

B.T. Beisengaliyev¹, S.A. Kozhabaeva², D.M. Turekulova³, Z.K. Zhanybayeva^{4*}

Kazakh University of Economics, Finance and International Trade, Kazakhstan

¹*bbeisengaliyev@gmail.com*, ²*Saule_285@mail.ru*, ³*dametken.t@gmail.com*, ⁴*z_zhanybayeva@kuef.kz*

⁴*https://orcid.org/0000-0003-4162-3602*

¹*Scopus Author ID: 56158300700*, ²*Scopus Author ID: 57205673202*, ³*Scopus Author ID: 56158300700*,

⁴*Scopus Author ID: 57195556510*

⁴*Researcher ID: V-2853-2018*

On the issue of the current state of agriculture of the Kazakhstan

Abstract

Object: analysis and assessment of the state of poultry farming (including determining the dynamics of the poultry industry development) in the leading regions of Kazakhstan

Methods: In particular, the study comparative, logistic, specific methods of analysis are used: economic-mathematical, economic-statistical; graphical interpretation of information, an experimental method that includes conducting a ascertaining experiment, analyzing and summarizing the data obtained, which made it possible to assess the state and development of the main sub-sectors of agriculture, revealed the leading regions of Kazakhstan in the development of poultry farming.

Findings: A comprehensive analysis of crop and poultry production in Kazakhstan is conducted. In particular, the dynamics of the development of the poultry sector for the period from 2010 to 2019, the number of birds in regions of Kazakhstan were studied.

Conclusions: The agricultural sector is a key sector of the economy of Kazakhstan, so the degree of its development affects the provision of food security, as well as the socio-political stability of the state. To meet domestic needs it is necessary to develop poultry farming, thereby reducing import dependence in a number of poultry products. Consequently, the complex reasons for the decline in the number of birds by region are determined, measures are proposed to minimize the impact of restraining factors in the development of poultry farming.

Keywords: agricultural sector, poultry farming, food security, grain market, crop production, agricultural production, agricultural policy.

Introduction

It is a well-known fact that the agricultural sector is the key sector of Kazakhstan's economy, the degree of development of which affects food security, and political stability of the state. In light of solving the problems of strengthening, the competitiveness of the economy, the role and importance of the agricultural sector is significantly increasing.

Having agricultural lands of 76 thousand hectares and favorable climatic conditions in the north of the country for growing grain, in the south for growing cotton, sugar beet, rice and so on, with the potential for development of livestock sub-sector, Kazakhstan's dynamic in the solution of structural problems in the market. Having all the factors that stimulate and contribute to the development of the agricultural industry, it is very important to carefully study the problems related to the development of this industry, including a comprehensive analysis, identifying existing problems, as well as determining models for further successful development of the industry. This need arises due to the fact that the products of such a sub-sector as poultry farming play a crucial role in ensuring the food security of the country. However, in recent years there has been a decline in the number of birds in our country due to the crisis state of agriculture and, as a result, import dependence.

Literature Review

This problem was studied in their works by such scientists as D.M. Keynes, P. Samuelson, M.L. Lurie, and others. Among the researchers in the CIS, N.A. Popov, M. Pershukevich, and so on were engaged in the study of agricultural issues. N.A. Popov identified the theoretical and methodological foundations of the organization of agricultural production, and also analyzed the economic activities of agricultural enterprises in the general system of the agro-industrial complex (Popov, 1999).

*Corresponding author.

E-mail address: *z_zhanybayeva@kuef.kz*

M. Pershukevich studied the resource potential of agriculture, have identified the relationship infrastructure that can meet the needs of agriculture and industrial and scientific-technical development of the agroindustrial complex (Pershukevich, 2001).

Thus, the economic literature studies the problems of effective agricultural production and focuses on the development of certain sub-sectors, to which the regions have a so-called predisposition, that is, certain natural and climatic conditions.

