Assessment of food security in Azerbaijan (on the example of wheat)

RESEARCH DOCUMENT

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Summary

This study is devoted to the study of problems in the field of food security in Azerbaijan on the example of wheat.

The first part of the study examines the theoretical approach to the concept of "food security" and methodological issues related to the solution of this problem. Detailed information on the criteria, principles, and standards of the Food and Agricultural Organization of the United Nations (FAO), which is specialized in the development of the agricultural sector in the world, was provided. The approach of the organization is that although it is important to have enough food for food security, it is not the only condition. It is possible to say that the country has fully achieved food security, provided that people have not only physical but also economic accessibility. Economic accessibility means that people have sufficient financial means to provide the necessary nutrition.

Section 2 of the study provides a statistical analysis of the current state of wheat supply in Azerbaijan.

The study of official data shows that although Azerbaijan's wheat production has increased by more than 60% over the past 10 years, the country is still highly dependent on wheat imports (about 50%). This situation is due to the rapid growth of demand in line with the expansion of production.

Introduction

Food security is one of the key elements of any country's national security, a key factor in economic and political independence. For this reason, food security is one of the top priorities of all countries.

From an economic point of view, the country's dependence on imports makes the economy vulnerable to shocks and crises, as well as leading to a steady outflow of foreign currency and a reduction in foreign exchange reserves. In terms of political and national security, when a country fails to ensure food security, it becomes dependent on other countries (especially neighbors), and the exporting country has more leverage and opportunities to impose sanctions against the importing country. Recent trade wars, import and export bans or quotas imposed on various products by countries are clear examples of this.

When states fail to ensure adequate food security, the social and economic well-being of the population deteriorates within the country, and the economic crisis leads to increased political discontent and, in many cases, a change of government.

Various crises (World Wars I and II, the Spanish flu of 1918, the Economic Crisis of 1929, the Financial Crisis of 2008, the Coronavirus Pandemic of 2020, etc.), natural disasters, climatic events that happened in the world from time to time increase the importance and relevance of the topic. One of the main common features of all these crises is that they affected the level of the food supply of the population and created certain difficulties.

Azerbaijan, in turn, has taken and continues to take steps, recognizing the strategic importance of food security and the importance of political and economic freedom.

The Food Security Program of the Republic of Azerbaijan covering the years 2001–2010 was approved and implemented by the Order of the President of the Republic of Azerbaijan No. 640 dated March 2, 2001. The State Program on Reliable Food Supply of the Population in the Republic of Azerbaijan for 2008-2015 was approved and implemented by the Order of the President of the Republic of Azerbaijan No. 3004 dated August 25, 2008. Strategic Roadmap on the Production and Processing of Agricultural Products in the Republic of Azerbaijan was approved and implemented by the Decree of the President of the Republic of Azerbaijan No. 1138 dated December 6, 2016. Based on these documents, the Azerbaijani government says it attaches great importance to food security.

However, in the 30 years since gaining its independence, despite all the initiatives and efforts, Azerbaijan has not been able to get rid of the high dependence on imports of a number of products, including wheat. In particular, large-scale incentives have been implemented to increase wheat production. The reasons for the failure to achieve the goal in this area were investigated in the study and efforts were made to identify the root causes.

1. Food security: Theoretical and methodological issues

According to the definition given by the Food and Agriculture Organization of the United Nations (FAO), food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.[1]

Moreover, the volume, quantity, variety, and quality of food should be sufficient and in the necessary amount for the individual's social development and normal physical activity.[2]

FAO experts recommend that a number of important points are taken into account in the development of public policy on food security, as well as when conducting research.[3]

First, food security does not mean that the country is fully self-sufficient in all types of food. It is practically impossible for any country, from China and the United States to Russia and India, to be fully self-sufficient at the expense of their domestic resources and factors of production (labor, land, capital). If there was such an opportunity, international trade and globalization would not be as widespread as they are today.

Second, if an arbitrary country has a comparative advantage over certain products, then food can be produced to meet domestic demand and for export. For example, a country with a very small territory, such as Singapore, cannot turn its territory into arable land, or Brazil cannot grow wheat in the Amazon rainforest in the equatorial climate zone. It must have a comparative advantage in order to start the production of any product.

Third, countries must have import potential to meet the food needs of the population. Even if the country does not have a production capacity or a comparative advantage, it must have sufficient foreign exchange reserves and revenues to be able to import food that will meet the needs of the population.

Finally, the population must have physical and economic accessibility to safe food. The availability of food supply in the country does not mean that the population has access to that food. People need physical health, employment, income, education, etc. so that they can benefit from food.

