DEVELOPMENT OF PROCESSING TECHNOLOGIES FOR INTENSIVE DEVELOPMENT OF HORSE BREEDING

Abstract. The optimal parameters of the dairy productivity of female horses of the Kazakh Jabe horses and Kushum breed were determined depending on the technological parameters of the udder (cup-shaped, round, goat). So, mares with a cup-shaped udder reliably surpass peers with a round and goat udder. The mares of the Kazakh horse of Jabe type with a cup-shaped udder are superior in average daily milk yield to individuals with a round udder in 23.8%, with goat udder - 71.2%. A similar picture is observed in mares of the Kushum breed, the difference between the cup-shaped and round forms of the udder is 16.4%, the cup-shaped and goat - 57.1%.

In fat content, no significant difference was found. The fat content in milk in the third month of lactation was 1.37-1.38% in Jabe mares, 1.32-1.33% in the Kushum breed. The full value degree of lactation is pronounced in all mares with the cup-shaped udder, in comparison with round and goat forms. Jabe mares with a cup-shaped udder reliably exceed their peers with round udder in terms of the full value of lactation by 6.3% in absolute terms, mares with goat udder - by 16.1% in absolute terms. Mares of Kushum breed with the cup-shaped udder reliably exceed their peers with round udder by 5.7%, with goat udder by 21.2%.

Female horses of the Kazakh Jabe horses with the cup-shaped udder, nipple length of at least 2.5 cm, milk yield of at least 7.1 kg in the third month of lactation are preferred for targeted breeding and selection for dairy productivity.

Mares of Kushum breed with the cup-shaped udder, flat-shaped nipples directed vertically downward, nipple length not less than 3.0 cm and not more than 6.0 cm, milk yield not less than 9.5 kg in the third month of lactation are desirable for targeted breeding and selection for dairy productivity.

It was established that in the preweaning period, the average daily gain in stallions is 1511-690-482 g, in mares 1496-675-472 g. In the post-dairy period, the average daily gain is significantly reduced in stallions - 882-406 g, in mares - 842-377 g.

It was found that in mares with the cup-shaped udder, due to higher milking capacity, foals grow better and have higher average daily gain.

Key words: mares, foals, parameters, milk yield, fat content in milk, exterior, live weight.

Introduction. In Kazakhstan, productive horse breeding has become widespread. Year-round keeping of horses on pastures allows to get cheap food, it is better to justify deserted, semi-desert and mountain pastures hardly suitable for other types of livestock. Therefore, productive herd horse breeding due to the simplicity of the technology and low costs is characterized by high economic efficiency [1].

In dairy horse breeding, the direction of selection by phenotype should ensure the acquisition of dairy herds with animals of a strong constitution, harmoniously built, capable of high fecundity and dairy productivity with low-cost technologies. The optimal model of a milked animal in the conditions of koumiss farms of Kazakhstan meets the complex of the following requirements: strong constitution; a regular exterior with a well-developed body in length, depth and width, a capacious belly and a pushed forward, well-developed udder with large nipples, convenient for milking; strong limbs with strong hoofed horn [2].

Currently, in dairy horse breeding, the selection parameters by technological characteristics are not included in the instructions for bonitiation of local breeds of horses [3]. Therefore, the technological parameters of productivity should be clarified experimentally for each breed of productive direction. For
Kazakh horses, the optimal levels of these traits are expressed in the following requirements: a cup-shaped udder, conical nipples.

Technological characteristics of the udder are evaluated in points during a comprehensive assessment of the animal: the shape of udder and nipples is visual, their sizes are taken by measurements, observation during milking.

In such a way, the system for improving the dairy productivity of horses includes the refinement and increase in the effectiveness of methods for evaluating animals according to the phenotype to more accurately characterize its genotype. The valuable genotypes revealed during the multistage selection process reproduce through the corresponding selection system under conditions that are most conducive to the development of the main breeding traits.

**The aim of the research.** To study the influence of technological parameters of productivity on the early ripeness of foals and the formation of dairy productivity in mares at Bayserke-Agro LLP.

**Methods of research.** To study the peculiarities of the mare’s body build, the indices of format, chest girth, massiveness, and bone were calculated [1].

