Sustainable development of the agro-industrial sector of the regional economy

Vasily I. Nilipovskiy
Candidate of Economic Sciences, Professor
State University of Land Land Use Planning,
Moscow, Russia
ORCID 0000-0003-4749-5701
Yermek A. Anarbayev
PhD student
Kazakh National Agrarian Research University
ORCID 0000-0002-0704-4132
Toleubek Pentayev
Doctor of Technical Sciences, Professor
Al-Farabi Kazakh National University,
Kazakh National Agrarian Research University
Gulmira Kenzhibaeva
Candidate of Technical Sciences, Professor
M.Auezov South Kazakhstan University,
Shymkent, Kazakhstan

Abstract. *Kazakhstan has traditionally been an agro-industrial country, and the development of virgin lands has turned it into one of the largest producers of grain and meat in the all-Union division of labor. During the period of independence of the Republic of Kazakhstan agricultural sector in the Turkestan region achieved significant results: there is a constant increase of production based on market relations, increases productivity, and productivity is updated fixed assets and infrastructure of the industry, achieved self-sufficiency in basic foods, there was a significant increase of the export of cereals, oil crops, fishery products. Agriculture is one of the key sectors of Kazakhstan's economy. The level of development of the agricultural sector has always been and continues to be a determining factor in the economic and socio – political stability of Kazakhstan's society. In order to boost the rural economy over the past ten years, state and industry programs have been adopted to develop and support agriculture and rural areas, supported by solid financial resources.*

As one of the priority areas of the Republic's economy development, agriculture has a huge potential and largest reserve. The diverse climatic conditions made it possible to introduce diversification in the economy of this structure, which allowed the agro-industrial complex (AIC) to become one of the largest inter-industry complexes, combining several sectors of the economy aimed at the production and processing of agricultural raw materials and obtaining products from it that are brought to the end consumer. This is a branch of the country's economy that includes a combination of a wide range of varieties of

agricultural crops and industries in the agricultural sector. In turn, they are closely related to agricultural production, which carry out transportation, storage, processing of agricultural products, supply them to consumers, provide agriculture with the necessary equipment, chemicals and fertilizers, and are aimed at servicing agricultural production.

Keywords: regional economy of Kazakhstan, agro-industrial complex of the Turkestan region, sustainable development, agricultural production and food industry, food export and import.

Introduction

In order to improve the sustainability of the agro-industrial complex, the State program for the development of agricultural business in the Republic of Kazakhstan for 2016-2020 was adopted. The goals of the tasks of the State program are to increase the efficiency of agricultural production and marketing of agricultural products and food products, as well as to increase their competitiveness, to ensure the domestic market of the country with domestic agricultural products and food in the necessary volumes and proper quality based on the formation of market mechanisms for managing and developing agricultural business [1].

Along with this, the document specifies the main directions and measures to strengthen national food security:

1. Production of agricultural products, raw materials and food in all categories of farms. Here, efforts should concentrate on improving the structure of acreage; maintaining and improving soil fertility; innovative development of the material and technical base of organizations; introduction of resource-saving technologies and improving product quality;

2. In order to increase the economic availability of products for the population, it is necessary to develop effective mechanisms for motivating and stimulating labor and develop a system of internal food assistance to the population.

At the present stage, the strategy for sustainable development in the Turkestan region, the Republic of Kazakhstan provides for optimizing the use of state support and regulation in the agricultural sector, establishing clear rules for subsidizing agricultural production that comply with the rules of the EAEU and WTO standards, as well as more active use of "green basket» measures. For Kazakhstan, the practical implementation of this approach is due to the activation of the negotiation process for the Republic's accession to the WTO, the functioning and expansion of the EU, as well as the WTO membership of all States.

In the field of trade policy, it is planned to create integrated food systems focused on the production and supply of high-quality food to the population ("healthy nutrition", "functional nutrition", "baby food" programs, etc.), and joint food companies that will integrate competitive specialized production (raw materials, storage, food industry and marketing), scientific and innovative potential

(innovative technologies and developments) and promote products to the market of the EAEU and third countries [2-3].

