IRSTI 06.71.07
UDC 338.432
DOI: 10.46666/2021-3.2708-9991.11 https://www.jpra-kazniiapk.kz

POULTRY SUBCOMPLEX OF KAZAKHSTAN: PRODUCTION OF TURKEY MEAT

ҚАЗАҚСТАННЫҢ ҚҰС ШАРУАШЫЛЫҒЫ КІШІ КЕШЕНІ: КҮРКЕ ТАУЫҚ ЕТІН ӨНДІРУ

ПТИЦЕВОДЧЕСКИЙ ПОДКОМПЛЕКС КАЗАХСТАНА: ПРОИЗВОДСТВО МЯСА ИНДЕЙКИ

S.A. KOZHABAYEVA*[1]
C.E.Sc.
N.T. SARTANOVA[2]
C.E.Sc., Associate Professor
[1]Kazakh University of Economics, Finance and International Trade, Nur-Sultan, Kazakhstan
[2]A. Baitursynov Kostanay Regional University, Kostanay, Kazakhstan
corresponding author e-mail: s_kozhabayeva@kuef.kz
С.А. КОЖАБАЕВА*[1]
э.ғ.к
Н.Т. САРТАНОВА[2]
э.ғ.к., доцент
[1]Қазақ экономика, қаржы және халықаралық сауда университеті, Нұр-Сұлтан, Қазақстан
[2] А.Байтұрсынов атындағы Қостанай өңірлік университеті, Қостанай, Қазақстан
автордың электрондық поштасы: s_kozhabayeva@kuef.kz
С.А. КОЖАБАЕВА*[1]
к.э.н.
Нур-Султан, Казахстан
Н.Т. САРТАНОВА[2]
к.э.н., ассоциированный профессор
[1]Казахский университет экономики, финансов и международной торговли, Нур-Султан, Казахстан
[2]Костанайский региональный университет им.А.Байтурсынова, Костанай, Казахстан
электронная почта автора: s_kozhabayeva@kuef.kz

Abstract. *The goal*-is to analyze the state of development of poultry farming in Kazakhstan, identify the range of main problems and propose mechanisms for their solution. *Methods* - economic and mathematical modeling, economic and statistical, dialectical. *Results* - the advantages of turkey meat production over other types of poultry industry were revealed. The indicators of the poultry sector, as well as the production of feed in the leading regions of the republic in dynamics from 2019 to 2021 are given. An important advantage in obtaining turkey meat is a large meat yield from one carcass compared to other poultry, this indicates a high economic efficiency. The authors note that in the poultry subcomplex, meat direction has an advantage over the egg one, since poultry meat can be sold from all its varieties. The necessity of rational use of the fodder base in the production of turkey meat has been determined. Methods of using feed, namely wet, dry and combined processing, are considered, their structure is shown. So, for example, mixes are subjected to wet processing, that is, ground cereals, grains, concentrated supplements with protein content by adding water, whey, milk, juicy feed, broth and vitamins. Dry feed consists of complete feed in granules or ground form, enriched with essential minerals and vitamins. It has been determined that the use of innovative technologies for obtaining turkey meat, such as a floor system of growing and heating of a gas type, can reduce heating tariffs compared to a conventional system, reduce energy costs by more than 20%. *Conclusions.* Development of the poultry sector is socially beneficial and the most promising direction in ensuring food security of the Republic of Kazakhstan. Recommendations have been developed for improving the feed base, reimbursing part (30%) of financial costs associated with purchase of machinery and special equipment, the construction of modular production structures for meat and egg farms, preferential subsidies for investment activities of poultry enterprises, as well as the formation of stabilization funds for feed grain.