The shape of the udder in mares was determined visually, measuring the length and thickness of the nipples - with a measuring tape. The dairy productivity of mares was determined by the actual milk yield, by conducting weekly control milk yields.

Commodity milk yield of mares was determined monthly during lactation by the control milk yield method, twice a month on two adjacent days [2]. Dairy productivity was calculated taking into account milk sucked by foals at night, according to the formula of Professor I.A. Saigin [4].

The digital material was processed by the methods of variation statistics proposed by Lakin [5]. The research results were processed on a PC with an "MS Excel" program.

**Research results. The influence of technological parameters of the udder on milk yield.** The optimal parameters of the dairy productivity of mares of the Kazakh Jabe horses and Kushum breed were determined depending on the technological parameters of the udder (cup-shaped, round, goat) (table 1).

| Indicator                  | Udder form | Group   |
|----------------------------|------------|---------|
|                            | Jabe       | Kushum  |
| The average daily milk yield, kg | cup-shaped | 12.5±0.4 | 9.9±0.4 |
|                            | round      | 10.1±0.6 | 8.5±0.6 |
|                            | goat       | 7.3±0.8  | 6.3±0.8 |
| Fat content, %             | cup-shaped | 1.37±0.05 | 1.33±0.04 |
|                            | round      | 1.38±0.04 | 1.32±0.05 |
|                            | goat       | 1.37±0.05 | 1.33±0.05 |
| The full value degree of lactation | cup-shaped | 75.2±1.7  | 78.3±1.4 |
|                            | round      | 68.9±1.3  | 72.6±1.9 |
|                            | goat       | 59.1±0.9  | 57.1±0.8 |

So, mares with the cup-shaped udder reliably exceed peers with a round and goat udders. The female horses of the Kazakh Jabe with a cup-shaped udder are superior in average daily milk yield to peers with a rounded udder - by 23.8%, with goat udder - by 71.2%. A similar picture is observed in mares of the Kushum breed, the difference between the cup-shaped and rounded forms of the udder is 16.4%, the cup-shaped and goat’s forms - 57.1%.

In fat content, no significant difference was found. The fat content in milk in the third month of lactation was 1.37-1.38% in Jabe mares, 1.32-1.33% in the Kushum breed. The full value degree of lactation is pronounced in all mares with the cup-shaped udder, in comparison with round and goat forms. Jabe mares with a cup-shaped udder reliably exceed their peers with round udder in terms of the full value of lactation by 6.3% in absolute terms, mares with goat udder - by 16.1% in absolute terms. Mares of Kushum breed with the cup-shaped udder reliably exceed their peers with round udder by 5.7%, with goat udder by 21.2%.

| Table 1 – Average daily milk yield and fat content in milk during the third month of lactation in mares |
Female horses of the Kazakh Jabe horses with the cup-shaped udder, nipple length of at least 2.5 cm, milk yield of at least 7.1 kg in the third month of lactation are preferred for targeted breeding and selection for dairy productivity.

Mares of Kushum breed with the cup-shaped udder, flat-shaped nipples directed vertically downward, nipple length not less than 3.0 cm and not more than 6.0 cm, milk yield not less than 9.5 kg in the third month of lactation are desirable for targeted breeding and selection for dairy productivity.

**The genetic basis of selection for the improvement of horses in Bayserke-Agro.** The main features by which selective and breeding work with horses was carried out are the type, exterior, samples, live weight, adaptability to the herd keeping, milk yield of mares, which differ in varying degrees of phenotypic diversity (table 2).

| Breed                     | Sex   | n  | Measurements | Live weight |
|---------------------------|-------|----|--------------|-------------|
|                           |       |    | height at the withers | oblique body length | chest girth | metacarpus girth |                   |             |
|                           |       |    | δ           | Cv           | δ           | Cv           | δ           | Cv           | δ           | Cv           |
| Kushum                    | Stallion | 11 | 0.83       | 0.57         | 1.16       | 0.77         | 0.62       | 0.27        | 1.37       | 6.86       | 1.42        |
|                           | Mare    | 53 | 2.61       | 1.82         | 3.25       | 2.16         | 3.46       | 1.87        | 0.92       | 4.92       | 10.65       |
| Kazakh Jabe type          | Stallion | 12 | 0.79       | 0.54         | 1.22       | 0.81         | 1.12       | 0.62        | 0.25       | 1.29       | 7.45        |
|                           | Mare    | 73 | 1.79       | 1.26         | 3.59       | 2.42         | 4.35       | 2.43        | 0.77       | 4.18       | 11.32       | 4.64        |