FAO distinguishes 4 important elements of food security and these elements are as follows:

i) Food availability. Food availability includes domestic production, import, distribution, and trade of food products. As can be seen, food security is not based on domestic production of food, but on the availability of sufficient food in the country, which can be ensured through domestic production or imports. What is important here is the availability of sufficient and safe food products, which are essential for human survival, in the country. This element is directly affected by foreign trade. Such that in a liberal foreign trade environment, the country imports food products that are in short supply and exports surplus food products, thus

[1] http://www.fao.org/3/MR173EN/mr173en.pdf
[2] https://atm.gov.az/pdf/magazine/3.pdf, E.H. Akbarov - The place of food security in the national security system.
[3] http://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf

ensuring a food balance. In this case, the country's import regime has a serious impact on the price, volume, and quality of important food products. In other words, the more liberal the import regime, the more food can be imported at a lower price. What is important is to create conditions for the import of sufficient products, as well as to limit imports in excess of market demand, so that domestically produced products can be sold. To do this, the methods used in international trade must be used, which we will discuss later.

ii) Food access. Along with food availability, food access is also very important. Food access includes the ability of households to obtain essential food items, i.e. material well-being or the ability to produce that food themselves, and selection criteria. It is especially important that the population has sufficient financial resources to obtain the necessary food. Thus, the poverty level of the population becomes an important component of food security. This means that the poverty level must be reduced to ensure food security. Along with reducing the poverty level, consumer prices for food are also very important. That is, as the price of existing food products rises, the population's access to those food products is limited, which has a negative impact on food security. This makes it necessary for the prices of both domestically produced and imported products to correspond to the purchasing power of the population. Here is another effect of foreign trade on food security, which is the price of imported products and the factors that affect it. The state should regulate it in such a way that the price of imported food products is in line with market demand. Here, it is necessary for the state to correctly identify and effectively implement tariff and non-tariff methods that affect the price of products in the regulation of imports. Another important issue is to ensure that the price of imported products is at or above the level of the price of local products in order to be able to sell locally produced products when the market value of local products is formed under normal competitive conditions. We will inform you about this later.

(iii) Utilization. In a situation where food is available and every citizen has access to it, another important issue is that the food is safe, high quality and in the necessary amount for the human body. This brings out the importance of non-food inputs in food security. It is important that the food is safe and provides the necessary vitamins for the human body, as long as there is a sufficient food supply. This makes it necessary to pay more attention to food security, which we will discuss in more detail later.

(iv) Stability. One of the important elements in food security is the stable and reliable food supply of the population at all times. The main feature of agricultural products is that they are high risk and depend on many factors. Domestic production and imports can be drastically reduced due to climate change, droughts, natural disasters, diseases, pests, emergencies, and wars. One of the most important points in ensuring food security is the state's preventive measures against such cases and the creation of sufficient food reserves in the country. Here is another effect of foreign trade on food security.

The FAO offers five levels for assessment in terms of countries achieving food security. These levels are as follows[4]:

1) **First level** – The state's domestic production exceeds domestic demand for the most important types of food, and the state is fully self-sufficient and has export potential.

[4] http://www.cisstat.com/gsagr/CIS_Agristat_Metodology_Recommendation_of_system_indicators_of_food_security_CIS_countries.pdf

2) **Second level** – The state is self-sufficient in the most important food products to a level that can only meet its domestic needs.

3) **Third level** – The import of food products into the country does not exceed 15-20% of annual consumption. This level is considered the level of "optimal import".

4) **Fourth level** - About 30% of the food consumed in the country depends on imports. This level is considered the level of threat to food security.

5) **Fifth level** – The state has a chronic and acute dependence on certain products from other countries. This level, where imports exceed 30% of total consumption, is considered a risky level. Countries facing this situation are constantly at risk of food crises, high inflation, unemployment and poverty, migration and demographic decline.

However, the permissible levels of dependence on these types of products may be determined differently in different countries. For example, in Russia, the maximum level of dependence is set at 5% for grain and potatoes, 15% for meat and meat products, and 20% for vegetable oils and sugar.

The FAO has developed food safety indicators to assess countries' food security and assesses the level of food security in each country over the years.[5]

These indicators include the average dietary energy supply adequacy; the average value of food production; the share of dietary energy supply derived from cereals, roots, and tubers; the cereal import dependency ratio; the percent of arable land equipped for irrigation; the value of food imports in total merchandise exports; the domestic food price volatility index, the per capita food production variability; the prevalence of undernourishment; the number of severely food insecure people, etc.

As can be seen from the presented indicators, FAO takes a special approach to the role of cereals in food security and recommends the level of dependence on imports of these products as a separate indicator to assess the country's food security. Given both the FAO's approach and the role of bread and bakery products in human nutrition, we considered it appropriate to select wheat as a pilot product to assess the state of food security in Azerbaijan.

[5] http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/#.YDFEZ-gzZEb

2. Self-sufficiency of Azerbaijan in wheat: Current situation and problems

The official database for assessing the level of self-sufficiency of Azerbaijan in wheat is the "food balance" statistics prepared by the State Statistical Committee.[6]

Table 1. The level of self-sufficiency of Azerbaijan in wheat

	2015	**2016**	**2017**	**2018**	**2019**
Production (tons)	1,639,830	1,799,859	1,769,574	1,991,683	2,114,139
Import (tons)	1,353,072	1,599,599	1,274,434	1,080,906	1,584,998
Export (tons)	-	-	-	-	1,500
Total consumption (tons)	**3,849,706**	**4,274,706**	**4,069,639**	**3,902,413**	**4,406,068**
The level of self-sufficiency in wheat - The ratio of domestic production to total consumption (%)	42.6	42.1	43.5	51.0	48.0

The study of statistical data shows that the level of self-sufficiency of Azerbaijan in wheat over the past 5 years was below 50%. Although this figure rose from 42.6 to 51% in 2015-2018, it fell again to 48% in 2019. FAO experts recommend finding the ratio of domestic production to domestic consumption to calculate the level of self-sufficiency.[7] However, the volume of consumption is not limited to the household or industrial consumption during the year. At the same time, it is necessary to take into account the volume of wheat stored in warehouses for the formation of wheat reserves. The FAO recommends that wheat reserves be created for insurance purposes (for emergencies, natural disasters, etc.) at the level of at least 20% of total consumption. Reserves are very important not only in terms of being insured against unforeseen events but also in terms of creating price stability in the domestic market. As a rule, governments intervene in the market through the reserves at their disposal when they see a risk of rising wheat prices. However, sometimes the opposite process occurs: when there is an abundance of crops, the sharp decline in wheat prices in the market is prevented by increasing stockpiles with guaranteed contract prices to protect the interests of wheat producers.

