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# MODERN "HERD MANAGEMENT" SYSTEM ON THE EXAMPLE OF MODEL DAIRY FARMS

## МОДЕЛЬДІК СҮТ ФЕРМАЛАРЫ МЫСАЛЫНДАҒЫ "ТАБЫНДЫ БАСҚАРУ" ЗАМАНАУИ ЖҮЙЕСІ

## СОВРЕМЕННАЯ СИСТЕМА «УПРАВЛЕНИЕ СТАДОМ» НА ПРИМЕРЕ МОДЕЛЬНЫХ МОЛОЧНЫХ ФЕРМ

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**Abstract. In terms of transition to loose housing, the issue of herd management is becoming especially acute. The aim of the study is to substantiate the efficiency of milk production using innovative technologies based on 7 model dairy farms containing 100 or more dairy cows. The relevance of the research topic is in the analysis of the effective application of the "Herd**

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Management" system through digital technologies and intensive feeding for raising young animals of various groups. The economic effect of the introduction of innovative technologies in these economic entities is shown, which made it possible to determine the potential for their development, to assess the results of conducting production processes. The authors note the importance for dairy industry of the transfer and adaptation of technologies for automation of technological processes for production of livestock products in dairy cattle breeding in Kazakhstan, which will contribute to the achievement of goals and indicators as part of the implementation of the State Program on Development of the Agroindustrial Complex of the Republic of Kazakhstan for 2017-2021. Examples of model farms, where high financial indicators were obtained on the basis of calculations, are presented. It was revealed that the development of dairy cattle breeding and the increase in productivity of cows largely depends on intensification of forage production, organization of proper care and maintenance of livestock, the breed and quality of raised heifers intended for reproduction. It was determined that in the experimental groups, when optimizing the feed rations of young cattle, the increase in live weight of the studied farm animals increases.

Аңдатпа: Міндетті емес мазмұнға көшумен бірге табынды басқару мәселесі ерекше өткір тұр. Зерттеу мақсаты - құрамында 100 және одан да көп сауын сиыры бар 7 модельді сүт фермалары базасында инновациялық технологияларды пайдалана отырып, сүт өндіру тиімділігін негіздеу. Зерттеу тақырыбының өзектілігі - әр түрлі топтағы жас малдарды өсіру үшін сандық технологиялар мен қарқынды азықтандыру арқылы "табынды басқару" жүй-есін тиімді қолдануды талдау болады. Аталған шаруашылық жүргізуші субъектілерге инновациялық технологияларды енгізудің экономикалық тиімділігі көрсетілді, бұл олардың даму әлеуетін анықтауға, өндірістік процестерді жүргізу нәтижелерін бағалауға мүмкіндік берді. Авторлар сүт саласы үшін Қазақстан Республикасының агроөнеркәсіптік кешенін дамыту-дың 2017-2021 жылдарға арналған мемлекеттік бағдарламасын іске асыру шеңберінде мақсаттар мен индикаторларға қол жеткізуге ықпал ететін Қазақстанның сүтті мал шаруашылығында мал шаруашылығы өнімдерін өндірудің технологиялық процестерін автоматтандыру бойынша технологияларды трансферттеу және бейімдеу маңыздылығын атап өткен. Есептеулер негізінде жоғары қаржылық көрсеткіштер алынған модельдік фермалар-дың мысалдары келтірілген. Сүтті мал шаруашылығының дамуы және сиырлардың өнімділігінің артуы көбінесе жемшөп өндірісінің қарқындылығына, малды дұрыс күтіп-ұстауды ұйымдастыруға, өсіруге арналған өсірілген сиырлардың тұқымы мен сапасына байланысты екендігі анықталды. Тәжірибелік топтарда жас ірі қара малының жемшөп раци-онын оңтайландыру кезінде зерттелетін ауылшаруашылық малдарының тірі салмағының өсуі артады.