Research methods and materials

The methodological basis of the research is the methods of analysis and generalization of statistical and analytical data on the use of land resources, as well as works of domestic and foreign zones on sustainable land use of land resources of the Republic of Kazakhstan for the study of 15 years [4, 5, 9, 10, 14, 15].

Results and discussion

In recent years, considerable attention has been paid in the Republic to the issues of improving the sustainable development of the agro-industrial complex by improving environmental and economic activities, preserving the potential of natural resources.

By the Decree of the President of the Republic of Kazakhstan dated October 14, 2006 №216, the concept of the transition of the Republic of Kazakhstan to sustainable development for 2017-2024 was adopted [5-7], where it was noted that the most important conditions for increasing the production of agricultural products are polynya and the correct use of land. In this regard, it is very important to analyze the state of land resources and point out ways to improve their efficient rational use.

Analysis of land registration materials for the Turkestan region shows that in recent years, the change in the area of agricultural land has occurred both in time and space unevenly.

In the conditions of the Turkestan region, there are all objective natural and economic conditions in order not only to return the drunken arable land to economic circulation, and to increase them the largest amount of agricultural products.

In farms with sustainable irrigated land use, agriculture is the main source of stable agricultural products regardless of weather conditions, only the heterogeneity of the soil cover is significantly reduced - the productivity of agricultural land. However, the low level of technical condition of irrigation systems, poor equipping them with water-distribution structures, insufficient use of water-saving technologies in paleo make the state and productivity of irrigated lands dependent on the water regime and lead to a reduction in the area of irrigated lands.

Therefore, the deficit of water regimes and the lack of capital investments for the development of irrigated agriculture hinder the possibility of expanding new areas of irrigated land. As a result, over the years of reforming agriculture, the structure of crops worsened, no agro-technical measures were taken, which led to a decrease in the productivity of irrigated lands. Valuable irrigated lands were often used for monocultures, all scientifically substantiated turns were not maintained, the necessary amount of fertilizers was not provided, and water-saving technologies were not followed.

However, in recent years, in some farms, the definition of work to increase the productivity of the used lands has been carried out [6, 8, 5]. But nevertheless aul, there is not enough solution for the level.

The effective use of soil resources 1 seed farming requires fundamental knowledge of the nature of soil, soil-forming processes, based on the study of genesis, geographical soil cover criterion of the territory.

At the present time, these tasks were of even greater relevance. This is due to the new land relations in the Republic and the need to assess the quality of land, often lease or property.

According to the reporting data of the Committee of the Republic of Kazakhstan on land management [5, 7], the process of degradation tends to increase. The processes of desertification of irrigated soils in the deltas of the Syrdarya river are progressing. In the northern part of the region (Suzak district), chemical, radioactive contamination and technogenic destruction of the soil cover are observed in the places of mining and processing of minerals.

In order to suspend the above negatives on the territory of the Republic, a number of programs were developed by the Decree of the Government of the Republic, within the framework of which the following measures were envisaged [5, 6, 11-13]:

- Inventory and assessment of degraded lands;
- Informing and ensuring the participation of all segments of the population in the process of combating desertification;
- Development and implementation of pilot projects for land restoration;
- Development and implementation of regulatory requirements and economic mechanisms for sustainable land use, ensuring the preservation and restoration of the resource base;
- Ensuring the consolidated implementation of international environmental conventions;
- Reducing the scale and preventing the development of desertification processes and the negative impact of droughts.

All these measures related to increasing the productivity of agricultural lands, the introduction of economic mechanisms to combat degradation were supposed to reduce the scale of the desertification process in the Republic. So, as agricultural lands have a special right to regime and should be protected, aimed at limiting the withdrawal of these lands, preserving and increasing their fertility.

The Dynamics of agricultural production in all categories in the Turkestan region, Republic of Kazakhstan is shown in Figure 1, including livestock products (Figure 2) and crop production (Figure 3), which allow balancing supply and demand for the most important types of products [4].