According to statistics, the level of self-sufficiency of Azerbaijan in wheat is very low, and the country is at a critical point in terms of dependence on wheat imports in accordance with the

[6] https://www.stat.gov.az/source/food_balances/

[7] http://www.cisstat.com/gsagr/CIS_Agristat_Metodology_Recommendation_of_system_indicators_of_food_security_CIS_countries.pdf

fifth level set by the FAO. This level occurs when the dependence on arbitrary food imports is more than 30%. In 2015-2019, the volume of wheat production in Azerbaijan varied in the range of 1.639-2.114 million tons.

According to official data, in 2015-2019, the level of dependence of Azerbaijan on wheat imports ranged from 49 to 57.9%. During the analyzed period, the volume of imports varied in the range of about 1.4-1.6 million tons.

Foreign trade statistics[8] show that Azerbaijan spends a lot of money on wheat imports. This can be clearly seen from the information provided below:

Table 2. Statistical indicators on wheat imports of Azerbaijan

Years	The name of the product	Quantity (tons)	Statistical value (thousand US dollars)	Share in total imports (%)
2015	Wheat	1,353,072.00	296,831.00	3.48
2016	Wheat	1,599,599.00	295,017.56	3.22
2017	Wheat	1,274,434.18	227,167.82	2.59
2018	Wheat	1,080,905.51	205,967.01	1.80
2019	Wheat	1,584,998.20	340,533.08	2.49
2020	Wheat	1,365,100.13	296,905.18	2.77

According to official data, in 2015-2020, Azerbaijan spent a total of $ 1.660 billion on the import of 8.3 million tons of wheat. During this period, 1.8-3.5% of the country's import expenditures were spent on wheat imports.

As for the geography of wheat imports, foreign trade statistics for the last 5 years show that Azerbaijan imports wheat from only two countries - Russia and Kazakhstan.

Table 3. Geography of wheat imports in Azerbaijan

Ölkələr	2015	2016	2017	2018	2019
Kazakhstan	7%	6%	5%	25%	17%
Russia	91%	93%	94%	75%	83%

During this period, Azerbaijani imported wheat mainly from Russia. During the analysis, the share of Russia in wheat imports ranged from 75 to 94%. In particular, in 2015-2017, this country had a huge advantage in the supply of wheat to Azerbaijan, however, in the last two years, there has been a significant reduction in wheat dependence on Russia.

[8] https://www.stat.gov.az/source/trade/

In order to determine the volume of reserves in local statistics, it is necessary to pay attention to the difference between domestic consumption and aggregate consumption.

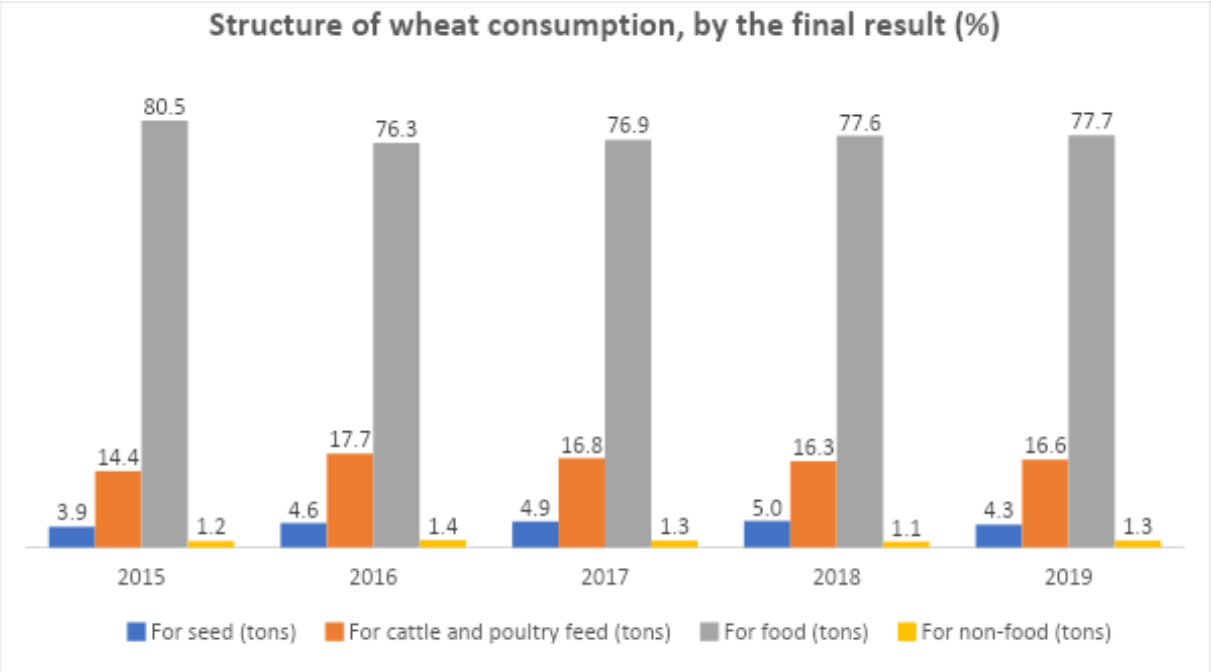
Table 4. The volume of annual wheat reserves in Azerbaijan (tons)