The live weight is characterized by the highest variability, which is 1.42 and 1.61 for stallions, 5.75 and 4.64 for mares. Variation in metacarpus girth is 1.37 and 1.29 in stallions, 4.92 and 4.18 in mares. In terms of measurements of the height at the withers, the oblique body length and chest girth, more stable indicators of variability are inherent in stallions: 0.57-0.54, 0.77-0.81, 0.62-0.62 and in mares 1.82-1.26, 2.16-2.42, 1.87-2.43 respectively.

It can be seen from the above data that for Kushum and Kazakh horses, the selection by live weight, boniness, oblique body length, and chest girth gives positive results in breeding work to improve these traits.

When breeding horses of both breeds by live weight, the selection was made primarily by chest girth and metacarpus girth. A study of the correlation of the main economic traits in mares shows that the degree of development of the leading conjugate traits was not the same (table 3).

| Correlation traits             | Correlation coefficient \(r=\frac{m_{bc}}{n}\) | validation criterion \(tr\) | Probability value \(p\) |
|--------------------------------|-----------------------------------------------|-----------------------------|-------------------------|
| Height at the withers – live weight Kushum | 0.203±0.137 | 1.48 | 0.90 |
| Косая длина туловища – live weight Kushum | 0.331±0.132 | 2.51 | 0.95 |
| Oblique body length – live weight Kushum | 0.462±0.124 | 3.71 | 0.999 |
| Metacarpus girth – live weight Kushum | 0.485±0.122 | 3.93 | 0.999 |
| Height at the withers – live weight Kazakh Jabe | 0.216±0.141 | 1.55 | 0.90 |
| Косая длина туловища – live weight Kazakh Jabe | 0.327±0.136 | 2.41 | 0.95 |
| Oblique body length – live weight Kazakh Jabe | 0.458±0.128 | 3.56 | 0.999 |
| Metacarpus girth – live weight Kazakh Jabe | 0.461±0.127 | 3.58 | 0.999 |

The correlation coefficient \(r\) between measurements and live weight in horses of the Kushum breed is slightly higher than in mares of the Kazakh Jabe. A higher correlation relationship in both breeds of horses is observed between live weight and metacarpus girth of 0.485-0.458, then between chest girth and live weight of 0.462-0.458. Finally, the relationship between height at the withers and live weight was 0.223-0.216.
Thus, in breeding work with horses, while improving meat and milk breeds, along with evaluating horses for height at the withers and oblique body length, it is necessary to conduct a careful selection by the chest girth and metacarpus girth. This is most fully consistent with the task of improving the Kushum breed and Kazakh Jabe horses.

Patterns of growth and development of foals in the dairy and post-dairy period, depending on the technological parameters of the breeding characteristics of their mothers. In 2019, 162 foals were obtained (40 animals per 100 broodmares). An important event in selective and breeding work is the development of a control scale for the development of young stock. To this end, we studied the growth and development of young animals of both breeds, for this we determined the dynamics of changes in measurements and live weight, calculated body indices, as well as the growth energy of foals depending on the udder shape of the mothers (tables 4, 5, 6).