The special significance of the grain market among all strategically important markets of agricultural raw materials is explained by its exceptional role in ensuring food security in the Turkestan region, the Republic of Kazakhstan. With further intensification of grain farming, partial expansion of acreage and improvement of the structure of crops, the production potential is about 15 million tons of grain.

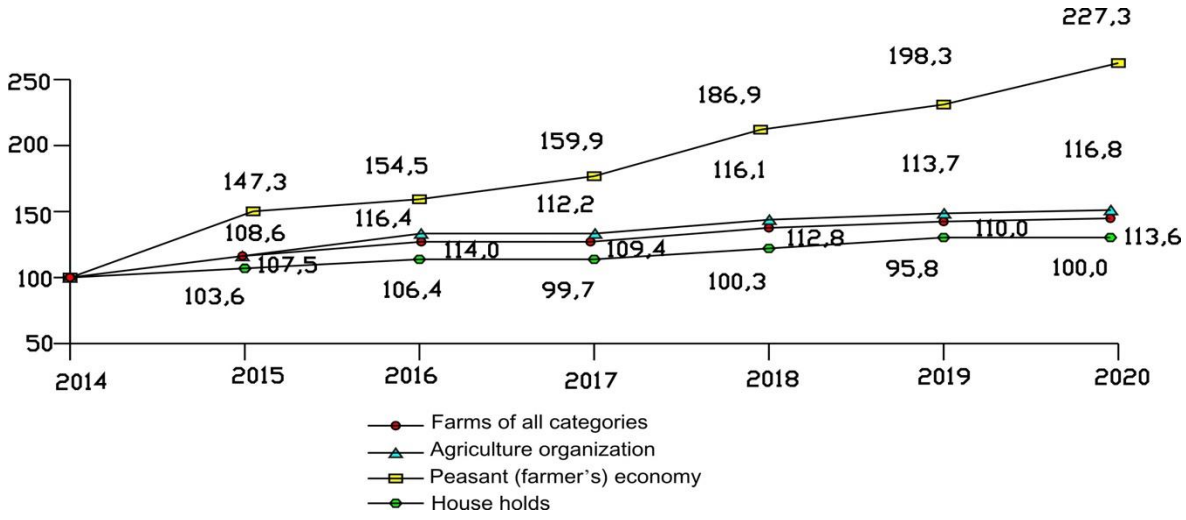

Figure 1. *Dynamics of agricultural production in all categories in the Turkestan region, the Republic of Kazakhstan, in % to 2014*

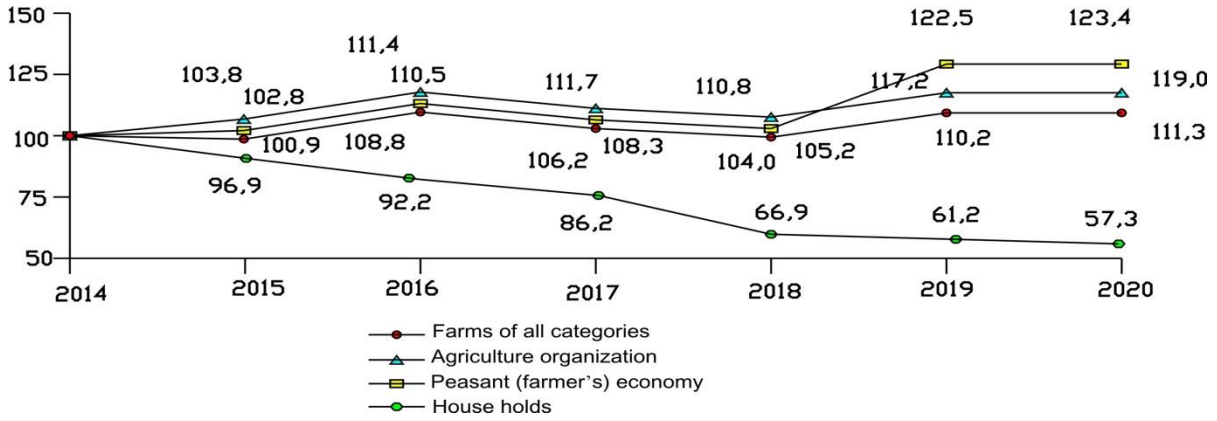

Figure 2. *Dynamics of livestock production in all categories in the Turkestan region, the Republic of Kazakhstan, in % to 2014*