Аңдатпа. *Мақсаты* – Қазақстандағы құс шаруашылығының даму жағдайына талдау жасау, негізгі проблемалар спектрін белгілеу және оларды шешу тетіктерін ұсыну болады. *Әдістері* – экономикалық-математикалық модельдеу, экономикалық-статистикалық, диалектикалық. *Нәтижелері* - құс шаруашылығының басқа түрлерінен күркетауық етін өндірудің артықшылықтары анықталған. Құс шаруашылығы секторының, сондай-ақ 2019-2021 жылдар аралығында республиканың жетекші өңірлерінде жемшөп дайындаудың көрсеткіштері келтірілген. Күркетауық етін алудың маңызды артықшылығы-басқа құс етіне қарағанда бір қаңқадан еттің үлкен шығуы, бұл жоғары экономикалық тиімділікті көрсетеді. Авторлар құс өсіру кешенінде ет бағытының жұмыртқаға қарағанда артықшылығы бар екенін айтады, өйткені құс етін оның барлық түрлерінен сатуға болады. Күркетауық етін өндіруде жемшөп базасын ұтымды пайдалану қажеттілігі анықталған. Азықтарды пайдалану әдістері қарастырылған, атап айтқанда ылғалды, құрғақ және аралас өңдеу, олардың құрылымы көрсетілген. Мысалы, араластырғыштар, яғни дәнді дақылдар, дәндер, су, сарысу, сүт, шырынды жем, сорпа және дәрумендер қосу арқылы ақуызы бар концентрацияланған ылғалды өңдеуден өтеді. Құрғақ жем қажетті минералдар мен дәрумендермен байытылған түйіршіктердегі немесе жер түріндегі толық құрама жемнен тұрады. Едендік өсіру жүйесі және газ түріндегі жылыту сияқты күркетауық етін алу кезінде инновациялық технологияларды пайдалану әдеттегі жүйемен салыстырғанда жылыту тарифтерін төмендетуге, электр энергиясының шығындарын 20%-дан астам қысқартуға мүмкіндік беретіні анықталды. *Қортындылар* - құс шаруашылығы секторын дамыту - Қазақстан Республикасының азық-түлік қауіпсіздігін қамтамасыз етудегі әлеуметтік тиімді және неғұрлым перспективалы бағыт болып табылады. Азық базасын жақсарту, техника мен арнайы жабдықты сатып алуға, ет және жұмыртқа бағытындағы шаруашылықтардың модульдік өндірістік конструкцияларын салуға, құс шаруашылығы кәсіпорындарының инвестициялық қызметін жеңілдікпен субсидиялауға, сондай-ақ жемдік астықтың тұрақтандыру қорларын қалыптастыруға байланысты қаржылық шығындардың бір бөлігін (30%) өтеу бойынша ұсынымдар әзірленген.

Аннотация. *Цель* – дать анализ состояния развития птицеводства в Казахстане, обозначить спектр основных проблем и предложить механизмы их решения. *Методы* – экономико-математического моделирования, экономико-статистический, диалектический. *Результаты* – выявлены преимущества производства мяса индейки перед другими видами птицеводческой отрасли. Приведены показатели птицеводческого сектора, а также изготовления кормов в ведущих регионах республики в динамике с 2019 по 2021 гг. Важное преимущество при получении индюшатины – большой выход мяса с одной тушки по сравнению с другой домашней птицей, это указывает на высокую экономическую эффективность. Авторы отмечают, что в птицеводческом подкомплексе мясное направление имеет преимущество над яичным, поскольку мясо птицы может быть реализовано из всех ее разновидностей. Определена необходимость рационального использования кормовой базы при производстве мяса индеек. Рассмотрены методы использования кормов, а именно влажной, сухой и комбинированной обработки, показана их структура. Так, например, влажной обработке подвергаются мешанки, то есть молотые злаки, зерна, концентрированные добавки с содержанием белка путём добавления воды, сыворотки, молока, сочного корма, бульона и витаминов. Сухие корма состоят из полнорационных комбикормов в гранулах или молотом виде, обогащенные необходимыми минералами и витаминами. Установлено, что использование инновационных технологий при получении мяса индеек, таких как напольная система выращивания и отопление газового типа позволяет снизить тарифы на отопление по сравнению с обычной системой, сократить расходы на электроэнергию более, чем на 20%. *Выводы.* Развитие птицеводческого сектора – социально выгодное и наиболее перспективное направление в обеспечении продовольственной безопасности Республики Казахстан. Разработаны рекомендации по улучшению кормовой базы, возмещению части (30%) финансовых затрат, связанных с приобретением техники и специального оборудования, строительством модульных производственных конструкций хозяйств мясного и яичного направлений, льготному субсидированию инвестиционной деятельности птицеводческих предприятий, а также формированию стабилизационных фондов кормового зерна.

Key words: poultry sub-complex of meat and egg directions, poultry farms, feed base, turkey meat, processed products, low calorie content, high nutritional value, export.

Түйінді сөздер: ет және жұмыртқа бағытындағы құс өсіру кешені, құс фабрикасы, жемшөп базасы, күркетауық еті, өңделген өнімдер, төмен калориялы, жоғары қоректік құндылығы, экспорт.