Methods

The method of exploring the surrounding realities is the scientific method. In our article we used a set of methods from a wide range of general scientific methods of analysis. The analysis of agriculture is based on the dialectical method, assuming that all agricultural processes depend on and condition each other. Agricultural science, based on the dialectical method and conducting observation and experiments, capable of increasing the productivity of agricultural products. In particular, in the study of agricultural economics specific methods of analysis were used: economic-mathematical, economic-statistical. The method of mathematical statistics is an important tool in the planning and processing of the data obtained. This method allows to identify the maximum amount of information from the source data, and make an assessment of the differences between the options. The combination of scientific research methods provides the opportunity to obtain scientifically-based results.

The sources of the conducted economic research were statistical data on the development of the agricultural sector, special scientific domestic and foreign literature.

Results

Durum wheat, which is sown and cultivated in a number of western regions of the Republic of Kazakhstan, enjoys a high level of demand in the world grain markets. Effective development of crop production allows the republic to develop the traditional livestock industry, which fills the domestic needs of the population in food, and light industry in the necessary raw materials. The pig sub-sector and dairy farming are developing in the North, the South have all conditions for development of horse breeding, camel, beef cattle and sheep. Poultry farming is subject to uniform distribution across the regions of the republic, as the natural and climatic conditions and modern technical capabilities of the regions contribute to this. Poultry farming plays a very important role in ensuring food security. At the same time, the poultry industry depends on the level of breeding work, which is aimed at increasing the productivity and strengthening the breeding qualities of birds, balance in feeding issues. The dynamics of the development of the poultry industry for the period from 2010 to 2019 can be viewed in Figure 1.

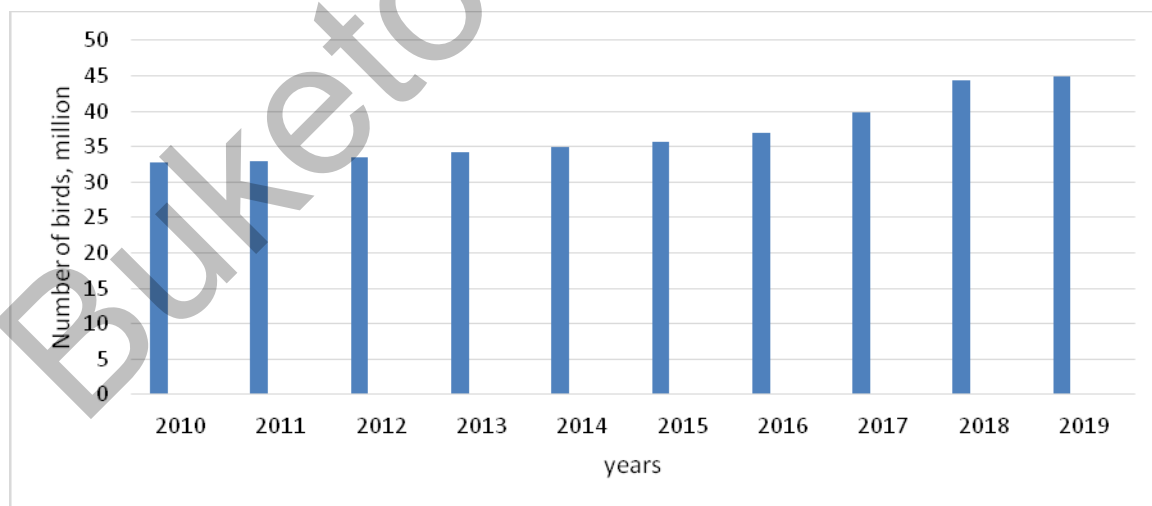


Figure 1. Number of birds at the end of the year, million heads

Note: compiled by the authors

The number of birds in 2019, according to the population, increased significantly, but the growth occurred unevenly in all regions. Ten regions of the republic have reduced the number of poultry production. And four regions, on the contrary, showed an increase in the number of birds.

The decline in poultry has occurred as a result of the agricultural crisis, which is gradually leading poultry farming to become dependent on imports. And this, in turn, has a negative impact on the food security of the republic as a whole.

According to the national statistics of the Bureau of the Agency for strategic planning and reforms of RK, the degree of participation in the development of poultry industry leaders are Almaty region, Akmola region, North Kazakhstan region. Mangystau and Atyrau regions form the minimum share of participation in the development of poultry farming in the republic due to unfavorable natural and climatic conditions for poultry breeding.

