

International Academy of Science and Higher Education  
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Global International Scientific Analytical Project



MEMORIAL  
Antonie van  
Leeuwenhoek



## TRADITIONAL AND EXPERIMENTAL METHODS OF STUDYING AND OVERCOMING THE MEDICAL AND BIOLOGICAL PROBLEMS IN ENSURING THE OPTIMAL VITAL FUNCTIONS OF HUMAN BEINGS AND THE WILDLIFE

Peer-reviewed materials digest (collective monograph) published following the results of the CXLII International Research and Practice Conference and I stage of the Championship in Medicine and Pharmaceuticals, Biology, Veterinary Medicine and Agricultural sciences (London, April 13 - April 21, 2017)



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In the digest original texts of scientific works by the participants of the CXLII International Scientific and Practical Conference and the I stage of Research Analytics Championship in Medicine and Pharmaceutics, Biology, Veterinary Medicine and Agriculture are presented.



### **National Research Analytics Championship**

Azerbaijan  
Kazakhstan  
Moldova  
Russia  
Ukraine



### **Open European-Asian Research Analytics Championship**

Azerbaijan  
Kazakhstan  
Russia  
Ukraine



### **International Scientific and Practical Conference**

Azerbaijan  
Bulgaria  
Kazakhstan  
Moldova  
Russia  
Ukraine

## EXPERTS OF CHAMPIONSHIPS AND CONFERENCE



### **ALEXANDER CHIGLINTSEV (RUSSIA)**

Doctor of Medicine, Full Professor

**Place of work:** South Ural State Humanitarian Pedagogical University

**Discoveries and inventions:** 11 certificates of the Russian Federation of computer programs state registration, 6 patents for inventions of new methods of operations and surgical instruments.

**Scope of research interests:** practical and theoretical urology, psychology, organization of health care and public health, the legal aspects of medical practice, intellectual property in medicine, patent law.



### **ALEXANDRATEGZA (KAZAKHSTAN)**

Doctor of Veterinary medicine, Full Professor

**Place of work:** Kostanai State University A. Baitursynov

**Discoveries and inventions:** Copyright certificate «Method of producing dry museum preparations of tubular organs»

**Scope of research interests:** Pathology of the reproductive system of cows; The pathogenesis of foot rot among sheep.



### **BAKAR SUDHIR (INDIA, USA)**

DM, Cardiology Centre (Agra).



### **DANI SARSEKOVA (KAZAKHSTAN)**

Doctor of Agricultural sciences, Associate Professor, Acting Professor

**Place of work:** S. Seifullin Kazakh Agro Technical University.

**Discoveries and inventions:** patent pending.

**Scope of research interests:** forest plantations, irrigation forestry.



### **GABRIEL GRAZBUNGAN (SWITZERLAND)**

DSc, co-owner of an international agricultural corporation.



### **GALINA KHMICH (KAZAKHSTAN)**

Candidate of Biology, Associate Professor.

**Place of work:** Innovative University of Eurasia, Pavlodar.

**Scope of research interests:** Problems of adaptation of organism when influenced by different etiological factors, problems of developmental physiology.



**GEORGE CRUIKSHANK (UK)**  
HScD, cal clinic “تکرب” (Damask, Syria)



**HOKUMA KULIEVA (AZERBAIJAN)**  
Doctor of Biology, Full Professor

**Place of work:** Baku State University, Institute of Zoology of the Azerbaijan National Academy of Sciences.

**Discoveries and Inventions:** Patent I 2003 0100, Patent I 2012 0091

**Scope of research interests:** entomology, ecological physiology.



**MAXIM KOSTIN (RUSSIA)**  
Candidate of Agricultural sciences

**Place of work:** Russian Academy of Sciences - Institute of Forest Science

**Discoveries and inventions:** Patent application submitted in 2013, pending.

**Scope of research interests:** Rational nature management, protective afforestation, restoration of forest plantations.



**LASZLO KORPAS (HUNGARY)**  
East European Cynology Association, PhD



**LIUDMILA KOKOLOVA (RUSSIA)**  
Doctor of Veterinary medicine, Head of the laboratory

**Place of work:** Yakut Research Institute of Agriculture (Yakutsk).

**Discoveries and inventions:** FIIP Patent for invention №2532977, 2014

Certificate №2014621492, 2014

**Scope of research interests:** Veterinary medicine, helminthology, parasitology, microbiology, biotechnology



**SAITO KANO (JAPAN)**  
DSc, Head of the Tingo Maria National Park Breeding Service (Peru)



**SUSANNE KRAUSE (GERMANY)**  
The Menarini Group Company, DM



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The Department of supervision of animal populations in urban areas  
(Indiana, Indianapolis, IN), D.Sc.