Ключевые слова: птицеводческий подкомплекс мясного и яичного направлений, птицефабрики, кормовая база, мясо индейки, продукты переработки, низкая калорийность, высокая питательность, экспорт.

Introduction. Meat "for long-livers" is called turkey meat. The taste and dietary properties of turkey meat have influenced the fact that recently more and more turkey meat can be found in supermarkets and specialized stores in developed countries of the Middle East, in European countries and the United States [1]. Steven Pratt, a renowned American nutritionist and plastic surgeon, points out that turkey meat is a delicacy that can help keep you young and healthy for many years [2].

These recommendations are based on the properties of turkey meat, including the fact that one serving of turkey replaces about 60% of the daily vitamins and is low in fat (for example, one hundred grams of duck contains about 500 mg of cholesterol, veal - 110 mg, chicken meat contains about 80 mg of cholesterol, and one hundred grams of turkey meat contains only 30 mg of cholesterol and only 1.5 g of fat). An important advantage in the production of chicken meat is a large meat yield per carcass compared to the production of meat from other poultry. And this advantage makes the production of turkey meat cost effective.

The Ministry of Agriculture has planned the construction of 7 poultry farms where turkey meat will be produced. In 2020, new poultry farms were opened in the Almaty region, Atyrau region, Zhambyl region, Kostanay region, Mangistau region, Turkestan region and North Kazakhstan region with a total capacity of 50 thousand tons. In the village of Badam, South Kazakhstan region, on the basis of the poultry complex of Ordabasy kus LLP, an investment project is being implemented to grow and slaughter turkey meat with a production capacity of 4830 tons of meat per year.

The turkey meat industry has prospects in its development both on a global scale and on a scale of Kazakhstan due to the growing popularity of proper (healthy) nutrition and an increase in the demand for processed products (for example, turkey sausage, ham, etc.).

Material and methods of research. Among the researchers of the agrarian issue were used the works of Steven G., Pratt M.D., Popov N.A., Abdikadirova A.A., Dulatbekova Zh.A., Kushenova M.Sh., Kozhabaeva S.A. etc. Steven G., Pratt M.D., Davis K.F., De Olde E.M., Minviel J.J., Mogaji K.A. the theoretical and methodological foundations of the organization of agricultural production, including the poultry industry, are noted, and an analysis of the results of the economic activity of the poultry complex in the general system of the poultry industry is made [3,4,5,6].

In the work of Popov N.A., Abdikadirova A.A., Dulatbekova Zh.A., Kushenova M.Sh. the aspects related to the resource potential of agriculture are disclosed, the connection between the infrastructure, which is able to meet the agro-industrial needs of the country, and the conditions for the development of agriculture, of a production, scientific and technical nature, are disclosed [7,8]. In the works of Azretbergenova G.Zh., Syzdykova A.O., Bimendayev BB. the ways of increasing the economic efficiency of the agricultural sector in the regions of Kazakhstan have been identified [9].

In the scientific materials of S.A. Kozhabaeva an analysis of the development of poultry farming in Kazakhstan is made, problems of the development of this industry are identified and mechanisms for solving these problems are proposed. In our presented article, we used a set of the entire spectrum of methods of general scientific analysis. When analyzing the poultry industry, the article also used dialectical and other special methods, such as economic and mathematical modeling, economic and statistical. The sources of research in our article are statistical and empirical data on the development of the poultry industry.

Results and their discussion. Kazakhstan's poultry industry plays an important role in the structure of population consumption in terms of providing high quality dietary products. The poultry industry is currently developing in three directions, which are associated with innovative development, these are the biological direction, the technological direction and the organizational direction. Breeding issues are acutely faced by poultry farming today. Breeding faces a number of tasks, including improving economic traits (improving productivity and feed conversions). Modern genetics is capable of independently breeding breeds, enriching the avian gene background, which will reduce the import of many bird breeds and motivate domestic production to intensify. Low yielding birds have been replaced by linear and hybrid birds.

The world poultry industry, since the 20th century, has been divided into two main areas: the meat direction and the egg direction [lk.3]. The meat business is a little easier to implement than the egg one, because poultry

meat can be sold from all types of poultry. Correct use of the feed base is very important in the poultry industry. Use feed wet, dry and combined processing. Mushrooms are subjected to wet processing, that is, ground cereals, grains, concentrated protein supplements by adding water, whey, milk, succulent feed, broth and vitamins. Dry food consists of complete feed, sold in granules or in ground form, enriched with essential minerals and vitamins. Mixed feed uses conventional feed additives, grains and wet feed.

