
| Bracelet 13-74  | 216,3                      | 176,8                          | 81,7 | 39,5  | 18,3 |
| Zadornov 51 -76 | 227,1                      | 187,3                          | 82,5 | 39,8  | 17,5 |
| Pamir 127-78    | 197,6                      | 159,9                          | 80,9 | 37,7  | 19,1 |
| Nonlinear       | 188,2                      | 149,8                          | 79,6 | 38,4  | 20,4 |

The data show that the morphological composition of carcasses of horses of various lines was not the same. The yield of pulp in the line of horse carcasses of Zadornov 37.5 kg (25.0%), line Bracelet 27.0 kg (18.0%) and 10.1 lines Pamir kg (6.7%) compared with the above nonlinear animals. It should be noted that the relative content of bones in the carcasses of linear horses was lower than that of the nonlinear animals. Thus, 1 kg of pulp in bone obtained in Bracelet line 4.5 kg, 4.7 kg in Zadornov line, 4.2 kg in Pamirs line, whereas the nonlinear - 3.9 kg, was respectively superior at 15.4; 7.7 and 20.5% in favor of the linear horses.

In determining the ratio of high-quality fabrics in different lines of horse carcass, it was found that the yield of pulp in certain grades is not the same. The highest yield of linear and nonlinear horses was observed in the I and the II grade, and the fewest in the III grade. Nonlinear horse pulp output in the I grade inferior animals of perky line at 20.2 kg (31.2%) from the line Bracelet 13.3 kg (20.5%), from the Pamir line 5.7 kg (8, 8%), at the output of pulp in kazy, respectively, 45.7; 29.5 and 10.7%. At

the exit of pulp grades II and III, like linear and nonlinear horses with large differences were observed.

The largest bone content in all groups of horses contained in the II grade meat from 39.1 to 40.4%, then in the I grade of 34.4 to 37.0% and III grade of 17.7 to 19.0%. The bran kazy bone content was from 6.1 to 7.3%.

As you know, horse meat produces different foods. Some national product as kazi, map, stings, zhaya, telshik, and shuzhuk sur-is considered to be delicacies. They have a high nutritional value and good taste.

F. Popescu (5) indicates that the horse meat has the advantage over other meat animals is that it does not contain transmitters of intramuscular diseases.

Dairy efficiency of mares in different lines are determined monthly during the three and a half months of lactation. Studies have shown that the type of toad Kazakh mares in different lines have unequal milking. (9-10) Higher milk production with pasture conditions of detention had a uterine line from the Pamirs. Then, in descending order are nonlinear, animal mare line bracelet and finally the mare line Zadornov (Table 9).

Table 9. Dairy Kazakh Mares Type Toad Different Lines (L)

| The live weight of the mares, kg | Actual milk yield |                       | milkiness  |                       |                       |
|----------------------------------|-------------------|-----------------------|------------|-----------------------|-----------------------|
|                                  | per day           | 105 days of lactation | per day    | 105 days of lactation | 100 kg of live weight |
| Bracelet line (n=5)              |                   |                       |            |                       |                       |
| 450,0±3,5                        | 5,92±0,17         | 621,6±5,22            | 14,21±0,35 | 1492,05±22,6          | 332                   |
| Zadornov line (n=5)              |                   |                       |            |                       |                       |
| 461,4±3,8                        | 5,68±0,15         | 596,4±4,92            | 13,63±0,31 | 1431,15±20,3          | 310                   |
| Pamir line (n=7)                 |                   |                       |            |                       |                       |
| 436,0±2,4                        | 6,75±0,19         | 708,7±4,50            | 16,20±0,43 | 1701,0±28,3           | 390                   |
| Nonlinear line(n=8)              |                   |                       |            |                       |                       |
| 428,7±2,1                        | 6,44±0,11         | 676,2±3,87            | 15,46±0,37 | 1623,3±25,7           | 379                   |

The data show that in 105 days of lactation milking of mare's line Pamir was 1701.0 L, nonlinear mares - 1623.3 l, 1 Bangle line 1492.05 and 1431.15 l line Zadornov.

Milk yield obtained from mare's line Pamir was 708.7 liters, nonlinear horses 676.2 L, 621.6 Bracelet line 1 and line Zadornov 596.4 liters. Uda mares Pamir line exceeds 4.8% or 32.5 liters than the nonlinear mares, by 18.8% or 112.3 liters than in mare's line Zadornov and by 14.0% or 87.1 liters than in

mares Bracelet line. According to the index of milk production (per 100 kg of live weight), mare's high rates were also in mares line Pamir (390 kg) and nonlinear queens (379 kg) and virtually identical in mares line Bracelet (332 kg) and the line Zadornov (310 kg).

Linear milking mares over 105 days were far uneven. Higher productivity mare showed the 2-3 month of lactation, milk yield and then gradually decreased, and more sharply towards the end of lactation (Table 10).

