



# **ECONOMIC EFFICIENCY OF KOREAN LIFE TECHNOLOGY IN FEEDING OF ANIMALS**

**Tursunov Shavkat Alamovich<sup>1</sup>, Ilmuratov Shavkat Maxsumovich<sup>2</sup>**

*<sup>1</sup>Branch of the Federal State Budgetary Educational Institution of Higher Education  
"Astrakhan State Technical University" in Tashkent, Uzbekistan*

*<sup>2</sup>Branch of the Federal State Budgetary Educational Institution of Higher Education  
"Astrakhan State Technical University" in Tashkent, Uzbekistan*

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## **ABSTRACT**

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*The aim of the study is to develop theoretical and methodological approaches to optimizing the business processes of a livestock enterprise based on the development of decision support systems for managing the operation of a herd and the production of livestock products, taking into account the relationship between technological processes and economic results, including a set of mathematical models, methods and fodder base, management of animal exploitation.*

**KEYWORDS:** *Economic efficiency, in feeding animals, Korean TMR technology*

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## **INTRODUCTION**

Livestock is the main sector that meets the demand of the population for food products, and in 2019, livestock products accounted for 49.8% of the total volume of agricultural production in the country. This sector provides the population with high quality food products and raw materials to many industries. Therefore, it is important to study the state of the industry and show opportunities for further development.

According to the Resolution of the President of the Republic of Uzbekistan dated January 29, 2020 No PP-4576 - "On additional measures of state support of the livestock sector" , as well as the uninterrupted supply of the population with quality and affordable livestock products produced locally, as well as government support for enterprises specializing in animal husbandry. Ensuring food security of the country's population is an important and fundamental task. A special place in the implementation of this work belongs to agriculture, which is a priority of the national economy, and the livestock sector, which is an important part of it. This places a huge responsibility on all professionals working in this field.

The development of animal husbandry and the problems in accelerating the production of livestock products are related to the strengthening of the fodder base and the provision of livestock with nutritious food at the required level. Inadequate nutrition is one of the main problems in the development of livestock in Uzbekistan. Lack of land on farms does not allow them to fully feed their livestock.

Nutrition is the most important of all factors in livestock development. Feeding has a strong impact on livestock productivity. The animal's body receives from the animal feed the material necessary for the structure of the tissues, the substances that regulate metabolism, and the energy.

## **METHODOLOGY**

The theoretical and methodological basis of the dissertation work was the works of leading economists devoted to the issues of improving the economic efficiency of the functioning of the livestock subcomplex in the agro-industrial complex. Legislative and other regulatory documents, materials of state statistical bodies, as well as materials of annual reports and primary accounting of enterprises in the regions of the republic, personal observations of the author, national economists, works of scientists from near and far abroad countries, research in various areas of private animal husbandry, breeding, feeding of cattle. When summarizing and analyzing the initial information, the monographic method, the grouping method, correlation and regression analysis, as well as a number of methods and techniques of economic research were used: economic-statistical, abstract-logical.

## **RESULTS AND DISCUSSION**

Currently, two methods of feeding animals are used in practice:

1) distribution of each type of feed to animals is carried out separately in a certain sequence with a time interval;



2) All types of nutrients are distributed to nutrients in the form of a balanced nutrient mixture (in Germany such nutrients are called TMR - Total Mischration, in English-speaking countries - Unifeed).

In the implementation of the first method of feeding animals, the preparation for feeding each type of feed separately is carried out using specialized technological lines or separate machines.

The transition from separate distribution of feed to feed mixtures with a predetermined nutritional value will increase the milk yield of cows by 0.9 kg per day, reducing the consumption of basic feed by 20-30%.

The technology of feeding livestock with mixed feeds (the second method) is superior to all types of fodder, which is due to the uniformity of the digestive process, because with each portion the animals receive a balanced feed mixture.

When feeding livestock, optimal conditions for digestion must be created, because all the nutrients and components that make up the composition of the feed come in equal proportions. Vibrations of the acidic environment (pH) in the stomach are almost non-existent, preventing normal metabolism. In addition to improving the health of the animal, more efficient use of the feed is achieved as a result of its complete consumption. Selective consumption of the most appetizing components is almost not allowed, losses are reduced. In addition, there is an opportunity to include in the diet alternatives that have a high level of nutrition and

digestibility, are naturally poorly consumed, as well as the ability to formulate and select the optimal ration of nutrition.