All technological investments are aimed at improving the methods and conditions of keeping farms, poultry farms and poultry. With the help of investments, Kazakhstani poultry farmers are planning to create a system of year-round staffing of poultry and adjust an uninterrupted system of poultry meat production. And as a result - the achievement of technological progress with the improvement of mechanized and automated production. Organizational innovations are aimed at creating a supply system, special poultry farms and a marketing system for poultry meat. Organizational progress is already visible through the use of biological technologies and genetics of meat breeds of birds and oviparous breeds of birds [lk.7].

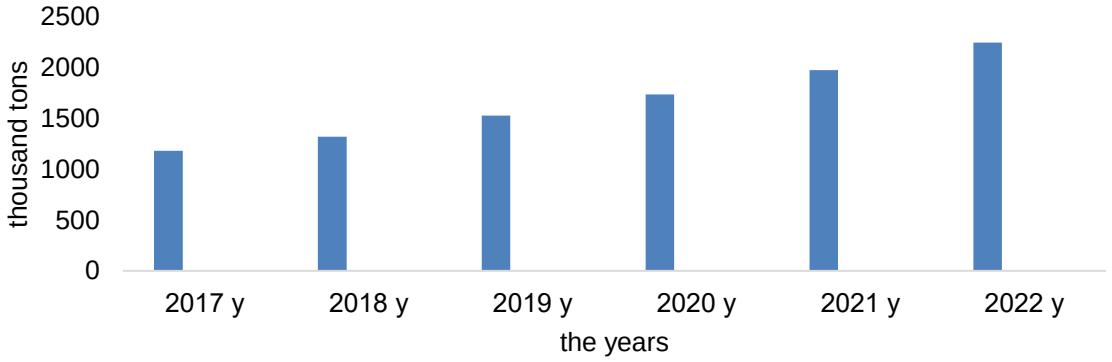
Now in Kazakhstan more than 10 meat breeds of birds are produced, which makes it possible to reduce the need for feed additives and get a large gain and increase in live weight of birds. In addition, the use of technological innovations in poultry farms, such as floor rearing and gas-type heating, results in a reduction in the cost of heat generated compared to a conventional heating system, reducing energy costs by more than 20% [lk.8]. The temperature regime is reduced by several degree units, which saves about ten percent of heat without damaging the health of birds.

And electricity is saved through the introduction of intermittent lighting systems in the poultry houses. Automation of the ventilation and heating systems leads to a decrease in the consumption of energy and heat resources by more than 15%. A number of poultry farms in Kazakhstan use such methods. The use of German equipment leads to higher productivity of poultry meat produc-tion, an increase in poultry egg production while reducing the of feed by more than 13%.

Water consumption is reduced by almost 80% and energy consumption for water consumption is reduced by almost 30% through the use of a nipple drinker system. Innovative advances in egg storage and processing have been achieved through the use of vacuum bags and film for packaging poultry meat. Vacuum bags and films do not have toxic properties, they are made from high quality collagen. Packing poultry meat in such vacuum bags and film allows reducing the shrinkage of poultry meat by 30% and makes it possible to store up to 15 days without freezing. The use of such innovative achie-vements allows to increase the economic efficiency of production, storage of poultry meat and all the work of poultry farms.

The fodder base is also subject to the introduction of innovative achievements. For poultry feed, different feeds are used, which leads to an increase in the quality and nutritional value of poultry meat, increasing the value of poultry products for the consumer [lk.9]. Through the use of feed additives and vitamins, folic and fatty acids, iodine, etc., it can increase the content of a number of nutrients in poultry meat and eggs.

The analysis of all dynamic indicators allows us to conclude and forecast that the production of fodder base for the total agricultural livestock of animals and birds in 2022 will be equal to 2 million 248 thousand tons (figure 1).