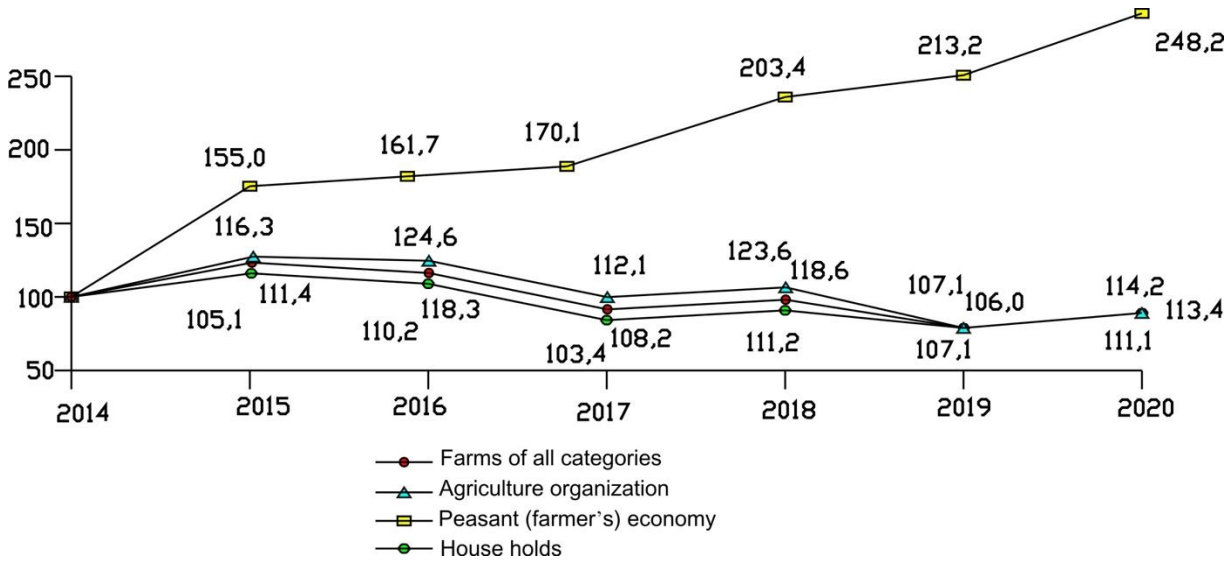

Figure 3. *Dynamics of crop production in all categories in the Turkestan region, the Republic of Kazakhstan, in % to 2014*

Grain crops are cultivated in all regions in the Turkestan region, the Republic of Kazakhstan and occupy a Central place in the industry structure of crop production. In 2020, cereals occupied more than 41% of arable land, but in comparison with 2014, the share of grain crops in the total sown area decreased by 4.5% (Figure 4).