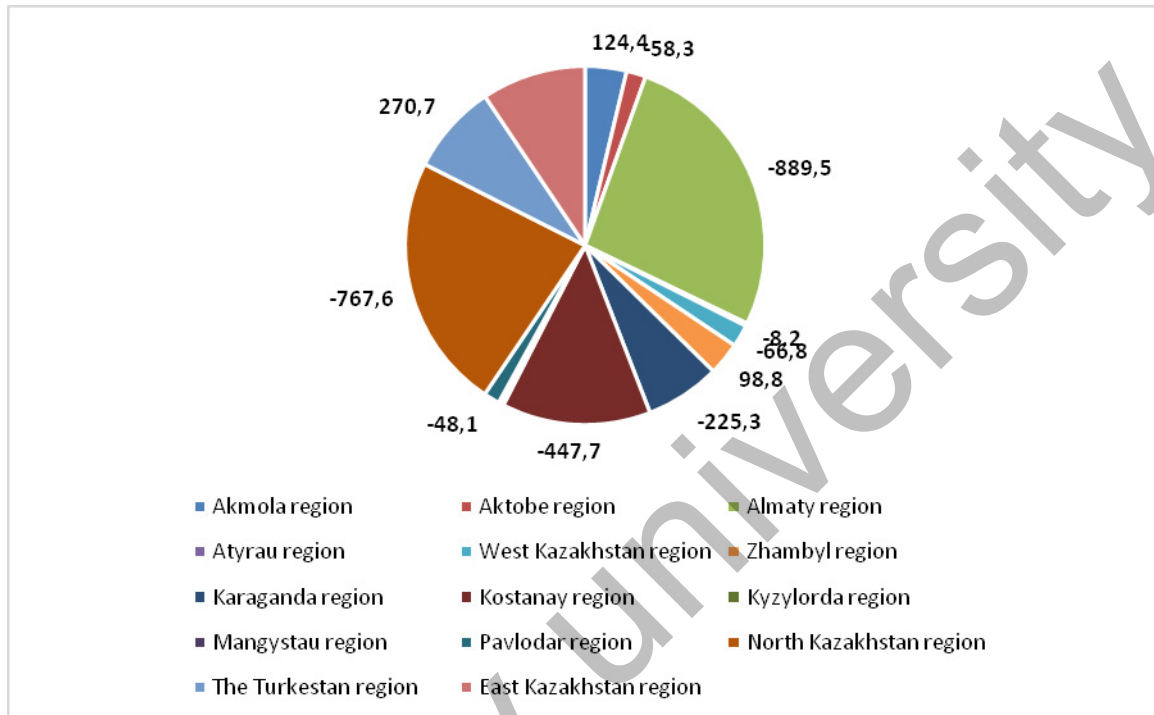


Figure 2. Difference in changes in the number of birds in Kazakhstan for 2019, thousands of heads

Note: compiled by the authors

As of November 1, 2019, the number of birds increased to 47,850 thousand heads, which is 468 thousand more than in the previous period. For the month of November the number of birds in Kazakhstan became equal to 47521 thousand heads, that is, it decreased by 329 thousand heads, or 0.7 %. By January 1, 2020, the number of birds decreased by 2,323 thousand heads from an indicator of 47,521 thousand heads to 45,197 thousand heads, that is by 4.9 %. In general, in 2019 the number of birds in the country increased by 891 thousand heads, from the indicator of 44305 thousand heads to 45197 thousand heads, that is, by 2 %.

When analyzed by region (see Figure 3), in the Almaty region for the month of December 2019 was observed the greatest decrease in the number of birds with 11200 thousand heads to 10311 thousand heads, the difference amounted to 889 thousand heads; in the North-Kazakhstan region decreased from 5382 thousand heads to 4614 thousand heads, at 767 thousand head; a reduction in the number of birds in Kostanay region was from 4714 thousand heads to 4266 thousand heads, a difference of 447 thousand head, in the East Kazakhstan region the number of birds decreased from 4189 thousand heads to 3875 thousand, that is, the difference is 314 thousand heads. In six other regions the number of birds decreased by no more than 300 thousand heads. But there is not only a reduction in the number of birds; in two regions of the republic the number of birds has increased, for example, in the Turkestan region the number of birds increased from 1907 thousand heads to 2178 thousand heads, which is 270 thousand heads. In the Akmola region, the number of birds increased from 7954 thousand heads to 8078 thousand heads, the difference was 124 thousand heads.