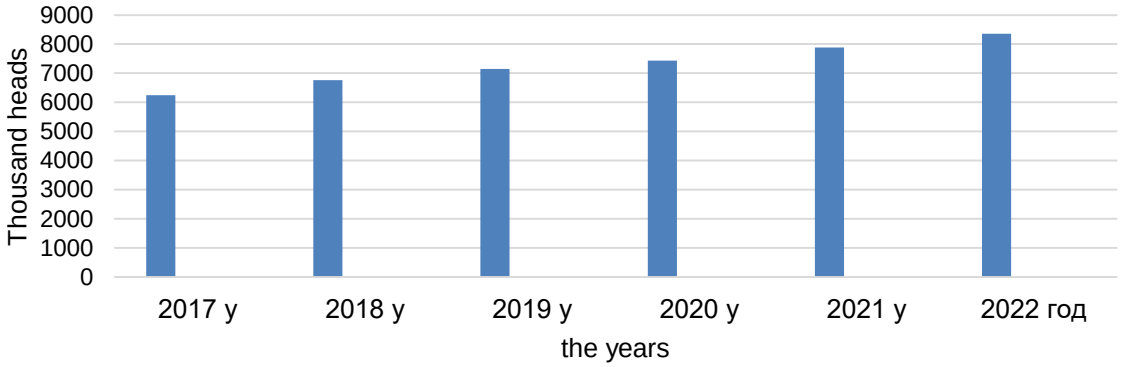


Note: compiled by the author based on [10]

Figure 1 - Forecast situation of production of ready-made feed for poultry livestock for 2022, thousand tons

Also, having calculated the dynamics of several years, it can be predicted that the number of livestock and birds will reach 8 million 355 thousand tons in 2020 (figure 2).

The use of innovative achievements opens up many different prospects for poultry farming that were previously unavailable, which makes it possible to improve the development and improve the competitiveness of Kazakhstani poultry meat production. So, if we analyze the statistical data on the production of poultry for the last three years, it is fashionable to see a positive trend in almost all regions of Kazakhstan (table).



Note: compiled by the author based on [lk.10]

Figure 2 - Forecast data on the livestock of animals and birds in the Republic of Kazakhstan for 2022, thousand heads

Table - The number of poultry in Kazakhstan at the beginning of the analyzed period, thousand heads

Regions	2019 year	2020 year	2021 year
The Republic of Kazakhstan	44 306	44 970,8	43 160,0
Akmola region	7 551	8 078	8 935
Alma-Ata's region	10 427	10 311	10 602
Aktobe region	1 217	1 311	1 273
Atyrau region	444	456	263
East Kazakhstan region	3 903	3 875	3 256
Jambyl Region	1 620	1 701	1 782
West-Kazakhstan region	1 414	1 443	1 388
Karaganda region	3 929	4 009	3 237
Kostanay region	4 423	4 267	4 025
Kyzylorda Region	127	126	124
Mangysta region	46	39	31
Pavlodar region	1 623	1 696	1 795
North-Kazakhstan region	4 633	4 614	3 110
Turkestan region	2 048	2 175	2 219
Nur-Sultan city	0,1	0,1	3,0
Almaty city	5,0	5,0	6,0
Shymkent city	895	863	1 111
Note: compiled on the basis of [lk.10]			

According to statistics, the domestic needs of the Kazakhstani poultry meat market is covered by only 60%, so the rest of the demand is covered by imports.

In the poultry industry the production of turkey meat is becoming more common.The largest meat poultry is the turkey. The weight of an adult representative of the turkey breed is 7-10 kilograms.

Since 2019 Kazakhstan has imported about 173 000 tons of turkey meat annually [lk.10]. But our country has the potential to further increase its own production of turkey meat. And this potential can be realized by increasing production capacity through the system of state support for poultry farmers, through an increase in the number of poultry farms, through an increase in subsidies for turkey meat producers with a production capacity below 500 tons. Instead, the country is taking measures that create problems in the development of turkey meat production. So, for example, there is no gradation of subsidies payments now, in

2021 the subsidy standard is the same and is reduced by 2 times from 200 tenge to 100 tenge per 1 kg of poultry meat. Subsidies are completely deprived of egg poultry farms as a result of the fact that internal needs for egg production are fully satisfied.

In 2021 the projected volumes of poultry meat exports in Kazakhstan are about 9 thousand tons for a total amount of about 15 million US dollars, which is 2.4 more than in 2020. In the overall structure of poultry meat exports, the volume of turkey meat exports amounted to about 1 thousand tons. Turkey meat is exported in two main directions: more than 7 thousand tons are exported to Russia, more than 2 thousand tons are exported to Kyrgyzstan. Simultaneously with the export of poultry meat, its production is growing and its production is more than 90 thousand tons, which is 11.9 thousand tons more than the production of turkey meat than in 2020. One of the directions of the import substitution program is to increase the volume of domestic production of turkey meat.

