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Possibilities of applying smart technologies in agriculture (after the Pandemic)

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Abstract

In addition to the rapid increase in the number of people in the world, the food needs of people are also changing with the same dynamics. This dynamic leads to a decrease in the number of economically important plant and animal species every day. Development directions of agriculture depend on social, economic and natural factors. Climate change and the problems underlying it leads to a crisis situation in some areas of agriculture. The influence of concepts such as food safety, healthy nutrition, and environmental protection on people encourages agricultural entrepreneurs to produce environmentally friendly products. The IV industrial revolution creates an opportunity to build agrarian complexes that meet modern requirements using the opportunities created by technology in farms located in cities and surrounding areas. Analysis and evaluation of spatial data is carried out using information technologies. After calculating the economic efficiency of the obtained results, a road map is prepared for conducting economic activities in the evaluated area. With the help of geographic information systems, preliminary analyzes of any type of economic subject can be calculated. The records of all components are digitized and the potential cropping structure for the area is determined. In some countries, the economic decline during the pandemic was directly related to agriculture. Territorial organization of agriculture in Azerbaijan is developing in a different direction over the years. In the post-pandemic period, this process has accelerated somewhat. Application tools were expanded to eliminate deficiencies in sectors.

1. Introduction

Azerbaijan is among the countries with ancient agricultural traditions. Throughout history, the main occupation of the peoples living in the territory of Azerbaijan has been agriculture and animal husbandry. The favorable climate, fertile lands, and the fact that the Kür and Araz rivers largely pass through our lands have paved the way for the development of the occupation of the people in this direction. The establishment of a sustainable agricultural system through a comprehensive analysis of the agricultural sector and the application of modern science means the beginning of a new stage in Azerbaijan's economic and social life. The possibilities of using technology for agricultural optimization are considered among the greatest innovations of the 21st century.

2. Method

It is important to apply several methods in farm evaluation. Years ago, potential development directions were determined using the observation method, but

now the latest innovations are being applied to agriculture using the opportunities created by technology. Research conducted with the help of IoT and GIS technologies encourages the creation of large-scale farm complexes.

3 Agriculture as a priority area

As an alternative to oil in Azerbaijan, the government has announced several priority areas. One of them was tourism. The year 2020 was considered a lost year for world tourism. The tourist season in Azerbaijan ended before it started. The agricultural sector has potential. In recent years, we have seen a certain growth in this sector in terms of quantity and quality (Arampatzis et al. 2005).

It is plausible that there will be changes in the development aspects of agriculture before and after the pandemic. Of course, the importance given to agriculture in the last 10 years cannot be ignored. Due to the closure of borders during the pandemic process, the volume of imported agricultural products decreased several times. Therefore, it can be assumed that the food

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shortage in the Republic is at a visible level. The supply base with agricultural products has been established in recent years. In this respect, the existence of food shortages in the country was prevented. In addition, winter wheat and barley crops were planted before the spread of the coronavirus in the country. These crops are harvested during the summer months. In fact, it can be noted that the favorable agro-climatic resources of the country give us a great advantage in being able to harvest twice a year from the same region. Government subsidies provide a great incentive to plant a second crop in the same area. As a result, farmers in lowland areas start planting corn after the grain harvest is complete. Agricultural products with import dependency are as follows.

1. Cereal crops
2. Raw Materials of Sugar
3. Raw Materials of Sunflower and Corn Oils
4. Tea raw materials
5. Brass
6. Tobacco

Both the state and the private have warehouse infrastructure to store 1.5 million tons of grain stock. 80-90% of the meat and dairy supply is at the expense of the local economy.

The lack of agricultural machinery to meet the agrotechnical maintenance requirements causes farmers to pull machinery from other regions. For some time, the restriction of movement between counties has been implemented with exception rules for people engaged in agriculture (Devi et al. 2013). Machinery and agricultural products are transported seamlessly between regions. For the first time in Azerbaijan, preferential and unsecured loans are offered to farmers. Government investments in the agricultural sector are increasing every year. New equipment is purchased, subsidies are allocated by the state, agricultural service areas are created, fertilizers, fuel oil and rentals are provided on preferential terms. Agricultural Credit from the reserve fund of the President of the Azerbaijan Republic to the Ministry of Agriculture of the Republic of Azerbaijan has been provided in the 2020 state budget of the Republic of Azerbaijan to provide unsecured micro-credits in the agricultural sector to meet the need. For the financing resources of agricultural producers, 30.0 (thirty) million manats were allocated to the Development Agency on April 14, 2020, in the conditions of the Corona virus pandemic and in the following period.