Table 4 – Age-related dynamics of measurements and live weight of young horses

| Age, months | n  | Measurements, cm | Live weight | Average daily gain, g |
|-------------|----|------------------|-------------|-----------------------|
|             |    | height at the withers | oblique body length | chest girth | metacarpus girth | Stallions |
|             |    | 92.7±0.53         | 80.2±0.47   | 96.7±0.67  | 11.7±0.17  | 48.7±1.87   | – |
| 3 days      | 65 | 101.5±0.62        | 106.1±0.64  | 12.3±0.21  | 89.5±2.09  | 1511        | |
| 1           | 64 | 113.2±0.67        | 115.8±0.60  | 14.5±0.18  | 130.9±2.17 | 690         | |
| 3           | 62 | 118.7±0.67        | 124.6±0.74  | 15.7±0.16  | 174.3±2.31 | 482         | |
| 6           | 60 | 122.1±0.59        | 143.2±0.71  | 16.6±0.11  | 210.9±2.36 | 882         | |
| 9           | 55 | 129.6±0.61        | 151.7±0.69  | 17.2±0.13  | 290.3±2.87 | 882         | |
| 12          | 50 | 91.4±0.48         | 79.6±0.53   | 95.8±0.57  | 11.4±0.11  | 47.2±1.62   | – |
| Fillies     |    | 100.2±0.51        | 104.8±0.52  | 12.6±0.12  | 87.6±2.91  | 1496        | |
| 3 days      | 76 | 110.5±0.57        | 113.6±0.52  | 14.1±0.10  | 128.1±2.28 | 675         | |
| 1           | 76 | 117.6±0.62        | 121.4±0.47  | 15.1±0.12  | 170.6±2.42 | 472         | |
| 3           | 70 | 120.6±0.59        | 142.1±0.49  | 15.5±0.09  | 204.6±2.33 | 377         | |
| 6           | 68 | 127.8±0.59        | 151.2±0.51  | 16.2±0.19  | 280.4±2.62 | 842         | |

Table 5 – Age-related changes in the body indices of foals

| Age, months | n  | Body indices, % |
|-------------|----|----------------|
|             |    | Format | Girth | Bone | Massiveness |
|             |    | Stallions |
| 3 days      | 65 | 86.5   | 104.3 | 12.6 | 60.9         | |
| 1           | 64 | 90.3   | 104.5 | 13.0 | 86.0         | |
| 3           | 62 | 92.8   | 102.1 | 12.8 | 89.6         | |
| 6           | 60 | 95.5   | 105.0 | 13.2 | 104.4        | |
| 9           | 58 | 97.9   | 117.3 | 13.6 | 115.9        | |
| 12          | 55 | 100.4  | 117.1 | 13.3 | 133.2        | |
| Fillies     |    | Stallions |
| 3 days      | 76 | 87.1   | 104.8 | 12.5 | 162.1        | |
| 1           | 76 | 90.2   | 104.6 | 12.6 | 86.7         | |
| 3           | 72 | 93.8   | 102.8 | 12.8 | 94.9         | |
| 6           | 70 | 94.8   | 103.2 | 12.8 | 104.7        | |
| 9           | 65 | 97.2   | 117.8 | 12.8 | 116.9        | |
| 12          | 60 | 98.7   | 118.3 | 12.7 | 134.2        | |

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It was established that in the dairy (preweaning) period, the average daily gain in stallions is 1511-690-482 g, in mares 1496-675-472 g. In the post-dairy period, the average daily gain is significantly reduced in stallions 406-882 g, in mares 377-842 g.

By the live weight of foals, it is not always possible to determine in which direction the development of the animal's organism is going. The answer to this question is given by the study of changes in exterior features in the development process. In the postnatal period, higher growth energy of foals is noted in the axial and weaker in the peripheral parts of the body. If from the age of 3 days to 6 months, measurements of the height at the withers increased in stallions by 26.0 cm and in fillies by 26.2 cm, of metacarpus girth by 4.0 cm and 3.7 cm, then measurements of the oblique body length increased by 33.2 cm and 31.9 cm, chest girth by 27.9 cm and 25.6 cm, respectively. Thus, the most intensive growth of all body parts in foals occurred in the first six months of life.

The advance in the format index with age occurs due to the higher growth rate of the oblique body length than the height at the withers. A high increase in the index of chest girth is due to the higher energy of growth of the body in depth and width, and the metacarpal bones in thickness than the growth of bones of the chest limb in length. A high index of massiveness in foals is associated with a faster increase in live weight over the growth of foals in height and length.

At the age of one month, the average daily gain of the foals of the Kazakh Jabe and Kushum mares with the cup-shaped udder was 1518 g and 1667 g, and with a round shape of the udder 1481 g and 1592 g, respectively, the average daily gain of foals of 2-month-age was 1000 and 950 g, and the Kushum foals were 1190 g and 1100 g.