Аннотация. С переходом на беспривязное содержание особо остро встает вопрос менедж-мента стадом. Цель исследования – обоснование эффективности производства молока с использованием инновационных технологий на базе 7-ми модельных молочных ферм, со-держащих 100 и более дойных коров. Актуальность темы исследования – в анализе эф-фективного применения системы «Управление стадом» посредством цифровых технологий и интенсивного кормления для выращивания молодняка различных групп. Показан эконо-мический эффект от внедрения инновационных технологий в данных хозяйствующих субъ-ектах, что позволило определить потенциал их развития, провести оценку результатов ве-дения производственных процессов. Авторы отмечают важность для молочной отрасли трансферта и адаптации технологий по автоматизации технологических процессов произ-водства продукции животноводства в молочном скотоводстве Казахстана, которые будут способствовать достижению целей и индикаторов в рамках реализации Государственной программы развития агропромышленного комплекса Республики Казахстан на 2017-2021 годы. Приведены примеры модельных ферм, где на основе расчетов получены высокие финансовые показатели. Выявлено, что развитие молочного скотоводства и повышение продуктивности коров во многом зависит от интенсификации кормопроизводства, органи-зации правильного ухода и содержания скота, породности и качества выращенных телок, предназначенных для воспроизводства. Определено, что в опытных группах при оптими-зации кормовых рационов молодняка КРС увеличивается прирост живой массы исследуе-мых сельскохозяйственных животных.

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Түйінді сөздер: агроөнеркәсіптік кешен, сүт саласы, модельдік фермалар, өндіріс, табын менеджменті, жемшөп өндірісі, интенсификация, инновациялық технологиялар, өнімділік.

Ключевые слова: агропромышленный комплекс, молочная отрасль, модельные фермы, производство, менеджмент стада, кормопроизводство, интенсификация, инновационные технологии, продуктивность.

**Introduction.** One of the priority sectors of the AIC of Kazakhstan is dairy industry, which is the leading branch of the food industry. The main problem hindering its development is the underdeveloped raw material basis: insufficient volumes of raw milk production, its low quality, which does not meet the requirements of industrial processing.

The solution of this issue lies in the development of dairy cattle breeding, provision of feed, introduction of innovative technologies, reduction of labor intensity, increased productivity of livestock [1].

Analysis of the state of dairy industry in the republic shows that high share of households in total milk production volume (73.6%), the share of peasant (private) farms - 19.6%, agricultural enterprises - 6.8% is a serious problem [2].

It is necessary to develop large and medium-sized farms with potential to produce marketable products, improve the quality of raw milk and finished dairy products.

It becomes obvious that traditional methods of economic management, use of high-cost, energy-intensive technologies, outdated models of machinery and equipment, ineffective forms of labor organization cannot ensure the competitive production.

The primary task for achieving the goals of the State Program of Agro-Industrial Complex Development of the Republic of Kazakhstan for 2017-2021 is the complete technological re-equipment of production sector, which contributes to the integrated, sustainable, development of dairy sector of livestock production, import substitution, increasing labor productivity, ensuring food security of the country [3].

**Material and methods of research.** In the framework of applied researches in the field of agri-industrial complex under the scientific and technical program "Transfer and adaptation of technologies on automation of technological processes of dairy production on the basis of model dairy farms containing 100 or more dairy cows" for 2018-2020 "Kazakh Research Institute of Livestock and Forage Production" LLP.

The authors' studies were carried out on the basis of integrated monitoring of technologies of keeping calves during dairy period in farms with equipment on energy and water supply, indoor microclimate, weighing and identification of livestock, manure removal system, possibility of undertaking veterinary measures; marketing monitoring (systematic collection, data display and analysis) on various aspects of marketing activities aimed to assess the effectiveness of creating model farms in dairy farming; analysis of economic efficiency of the use of technologies of automation of milk production technological processes on the basis of 3 model dairy farms containing 1000 or more dairy cows.

In the work a systematic approach in combination with various methods of economic research were used: abstract-logical, economic-statistical and computational-constructive.

Special attention is paid to the specific features of functioning of these farms, their differences in potential for the development of dairy production and possibilities of using new technologies of automatization of technological processes.

**Results and their discussion**. The electronic "herd management" system is an automated complex that integrates information about the animal's condition into the computer base, and allows monitoring of indicators, taking optimal decisions regarding one animal and the herd as a whole.