In Kazakhstan the largest production-scale production of turkey meat was launched at Ordabasy Kus LLP. In 2007, this LLP launched an investment project of the Industrialization Map for the creation of new poultry farms in seven regions of Kazakhstan. The main emphasis on the development of production capacity is placed on the only poultry farm of a production scale for the production of turkey meat in the village of Badam, South Kazakhstan region, where work is currently being carried out on the cultivation, processing and slaughter of turkey meat. Turkey meat production is a very popular and promising business in the world and in Kazakhstan in the light of the popularization of proper and healthy nutrition. And turkey meat meets all the requirements of the nutritional market, providing high nutritional value with low calorie content.

Since 2020 in Pavlodar region, turkey meat has been produced in vacuum packaging. More than 500 million tenge were invested in this project, 50 percent of which are borrowed funds. Two poultry houses have been built and have been operational since 2020, and five more poultry houses have been launched since 2021. It also built its own mini feed mill. Thanks to the sophisticated feeding system, in these poultry houses the turkey grows up to 22 kilograms within 150 days. The capacity of the turkey meat market allows planning for a three-year increase in production, increasing the capacity of poultry farms to 8 000 tons. By the end of 2021, it is planned to launch a slaughterhouse for 4 000 poultry. Thus, a whole line of production will be launched: from the production of eggs to the slaughter of turkey meat. The cost of the entire project was estimated at the initial stage at 1 million 5 thousand tenge.

Turkey meat production for Kazakhstan is a completely new industry that requires the development of new technologies. At present, the Ordabasy kus poultry farm includes 6 facilities, such as an incubator, a young growth area, two growing areas, a feed mill, a slaughterhouse with deep processing of turkey meat and a waste processing workshop [11]. Each zone has its own infrastructure with uninterrupted sources of electricity, heating (including a gas pipeline), and water supply.

At the end of 2010 the poultry farm produced the first turkey poults from its own incubators, and the first turkey meat production was produced in March 2011. The entire production cycle was started with incubation, resulting in a daily number of chicks hatched between 20 000 and 25 000. The poults are delivered to the rearing area, where they are reared for 42 days, then sent to the rearing area, where females are fed for 100 days and males are fed for 140 days. This turkey production technology was borrowed from Israeli turkey meat producers.

This specialized technology for the production of turkey meat using Israeli technologies involves the location of the poultry farm facilities at a certain distance from each other. This is necessary as a prevention and minimization of the risks of losses from any force majeure circumstances, including the occurrence of diseases. So, for example, if all zones are located in one place, then the diseased zone can infect all other zones. Each object in its structure has its own staff. In the poultry farm, all areas are automatically supplied with water to ensure minimal human-bird contact.

After the poultry gains the required weight, the poultry is sent to the meat processing plant for the slaughtering and cutting of poultry, then to the workshop for the deep processing of poultry meat. The entire production cycle ends with waste recycling, waste-free production is used. Waste is processed to the state of powder and added to feed for chickens. The compound feed is produced at our own plant, which significantly reduces the cost of turkey meat and increases the economic efficiency of production. The plant produces about 100 tons of compound feed per day for daily feeding of birds [lk.11].

All technological equipment available at the poultry plant allows the production of more than twenty different types of sausages and sausages, the name of which exceeds the number

of 100. Production of turkey meat at the poultry farm was carried out at the end of 2011 – 2 000 tons, in 2012 – 4 000 tons, in 2020 – 8 000 tons, and in the future it is planned to increase production volumes to 20,000 tons of turkey meat. Each year, the production of turkey meat is increasing due to the potential of production capacity, the huge capacity of the Kazakh sales market and the possibility of entering the markets of neighboring countries.

The consumption of turkey meat is already well organized. Turkey meat, due to its consumer qualities, is in great demand in the Kazakhstani poultry market. The structure of consumption of turkey meat is as follows: the city of Shymkent consumes about 1 000 tons per year, the city of Nur-Sultan consumes more than 1 000 tons per year, the city of Almaty consumes about 2 000 tons per year. In general, a year per person in Kazakhstan produces about 14 kg of chicken meat, and about 300 grams of turkey meat. If we compare with other countries, for example with Israel, then one person has about 15 kilograms of turkey meat, and in Europe - about 10 kilograms.