It was found that in mares with the cup-shaped udder, due to higher milking capacity, foals develop better and have a higher average daily gain. The data obtained indicate the prospects for the development of dairy horse breeding, at the level of dairy cattle breeding in the conditions of Bayserke-Agro LLP [6]. In subsequent studies, it is necessary to pay attention to study the reproductive qualities of mares, according to the common methodology in dairy cattle breeding [7].

The studies were carried out in accordance with the program of the Ministry of Agriculture of the Republic of Kazakhstan for 2018 - 2020. IRN: BR06249249 Development of the integrated system for increasing productivity and improving breeding abilities of farm animals as an example of Bayserke-Agro LLP.

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Аннотация. Зерттеу мақсаты – «Байсерке-Агро» ЖШС шаураушылығындағы биі сүт өндірілігінің калыңдастыру мен ерте жеңілдетуі құлындық технологиялық параметрлер өндірілігіне есерін зерттеу.

Table 6 – Growth and development of foals

| Indicators                   | Breed               |
|------------------------------|---------------------|
|                              | Kazakh Jabe         | Kushum              |
|                              | Mare’s udder shape  |
|                              | cup-shaped  | round | cup-shaped | round  |
| Number of animals            | 4            | 3     | 3          | 2      |
| Live weight: at the age of 3 days, kg | 41  | 39  | 48  | 47  |
| at the age of 1 month, kg    | 82±3.1       | 79±4.5 | 93±5.9 | 90±5.9 |
| at the age of 2 months, kg   | 112±5.4      | 107±7.7 | 129±9.2 | 123±6.0 |
| at the age of 6 months, kg   | 165±5.6      | 149±7.9 | 171±9.4 | 155±6.2 |
| at the age of 9 months, kg   | 217±5.8      | 181±8.0 | 233±9.6 | 197±6.4 |
Казахстаның жаба және кешім тукымдасының салмак көлемінің ұзындығы мен бойының өзгершілігі анықталды. Бие емізігінің узындығы мен жұандығы елшеуінің әсерінде айқындалды. Биенің сүт емірі салмалыққа қосылуы үшін құрылыс өзекті қабылдау арқылы анықталды.

Биенің тауарлық салмалық көлемі ай сайынды лактация барысында айына екі рет, кунара сүт өңдеу арқылы анықталды. Сүт ешмегінің жасылықтарының әсерінде жұандығы елшеу үшін шығарылды.

Сүт емес көлемі салмалық қалыңдығы 2,5 см, лактацияның үшінші айында 7,1 кг сауылған, демек, мүмкін екіншіден 57,1% айырмашылықты көрсетті.

Майлылық курамында айырмашылық табылмады. Лактацияның үшінші айында сүт көлемінің өзгерісі және кеуде улгісінің өзгерісі бейімделген. Лактацияның үшінші айында сүт көлемінің өзгерісі 1,37-1,38%, кеуде орташа 1,32-1,33% камтыды.

Лактацияның көлемінің өзгерісінің динамикасы анықталды және дене түркісінің өзгерісі, сондай-ақ кулының қабылдамалық және кеуде орташа емірімен қолайлы деп есептелді.

Тостаган тәрізді желінді биенің сүт емірінің ұзындығы мен жұандығы 23,8%, ешкінен 71,2% жоғары.

Майлылық курамында айырмашылық табылмады. Лактацияның үшінші айында сүт емірінің ұзындығы және кеуде орташа емірі 6,3%, ешкінен 21,2% жоғары.

Селекциялық-тукымдық шаруашылығының манызды жағдайларын бірі - өкінішті түрлідің дамуын басқару процессі.

Тостаган тәрізді желінді биенің сүт емірінің ұзындығы мен жұандығы 2,5 см, лактацияның үшінші айында 7,1 кг сауылған және кеуде орташа емірі 2,5 см, 71,2% жоғары.

Тостаган тәрізді және томпак желінді биеде айырмашылық 16,4%, тостаган тәрізді және ешкінен 57,1% айырмашылықты көрсетті.