Milking equipment is a key link in dairy production technology, on the basis of which the data on productivity, quality indicators of production process, reproduction, and physiological state of the animals are collected, updated and recorded.

The "Herd management" system is based on the assessment of the potential benefits from product sales for each technology individually.

Depending on technical capabilities of the farm equipment (boluses, milking devices, feed mixers, etc.), gross product value of milk was chosen as the basis for calculating the economic effect.

Net Present Value (ENPV), Economic Return Rate (ERR) and Benefit Cost Ratio

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(BCR) are considered as key performance indicators.

The calculation of economic efficiency of the "Herd management" system is based on the assessment of the potential benefits from the implementation of

$V_b = \beta \cdot V_e$, where β-the share of the effect attributed to the project performance, and $V_e$ - the value of total effect from implementation, determined for each project individually.

The calculation of key performance indicators is carried out according to the classic formulas:

$$ENPV_d = \sum_{t}^{N} = 0\ \frac{V_b^t - C^t}{(1+d)^t},$$

where ENPV -is net present economic value, N- is the duration of the period during which the significant effect from the project implementation is observed, $V_b^t$ - benefits from the project implementation generated per year $t$, $C^t$- project costs per year $t$, $d$ - discount rate;

$$ERR: ENPV_{d=ERR} = 0,$$

where ERR - economic rate of return, $ENPV_{d=ERR}$ - net present economic value at discount rate which is equal to the economic rate of return;

$$BCR = \frac{\sum_{t}^{N} = 0\ \frac{V_b^t}{(1+d)^t}}{\sum_{t}^{N} = 0\ \frac{C^t}{(1+d)^t}},$$

where BCR -is benefits and costs ratio, $\sum_{t}^{N} = 0\ \frac{V_b^t}{(1+d)^t}$ -is the present value of benefits from project implementation, $\sum_{t}^{N} = 0\ \frac{C^t}{(1+d)^t}$ - project budget estimate.

The following parameters are common for the analysis of economic efficiency of the implementation of herd management system in model farms:

d - discount rate - is the interest rate used to recalculate future benefits by the time of project start to account inflation or alternative costs [4]. It was chosen conservatively at the level of 7% at the upper limit of inflation corridor of the National Bank of Kazakhstan in 2020.

β - the proportion of the effect attributed to the project performance, which reflects the size of the part of total effect attributable to the technology. Since the total size of the effect is formed not only from the introduced technology, but also as a result of other components, such as feeding ration, housing conditions and other activities, for a quantitative assessment it is necessary to determine that part of the effect which, in economic analysis, is considered a direct economic benefit.

Due to the fact that model farms were selected in the frame of the implementation of scientific and technical program and further replication of the experience of the effective introduction of innovative technologies, the share of the effect attributed to the effective technology in farms and determining the size of benefits was chosen at 20% and reflects the high importance of increasing livestock productivity. All equipment is donated to farms. It is possible to adjust key indicators as part of the project implementation tasks according to the schedule, which can affect the change in productivity of cows.

We will give examples of model farms, where the following economic indicators were obtained on the basis of analysis and calculations.

The farm IB "Karimov" is located in Koksu district of Almaty region, and is specializing in dairy production. The dairy farm is of industrial type. The area of the farm is 3 ha, there is a cowshed, a calf shed and feed warehouses, the farm is fully automated. The value of gross product of produced milk until 2027 was selected as the basis for calculating economic effect of the innovation program.

The value of output produced before the use of the "Herd management" system and after its implementation, as well as the effect attributed to the economic result, are shown in table 1. In the selected parameters, net present value of benefits from introduction of technologies is positive and is estimated at 216,373 thous. tenge and the return rate is 3%. These indicators are positive and higher than 0, which indicates the economic efficiency of the "Herd management" system.

In LLP "Kakpatas - Kordai" which is located in Kordai district of Zhambyl region (specialization - production of cow's milk and participation as a model farm in the frame of the program "Transfer and adaptation of technology of automation, technological processes of production of animal products" since 2018), these indicators are 49 848 thous.tenge, and 1.1% (see table 1).