**YELENA SHARACHOVA (RUSSIA)**  
Doctor of Pharmaceutics, Full Professor

**Place of work:** Altai State Medical University.

**Scope of research interests:** human resource management in health care, pharmacoecomics, rational use of medicines.



**YURIY LAKHTIN (UKRAINE)**  
Candidate of Medicine, Associate Professor

**Place of work:** Kharkiv Medical Academy of Postgraduate Education

**Scope of research interests:** dentistry, dental diseases, periodontal tissues, oral mucosa, anesthesiology in dentistry, physiotherapy, dentistry, dental filling materials, the organization of health care, drug treatment in dentistry, pharmacotherapy in dentistry, dental ecogenic



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Following the results of the I stage of the Championship in Medicine, Pharmaceutics, Biology, Veterinary Medicine and Agriculture, held within the framework of the National Research Analytics Championship and the Open European-Asian Research Analytics Championship, the Championship Organizing Committee and IASHE regional expert council decided to single out the following reports as the best research works presented at the championships:

## OPEN EUROPEAN-ASIAN RESEARCH ANALYTICS CHAMPIONSHIP

### Absolute championship

#### *Agricultural Sciences*

Bronze decoration,  
Money bonus in the amount of Euro 25 and 50 credits

Maxim Kostin

#### *Biology*

Bronze decoration,  
Money bonus in the amount of Euro 25 and 50 credits

Oxana Khlukshevskaya,  
Galina Khimich

#### *Pharmaceutics*

Bronze decoration,  
Money bonus in the amount of Euro 25 and 50 credits

Nataliia Bondarenko,  
Mykola Blazheyevskiy

#### *Veterinary*

Bronze decoration,  
Money bonus in the amount of Euro 25 and 50 credits

Alexandra Tegza

## NATIONAL RESEARCH ANALYTICS CHAMPIONSHIP

### Absolute championship

#### *Medicine*

##### **Ukraine**

Silver decoration,  
Money bonus in the amount of Euro 30 and 60 credits

Liubov Hryhorenko

Bronze decoration,  
Money bonus in the amount of Euro 25 and 50 credits

Olena Vasilenko,  
Olena Viedienieieva,  
Valentin Drozda

#### *Pharmaceutics*

##### **Ukraine**

Bronze decoration,  
Money bonus in the amount of Euro 25 and 50 credits

Nataliia Bondarenko,  
Mykola Blazheyevskiy



All the participants of championships except those who were awarded with diplomas receive certificates of participants of the championship.



On behalf of the Organizing Committee and the Commission of Experts  
I stage of the Championship in Medicine, Pharmaceutics, Biology,  
Veterinary Medicine and Agriculture  
of the National research analytics championship  
and the Open European-Asian research analytics championship

Head of IASHE International Projects Department  
Thomas Morgan

A handwritten signature in black ink, which appears to read "Morgan". The signature is written in a cursive, flowing style.

UDC 636.064

**BREEDING AND PRODUCTIVE QUALITIES OF THE KAZAKH WHITEHEAD HEIFERS OF THE DIFFERENT GENOTYPES «ZHANABEK» LLC**

**I. Tegza, Cand. of Agricultural sciences, Associate Prof.  
A. Tegza, Dr. of Veterinary medicine, Full Prof.  
A. Kolbasina, Magistrate  
Kostanay State University after A. Baitursynov, Kazakhstan  
R. Fatkullin, Dr. of Biology, Full Prof.  
South Ural State Agrarian University, Russia  
L. Iahnik, Master of Veterinary, Researcher  
Kostanay Veterinary Research Station, Kazakhstan**

**Conference participants,  
National championship in scientific analytics,  
Open European and Asian research analytics championship**