In order to increase the meat productivity and quality of bulls in Uzbekistan using the technology of feeding and fattening of bulls in Uzbekistan, research was conducted in collaboration with the Research Institute of Animal Husbandry and Poultry and the KOPIA Center of Korea. The feasibility of crushed feed mixing (TMR) technology was achieved through economic evaluation.

TMR feeding of livestock in combination with high-value feeds has a positive effect on the rapid growth and development of the organism, increase in live weight, productivity and product quality, as well as save labor, feed and other costs. In this technology, 6-month-old weaned calves were fattened up to 24-26 months of age (570 days).

When feeding young cattle on Korean technology, the feed was prepared in 2-3 cm pieces, mixed with mixed feeds, food waste from households, enriched with premixes. During the growing, maintenance and fattening periods, 1210 kg of mixed fodder, 1920 kg of natural hay, 1600 kg of straw and 13 kg of salt are used. (Table 1). For feeds during the growing season (200 days) when calculated at current prices

961.8 thousand soums (Table 2), during the maintenance period (220 days) 1850.64 thousand soums (Table 3) and during the fattening period (150 days) 1791.33 thousand soums were spent.

**Table 1. Feed consumption per 1 head of cattle during breeding, maintenance and fattening periods, kg.**

Types of feed	Feeding During The Growing Season (200 Days)		Feeding Costs During The Maintenance Period (220 Days)		Feed Consumption During The Fattening Period				All
					Main Part (90 Days)		Final Part (60 Days)		
	In A Day	Total	In A Day	Total	In A Day	Total	In A Day	Total	
Omixta em, kg	1	200	2	440	3	270	5	300	1210
Pichan, kg	2,5	500	4	880	4	360	3	180	1920
Somon, kg	2	400	3	660	4	360	3	180	1600
Salt, kg	0,015	3	0,02	4,4	0,035	3,15	0,04	2,4	12,95

**Table 2. Feeding costs during the growing season**

№	Types of feed	Types of feed	Types of feed	Types of feed
1	Omixta em	200	2000	40000
2	Pichan	500	800	40000
3	Somon	400	400	160000
4	Salt	3	600	1800
	<b>Total</b>			<b>961800</b>



**Table 3. Feeding costs during the maintenance period**

№	Types of feed	Amount of feed, kg	Price in soums / kg	Total feed costs, UZS
1	Omixta em	440	2000	880000
2	Pichan	880	800	704000
3	Somon	660	400	264000
4	Salt	4,4	600	2640
	<b>total</b>			<b>1850640</b>

**Table 4. Feeding costs during the fattening period**

№	Types of feed	Amount of feed, kg	Price in soums / kg	Total feed costs, UZS
1	Omixta em	570	2000	1140000
2	Pichan	540	800	432000
3	Somon	540	400	216000
4	Salt	5,55	600	3330
	<b>total</b>			<b>1791330</b>

**Table 5. Feeding costs, soums**

№	Periods	Term	Feeding Costs
1	Grow	200	961800
2	Care	220	1850640
3	Fattening	150	1791330
	<b>total</b>		<b>4603770</b>

When raising bulls for meat, their live weight is one of the key indicators. The analysis of their live weight plays an important role in determining the

cost of meat production, as well as the efficiency of their cultivation.

**Table 6. Meat productivity of cattle in the Republic of Karakalpakstan and regions, kg.**

Provinces	Live weight		Extra weight gain	Daily weight gain
	6 ойлик	25 ойлик		
The Republic of Karakalpakstan	78,0	411,1	333,1	0,584
Andijon	93,9	447,6	353,7	0,621
Bukhara	83,8	453,1	369,3	0,648
Jizzax	85,3	440,1	354,8	0,622
Qashqadaryo	81,4	453,5	372,1	0,653
Navoi	86,0	415,8	329,8	0,579
Namangan	83,5	406,2	322,8	0,566
Samarkand	83,4	435,5	352,1	0,618
Surxondaryo	87,6	448,0	360,4	0,632
Sirdaryo	84,3	410,9	326,6	0,573
Tashkent	84,2	417,7	333,5	0,585
Fergana	86,3	454,2	367,9	0,645
Khorezm	83,3	415,0	331,7	0,582
<b>Average</b>	<b>84,7</b>	<b>431,4</b>	<b>346,7</b>	<b>0,608</b>

The results show that during the growth, care, and fattening of bulls, the live weight of bulls was 71.4 kg (431.4–360) higher than that of conventional grazing of domestic cattle in households using Korean technology. The average live weight of 6-month-old cattle purchased in the country was 84.7 kg. As a result of 570 days of grazing, the live weight of 25-month-old cattle averaged 431.4 kg. The average daily weight gain was 608 grams, with the highest rates in Kashkadarya, Bukhara and Fergana

regions, and the lowest in Namangan region.