In the APC "Plemzavod "Almaty" in Talgar district of Almaty region, which is a large farm specializing in breeding cattle and production of cow's milk, which is also participating in the budget program"Transfer and adaptation of automation technology, technological processes for production of livestock products", the corresponding

indicators are 249 289 thous.tenge and 2.4% (see table 1).

"Borte Milka" LLP of Ordabosy district of Turkestan region, a model farm where breeding work is carried out through the purchase of high-bred cattle, in particular, Holstein-Friesian from Hungary. Its perspective capacity is calculated for 1000 dairy cows. These indicators are at the level of 75 372 thous.tenge and 2.5% (see table 1).

In "Tastobe AgroFood" LLP, which specializes in production of cow's milk, - 76,023 thous.tenge and 1.3% (see table 1).

The peasant farm "E. Zaitenov", the cattle population is 1519 heads, the share of cows - 39.5%, it is engaged in raising bulls for meat and fattening adult cattle, respectively 171,018 thous.tenge and 2.8% (see table 1).

In the IB "Sadykov" in Talgar district of Almaty region, which has an insignificant areas of its own land (50 ha) and leases 107 ha in other farms - 12 143 thous. tenge and 0.1% (see table 1).

Table 1 - Indicators of economic efficiency of the system "Herd Management" in model dairy farms containing 100 and more dairy cows

| Farm name | Indicator | Present value |
|---|---|---|
| IB "Karimov" | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 216 373 |
| | Economic rate of return ERR,% | 3 |
| | Cost-benefit ratio BCR, thous. tenge | 182,7 |
| PF "Kakpatas-Kordai" | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 49 848 |
| | Economic rate of return ERR,% | 1,1 |
| | Cost-benefit ratio BCR, thous. tenge | 215,54 |
| APC "PZ "Almaty " | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 249 289 |
| | Economic rate of return ERR,% | 2,4 |
| | Cost-benefit ratio BCR, thous. tenge | 654,39 |
| "Borte Milka" LLP | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 75 372 |
| | Economic rate of return ERR,% | 2,5 |
| | Cost-benefit ratio BCR, thous. tenge | 115, 9 |
| LLP "Tastobe AgroFood" | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 76 023 |
| | Economic rate of return ERR,% | 1,3 |
| | Cost-benefit ratio BCR, thous. tenge | 42,6 |
| PF "E. Zaytenov " | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 171 018 |
| | Economic rate of return ERR,% | 2,8 |
| | Cost-benefit ratio BCR, thous. tenge | 89,3 |
| IB "Sadykov" | Net present value of benefits from the implementation of the ENPV project, thous. tenge | 12 143,3 |
| | Economic rate of return ERR,% | 0,1 |
| | Cost-benefit ratio BCR, thous. tenge | 7,52 |

The development of dairy farming and increase in productivity of cows largely depends on the intensification of forage production, organization of proper care and maintenance of livestock, breed and quality of raised heifers intended for reproduction.

Study of the fodder base and a balanced ration of feeding with inclusion of mixed fodder and premix in model dairy farms of the APC "Plemzavod Almaty", Talgar district, Almaty region, IB "Karimov" in Koksu district, Almaty region, LLP "Kakpaktas-Korda" in IB "Sadykov", Talgarskiy district of Almaty region, LLP "Tastobe AgroFood" of Karatal district of Almaty region, LLP "BorteMilka" of Ordabasy district of Turkestan region, the farm "Zaytenov" of Borodulikhinsky district of the East Kazakhstan region showed that in the experimental groups, when optimizing feed rations of young cattle, the increase of the live weight of the studied farm animals is observed.

Average daily gain in live weight of young animals in the context of farms, on average, per one head for the period from 6 to 12 months, fluctuated within 565 - 810g, while the live weight of young animals at the age of 12 months was in the range of 255.7-310.8 kg.

In the experimental groups of IB "Karimov" in comparison with the control calves, the costs per 1 kg of gain in live weight of young animals decreased (table 2). In intensive feeding of young cattle at the age of 6-12 months, the live weight was 3.09 c., which is 14 kg higher. At the same time, the cost of 1 c. of live weight decreased by 2.3 thous. tons from 54.4 to 52.1 thous. tenge in the experimental group.