*Analysis of the indicators of effectiveness of rearing heifers was carried out from the birth to 18 months. Production costs taking into account the growth of heifers in group 1 was more at 186 360 tenge, it is more than that of heifers of the 2<sup>nd</sup> and 3<sup>d</sup> groups on 6 001 and 11 939 tenge or as percentage of 3.2% and 6.4%. The cost price of 1 quintal of the body weight of heifers of all groups was quite high. However, the most of its value to all periods of growth was characteristic to 3 groups of heifers and it was 41,529 tenge, with respect to the group 1 and 2 it was 1 452 - 445 tenge or 3.5 - 1.1% in the period from birth to 18 months. Accordingly, the profit from the sale of the heifers of the 1<sup>st</sup> group was higher than in the groups of the same age is 15 295 - 30 475 KZT, or 5.6 - 11.2%.*  
**Keywords:** cattle breeding, Kazakh white-headed breed, growth rates of young growth, pure gain, live weight.

The important structural elements are breed lines and related groups, allowing to improve the herd for breeding and productive qualities. Proper rearing is an integral part of improving the herd and makes optimal expression of the genetic potential of the productive qualities of animals [1].

It is necessary to involve all animal genetic resources of domestic origin to improve the productive qualities of the animals. The use of highly productive breeds of animals, intensive forms of organization and beef production technology occupy a leading position in the meat balance must expand therefore and everywhere. In decision of this task, a significant role is given to more efficient use of available resources rock cattle inbreeding of different types [2]. In order to improve the status of beef cattle it is necessary to conduct breeding work effectively, taking into account the diversity of genotypes of cattle beef productivity of domestic breeding, which are bred in Kazakhstan, it is necessary to scientifically substantiate the feasibility of using different genotypes and taking into account their competitiveness in terms of meat productivity, slaughter yield, meat quality, reproductive capacity [3]. In recent years, beef cattle, both in the region and in Kazakhstan as a whole is developing quite rapidly, which is undoubtedly due to the state policy of support of this direction, developing and implementing long-term programs of development of the industry “Development of beef cattle of the Republic of Kazakhstan” on 2012-2020 years. The program is implemented in phases: first - 2012-2015 years; second - 2015-2020 years, [4].

Kostanay region is a major producer and supplier of breeding stock of specialized beef breeds. Yearly breeding farms sell to agricultural 2,0-2,5 thousand and more of the heads of highly productive young animals, mostly Kazakh white breed.

**The aim of the search:** to study the breeding and productive qualities of calves of the Kazakh white breed in the conditions of LLC “Zhanabek”, which will allow increasing the efficiency of beef production and improving the quality of its meat?

**Materials and Methods:** Scientific and economic research was carried out in LLC “Zhanabek” Altynsarin District, Kostanay region through Kazakh white breed animals.

In the experiment on breeding and productive qualities, in order study the effectiveness of the intensive rearing of heifers of the 2015 birth of the Kazakh white breeds, three groups of pairs of analogs in 21 head in each group was formed. Having divided them as belonging to different lines, heifers belonging to the line of Landysh were included in the 1st group, the 2nd group consisted of heifers belonging to Viskounta’s line and heifers belonging Smychok’s line were included in the 3d group of Kazakh white breed.

The experimental herd of young animals from birth to 8 months of age have been grown for meat cattle breeding technology together with cows. After weaning young animals were kept up to 18 months of age in the same production conditions. Feeding of the animals was calculated to obtain the average daily weight gain of 800 – 900 grams.

Accounting of palatability of feed was conducted for two days on the adjacent difference given masses and the remnants of uneaten during housing. In order to study the growth and development monthly weighing up to feed at the age of 8, 12, 15 and 18 months, which resulted in the expected absolute, average daily gain and body weight, the relative growth rate of the formula S. Brodi and magnification of live weight with age was carried out.

Heifers breeding values of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>d</sup> groups were evaluated based on the results of tests on their own productivity. The economic efficiency of growing heifers was determined based on prevailing costs for the period from birth to 18 months.

**The results of researches.** One of the main factors that determine the productivity of meat heifers is a full feeding. Valuable quality of breeding animals cannot be kept without a sufficiently high feeding level. Identical diets and feeding standards were used for all groups of animals. Among the environmental factors of feeding, the importance is in the formation of meat productivity of animals. Feed rations made up according to available stocks at the farm and feed set, comprising obtaining the average daily gain during the whole growing period - 800 – 850gram. The ration structure was typical for the majority of households Kostanay region. It contained a significant amount of concentrates, hay and green fodder. Over the entire period of experiment three groups of animals were fed from 3157 to 3185 of feed units and from 317 to 320 kg of digestible protein. 1 feed unit had from 100.4 to 100.5 g of digestible protein. The concentration of metabolizable energy was from 8.45 to 8.46 MJ. On average, through the period of experience of the diet structure, drawing (2) was as follows: concentrates - 39.2%, gross - 35.1%, succulent feed - 25.7%.