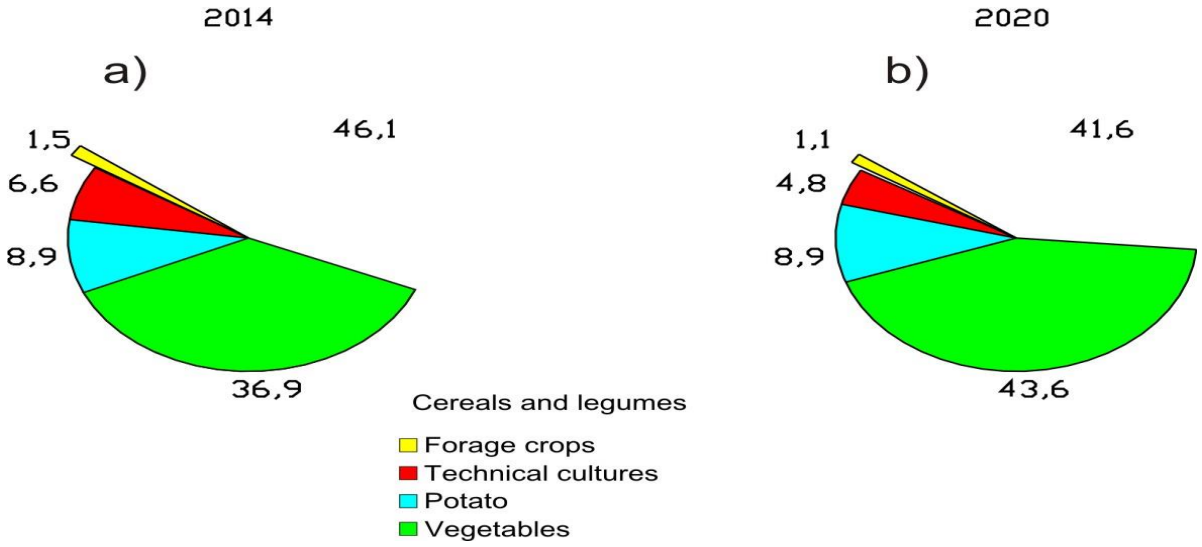

Figure 4. *Structure of crops of the main agricultural crops in the Turkestan region, the Republic of Kazakhstan: a) 2014; b) 2020*

The peculiarity of the domestic grain market is determined by the natural and economic conditions of the country, the production of the main part of grain in multi-industry farms with developed animal husbandry. Therefore, almost half of the grain crop, with the exception of seeds, is used for livestock feed and is not involved in the sphere of commodity circulation.

The main channel for grain sales is public procurement – more than 60%. The basis that forms the domestic grain market and ensures its functioning is the own production of these products.

The dynamics of the gross harvest and yield of grain and legumes in the Turkestan region, the Republic of Kazakhstan is shown in Figure 5.

The data shown in figure 6 show that the gross harvest of grain and leguminous crops in the Turkestan region, the Republic of Kazakhstan in 2020 significantly decreased in relation to 2018-2019, but in comparison with 2019 increased by 529 thousand tons (or 7%). The same dynamics can be seen in the yield of grain crops: in 2020, it increased by 1.7 C / ha (or 5%).

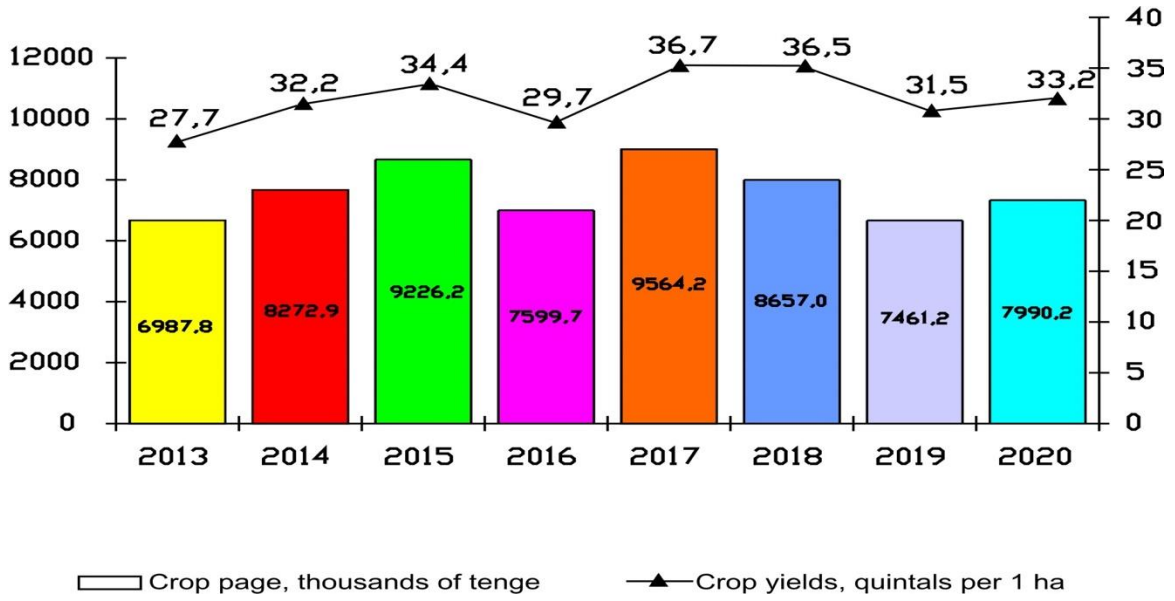

Figure 5. *Dynamics of gross harvest and yield of grain and leguminous crops in the Turkestan region, the Republic of Kazakhstan*