	2015	**2016**	**2017**	**2018**	**2019**
Total domestic consumption, including losses (tons)	2,974,458	3,249,075	2,997,283	3,195,482	3,542,058
Residual reserves at the end of the year (tons)	875,248	1,025,631	829,824	706,931	864,010
Aggregate consumption, including residual reserves (tons)	3,849,706	4,274,706	4,069,639	3,902,413	4,406,068
Ratio of reserves to total domestic consumption (%)	29.4	31.6	27.7	22.1	22.4

Analysis of statistical data shows that in 2015-2019, in information sources, the volume of wheat stored in warehouses as a residue at the end of the year changed from 707,000 to 1.025 million tons. In turn, the ratio of reserves to total domestic consumption ranged from 22.1 to 31.6%, which is much higher than the minimum recommended by FAO experts at 20%.

As for the structure of domestic consumption of wheat, the consumption of wheat for food is predominant.

Figure 1. Structure of wheat consumption in Azerbaijan



According to official data on wheat consumption, in 2015-2019, about 75-80% of wheat consumption was for food and 20-25% for non-food. Consumption for food means consumption for the processing of flour, cereals, and alcoholic beverages, as well as consumption for food in households without processing. Consumption for non-food means consumption for the processing of starch, mixed fodder, and their production. In addition, the statistics also take into account the consumption of seeds and unprocessed cattle and poultry feed.

	2015	**2016**	**2017**	**2018**	**2019**
For seed (tons)	128,300	137,555	146,964	147,971	142,181
For cattle and poultry feed (tons)	467,756	529,389	503,993	483,283	545,657
For food (tons)	2,618,947	2,279,421	2,306,382	2,298,358	2,546,892
For non-food (tons)	37,786	41,957	39,944	38,303	43,246
Total consumption, excluding losses (tons)	**3,253,000**	**2,988,322**	**2,997,283**	**2,962,915**	**3,277,976**

Table 5. The volume of wheat consumption in Azerbaijan by purpose (tons)

As can be seen, in 2015-2019, excluding losses, the volume of net wheat consumption varied in the range of about 3-3.2 million tons, and wheat consumption for food in the range of 2.3-2.6 million tons. Wheat consumption for food is mainly due to meeting the needs of the population in bread and bakery products. According to the composition of the minimum

consumer basket[9] approved by the Decision of the Cabinet of Ministers of the Republic of Azerbaijan No. 118 dated June 23, 2005, the minimum consumption norm of the population's demand for bread and bakery products in flour equivalent is determined as follows:

- **For able-bodied population - 136.8 kg;**
- **For pensioners - 107.9 kg;**
- **For the population aged 0-15 years - 100.5 kg.**

Food balance statistics show that the volume of wheat processed to meet the population's demand for flour is slightly more than 2 million tons.

3. Policy measures to increase the level of self-sufficiency of Azerbaijan in wheat and their results

The promotion of grain-growing, including wheat production, in the official government policy in Azerbaijan is reflected in various normative legal acts, official initiatives and various mechanisms reflected in state programs and government strategies. The activity of the grain-growing sector in Azerbaijan is regulated by various normative legal acts. The Law on Grain[10] has been adopted. This document defines the legal relations in the field of grain production, grain supply, organization of the grain market, quality management of grain and grain products. The law defines a number of duties for the state. To study the situation in the grain market; to prepare and approve the grain balance; to make forecasts; to regulate the grain market by economic methods; to develop targeted grain programs to increase grain production; to implement relevant investment, price, credit, and tax policies; to create a State Grain Fund; to organize its formation, maintenance, and use; to adopt relevant normative legal acts in the field of grain-growing; to develop international cooperation are among the main tasks.

According to the law, the state is obliged to regulate the grain market. For this purpose, economic methods such as commodity intervention in the grain market; grain market monitoring and forecasting; informing the subjects of grain-growing activity; fight against unfair competition in the grain market and state support for local producers; organization of standardization and certification of requirements for a minimum quality of grain products are used to ensure price equilibrium.

At the same time, the Law on Grain sets requirements for grain imports. For import, the grain must obtain a food safety (health) certificate in accordance with the requirements of the legislation. However, grain products without the relevant certificate provided for in the

[9] http://www.e-qanun.az/framework/10061
[10] http://www.e-qanun.az/framework/631

normative documents in force may be imported into the country only for the purpose of a demonstration at exhibitions, research, and testing in accordance with the procedure established by legislation. In turn, the import of grain and its products produced by using agricultural plant materials, which have been created from genetically modified plants or by modern biotechnological and genetic engineering methods, are not allowed to be imported into the country.