Тостаган тәрізді желінді биенің сүт емірінің ұзындығы және кеуде орташа емірі мен томпак желінді биеде айырмашылық 6,3%, ешкінен 21,2% жоғары.

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Тостаган тәрізді желінді биенің сүт емірінің ұзындығы және кеуде орташа емірі 6,3%, ешкінен 21,2% жоғары.
АННОТАЦИЯ. Цель исследования — изучить влияние технологических параметров продуктивности на скороспелость жеребят и формирование молочной продуктивности у кобыл в ТОО «Байсерке-Агро».

С целью изучения особенностей телосложения кобыл вычислялись индексы формата, обхвата груди, массивности и костистости.

Определение формы вымени кобыл производилось визуально, измерение длины и толщины сосков — мерной лентой. Молочную продуктивность кобыл определяли по фактическим надоям путем проведения ежедекадных контрольных удоев.

Товарная молочность кобыл определялась ежемесячно в течение лактации методом контрольных удоев, два раза в месяц по двум смежным дням. Молочная продуктивность рассчитывалась с учетом молока, высосанного в ночное время жеребенком, по формуле профессора И.А. Сайгина (1963 года).

Результаты Определены оптимальные параметры молочной продуктивности кобыл казахских лошадей жабе и кушумской породы в зависимости от технологических параметров вымени. Кобылы казахской лошади типа жабе с чашевидной формой вымени превосходят по среднесуточному удою особей с округлой на 23,8%, козьей — на 71,2%. Аналогичная картина наблюдается у кобыл кушумской породы, разница составила между чашевидной и округлой формами вымени 16,4%, чашевидной и козьей — 57,1%.

По содержанию жира существенной разницы не установлено. Жирность молока на третьем месяце лактации составила у кобыл типа жабе 1,37-1,38%, кушумской породы — 1,32-1,33%. Степень полноценности лактации ярко выражена у всех кобыл, имеющих чашевидную форму вымени, в сравнении с дольковидной и козьей. Кобылы жабе с чашевидной формой вымени достоверно превосходят сверстниц с дольковидной по степени полноценности лактации на 6,3% в абсолютном выражении, с козьей — на 16,1% в абсолютном выражении. Кобылы кушумской породы с чашевидной формой вымени достоверно превосходят сверстниц с округлой на 5,7%, с козьей — на 21,2%.

Кобылы казахских лошадей жабе с чашевидной формой вымени, длиной сосков не менее 2,5 см, удоем на третьем месяце лактации не менее 7,1 кг являются предпочитительными для целенаправленного подбора и селекции на молочную продуктивность.

Кобылы кушумской породы с чашевидной формой вымени, сосками плоской формы, направленными вертикально вниз, длиной сосков не менее 3,0 см и не более 6,0 см, удоем молока на третьем месяце лактации не менее 9,5 кг являются желательными для целенаправленного подбора и селекции на молочную продуктивность.

Наиболее высокой изменчивостью характеризуется живая масса, которая равняется 1,42 и 1,61 у жеребцов, 5,75 и 4,64 у кобыл. Изменчивость обхвата пясти составляет у жеребцов 1,37 и 1,29, у кобыл 4,92 и 4,18. По промерам высоты в холке косой длине туловища и обхвату груди присущи более стабильные показатели изменчивости, у жеребцов 0,57-0,54, 0,77-0,81, 0,62-0,62 и кобыл соответственно 1,82-1,26, 2,16-2,42, 1,87-2,43.

Коэффициент корреляции (r) между промерами и живой массой у лошадей кушумской породы несколько выше, чем у кобыл казахского типа жабе. Более высокая корреляционная связь в обеих породах лошадей наблюдается между живой массой и обхватом пясти 0,485-0,458, затем между обхватом груди и живой массой 0,462-0,458. Наконец, связь между высотой в холке и живой массой составила 0,223-0,216.

Важным мероприятием в селекционно-племенной работе является разработка контрольной шкалы развития молодняка. С этой целью нами проведено изучение роста и развития молодняка обеих пород, для этого были определены динамика изменения промеров и живой массы, вычислены индексы телосложения, а также энергия роста жеребят в зависимости от формы вымени матерей.