In general, in 2019 the number of birds increased by 528 thousand heads in the Akmola region, and 130 thousand heads in the Turkestan region. The largest reduction in the number of birds for the whole of 2019 occurred in the Kostanay region from 4422 thousand heads to 4266 thousand heads, the difference was 156

thousand heads, and also in the Almaty region the number of birds for 2019 decreased from 10426 thousand heads to 10311 thousand heads, the difference was 115 thousand heads.

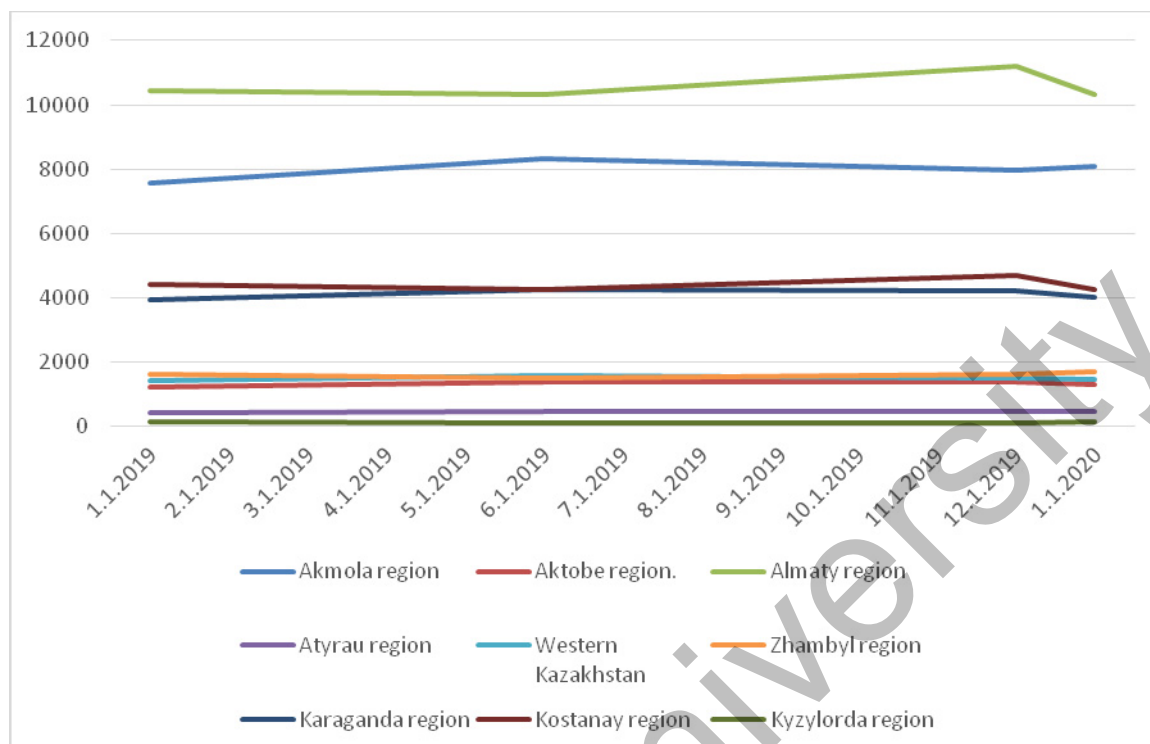


Figure 3. Dynamics of the number of birds in the context of the regions of Kazakhstan for 2019, thousands of heads

Note: compiled by the authors

Despite the general growth trend, the domestic producer of the poultry industry does not have a high competitiveness even in comparison with the Russian producer.

In the poultry industry today both the efficiency of products and their safety (in terms of quality and harmlessness of consumption) are very important. At the same time, preferences in the main link of the poultry system change, namely: agricultural poultry should have such properties as the development of the immune system, good adaptability and high productive qualities of meat and eggs, etc. To achieve this goal to increase competitiveness it is possible to use an integrated approach and systematic coordination of genetics and breeding. In Kazakhstan in 2018 there were about 60 poultry farms, meat production was about 180 thousand tons. While the total demand for meat is approximately 300 thousand tons. That is, a little more than half of the domestic market needs for poultry meat are occupied by domestic producers. This import-dependent situation arose as a result of many problems, including:

- high cost of the feed component;
- use of outdated equipment.