In addition, there are some issues related to the development of grain-growing in the Strategic Roadmap[11] on the Production and Processing of Agricultural Products in the Republic of Azerbaijan adopted in 2016. The document envisages assessing the need for new elevators and granaries and preparing proposals for improving the infrastructure. According to the Roadmap, as part of taking appropriate measures to increase the production of soft wheat and other legumes for food, the main focus should be on identifying districts where grain-growing is more efficient, increasing the volume of production without expanding existing sown areas through maximum intensification of production and increasing productivity. Moreover, one of the main goals will be the establishment of small and medium-sized grain warehouses in the main grain-growing regions as part of market infrastructure development measures.

Finally, 4 different regional development programs adopted in 2004-2019 also included the development of grain-growing and increasing the share of local production in the wheat supply of the country. For example, the most recently adopted State Program[12] on Socio-Economic Development of the Regions of the Republic of Azerbaijan for 2019-2023 provides for the measures such as the establishment of agroparks specialized in grain-growing and small grain processing enterprises, construction of granaries, establishment of exemplary grain farms, preparation of development plans for grain-growing, establishment of a modern grain-growing laboratory equipped with the necessary equipment, etc.

The country has also created a regulatory framework for the formation of grain reserves and the organization of reserve funds to regulate the grain market. For example, according to the Rules[13] for the maintenance and use of the State Grain Fund, the Fund, which is at the disposal of the Ministry of Emergency Situations, annually supplies grain to the Fund's warehouses in the amount determined by the Cabinet of Ministers. According to the Decision[14] of the Cabinet of Ministers No. 206 dated September 18, 2012, on determining the volume of grain supplied to the State Grain Fund, the supply of grain to the State Grain Fund was set at 750 thousand tons.

The Rules for the maintenance and use of the State Grain Fund define the quality requirements and standards for grain to be supplied. According to the Rules, the use of grain from the Fund is carried out in order to meet the demand of consumers for these products in emergencies, to fulfill international obligations, and, if necessary, to prevent sharp price fluctuations in grain products in the domestic market. The Fund should be used when it is necessary to prevent a sharp rise in grain prices.

[11] http://e-qanun.az/framework/34254
[12] http://www.e-qanun.az/framework/41320
[13] http://www.e-qanun.az/framework/18044
[14] http://www.e-qanun.az/framework/24297

In connection with ensuring the activity of the State Grain Fund, the supply, storage, use, and renewal of grain in the Fund are carried out at the expense of funds provided for this purpose in the state budget.

In addition to the norms for the supply of grain to the Fund, the Rules also set requirements separately for the storage of grain supplied.

Ensuring the development of the sector is not limited to the creation of an appropriate regulatory framework, the adoption of sectoral programs or strategies. The state has also tried to promote wheat production through the subsidy mechanism. Such that the provision of state support to agricultural producers, i.e. the provision of subsidies, has begun with the Order[15] of the President of the Republic of Azerbaijan No. 1907 dated January 23, 2007, on state support to the producers of agricultural products. According to the Order, twice the subsidy for other crops was paid for wheat crops. For example, in 2015-2019, wheat producers received a subsidy of 80 manats per hectare (other crop producers - 40 manats).

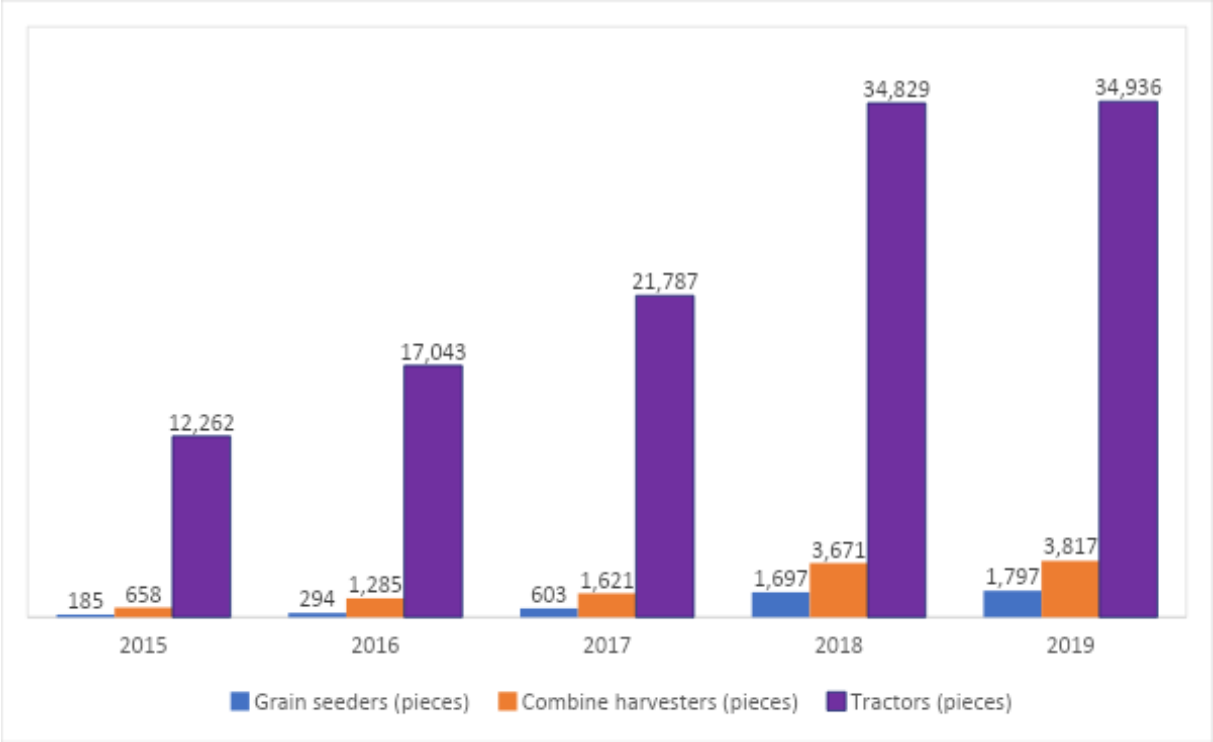
According to the Decision[16] of the Cabinet of Ministers of the Republic of Azerbaijan No. 283 dated August 18, 2015, the provision of assistance has begun for the cultivation of wheat and paddy at the expense of the state budget. Such that in 2015, the amount of subsidies provided to producers for wheat sowing was 40 manats per hectare.