В связи с тем, что у кобыл с чашевидной формой вымени в силу более высокой молочности жеребят развивается лучше и имеют более высокий среднесуточный прирост.

Установлено, что в молочный период средний суточный прирост составляет у жеребчиков 1511-690-482 г, кобылок 1496-675-472 г. Постмолочный период средний суточный прирост достоверно снижается у жеребчиков 406-882 г, кобылок 377-842 г.

По живой массе жеребят не всегда можно определить, в каком направлении идет развитие организма животного. Ответ на этот вопрос дает изучение изменений экстерриториальных особенностей в процессе развития. В послянатальный период более высокая энергия роста жеребят отмечена в осевой и слабее в периферических частях тела. Если с 3 дневного до 6-ти месячного возраста промеры высоты в холке возросли у жеребчиков на 26,0 и у кобылок 26,2 см, обхват пясти на 4,0 и 3,7 см, то промеры косой длины туловища увеличались на 35
33,2 и 31,9 см, обхват груди на 27,9 и 25,6 см соответственно. Таким образом, наиболее интенсивный рост всех статей тела у жеребят произошли в первые шесть месяцев жизни.

Увеличение индекса формата с возрастом происходит за счётом более высокой интенсивности роста косой длины туловища, нежели высоты в холке. Высокий рост индекса обхвата груди за счёт более высокой энергии роста туловища в глубину и ширину, а пястных костей в толщину, чем рост костей грудной конечности в длину. Высокий индекс массивности у жеребят связан с опережающим повышением массы тела над ростом жеребят в высоту и длину.

В месячном возрасте среднесуточный прирост жеребят казахских и кушумских кобыл с чашевидной формой вымени составила 1518 и 1667 г, а с округлой формой вымени соответственно 1481 и 1592 г. Среднесуточный прирост жеребят 2-х месячного возраста составлял 1000 и 950 г, а кушумских – 1190 и 1100 г.

Установлено, что у кобыл с чашевидной формой вымени в силу более высокой молочности жеребята развиваются лучше и имеют более высокий среднесуточный прирост.

Ключевые слова: кобылы, жеребята, параметры, удой молока, жирность молока, экстерьер, живая масса.

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REFERENCES

[1] Akimbekov A.R., Baimukanov D.A., Yuldashbayev Yu.A., Demin V.A., Iskhan. K.Zh. Horse breeding (ISBN 978-5-906923-27-1). M.: COURSE: INFRA-M, 2018. 400 p. (in Russ.).
[2] Akimbekov A.R., Baimukanov D.A., Iskhan K.Zh., Omarov M.M., Aubakirov H.A. Dairy productivity and milk composition of mares of different genotypes // Reports of the National Academy of Sciences of the Republic of Kazakhstan. Almaty, 2018. N 2. P. 172 - 180 (in Russ.).
[3] Instructions for bonitation of horses of local breeds. (2014) Astana. Ministry of Agriculture of the Republic of Kazakhstan. 22 p. (in Russ.).
[4] Saigin I.A. Meat and dairy horse breeding // Agricultural production of the Urals, 1963. N 5. P. 12-14 (in Russ.).
[5] Lakin G.F. Biometrics. M.: Higher School. 1980. 293 p. (in Russ.).
[6] Spanov A.A., Bekenov D.M., Sultanbai D.T., Zhaksylykova G.K., Baimukanov A.D. (2019) The effect of canola meal application in the diet of dairy cows of Holstein breed in Bayserke AGRO LLP. Reports of the National Academy of Sciences of the Republic of Kazakhstan. Vol. 5, N 325 (2019). P. 21-24. ISSN 2518-1483 (Online), ISSN 2224-5227 (Print). https://doi.org/10.32014/2019.2518-1483.135
[7] Baimukanov D.A., Seidaliev N.B., Alentayev A.S., Abugaliyev S.K., Semenov V.G., Dalibayev E.K., Zhamalov B.S., Muka Sh.B. (2019) Improving the reproductive ability of the dairy cattle. Reports of the National Academy of Sciences of the Republic of Kazakhstan. Vol. 2, N 324 (2019). P. 20–31. ISSN 2518-1483 (Online), ISSN 2224-5227 (Print). https://doi.org/10.32014/2019.2518-1483.33