The characteristic difference in body weight between animals due to the same feeding and management during the period from birth to 8 months has not been established. However, in the further growth and development the heifers from the 1<sup>st</sup> and 2d groups

had an advantage over the studied parameters according to the 3d group of heifers belonging to line of Smychok. The studding of the individual development of animals on different periods opens the opportunity of the ruling by the growing and development of animals on definite stage of ontogenesis.

Analysis of the received data showed that the really weight of newborns was significantly higher in group 1 heifers than in animals of the 2nd and the 3d groups. In Group 1 heifers in 8 months the really weight was 203.0 kg. They outscored their counterparts really weight from their analogs of the 2nd and the 3d groups on 4.6 - 6.6 kg, respectively, or 2.3 - 3.3%. Thus, 3 groups of heifers in aged of 10 months inferior peers the 1<sup>st</sup> and 2nd groups at 13.9 kg (5.4%) and 4.9 kg (2%). At the age of 12 months in heifers of the 1<sup>st</sup> group the really weight was higher than that of peers at 13.2 - 21.1 kg, or (4,1 - 6,5%). The difference between heifers of the 1<sup>st</sup> and the 3d groups was statistically significant. The advantage of the heifers of the 1<sup>st</sup> group at the age of 15 months peers over the 2<sup>nd</sup> and the 3d groups 2 and 3 was 18.5 kg (4.7%) and 32.7 kg (8.3%).

In the age period from birth to 15 months animals of groups 1 and 2 had the absolute growth in table 2, according to body weight had the advantage over the individuals within the group 3 about 18.1 - 32.8 kg (4.9 - 8.9%).

Analysis of the dynamic of the absolute increase of the body weight shows that heifers of groups 1 and 2 in all age periods differed of greater intensity of growth, due to more optimal genetic parameters of linear animal origin. The data of the table shows that the dynamics of the absolute growth of heifers of different groups has its own figures. The results of the received data showed that heifers of group 1 at weaning at 8 months exceeded heifers of the 1st and 3d groups on 4.2 - 6.7 kg, or 2.4 - 3.8

Analysis of the table 3 of dynamics of average daily weight gain of the body shows that in all age periods of greater intensity of growth differed heifer groups 1 and 2, which shows the superiority linear genetic potential of animals.

At the age of 12 months in heifers of the 1<sup>st</sup> group absolute increase was 63.5 kg, which is higher than that of the same age in group 2 and 3 on 4.2 - 7.2 kg or (6.6 - 11.3%). The difference between the 2nd and 3d groups of heifers was 3 kg (5.1%). Advantage of the heifers in group 1 at the age of 15 months peers over groups 2 and 3 was 5.3 kg (7.3%) and 11.6 kg(16,1 %).

In intensive rearing heifers should be fed so that their body weight compared with weight at birth to the age of one year increased in 8 - 10 times, and one and a half years in 13 - 15 times.

Applied heifer rearing system takes into account the biological characteristics of animal growth and development, their ability to create their high productivity and strong constitution, and be economically effective. The ability of the young organism has shelving in the organs and tissues of the proteins that are actively involved in the exchange. With age, this ability is reduced and gains increased largely due to fat deposits.

The average daily gain from birth to 8 months of heifers in all groups was at the same level, it shows the good milk of mothers in the pasture period. Results of the average daily gain in the period from 8 to 10 months have shown that in group I heifers they were at the level of 0.942 g that were higher than that peers with the 2nd and 3d groups on 74 - 122 g, or 7.9 - 13.0%.

The average weight gain in heifers of the 1st group of the line of Landysh of Kazakh white breed in the period from 10 - 12 months amounted 1058.3 g, it was higher than in the same age of group 2 and 3 of the lines of Viskounta and Smychok on 70.3 - 120.3 g or 6.6 - 11.4%.