In 2020, a new subsidy mechanism was introduced. According to the Rules[17] for subsidizing agricultural production approved by Presidential Decree No. 759 dated June 27, 2019, for each hectare, producers now have the opportunity to receive a subsidy of not less than 200 manats for all agricultural crops, including wheat. Over the past 13 years (before the transition to the new subsidy mechanism), the state budget has provided about 60-80 million manats in subsidies to wheat and paddy production annually. For example, according to the latest data from the Ministry of Agriculture, in 2019, the amount of this subsidy amounted to 83.2 million manats.[18]

Furthermore, wheat producers have the opportunity to receive 40% state support and 7% soft loans for the purchase of agricultural machinery. Analysis of official statistics shows that the application of discounts on the purchase of equipment has been accompanied by a significant expansion of the technical park for grain producers.

Figure 2. Main types of agricultural machinery for grain production, by the end of the year

[15] http://e-qanun.az/framework/12851
[16] http://e-qanun.az/framework/12851
[17] http://e-qanun.az/framework/42750
[18] https://www.agro.gov.az/uploads/documents/pages/2019.pdf



According to official data, in 2015-2019 alone, the number of grain seeders increased by 10 times, the number of combine harvesters by 6 times, and the total number of tractors by 3 times. Undoubtedly, one of the most important conditions for increasing production is the timely planting of wheat, the provision of the necessary agro-technical services during the growing season, and the creation of a technical park of the required quantity and quality in terms of supply at harvest time without losses.

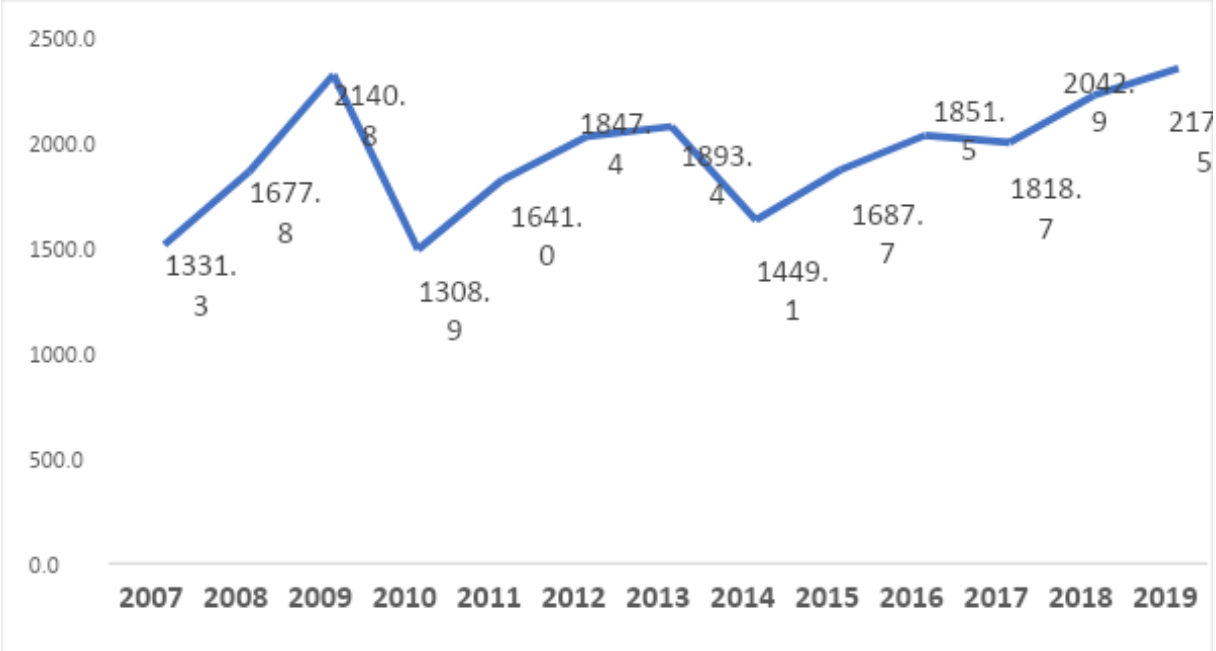
Furthermore, the government has been supporting the establishment of agroparks in the regions for the last 7-8 years and attracting new areas within these parks for grain crops. For example, the Gakh Agropark, established in 2018, cultivates 5,200 tons of grain.[19]

It is important to analyze the extent to which all these legal regulations and incentive measures have had a decisive impact on the country's dependence on wheat imports. As can be seen from the statistics presented in the previous section, in 2015-2019, there was a certain decrease in the country's dependence on imports (from 57% to 49%). However, the country still has to meet half of its grain needs from abroad.