To solve the current situation it is necessary:

1. Reimbursement of part (30 %) of the financial costs associated with the purchase of machinery and special equipment, with the construction of modular production structures of meat and egg farms.
2. Preferential subsidies for investment activities of poultry organizations (the rate is up to 5 % per annum, for a period of at least 20 years).
3. Formation of stabilization funds for feed grain not only in the state reserve, but also in the association of agricultural producers.

Through these measures it is possible to minimize the impact of constraints on the development of poultry farming and the agricultural industry as a whole.

Discussions

The agricultural sector of the economy of Kazakhstan is still in crisis today, which motivates the urgency of solving food issues and revising its agricultural policy. The crisis is associated with such reasons as the fact that the agricultural sector is a seasonal production and is objectively unable to resist the monopoly poli-

cy of economic entities in the first and third spheres of the agricultural sector. It should be noted that the preventive measures that are taken in a timely manner in the country help to maintain some stability in the domestic food market. But the weakness of our agriculture in the face of the global market and the high vulnerability to global trends, unfortunately, remains.

Conclusions

As a result of the analysis of agriculture, including poultry farming, the opportunities for the development of the poultry sub-sector and its growth trend are determined. Kazakhstan, officially having about 60 poultry farms, produces poultry meat in the amount of 180 thousand tons, and the domestic demand for this type of product is about 300 thousand tons. To meet domestic needs it is necessary to develop poultry farming, thereby reducing import dependence in a number of poultry products. Problems in the development of poultry farming in Kazakhstan are highlighted:

- high cost of feed component;
- use of outdated equipment.

Measures are proposed to minimize the impact of restraining factors in the development of poultry farming:

1. Reimbursement of part (30 %) of the financial costs associated with the purchase of machinery and special equipment, with the construction of modular production structures of meat and egg farms.
2. Preferential subsidies for investment activities of poultry organizations (the rate is up to 5 % per annum, for a period of at least 20 years).
3. Formation of stabilization funds for feed grain not only in the state reserve, but also in the association of agricultural producers.

References

- Balobin, B.V. (1998). *Praktikum po ptitsevodstvu i tekhnologii proizvodstva yaits i miasa ptitsy: uchebnoe posobie* [Workshop on poultry farming and technology of production of eggs and poultry meat: a textbook]. Moscow: Uradzhai [in Russian].
- Bronshstein, M.L. (1972). *Optimizatsiia ispolzovaniia zemli i sistema otsenok. Voprosy sovershenstvovaniia planovogo upravleniia i khozraschetnogo mekhanizma optimizatsii ispolzovaniia zemelnykh resursov* [Optimization of land use and assessment system. Issues of improving planned management and self-financing mechanism for optimizing the use of land resources]. Estonskoe otdelenie TseMI — The Estonian branch of the CEMI, 4–14 [in Russian].
- Davis, K.F., Gephart, J.A., Emery, K.A., Leach, A.M., Galloway, J.N., & D’Odorico, P. (2016). Meeting future food demand with current agricultural resources. *Global Environmental Change*, 39, 125–132.
- De Olde, E.M., Oudshoorn, F.W., Sørensen, C.A., Bokkers, E.A., & De Boer, I.J. (2016). Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice. *Ecological Indicators*, 66, 391–404.
- Gutzler, C., Helming, K., Balla, D., Dannowski, R., Deumlich, D., Glemnitz, M., & Sieber, S. (2015). Agricultural land use changes—a scenario-based sustainability impact assessment for Brandenburg, Germany. *Ecological indicators*, 48, 505–517.
- Kochish, I.I. (2004). *Ptitsevodstvo v Rossii. Istoriia. Osnovnye napravleniia. Perspektivi razvitiia* [Poultry farming in Russia. History. The main directions. Development prospects]. Moscow: Kolos [in Russian].
- Lomakin, A. I. (1991). *Organizatsionno-tekhnologicheskie metody uvelicheniia proizvodstva yaits i miasa kur. Chast I* [Organizational and technological methods of increasing the production of eggs and chicken meat. Part I]. Saratov: Izdatelstvo Saratovskogo gosudarstvennogo universiteta [in Russian].
- 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.
- 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.
- Naumova, V.V. (2008). *Ptitsevodstvo* [Poultry farming], 258 [in Russian].
- Popov, N.V. (1999). *Ekonomika selskogo hozyaistva* [Agricultural economics]. Ekmos, [in Russian].
- Sait Biuro natsionalnoi statistiki Agentstva po strategicheskomu planirovaniuu i reformam RK* [Website of the Agency for Strategic planning and reforms of the Republic of Kazakhstan Bureau of National statistics]. <https://stat.gov.kz/official/dynamic> [in Russian].
- Walters, J.P., Archer, D.W., Sassenrath, G.F., Hendrickson, J.R., Hanson, J.D., Halloran, J.M., & Alarcon, V.J. (2016). Exploring agricultural production systems and their fundamental components with system dynamics modelling. *Ecological modelling*, 333, 51–65.
- Yang, L., & Zhang, X. (2018). Assessing regional eco-efficiency from the perspective of resource, environmental and economic performance in China: A bootstrapping approach in global data envelopment analysis. *Journal of Cleaner Production*, 173, 100–111.