The natural conditions in the Turkestan region, the Republic of Kazakhstan do not allow forming the necessary grain resources by types and directions of its use in accordance with the need. Therefore, in order to ensure the balance of the domestic market, it is necessary to develop grain farming based on the intensification of grain production and processing and to carry out import deliveries in order to meet the demand for grain in the assortment.

The dynamics of agricultural production per capita is shown in Table 1. Analysis of the data shown in Table 1 shows that in the Turkestan region, the Republic of Kazakhstan in 2020 compared to 2019, in General, agricultural production per capita increased by 14.5 %. During this period, the production of the main types of agricultural products per capita increased: sugar beet – by 29.3%, vegetables – by 11.8%, livestock and poultry in slaughter weight-by 1.6%, milk-by 1.2 %.

The processing industry is one of the most promising and developing industries in the Turkestan region, the Republic of Kazakhstan. The role of the processing industry in the development of the economy of the Republic of Kazakhstan in the Turkestan region is that it provides a rational nutrition of the population and allows efficient use of agricultural raw materials.

In 2020, the largest share in the structure of food production is occupied by the production of dairy products - 27.4 %, meat and meat products - 24.2 %, production of ready-made animal feed - 12.8 %, production of other food products (production of bread and flour confectionery, sugar, pasta, etc.) - 14.2 %, production of beverages – 8.3 %, production of flour and cereal products, starches

and starch products – 3%. A small share in the structure is occupied by the production of tobacco products – 2 %, the production of vegetable and animal oils and fats-1.9 %, processing and canning of fruits and vegetables – 2 %.

Table 1 - *Agricultural production per capita in the Turkestan region, the Republic of Kazakhstan*

	2018	2019	2020	from 2019 to 2018, %	from2 020 to 2019, %
Production of agricultural products per capita, RUB	1361	1425	1632	104.7	114.5
Production of main types of agricultural products per capita, kg:					
- seed	1009	912	785	90.4	86.1
- potato	663	632	630	95.3	99.7
- sugar beet	507	348	450	68.6	129.3
- vegetables	183	178	199	97.3	111.8
- livestock and poultry (in slaughter weight)	113	121	123	107.1	101.6
- milk	707	743	752	105.1	101.2
- eggs, pieces	407	395	386	97.0	97.7

The dynamics of food production in the Turkestan region, the Republic of Kazakhstan for 2019-2020 is shown in Table 2.

The data in Table 2 show that in the Turkestan region, the Republic of Kazakhstan in 2020 compared to 2014 increased the rate of growth of production of main kinds of food products in bulk: meat and offal food – 42.2 %, beef and veal – 12.4 %, pork – by 13.1 %, poultry – by 76.9 %, dairy products – by 31.9 %, butter – by 19.2 %, cheese – by 30.8 %, flour – by 33.3 %, pasta – 69.2 %, sugar – 3.8% and beer – by 8.3 %.