During the ongoing promotion and regulation measures, the dynamics of wheat production have changed very differently, and this can be clearly seen in the figure[20] below.

Figure 3. Wheat production in 2007-2019 (thousand tons)

[19] https://www.stat.gov.az/source/construction/az/1.xls
[20] https://www.stat.gov.az/source/agriculture/az/2.112.xls



As can be seen from the figure, in the following two years (2008-2009), when wheat producers began to receive subsidies, although wheat production increased rapidly by up to 50%, in 2010, it fell back to the level of 2007. Although there was another 40% increase in 2011-2014, there was another 25% decrease in 2015. Since 2016, there has been a steady increase. During this period, the volume of wheat production increased by 23% from about 1.7 million to 2.2 million tons. In general, although wheat production increased by about 840,000 tons or 62% in 2007-2019, the reasons for not seeing a significant decrease in dependence on wheat imports require serious assessment. In fact, as one of the reasons, together with the growth of wheat production, the population growth should also be taken into account.

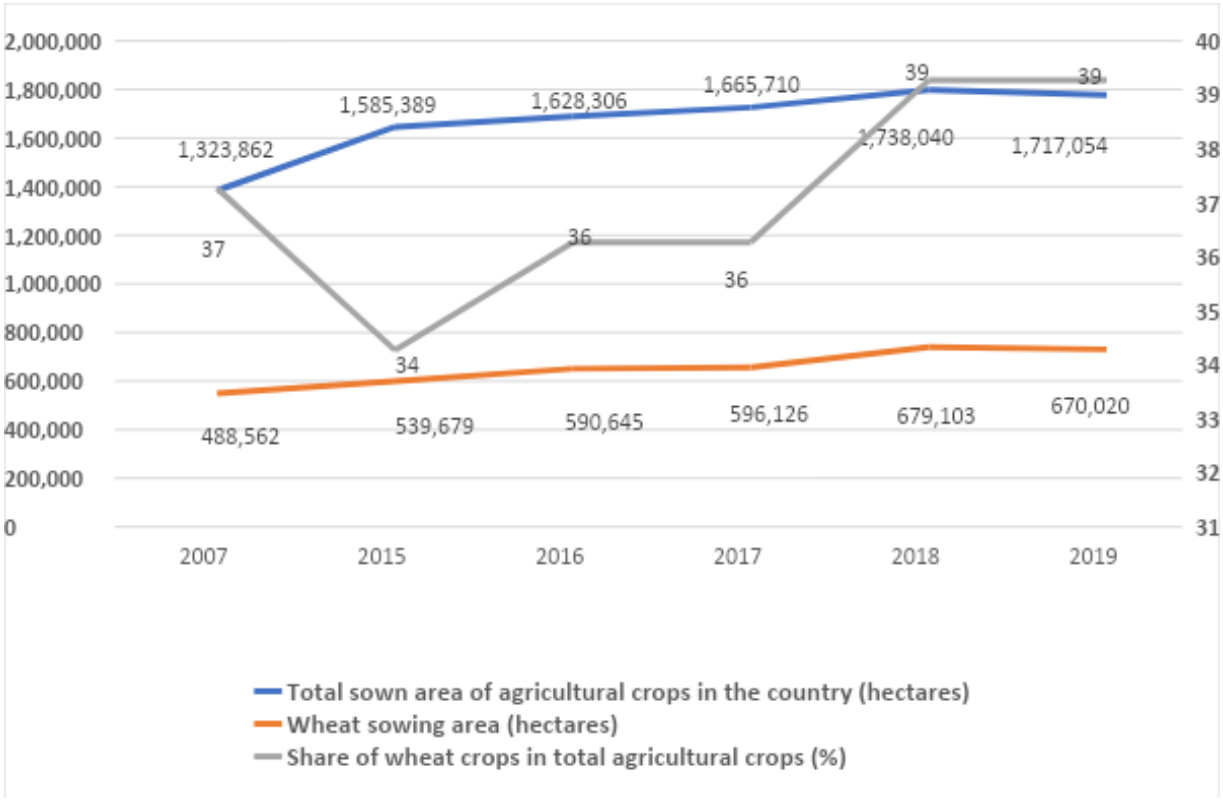
According to official statistics, the country's population increased by 1.3 million people or 15% between 2007 and 2019.[21] That is, excluding demographic expansion, the net increase in wheat production is slightly more than 40%. Such that while the per capita wheat production was 154 kg in 2007, it was 220 kg or 43% higher compared to that year in 2019. Another important reason was the faster growth of demand for the consumption of wheat for non-food. For example, according to the balance of wheat consumption[22], in 2007-2019, the consumption of unprocessed wheat as fodder was 158,000 tons or 41%, and the consumption of processed wheat used as processed cereals was about 200,000 tons or 10%, the production of other processed non-food products increased by 30,000 tons or 3.5 times. Of these, the volume of additional losses also increased by 100,000 tons or 40%.

As can be seen, despite all the incentive measures, it was not possible to achieve significant results in the country's dependence on wheat imports, as the growth rate of demand is close to the growth rate of domestic wheat production.