Analysis of the results in the period from 12 to 15 months showed the superiority of the group 1, it was 802.2 g, which is higher in comparison with the peers of the 2<sup>nd</sup> and 3d groups on 22 - 129 g, or on 7.4 - 16.1%. Over the period of growth from birth to 18 months daily increase was 820.0 grams and was on 40.0 g, or 4.9% and on 73.0 grams, or 8.99%.

Thus, the received data shows that the conditions of feeding and growth had a significant influence on the formation of body type and the exterior of animals. Economically useful qualities of heifers of Kazakh white breed in using her bulls of different genotypes were revealed. The comparative results of the assessment of breeding qualities of heifers, taking into account the body type and the achieved level of progress in breeding herd were showed. The power of the influence of sires of different genotypes on the productive qualities of heifers were revealed, the breeding and genetic parameters of the main economic-useful signs in the genetically determined groups were defined.

Heifers from the experimental groups in all periods of growth had the balanced and proportional physique, well expressed meat shape, typical for cattle meat direction. Meanwhile features of feeding and the maintenance of young growth promoted manifestation of certain distinctions in an exterior form: linear measurements of heifers of the first two groups were more, than contemporaries have 3 groups. Meanwhile, the features of feeding and keeping the young animals facilitated the manifestation of certain differences in the form of the exterior: the linear measurements of heifers of the first two groups were greater than in the same age of group 3. They are distinguished by an elongated and voluminous trunk, tall, large latitudinal soundings. At the same time, and they were characterized by high performance indexes body – stretch, deep chest, massiveness, weight of meat. It is known that a separate survey taken in absolute terms out of connection with other surveys does not give a complete picture of the animal physique establishing exterior features of the representatives of different lines, determining the ratio of individual anatomically related measurements at different ages of physique indexes were calculated. Perhaps, exactly the of the result of the growing and changing morphological and functional properties of the heifers organism of studied lines gives an indication about the dynamic measurements such as width of hook bones and the width in the Ischia tuberoses at the age of 18 months in the conditions of LLC “Zhanabek”, about the physiological age and reproductive ability of heifers.

Intensity of body type at the age of 18 months was measured on a scale evaluation of the young animals by exterior and stature based on height at the sacrum and the scoring of the constitution and exterior. Index for this feature in heifers from Landysh's bulls in both cases was greater than that of peers from other bulls on 20.9% and 19.9%, respectively.

The differences in measurements between the treatment groups survived to 18 months of age. So the heifers of the 1st group were superior to their peers heifers of the line of Viskounta and Smychok by depth, breast width, width of hook bone, metacarpus. And according to the width in the Ischia tuberoses they surpassed the 2nd and the 3d group at 3.2 - 4.4%, but the difference was not statistically false between them. In our studies, the exterior of animals was assessed by body size, body type visually on the basis of measurements, and method of linear estimation.

In our studies, the exterior of animals was assessed by body size, body type visually, on the basis of measurements, method of linear estimation. According to the result of the research based on the data analysis of the growth, exterior features of group 1 of the line of Landysh, it can be noted that such measurements of the height at the withers, height at sacrum and etc, by the scoring line Landysh heifers were classified as elite-record.

Analysis of the performance of growing heifers were carried out from birth to 18 months. The production costs, taking into account the keeping of heifers in the 1<sup>st</sup> group was more at 186 360 tenge, it is more than that was among the heifers of the 2<sup>nd</sup> and 3d groups at 6 001 and 11 939 tenge or as a percentage of 3.2% and 6.4%. The cost price of 1 quintal of weight gain of heifers of all groups was quite high. However, most of its value to all periods of growth was characterized for the 3d group of heifers and it was 41,529 tenge, and with respect to the group 1 and 2, it was 1 452 - 445 tenge or 3.5 - 1.1% in the period from birth to 18 months.

The best feed conversion gain was characterized by heifers of Group I, under the current costs of growth they are characterized

by large gross gain, which provided them more realizable value. Accordingly, the profit from the sale of heifers of the 1<sup>st</sup> group was higher than in the group of the same age on 15 295 - 30 475 KZT, or 5.6 - 11.2%. Net income was in heifers of the 1<sup>st</sup> group 83 660 KZT, that in relation to the 2<sup>nd</sup> and 3<sup>d</sup> groups of heifers were 9 294 - 18 539 KZT, or 11.1 - 22.1%.