Table 2 - Economic efficiency in intensive feeding of young cattle in different groups

| Indicator | IB «Karimov» | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,56 | 1,56 | 2,95 | 3,09 |
| Cost of 1 c of LW, tenge | 54 400 | 52 100 | 54 400 | 52 100 |
| Total costs, tenge | 84 864 | 81 276 | 160 480 | 160 989 |
| Selling price of 1 c LW, tenge | 80 000 | 80 000 | 80 000 | 80 000 |
| Sales proceeds, tenge | 124 800 | 12 4800 | 236 000 | 247 200 |
| Profit, tenge | 39 936 | 43 524 | 75 520 | 86 211 |
| Economic effect for 1 head, tenge | - | 3 588 | | 10 691 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

The profit in the control group 6 of calves, the economic effect per head of cattle at the age of 6 months amounted to 3.6 thous. tenge, in months amounted to 39.9 thous. tenge, in the second - 43.5 thous. tenge, respectively in age of 12 months: the profit amounted to 75.5 thous. tenge with profitability of 47.1%, and in group 2- 86.2 thous. tenge or 53.6%, respectively, the economic effect per head was 10.7 thous. tenge.

The results of similar indicators in other model farms are reflected in tables 3-8.

Table 3 - Economic efficiency in intensive feeding of young cattle in various groups in LLP "Kakpatas - Kordai"

| Indicator | LLP "Kakpatas - Kordai" | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,54 | 1,55 | 2,56 | 2,65 |
| Cost of 1 c of LW, tenge | 78 400 | 76 700 | 78 400 | 76 700 |
| Total costs, tenge | 12 0736 | 118 885 | 200 704 | 203 255 |
| Selling price of 1 c LW, tenge | 80 000 | 80 000 | 80 000 | 80 000 |
| Sales proceeds, tenge | 123 200 | 124 000 | 204 800 | 212 000 |
| Profit, tenge | 2 464 | 5 115 | 4 096 | 8 745 |
| Economic effect for 1 head, tenge | - | 2 651 | | 4 649 |
| Profitability,% | 2,04 | 4,30 | 2,04 | 4,30 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

Table 4 - Economic efficiency in intensive feeding of young cattle in various groups in the APC "Plemzavod "Almaty"

| Indicator | APC "Plemzavod "Almaty" | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,57 | 1,56 | 2,77 | 2,88 |
| Cost of 1 c of LW, tenge | 54 400 | 52 100 | 54 400 | 52 100 |
| Total costs, tenge | 85 408 | 81 276 | 150 688 | 150 048 |
| Selling price of 1 c LW, tenge | 80 000 | 80 000 | 80 000 | 80 000 |
| Sales proceeds, tenge | 125 600 | 124 800 | 221 600 | 230 400 |
| Profit, tenge | 40 192 | 43 524 | 70 912 | 80 352 |
| Economic effect for 1 head, tenge | - | 3 332 | | 9 440 |
| Profitability,% | 47,1 | 53,6 | 47,1 | 53,6 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

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Table 5 - Economic efficiency with intensive feeding of young cattle in various groups in "Tastobe AgroFood" LLP

| Indicator | LLP "Tastobe AgroFood" | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,65 | 1,64 | 3,1 | 3,22 |
| Cost of 1 c of LW, tenge | 68 000 | 67 100 | 68 000 | 67 100 |
| Total costs, tenge | 112 200 | 110 044 | 210 800 | 216 062 |
| Selling price of 1 c LW, tenge | 70 000 | 70 000 | 70 000 | 70 000 |
| Sales proceeds, tenge | 115 500 | 114 800 | 217 000 | 225 400 |
| Profit, tenge | 3 300 | 4 756 | 6200 | 9 338 |
| Economic effect for 1 head, tenge | - | 1 456 | | 3 138 |
| Profitability,% | 2,94 | 4,32 | 2,94 | 4,32 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