Table 10. Changes in Milk Production Kazakh Mares Type Toad Different Lines Lactation Months (L)

| indicators of milking | The month of lactation |             |             |             |
|-----------------------|------------------------|-------------|-------------|-------------|
|                       | June II                | July III    | August IV   | September V |
| Bracelet line         |                        |             |             |             |
| per day               | 14,40±0,31             | 15,17±0,23  | 14,16±0,27  | 13,10±0,26  |
| per month             | 432,0±5,08             | 470,22±7,20 | 438,90±5,24 | 170,36±3,36 |
| Zadornov line         |                        |             |             |             |
| per day               | 13,78±0,26             | 14,45±0,32  | 13,63±0,27  | 12,53±0,29  |
| per month             | 413,28±7,74            | 447,90±4,93 | 422,60±4,98 | 162,86±2,07 |
| Pamir line            |                        |             |             |             |
| per day               | 16,42±0,33             | 17,48±0,35  | 16,35±0,32  | 14,57±0,28  |
| per month             | 492,70±4,12            | 542,06±5,50 | 506,97±5,02 | 189,43±3,39 |
| Nonlinear line        |                        |             |             |             |
| per day               | 16,17±0,29             | 16,74±0,25  | 15,36±0,27  | 13,61±0,23  |
| per month             | 485,10±4,08            | 518,95±3,96 | 476,16±4,86 | 177,05±3,12 |

The data shows that the highest average daily milk yield in the second month of lactation were mares of Pamir line (16.42 liters). Then for nonlinear mares (16.17 liters) in mares' bracelets and Zadornov, the figures were 14.40 and 13.78 liters respectively. In recent months, the lowest average daily lactation milk yields were, line Zadornov - 12.53 L line Bracelet - 13.10, for nonlinear mares - 13.61 and mares line Pamir - 14.57 liters.

Thus, seasonal milking mares at stud due to the selection of meat and dairy other than meat animals significantly increased milk production of dairy mares.

#### 4 Conclusion

In the North-east of Kazakhstan, at the stud farm, "Altai Karpykov, Saidaliev-Sartoka" as a result of many years of breeding work with Kazakh horses such as the foal, with year-round grazing by pure-breeding targeted selection and selection, a new Seletinsky factory type of Kazakh horses was created. The live weight of stallions 511.3 kg, mares - 468.3 kg, perfectly adapted to the harsh conditions of a steppe zone of Pavlodar region.

As a result, extensive use of stallions such as the foal imported from Mugalzharsky stud Aktobe region with a uniform method of selection for the maximum manifestation of selected features using inbreeding received a horse with high productive qualities

and tribal merits and created three new factory lines; bracelet, Zadornov, and Pamir.

There are positive and significant correlations between body weight and height at the withers (0,193-0,216), body weight and oblique trunk length (0,312-0,331), body weight and chest girth (0,367-0,462), body weight and girth pastern (0,405-0,485) which indicate the possibility of selected bidders on these grounds. However, it is first necessary to conduct selection on metacarpus and chest girth.

Meat efficiency of linear horses characterized by higher values in comparison with nonlinear animals. Slaughter output from nonlinear colts was 52.7%, while the colts line bracelet and Pamir were respectively 56.6; 57.4 and 54.2%. By weight of linear carcass and linear colt, it does not exceed 29.8 (15.9%) 39.0 (20.8%) and 10.3 (5.5%), respectively. (11)

The morphological composition of horses' carcasses of various lines was not the same. The yield of pulp in line colts' carcasses was higher by 37.5 (25.0%) 27.0 (18.0%) and 10.1 (6.7%) compared with nonlinear colt, and the relative content of bone in carcasses for linear horses was lower than that of the nonlinear animals. Thus, 1 kg of pulp in bone obtained Bracelet line 4.5, Zadornov lines 4.7 and lines Pamirs 4.2 kg, whereas the nonlinear horses this figure was 3.9 kg.

In the context of seasonal koumiss farm economy "Altai Karpykov, Saidaliev-Sartoka" Dairy Kazakh mares type toad different lines are not the same. A more productive line of the uterus is the Pamirs (1701.0 L) and linear mare (1623.3 L) when compared with the animals from the line Bracelet (1492.05 L) and Zadornov (1431.15 liters). The difference between the compared lines is statistically significant. Index milking mares of Pamir line amounted to 390 kg in the nonlinear ewes - 379 kg, in mares' line of bracelets and Zadornov, were respectively 332 and 310 kg.

### 5 Offers production

In the harsh environment of the steppe zone of Pavlodar region with year-round grazing breeding work with Kazakh foals, it should be conducted in the direction of propagation of the new factory of Seletinsky type that exceeds local horses for fitness, endurance, meat, and milk quality. With the lowest cost of labor and resources, they produce cheap meat and mare's milk.

In order to further consolidate Seletinsky factory type horses, their productive and breeding qualities necessary to carry out an in-depth selection of a straight-line dilution should be improved with homogeneous and heterogeneous methods of selection based on productive and qualitative characteristics.

To increase the production of horsemeat and koumiss wider practice of breeding horses line bracelet are recommended. They are the Zadornov and the Pamirs in the north-eastern and northern Kazakhstan.

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