Meanwhile, the large value of production costs in the Group 1 heifers, but high body weight contributed to an increase in the level of profitability, it amounted to 44.9%, and according to this indicator they exceeded the 2<sup>nd</sup> and 3<sup>d</sup> animal groups by 3.7% and 7.6%. The profitability level in heifers from the bulls of line Landysh and Viskounta were larger compared with heifers Smychok's lines, both in keeping and in growth. Young animals of Landysh's line on this indicator exceeded heifers from other bulls – producers. It was found that, irrespective of the linear supplies production costs taking into account the content of the heifers were great at growing: the difference was through the line of Landysh - 186,360 tenge, in line of Viskounta - 180 359 tenge and in line of Smychok - 174 424 tenge. It should be noted that the profit from the sale of heifers Landysh's line was greater than that of peers when grown under conditions of farm LLC “Zhanabek”.

**Conclusion.** Growing in the same conditions had a significant influence on breeding and productive qualities and linear heifers belonging.

At the age of 12 months in heifers of Group 1 body weight was higher than that of peers at 13.2 - 21.1 kg, or (4.1 - 6.5%). The difference between the 1<sup>st</sup> and the 3<sup>d</sup> heifers groups was statistically significant. The advantage of the heifers of the 1<sup>st</sup> group at the age of 15 months peers over Groups 2 and 3 was 18.5 kg (4.7%) and 32.7 kg (8.3%). At the age of 12 months in heifers of the 1<sup>st</sup> group absolute increase was 63.5 kg, which is higher than that of the same age of the group 2 and 3 to 4.2 - 7.2 kg or (6.6-11.3%). The difference between groups 2 and 3 of the heifers was 3 kg (5.1%). The advantage of the heifers of Group 1 at the age of 15 months peers over Groups 2 and 3 was 5.3 kg (7.3%) and 11.6 kg (16.1%). Over the entire period of growth from birth to 18 month daily increase was 820.0 grams and was higher on 40.0 g, or 4.9% and on 73.0 grams, or 8.99%. Heifers of Landysh's line 9879 in comparance with peers had differences in measurements of up to 18 months of age. So heifers of the 1<sup>st</sup> group were superior to their peers and heifers line of Viskounta and Smychok by depth, breast width, width maklakov, metacarpus. A width in the Ischia tuberoses surpassed groups 2 and 3 at 3.2 - 4.4%, but the difference was statistically false between them. Prolivity index was higher in heifer's line of the Landysh - it amounted to 113.59%, which is higher than that of heifers 2 and 3 groups of 1.14 - 1.24%. And the difference between groups 2 and 3 was 0.10%, respectively. At the same time density index in heifers of group1 in 12 months. It was greater than for heifers on other lines on the 1.38% and 2.68% respectively.

After slaughter of heifers conducted at 18 months of age category the meat of the 1<sup>st</sup> category were obtained. And it was found that the level of nutrition and the related growth and development of heifers contributed to the high indicators of young animals. The body weight of heifers of group I was 234.8 kg. And with heifers of Groups 2 and 3, the figure was respectively 221.5 and 208.3 kg.

In analyzing the results of body weight of heifers of group 1 was 13.3 - 26.5 kg more than the heifers Group 2 and Group 3 and constituted as a percentage of 5.7 - 11.3%

Analysis of the indicators of effectiveness of rearing heifers was carried out from the birth to 18 months. Production costs taking into account the growth of heifers in group I was more at 186 360 tenge, it is more than that of heifers of the 2<sup>nd</sup> and 3<sup>d</sup> groups on 6 001 and 11 939 tenge or as percentage of 3.2% and 6.4%. The cost price of 1 quintal of the body weight of heifers of all groups was quite high. However, the most of its value to all periods of growth was characteristic to 3 groups of heifers and it was 41,529 tenge, with respect to the group 1 and 2 it was 1 452 - 445 tenge or 3.5 - 1.1%. in the period from birth to 18 months. Accordingly, the profit from the sale of the heifers of the 1<sup>st</sup> group was higher than in the groups of the same age is 15 295 - 30 475 KZT, or 5.6 - 11.2%. Net income was in heifers of the 1<sup>st</sup> group 83 660 KZT, that in relation to the 2<sup>nd</sup> and 3<sup>d</sup> groups of heifers were 9 294 - 18 539 KZT, or 11.1 - 22.1%.

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