Yuzefovich, A.E. (1987). Agrarnyi resursnyi potentsial: formirovanie i ispolzovanie [Agricultural resource potential: formation and use]. Kiev: Naukova dumka [in Russian].

Б.Т. Бейсенғалиев, С.А. Қожабаева, Д.М. Төрекұлова, З.К. Жаныбаева

Қазақстан ауыл шаруашылығының қазіргі жағдайы туралы

Аңдатпа

Мақсаты: Қазақстанның жетекші өңірлерінде құс шаруашылығының жай-күйін талдау және бағалау (оның ішінде құс шаруашылығы саласының даму серпінін айқындау).

Әдісі: 1. Салыстырмалы, логистикалық, атап айтқанда, зерттеуде талдаудың нақты әдістері қолданылған: экономикалық-математикалық, экономикалық-статистикалық.

2. Ақпаратты графикалық түсіндіру.

3. Ауыл шаруашылығының негізгі кіші салаларының жай-күйі мен дамуын бағалауға мүмкіндік берген, айқындаушы эксперимент жүргізуді, алынған деректерді талдауды және қорытуды қамтитын эксперименттік әдіс құс шаруашылығын дамыту бойынша Қазақстанның жетекші өңірлерін анықтады.

Қорытынды: Қазақстанның өсімдік шаруашылығы мен құс шаруашылығына кешенді талдау жүргізілді. Атап айтқанда, құс шаруашылығы саласының 2010 жылдан 2019 жылға дейінгі кезеңдегі даму серпіні, Қазақстан өңірлеріндегі құстардың саны зерттелді.

Тұжырымдама: Аграрлық сектор Қазақстан экономикасының негізгі секторы болып табылады, сондықтан азық-түлік қауіпсіздігін қамтамасыз ету, сондай-ақ мемлекеттің әлеуметтік-саяси тұрақтылығы оның даму дәрежесіне байланысты. Ішкі қажеттіліктерді қамтамасыз ету үшін құс шаруашылығын дамыту қажет, осылайша құс өнімдерінің бірқатарындағы импорттық тәуелділікті азайту қажет. Сонымен қатар, өңірлер бойынша құстар санының азаюының кешенді себептері анықталды, құс шаруашылығының дамуын тежейтін факторлардың әсерін азайтуға болатын іс-шаралар ұсынылды.

Кілт сөздер: аграрлық сектор, құс шаруашылығы, азық-түлік қауіпсіздігі, астық нарығы, өсімдік шаруашылығы, ауылшаруашылығы өндірісі, аграрлық саясат.

Б.Т. Бейсенғалиев, С.А. Қожабаева, Д.М. Төрекұлова, З.К. Жаныбаева

К вопросу о современном состоянии сельского хозяйства Казахстана

Аннотация

Цель: Анализ и оценка состояния птицеводства (в том числе определение динамики развития птицеводческой отрасли) в ведущих регионах Казахстана.