The poultry industry is currently gaining momentum in its development, becoming more and more demanding of itself, for the effectiveness of the product, for its safety in terms of quality consumption. In this regard, the advantages of the main link in poultry farming are changing, in particular: strengthening the immunity of birds, improving the conditions for adaptation and increasing the productivity of meat and egg breeds of birds [12]. To solve the problems associated with the development of poultry farming and the production of turkey meat, it is necessary to solve the following urgent problems facing the state and poultry meat producers: character; when subsidizing investment activities, organize benefits of up to 5% per year and for a period of up to 20 years; create favorable conditions for the formation of stabilization stock stocks of grain and animal feed in the created associations of agricultural producers, and not only in the state reserve.

All of the above measures will help minimize the impact of all factors hindering the development of poultry farming.

Conclusions. As a result of the study, the following conclusions can be drawn:

1. The poultry industry in Kazakhstan is in dire need of its own breeding base, improving the feed base, introducing resource-saving technologies in poultry production.

2. It is necessary to focus on the formation of breeding centers and expansion of Kazakhstan's own reproductive base.

3. Very important for the development of the poultry industry is the production of biologically active products, including minerals, trace elements, vitamins, and this requires the construction of specialized factories.

References

[1] Steven, G., Pratt, M.D. “Super Healthy Living” [Electronic resource].- 2018.- URL:// http: www. superhealthyliving.com/superfoods (date of access: 21.06.2021).

[2] Davis, K.F. Meeting future food demand with current agricultural resources / K.F. Davis // Global Environmental Change. - 2016. - Vol. 39. - P. 125–132.

[3] De Olde, E.M. Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice / E.M. De Olde // Ecological Indicators. - 2016. - Vol. 66.- P. 391-404.

[4] Gutzler, C. Agricultural land use changes–a scenario-based sustainability impact assessment for Brandenburg, Germany / C. Gutzler //Ecological indicators.-2015.-Vol.48.-P.505-517.

[5] Minviel, J.J. Effect of public subsidies on farm technical efficiency: a meta-analysis of empirical results / J.J. Minviel, L. Latruffe // App-lied Economics.- 2017.- Vol. 49.- №2.-P.213-226.

[6] Mogaji, K.A. Regional prediction of groundwater potential mapping in a multifaceted geology terrain using GIS-based Dempster–Shafer model / K.A. Mogaji, H.S. Lim, K. Abdullah // Arabian Journal of Geosciences. -2015. - Vol. 8. - № 5. - P. 3235–3258.

[7] Попов, Н.А. Экономика сельского хозяйства/ Н.А.Попов.- М: "Экмос", 2017.-352 с.

[8] Абдикадирова, А.А. Производственные инфраструктурные объединения в агропромышленном комплексе / А.А. Абдикадирова, Ж.А. Дулатбекова, М.Ш. Кушенова // Проблемы агрорынка.- 2020.- №4.- С.118-124. https://doi.org/10.46666/2020-4-2708-9991.14.

[9] Азретбергенова, Г.Ж. Повышение экономической эффективности аграрного сектора в регионах Казахстана / Г.Ж. Азретбергенова, А.О. Сыздыкова, Б.Б. Бимендеев // Проблемы агрорынка. – 2020.- №2. – С.75-81.

[10] Бюро национальной статистики Агентства по стратегическому планированию и реформам Республики Казахстан [Электронный ресурс].-2021.-URL: https://stat.gov.kz/official/dynamic (дата обращения: 24.06.2021).

[11] Тагаев, М.К. Деятельность компании ТОО «Ордабасы кус» [Электронный ресурс].-2019.-URL:https:// www. http://ordabasy-kus.kz/ (дата обращения: 25.06.2021).

[12] Кожабаева, С. Птицеводство Казахстана: проблемы и пути их решения /С. Кожабаева, А. Бактымбет // Проблемы агрорынка.– 2021.-№1.- С.115-121. https://doi.org/ 10.46666/2021-1-2708-9991.14.

References

[1] Steven, G. & Pratt, M.D. “Super Healthy Living” (2018). Available at://http:www. Super-

healthyliving.com/superfoods (date of access: 21.06.2021).

[2] Davis, K.F. (2016). Meeting future food demand with current agricultural resources. *Global Environmental Change*, 39, 125–132.

[3] De Olde, E.M. (2016). Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice. *Ecological Indicators*, 66, 391-404.

[4] Gutzler, C. (2015). Agricultural land use changes–a scenario-based sustainability impact assessment for Brandenburg, Germany. *Ecological indicators*, 48, 505–517.

[5] Minviel, J.J. & Latruffe, L. (2017). Effect of public subsidies on farm technical efficiency: a meta-analysis of empirical results. *Applied Economics*, 49(2), 213-226.