Table 6 - Economic efficiency in intensive feeding of young cattle in different groups in the IB "Sadykov"

| Indicator | IB "Sadykov" | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,49 | 1,5 | 2,67 | 2,76 |
| Cost of 1 c of LW, tenge | 72 700 | 70 900 | 72 700 | 70 900 |
| Total costs, tenge | 108 323 | 106 350 | 194 109 | 195 684 |
| Selling price of 1 c LW, tenge | 75 000 | 75 000 | 75 000 | 75 000 |
| Sales proceeds, tenge | 111 750 | 112 500 | 200 250 | 207 000 |
| Profit, tenge | 3 427 | 6 150 | 6 141 | 11 316 |
| Economic effect for 1 head, tenge | - | 2 723 | | 5 175 |
| Profitability,% | 3,16 | 5,78 | 3,16 | 5,78 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

Table 7 - Economic efficiency in intensive feeding of young cattle in different groups in "Borte Milka" LLP

| Indicator | "Borte Milka" LLP. | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,58 | 1,57 | 2,94 | 3,06 |
| Cost of 1 c of LW, tenge | 79 400 | 80 300 | 79 400 | 80 300 |
| Total costs, tenge | 125 452 | 126 071 | 233 436 | 245 718 |
| Selling price of 1 c LW, tenge | 130 000 | 130 000 | 130 000 | 130 000 |
| Sales proceeds, tenge | 205 400 | 204 100 | 382 200 | 397 800 |
| Profit, tenge | 79 948 | 78 029 | 148 764 | 152 082 |
| Economic effect for 1 head, tenge | - | -1 919 | | 3 318 |
| Profitability,% | 63,7 | 61,9 | 63,7 | 61,9 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

Table 8 - Economic efficiency in intensive feeding of young cattle in different groups in the farm "E. Zaytenov "

| Indicator | PF "E. Zaytenov" | | | |
|---|---|---|---|---|
| | 6 months | | 12 months | |
| | 1 | 2 | 1 | 2 |
| LW of 1 head., c | 1,55 | 1,54 | 2,64 | 2,71 |
| Cost of 1 c of LW, tenge | 63 500 | 62 100 | 63 500 | 62 100 |
| Total costs, tenge | 98 425 | 95 634 | 167 640 | 168 291 |
| Selling price of 1 c LW, tenge | 65 000 | 65 000 | 65 000 | 65 000 |
| Sales proceeds, tenge | 100 750 | 100 100 | 171 600 | 176 150 |
| Profit, tenge | 2 325 | 4 466 | 3 960 | 7 859 |
| Economic effect for 1 head, tenge | - | 2 141 | | 3 899 |
| Profitability,% | 2,36 | 4,67 | 2,36 | 4,67 |
| Note: 1-data before ration optimization, 2-data after ration optimization | | | | |

Profit in the control group 1 of 6 months calves - 2.5 thous. tenge, in the second group 5.1 thous. tenge, respectively, the economic effect per head of cattle at the age of 6 months - 2.6 thous. tenge, for 12 months - 4,0 thous. tenge with profitability of 2.04%, and in group 2 - 8.7 thous. tenge or 4.3%, respectively, the economic effect per head of cattle at the age of 12 months amounted to 4.6 thous. tenge.

Profit in the control group 1 of 6 months old calves was 40.2 thous. tenge, in group 2- 43.5 thous. tenge, respectively, the economic effect per head of cattle at the age of 6 months - 3.3 thous. tenge, for 12 months - 70.9 thous. tenge with profitability of 47.1%, in the 2nd group - 80.3 thous. tenge, or 53.6%, the economic effect per head of cattle at the age of 12 months is 9.4 thous. tenge.

**Conclusion**

1. Stable provision of the country's population with food is the main task of the State in solving the problem of food security. A special place on food market is given to milk and dairy products market, since these products traditionally occupy one of the leading places in the diet of the population of Kazakhstan.

2. The transition to advanced digital, intelligent production technologies and robotic systems should be considered as one of the country's development priorities.

3. In dairy farms, information technology is disseminated throughout the whole production process. The development of precision animal husbandry is required for the efficient use of resources; achieving and ensuring the quality of livestock products; ensuring the readiness of animals for productivity; reduction of unfavorable effects on the external environment.

4. By improving the quality indicators of milk and reduction of labor costs, the use of modern technologies contributes to the increase in the specific profit from the sale of produced milk.

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