Table 2 - *Dynamics of food production in the Turkestan region, the Republic of Kazakhstan*

	2014	2019	2020	Growth rate, %	
				from 2020 to 2019	from 2020 to 2014
Meat and food by-products, thousand tenge	746	1021	1061	103.9	142.2
Beef and veal, thousand tenge	234	257	263	102.3	112.4
Pork, thousand tenge	236	248	267	107.7	113.1
Bird, thousand tenge	255	439	451	102.7	176.9
Sausage goods, thousand tenge	317	266	276	103.8	87.1
Canned fruit, thousand tenge	466*	156	142	91.0	30.5
Vegetable oils, thousand tenge	161	262	151	57.6	93.8
Margarine and similar edible fats, thousand tenge	19,5	21,7	17,3	79.7	88.7
Whole milk products (in terms of milk), thousand tenge	1494	1963	1971	100.4	131.9
Butter and milk pastes, thousand tenge	99	114	118	103.5	119.2
Canned milk, thousand tenge	114	92	93	11.1	81.6
Cheeses (other than processed cheese), thousand tenge	146	181	191	105.5	130.8
Flour from grain, vegetable and other vegetable crops, mixtures thereof, million tenge	0,6	0,6	0,8	133.3	133.3
Pasta, thousand tenge	26	39	44	112.8	169.2
Granulated sugar, thousand tenge	816	654	847	129.5	103.8
Beer, million tenge	39,9	40,1	43,2	107.7	108.3

The dynamics of consumption of basic food products in the Turkestan region, the Republic of Kazakhstan per capita is shown in Table 3.

Table 3 – *Dynamics of consumption of basic food products in the Turkestan region, the Republic of Kazakhstan, kg per capita per yea*r

	Stan-dard	2018	2019	2020	Deviation from the standard, +, -			Growth rate, %
					2018	2019	2020	
Meat and meat products in terms of meat	80	88	89	91	+8	+9	+11	103.4
Milk and dairy products in terms of milk	393	252	254	251	-141	-139	-141	99.6
Eggs, pieces	294	288	280	269	-6	-14	-25	93.4
Fish and fish products	18,2	15,6	13,2	12,3	-2,6	-5	-5,9	78.8
Sugar	33	42,3	42,3	38,1	+9,3	+9,3	+5,1	90.1
Vegetable oil	13,2	18,1	18,5	18,3	+4,9	+5,3	+5,1	101.1
Vegetable and melon crops	124	145	145	146	+21	+21	+22	100.7
Fruits and berries	78	76	79	90	-2	+1	+12	118.4
Potato	170	177	170	171	+7	-	+1	96.6
Bread products (bread and pasta in terms of flour, cereals, flour)	105	85	86	82	-20	-19	-23	96.5

The data shown in table 3 show that in the Turkestan region, the Republic of Kazakhstan in 2020 compared to 2018, the growth rate of consumption of basic food products increased: meat and meat products – by 3.4%, vegetable oil – by 1.1%, vegetable and melon crops – by 0.7%, fruits and berries – by 18.4 %. During the study period, the consumption of milk and dairy products decreased by 0.4%, eggs – by 6.6%, fish and fish products – by 0.7%, fruits and berries – by 21.2%, sugar – by 9.9%, potatoes – by 3.4% and bread products – by 3.5 %.

It should be noted that at this stage, the Republic of Kazakhstan of the Turkestan region meets the domestic market demand for milk by 230%, meat by 136%, eggs by 124%, and sugar by 160%. Despite the fact that the level of consumption of basic food products is not limited by the resources of the domestic market, the structure of the diet remains unbalanced. The diet retains an excess of

high-calorie foods, such as sugar and vegetable oil, with a lack of consumption of milk, fish, and bread products. In General, the volume and dynamics of agricultural production correspond to the optimistic level of food security and allow increasing the export of agri-food products. At this stage, food exports account for more than 8 % of Kazakhstan's GDP and more than 15 % of the country's total exports. The main export agri-food products are products of animal origin. The share of exports of dairy products in the production volume is more than 55 %, meat products-about 40 %, white sugar-56.5 %.

Kazakhstan's foreign economic activity in the food market is shown in Table 4.

Table 4 - *Foreign economic activity in the Turkestan region, the Republic of Kazakhstan, on the market of food products, million US dollars*

	2018	2019	2020	Growth rate, from 2020 to 2019, %
Foreign trade in agricultural and food products	10455.4	8901.4	8307.9	79.4
Including				
Export	5606.4	4453.0	4231.6	75.5
Import	4849.0	4448.4	4076.3	84.1
Balance	757.4	4.6	155.3	20.5

The data shown in Table 4 show that in 2020, compared to 2018, the growth rate of foreign trade in agricultural products and food products decreased by 20.6%. during this period, exports of agricultural products and food products decreased by 24.5%, and imports – by 15.95%.