Методы: 1. Сравнительный, логистический, и в частности, в исследовании используются специфические методы анализа: экономико-математический, экономико-статистический.

2. Графическая интерпретация информации.

3. Экспериментальный метод, включающий проведение констатирующего эксперимента, анализ и обобщение полученных данных, позволивший оценить состояние и развитие основных подотраслей сельского хозяйства, выявил ведущие регионы Казахстана по развитию птицеводства.

Результаты: Проведен комплексный анализ растениеводства и птицеводства Казахстана. Рассмотрена динамика развития птицеводческой отрасли за период с 2010 по 2019 годы, численность птицы в регионах Казахстана.

Выводы: Аграрный сектор является ключевым в экономике Казахстана, поэтому от степени его развития зависит обеспечение продовольственной безопасности, а также социально-политическая стабильность государства. Для обеспечения внутренних потребностей необходимо развивать птицеводство, тем самым снизив импортную зависимость в ряде продуктов птицеводства. Таким образом, определены комплексные причины снижения численности птиц по регионам, предложены мероприятия, посредством которых возможна минимизация влияния сдерживающих факторов развития птицеводства.

Ключевые слова: аграрный сектор, птицеводство, продовольственная безопасность, зерновой рынок, растениеводство, сельскохозяйственное производство, аграрная политика.

References

- Балобин Б.В. Практикум по птицеводству и технологии производства яиц и мяса птицы: учеб. пос. / Б.В. Балобин. — М.: Ураджай, 1998. — 226 с.
- Бронштейн М.Л. Оптимизация использования земли и система оценок. Вопросы совершенствования планового управления и хозяйственного механизма оптимизации использования земельных ресурсов / М.Л. Бронштейн. — Тарту: Эстон. отд. ЦЭМИ, 1972. — С. 4–14.
- Davis K.F. Meeting future food demand with current agricultural resources / K.F. Davis et al. // Global Environmental Change. — 2016. — Т. 39. — С. 125–132.

- De Olde E.M. Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice / E.M. De Olde et al. // *Ecological Indicators*. — 2016. — Т. 66. — С. 391–404.
- Gutzler C. et al. Agricultural land use changes—a scenario-based sustainability impact assessment for Brandenburg, Germany / C. Gutzler et al. // *Ecological indicators*. — 2015. — Т. 48. — С. 505–517.
- Кочиш И.И. Птицеводство России. История. Основные направления. Перспективы развития / И.И. Кочиш, М.Г. Петраш, И.А. Егоров и др. — М.: Колос, 2004. — 263 с.
- Ламакин А.И. Организационно-технологические методы увеличения производства яиц и мяса кур / А.И. Ламакин. Ч. I; под ред. Г.П. Демякина. — Саратов: Изд-во СГУ, 1991. — 152 с.
- Minviel J.J. Effect of public subsidies on farm technical efficiency: a meta-analysis of empirical results / J.J. Minviel, L. Latruffe // *Applied Economics*. — 2017. — Т. 49. — №. 2. — С. 213–226.
- 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. — Т. 8. — No. 5. — С. 3235–3258.
- Наумова В.В. Птицеводство / В.В. Наумова. — М., 2008. — 258 с.
- Попов Н.В. Экономика сельского хозяйства / Н.В. Попов. — М.: Экмос, 2001. — 352 с.
- Сайт Бюро национальной статистики Агентства по стратегическому планированию и реформам РК. <https://stat.gov.kz/official/dynamic>.
- Walters J.P. Exploring agricultural production systems and their fundamental components with system dynamics modelling / J.P. Walters et al. // *Ecological modelling*. — 2016. — Т. 333. — С. 51–65.
- Yang L. Assessing regional eco-efficiency from the perspective of resource, environmental and economic performance in China: A bootstrapping approach in global data envelopment analysis / L. Yang, X. Zhang // *Journal of Cleaner Production*. — 2018. — Т. 173. — С. 100–111.
- Юзефович А.Э. Аграрный ресурсный потенциал: формирование и использование / А.Э. Юзефович. — Киев: Наук. думка, 1987. — 352 с.