[6] Mogaji, K.A. & Lim, H.S. & Abdullah, K. (2015). Regional prediction of groundwater potential mapping in a multifaceted geology terrain using GIS-based Dempster–Shafer model. *Arabian Journal of Geosciences*, 8(5), 3235-3258.

[7] Popov, N.A. (2017). Jekonomika sel'skogo hozjajstva [Agricultural economics]. Moskva: "Jekmos", 352 p. [in Russian].

[8] Abdikadirova, A.A. & Dulatbekova, Zh.A. & Kushenova, M.Sh. (2020). Proizvodstvennye infrastrukturnye ob'edinenija v agropromysh-lennom komplekse [Industrial infrastructure associations in the agro-industrial complex]. *Problemy agrorynka – Problems of agrimarket*, 4,118-124 [in Russian].

[9] Azretbergenova, G.Zh. & Syzdykova, A.O. & Bimendeev, B.B. (2020). Povyshenie jekonomicheskoj jeffektivnosti agrarnogo sektora v regionah Kazahstana [Increasing the economic efficiency of the agricultural sector in the regions of Kazakhstan]. *Problemy agrorynka-Problems of agrimarket*, 2, 75-81 [in Russian].

[10] Bjuro nacional'noj statistiki Agentstva po strategicheskomu planirovaniju i reformam Respubliki Kazahstan [Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan] (2021). Available at: https://stat.gov.kz/ official/dynamic (date of access: 24.06.2021) [in Russian].

[11] Tagaev, M.K. Dejatel'nost' kompanii TOO «Ordabasy kus» [Activities of the company LLP "Ordabasy kus"] (2019). Available at: https:// www. http://ordabasy-kus.kz/ (date of access: 25.06.2021) [in Russian].

[12] Kozhabaeva, S. & Baktymbet, A. (2021). Pticevodstvo Kazahstana: problemy i puti ih reshenija [Poultry farming in Kazakhstan: problems and solutions]. *Problemy agrorynka – Problems of agrimarket*,1, 15-121. https://doi.org/10.46666/2021-1-2708-9991.14 [in Russian].

Information about authors:

Kozhabayeva Saule Amankeldievna –**The main author**; Candidate of Economic Sciences; Associate Professor of the Department of Economics; Kazakh University of Economics, Finance and International Trade; 010000 Zhubanova str., 7, Nur-Sultan, Kazakhstan; e-mail: s_kozhabayeva@kuef.kz*;* https://orcid.org / 0000-0002-4586-4465

Sartanova Nalima Telqoraevna; Candidate of Economic Sciences, Associate Professor; Professor of the Department of Economics and Finance; A. Baitursynov Kostanay Regional University; 010000 Baitursynov str., 47, Kostanay, Kazakhstan; e-mail: nalimas@mail.ru; https://orcid.org/0000-0002-4342-4113

Авторлар туралы ақпарат:

Қожабаева Сауле Аманкелдіқызы **– негізгі автор;** экономика ғылымдарының кандидаты; "Экономика" кафедрасының доценті; Қазақ экономика, қаржы және халықаралық сауда университеті; 010000 Жұбанов көш., 7, Нұр-Сұлтан қ., Қазақстан; e-mail: s_kozhabayeva@kuef.kz; https: // orcid. org /0000-0002-4586-4465

Сартанова Налима Телғорақызы; экономика ғылымдарының кандидаты, доцент; «Экономика және қаржы» кафедрасының профессоры; А.Байтұрсынов атындағы Қостанай өңірлік университеті; 010000 Байтұрсынов көш., 47, Қостанай қ., Қазақстан; e-mail: nalimas@mail.ru; https://orcid.org/0000-0002-4342-4113

Информация об авторах:

Кожабаева Сауле Аманкельдиевна - **основной автор;** кандидат экономических наук; доцент кафедры «Экономика»; Казахский университет экономики, финансов и международной торговли; 010000 ул. Жубанова, 7, г.Нур-Султан, Казахстан; e-mail: s_kozhabayeva@kuef.kz; https://orcid.org/0000-0002-4586-4465

Сартанова Налима Телгораевна; кандидат экономических наук, ассоциированный профессор; профессор кафедры «Экономика и финансы»; Костанайский региональный университет им.А.Байтурсынова; 010000 ул. Байтурсынова, 47, г.Костанай, Казахстан; e-mail: nalimas@mail.ru; https://orcid.org/0000-0002-4342-4113