Conclusions. The conducted research allowed us to establish that the main directions of improving the efficiency and sustainable development of the agro-industrial complex in the Turkestan region, the Republic of Kazakhstan are:

- Increasing the productivity of agricultural land by laying the area of irrigated fields.
- Introduction of technological and economic mechanisms to combat agricultural land degradation.
- Production of agricultural products, raw materials and food in all categories of farms and organizations.
- Increasing the economic availability of food for all population groups.
- Increase the competitiveness of production and sales of products.
- Development of scientific and innovative potential for ensuring national food security.

References

1. State program for the development of agricultural business in the Republic of Kazakhstan for 2016-2020: approved. By resolution of the Council of Ministers of the Republic of Kazakhstan, No. 196 of 11.03.16 [Electronic resource]. – mode of access: http://msh.gov.by/ru/. - Access date: 10.09.2017.

2. Efimenko A. G. Improving the efficiency of agribusiness organizations on an innovative basis / A. G. Efimenko// Economic development of the region: management, innovation, training. - 2017 . - No. 4. - Pp. 117-122

3. Food security of the Republic of Kazakhstan in the conditions of functioning of the Eurasian economic Union/ V. G. Gusakov / Institute of system research in the agro-industrial complex of the national Academy of Sciences of Kazakhstan, 2010. – 141p.

4. Industry of the Republic of Kazakhstan: stat. Collector . - [Electronic resource] / national statistical Committee of Kazakhstan. 2015. - access Mode: http://www.belstat.gov.by/bgd/-public_compilation/index_438. - access date: 15.06.2018.

5. Consolidated analytical report on the condition and use of land in the Republic of Kazakhstan for 2007-2020.

6. Land Code of the Republic of Kazakhstan. Almaty 2003

7. Collection of normative acts on land management and land relations. Almaty 2005

8. Kudryashov V.I. Problems of the farming movement // Economy of agricultural and processing enterprises. - 1995. - No. 2. - p. 23.

9. Pestrekov T.P. Investment strategy of the peasant economy // Economy of agricultural and processing enterprises. - 1997. - No. 2. - p. 25.

10. National report "On the state of the environment in the RK 2003". RSE "Kazakh Research Institute of Ecology and Climate". Ministry of Protection and Environment of the Republic of Kazakhstan. // Almaty, 2004, 251 p.

11. A. Zheldikbayev, A.Y. Sabirova, T.P. Pentayev, A.D. Omarbekova. Improving the agriculture land us system in the Republic of Kazakhstan. JEMT - ASERS Publishing - Journal of Environmental management and Tourism CK - ISSN 30687729 - Germany - SCOPUS (Volume IX), ISSUE 7 (31), P. 1587 - 1591.

12. G. Aitkozhayeva, K. Tireyov, T. Pentayev. Land Policy and land Marvet Aktivity in Kazakhstan. ASERS Publishing Journal of Environmental Management and Tourism / JSSN 2068-7729 Journal DOI Volume X JSSUE3 (35) Summer 2019, D.590-597. https // doi / 10.19505 /

13. Shakirov F.K., Iskaliev R.R. State and prospects for the development of peasant (farmer) households // Economy of agricultural and processing enterprises. 1997. - No. 8.

14. Nesterenko S. Prosperity of agriculture is the prosperity of the people // Kazakhstanskaya Pravda - № 21 (24636) dated February 1, 2005

15. Bulletin of the Department of Earth Science, RAS, Electronic scientific information journal, http://wwwzogiz.ru/

16. www.aisqzk.kz

17. www.dataplus.ru

18.http://www.dissercat.com/cantent/formirovanie-razvitie-krestyanskikh-fermerskikh-khozyaistv-v-kyrgyzskoi-respubliki

19. Resolution of the Government of the Republic of Kazakhstan dated January 24, 2015