4. Pandemic period

During the years of Soviet rule, agriculture was unable to become the leading sector of the economy. Agriculture, which was in a state of crisis during the Second World War, experienced a period of decline in the post-war years. In the 60s, the republic's economy and one of its main sectors, agriculture, was in a state of prolonged crisis and decline. The average annual growth rate of the total agricultural output was lagging behind other republics. In 1969, 574 thousand tons of

grain, 299 thousand tons of cotton, 372 thousand tons of vegetables, 272 thousand tons of grapes, 52 thousand tons of fruit, 113 thousand tons of potatoes, 24.5 thousand tons of tobacco were produced. The productivity of the main agricultural crops was decreasing. This year, an average of 9.5 centners of cereals, 15.1 centners of cotton, 120 centners of vegetables, 43.63 centners of grapes, 10.4 centners of fruit, 18 centners of tobacco, and 79 centners of potatoes were produced per hectare. The situation in public animal husbandry was more deplorable. The number of livestock in collective farms and state farms is decreasing year by year, their productivity is decreasing, and their cost has increased. In the republic in 1969, only 49 calves and calves were obtained from every hundred cows and buffaloes, 43 lambs and goats from every hundred born sheep and goats, 677 kg of milk was milked from each cow and buffalo, and 1.6 kg of wool was sheared from each sheep. For the Union, this figure was 2253 kg and 2.8 kg, respectively.

Starting from 1975, there was a noticeable increase in agricultural products. Average indicators have increased 3 times compared to the previous decade. Advances in all fields of agriculture radically changed the socio-economic face of the Azerbaijani countryside, the country as a whole turned into an agro-industrial republic. The Corona virus pandemic, which suddenly took over the agenda by having a negative impact on the economy of the world's leading countries, has seriously affected Azerbaijan as well (Wang et al. 2010). The pandemic tested not only the sustainability of healthcare, but also the economic strength of countries. Of course, in this case, it is inevitable that the countries that strengthen their economic stability with oil will fall into a crisis situation. However, it should not be forgotten that the attention given to the development of the non-oil sector adds new priority directions to the restoration of the lost power of the economy in this period. Tourism and agriculture are considered the most profitable sectors of the non-oil sector. During the pandemic, it remains impossible to use tourism opportunities. The world's leading developed countries are planning to use the power of agriculture to the maximum to soften the economic blow caused by the pandemic. In the recently globalized world, where capitalism has developed - the urbanization of cities in the society of the IV industrial revolution, in a word, the principle of village-to-city has resulted in the agrarian sector moving into the background.

The decrease in the volume of oil and its price below 30 dollars is due to the sharp drop in demand for oil during the pandemic. The limited number of activities of industrial enterprises, plants and factories, and the decrease in the consumption capacity of oil products directly lead to changes in the demand and supply indices in the oil market. Of course, these processes form a chain connection (Liu et al. 2007).

5. Results

As a result, it should be noted that the importance of using information technologies in agriculture should be maintained. A development dynamics map should be

created based on analyzes and analyzes and this process should be accelerated with state support. All information centers related to geographic information systems should be able to help the farmer in a comprehensive way. This support should be done closely between farmers and official institutions.

6. Discussion

40-42 percent of wheat and barley is covered by import account. It should be noted that 60% of the arable land is cultivated with grain. Although 28-30 kuruş yield is obtained from 1 decare area, the most imported agricultural product is grain. When we optimize regular planting and agrotechnical maintenance, productivity can reach up to 40 cents. Currently, the amount of imported grain will vary by 20-25%. The government's efforts to ensure food security will be directed directly at local production. Subsidies and aid should be distributed more intensively to farmers and entrepreneurs to expand their farms and reuse arable or unused land for reproduction. Our country should focus on the development of the agricultural sector, the efficient use of water, soil and resources, reproduction and most importantly saving. Azerbaijan has land, irrigation and labor potential. These should be applied on a scientific basis. In other words, the agricultural sector is such that it should develop more with the application of innovative technologies.

Special attention should be paid to the production and processing of agricultural products, increasing the production capacity of existing agro-processing enterprises through the application of modern technologies and implementing comprehensive measures in the direction of creating new enterprises in this field will be the main contributor to ensuring food security in the coming years.

7. Conclusion

The social distance factor, which is one of the main ways to protect against the pandemic, does not allow people to gather together. At this time, cases of weakening of the production capacity of labor-intensive industries (cotton, cocooning, etc.) can be observed. Involvement of people in mass planting and later harvesting processes increases the speed of virus spread. Using the power of modern techniques as a tool

means reducing the labor force by half. Using information technology, you can control your farm from your workplace or home. Planting should be planned and excessive production should be avoided. The fact that the product exceeds the production norm creates a problem in its sale. Sometimes the product is offered at a price below cost. The concept of management of agricultural products should be formed in the republic. The training of qualified personnel in this field should expand the possibilities of selling local products in foreign markets.

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