Meat productivity of bulls after the period of their breeding and fattening was studied and compared on the basis of indicators such as pre-slaughter live weight, meat and fat consumption, by-products and internal organs consumption, morphological composition of semen on individual natural anatomical parts.

According to the results of a control bull slaughter, the live weight of the bulls in all groups



was high. This figure, pre-slaughter live weight, averaged 431.4 kg in the Korean technology group and 360 kg in the local group. That is, accordingly, the Korean technology group was 19.8% higher than the local group. It is known that in determining the meat yield of animals, slaughter expenditure is one of the main indicators. Slaughter expenditure, on the other hand, depends on the animal's levels of obesity. Nutritional norms are important in bringing animals to high levels of obesity and increasing slaughter expenditure. In a study by the Livestock Research

Institute, high slaughter rates were observed in both groups. In other words, in the group fed with Korean technology, the slaughter expenditure was 58.0%, while in the group fed with local technology, it was 56.2%. The Korean technology-fed group had a 1.8% higher rate than the local technology-fed group. The half-weight was 250.2 kg in the Korean technology group, compared to 202.3 kg in the local technology-fed group, or 23.7% higher than the half-weight group fed with local technology.

**Table 7. Results of bull control slaughter in the experiment**

Indicators	Groups	
	Korea	Local
Slaughter received live weight, kg	431,4	360
Slaughter weight, kg	250,2	202,3
Slaughter expenses,%	58	56,2

**Table 8. Income from 1 head of cattle**

Indicators	Quantity, kg		Price, m.soum / kg		Value, m.sum	
	TMR technology	Local technology	TMR technology	Local technology	TMR technology	Local technology
Meat	250,2	202,3	54	50	13510,8	10115
Teri					150	150
Kalla- pochcha					200	200
Manure					800	800
<b>total</b>					<b>14660,8</b>	<b>11265</b>

**Table 9. Production Costs, Thousand Soums**

№	Indicators	For 1 head	At 19 months for 15 heads
1	Salary expenses	100	28500
2	Feeding costs	<b>4603,8</b>	69056,6
2	Veterinary costs	80	1200
3	Electricity costs		1121
4	Transportation costs		1000
	<b>total</b>		<b>100877,6</b>

Salary costs are 1,500,000 soums per month for 15 head of cattle and 28,500,000 soums for 19 months.

One head of cattle is vaccinated twice a year, 1 drug costs 20 thousand soums and costs 80 thousand soums in two years.

The cost of 1 kW of electricity is 295 soums. 200 kWh of electricity will be consumed in 1 month, 3800 kWh in 19 months and 1121 thousand soums will be spent.

Transportation costs associated with the transportation and sale of food products amount to 500,000 soums per year.

6-month-old calves were purchased for an average of 2,400,000 soums, while 36,000 soums

were spent for 15 heads. For the preparation of fodder for cattle in the form of crushed and mixed fodder was purchased for 400 thousand soums (hay grinder) and for 100 thousand soums for each head of cattle (1500 thousand soums for 15 heads). As a result, the total cost of 15 head of cattle on TMR technology amounted to 138777.6 thousand soums, and on local technology - 136877.6 thousand soums.

The cost of one head of cattle fed on TMR technology amounted to 14660.8 thousand soums, and on local technology - 11265 thousand soums. The cost of products from 15 head of cattle in terms of technology was 219912 thousand soums and 168975 thousand soums, respectively.



**Table 10. (TMR) Technology Economic Evaluation Indicators**

№	Indicators	Unit of measurement	Technology	
			TMR	Local
1	Income	m.so'm	219912,0	168975,0
2	Total costs	m.so'm	138777,6	136877,6
3	Benefits	m.so'm	81134,5	32097,5
4	Economic efficiency	m.so'm	49037,0	
5	The level of profitability	%	58,5	23,4

## CONCLUSIONS

In the development of animal husbandry, the profitability of the Korean state due to the use of bull feeding and fattening (TMR) technology was 2.5 times higher than that of domestic feeding technology. In conclusion, it should be noted that the introduction of TMR technology will improve the quality of meat, and in the future in our country will be launched the production of quality marble meat products.

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