[21] https://www.stat.gov.az/source/demography/az/001_4-6.xls
[22] https://www.stat.gov.az/source/food_balances/az/001_3.xls

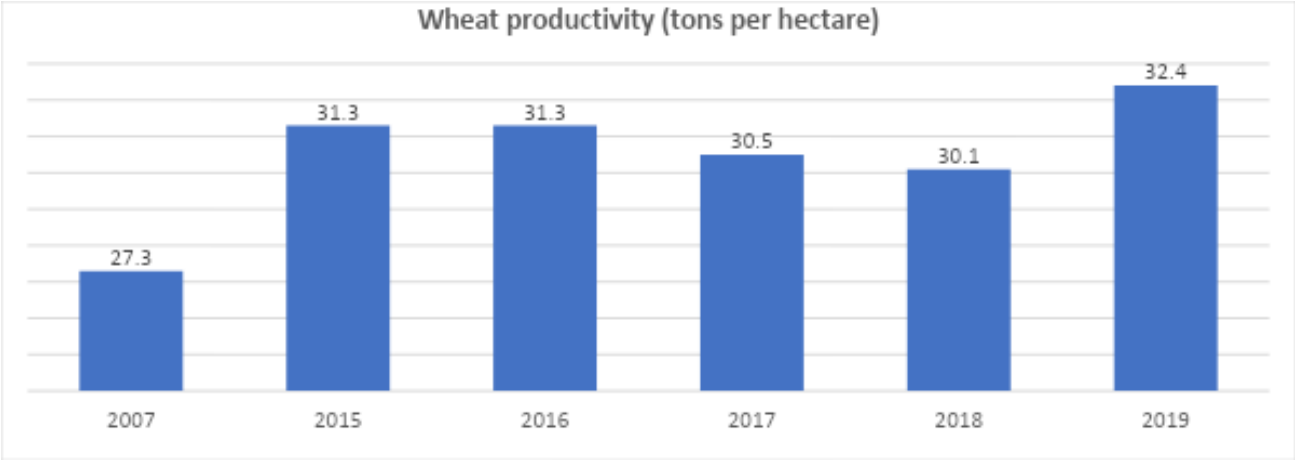
Analysis of statistical data shows that Azerbaijan has achieved wheat production mainly through extensive development, i.e. the expansion of sown areas.

Figure 4. The sown area of wheat and agricultural crops (hectares)



As can be seen from the figure, between 2007 and 2019, the total sown area under agricultural crops increased by about 400,000 hectares or 30%, and wheat crops by 182,000 hectares or 33%. However, during that period, wheat productivity increased from 27.3 to 32.4 centners per hectare, which is an increase of only 18.5%.

Figure 5. Wheat productivity



As can be seen, the growth rate of wheat productivity over 12 years has been half of the growth rate of arable lands. In turn, during the analyzed period, the share of wheat in all agricultural crops increased from 37 to 39%. The current level of wheat productivity in Azerbaijan is about half of the level of wheat productivity in countries with high results in agricultural production. According to the statistical database of the Organization for Economic Cooperation and Development (OECD)[23], in 2019, wheat productivity in the European Union was 58 centners per hectare. In turn, this figure is not less than 70 centners in countries such as France and Germany.

Main results of the study and recommendations

The study shows that food security is not just an economic issue for countries. This problem also plays a crucial role in ensuring political stability in states. In particular, the supply of the production of wheat, which plays an important role in the nutrition of people as a raw material for bread and flour products and in the production of livestock products as a fodder base, at the required level is very important.

Taking into account the above, the main results of this study, which assesses the current state of wheat production in Azerbaijan and the level of dependence on imports, can be considered as follows:

[23] https://stats.oecd.org/Index.aspx?DataSetCode=HIGH_AGLINK_2017

- **Over the past 10 years, a number of mechanisms (subsidies, technical support, and soft loan support) have been established in the country to stimulate wheat production;**
- **The normative legal base for the organization of wheat production and state regulation in this field has been formed;**
- **Over the past 10 years, wheat production has increased by 60%, wheat sown areas by 35%, and per capita wheat production by 40%;**
- **Despite the increase in the volume of production, Azerbaijan's level of dependence on wheat imports remains quite high (around 50%);**
- **Although there has been an increase in wheat productivity, the growth rate of productivity has been half of the growth rate of arable lands on average.**

Taking into account a number of problems and results of the study, it is necessary to take the following steps to reduce Azerbaijan's dependence on wheat:

- **Using quality seeds, which directly affect productivity, and certified seeds, which are adapted to local natural conditions, should be expanded, and the use of uncertified and low-reproductive seeds in wheat crops should be limited as much as possible;**
- **Concluding guaranteed futures contracts with farmers on the basis of world market prices to encourage them to plant wheat;**
- **Improving the profitability of wheat farms by increasing the scale effect by encouraging the consolidation of small farmers specializing in grain farming into cooperatives and the creation of larger arable land;**
- **Providing farmers with the necessary support to carry out wheat sowing at the expense of modern sowing and irrigation technologies;**
- **Improving the quality of academic research in the agricultural sector, increasing the volume of expenditures on research and development in this area;**
- **Improving the activity of the State Agrarian Development Centers in the field of farmers' education and the quality of consulting services;**
- **Carrying out start-up projects on agriculture;**
- **Creating an effective insurance mechanism to protect wheat from risks during storage in the warehouse.**