

Impact Of Efficiency On Economic Growth In Agricultural Sectors

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Abstract.

The research paper argues implementation of scientific and technological progress in agriculture is based on economic and biological laws inherent in it. As a result, scientific and technological progress in agricultural production has its own characteristics that follow from the specifics of cultivation, harvesting, storage, transportation and processing of agricultural products. Cultivation of agricultural crops is carried out on fertile soils, and obtaining high and stable yields is achieved both through rational processing of land plots and through the use of organic and mineral fertilizers, optimal doses of plant protection products. The efficient use of land, means of production and material resources depends on the introduction of scientifically grounded crop rotations, new technologies and high-performance equipment.

Agricultural crops differ in biological composition, vegetation periods and the degree of use of products for food without processing and after revision. In this regard, the development of scientific and technological progress should be carried out in the direction of a fuller and better use of the biological characteristics of a particular type of agricultural crops. Particular attention should be paid to the development of industries and industries for storage, processing and sale of products. Many types of crops for cultivation are very labor intensive. This primarily applies to row crops and industrial crops. Their cultivation requires much more living labor than the cultivation of grain crops. Thus, in the cultivation of vegetable crops, labor costs per 1 ha of crops are 40-60 times higher than in the production of grain crops. The acceleration of scientific and technological progress should contribute to the development of new machinery and equipment, primarily for the cultivation of labor-intensive crops with the comprehensive mechanization of production processes.

Keywords:

agricultural sector, development of the economy, rural population, production processes, cluster risk, economic counterparties.

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Introduction.

The development of the agricultural sector plays a key role in the development of the economy. This is primarily due to the key role of agriculture in the growth of the rest of the economy in the early stages of development, when the agricultural sector still has a significant share in employment and GDP. In this case, agriculture helps the growth of other sectors of the economy through the strengthening of factors of production

(provision of raw materials, labor, capital accumulation, attraction of foreign exchange).

Thus, agricultural growth can have a large multiplier effect in stimulating industrial growth. Research shows that \$ 1 growth in agriculture leads to \$ 1 growth in the rest of the economy, while \$ 1 growth in the rest of the economy causes only \$ 0.18 growth in agriculture. These agricultural growth multipliers tend to be larger in low-income countries, as much of the industrial

(agro-processing) and services (food marketing) sectors are linked to agricultural performance.

On the other hand, an increase in labor productivity in agriculture makes it possible to provide food for an increasing part of the population engaged in non-agricultural activities, thereby contributing to the growth of the urban population. Also, increased productivity in agriculture helps lower the price of food, which in turn lowers nominal wages in cities (labor costs for industry).

Another important factor is the direct link between agriculture and industry, through which agriculture makes raw materials available to the agro-processing industry. Also, the so-called financial surplus of agriculture, namely the cash flow from agriculture, can be invested in other sectors of the economy, supporting their growth.

Agriculture creates demand for goods produced by other sectors, as it requires industrial products for agricultural production (fertilizers, tools and machines), while the rural population needs consumer goods as incomes rise.

Thus, the growth of income from agriculture stimulates industrialization. This factor formed the basis for land reform policies in India and China. In particular, China's policy of granting land ownership rights to its current users can be interpreted as an attempt to expand the domestic industrial market among 800 million rural households, while external demand will decline due to slow growth in OECD countries.

The achievements of the natural and technical sciences are the most important source of the development of technology and productive forces on the basis of large-scale machine production. This means that the revolutionary form of technological progress is scientific and technological progress.

Similar to technical progress, scientific and technological progress also has two forms of development: evolutionary and revolutionary. For many years, the development of machine production and science was evolutionary. The slow accumulation of scientific ideas, their insufficient elaboration in practical conditions did not contribute to qualitative changes in the means of production.

In the evolutionary form of the development of scientific and technological progress, the production process is improved within the framework of the same technological principle, and in the revolutionary form, the technological principle is replaced with a qualitatively new one. Accelerated development of

science and its application in material production at the end of the 60s. was the main condition for the introduction of industrial technologies in agriculture and the main factor in increasing the productivity of social labor. All this took place within the framework of a revolutionary form of scientific and technological progress.

In modern conditions of the development of the scientific and technological revolution, the role of science is increasing immeasurably. Revolutionary changes in science are an important factor in social production and find concrete embodiment in new means and objects of labor, in new technological principles.

The progress of science and technology at this stage in the development of the scientific and technological revolution introduces qualitative changes in the functions of scientific and technological progress and in the mechanism of its influence on the economic results of production. They boil down mainly to the fact that the introduction of scientific and technical achievements contributes not only to saving living, but also materialized (past) labor.

Scientific and technological progress has a direct impact on agriculture through the most important areas of its development, which act as material, economic and organizational factors of reproduction. With regard to crop production, its elements are the creation and widespread use of more efficient machines and mechanisms, chemicalization, reclamation, the use of new highly productive varieties and hybrids of agricultural crops, intensive technologies for their cultivation and harvesting. The introduction of rational forms of management, organization and remuneration of labor, training of highly qualified personnel is directly related to the development of scientific and technological progress.

In practice, the main directions in which the achievements of scientific and technological progress in crop production are developed and are widely used have been established and are widely used. Among them are such as agrotechnical, organizational and economic.

Agro technical ones include: the use of intensive crop rotations, the creation and use of highly productive varieties and hybrids of agricultural crops, the expansion of irrigated lands and the improvement of irrigation methods, the effective use of mineral and organic fertilizers, chemical and biological means of protecting plants from pests, diseases, weeds.

Technological include: the creation and use of new high-performance machines and tools,

the introduction of industrial technologies for the cultivation and harvesting of agricultural crops, the use of containers, vehicles, the expansion of containers for short-term storage of products.

The study of organizational and economic directions, in which the achievements of scientific and technological progress in agricultural technology and crop cultivation technology are concentrated, is acquiring the greatest significance. These include: deepening specialization and increasing the concentration of the industry, improving the forms and methods of harvesting products, organizing labor and material incentives, training highly qualified personnel for agriculture. These directions are relevant at all stages of agricultural development. At present, the approaches to the comprehensive substantiation of the directions of scientific and technological progress come to the fore. At the same time, its influence on production and economic results is most clearly and clearly manifested.

Scientific and technological progress is an important factor in increasing the economic efficiency of production if the achievements of science and technology are used in an integrated manner, and they contribute to the transfer of the industry to an industrial basis. If it is introduced only for certain elements of the production process or in the cultivation of certain types of agricultural crops, then material and monetary costs for the production of a unit of output either increase or decrease extremely slowly. Based on this, the wrong conclusion is sometimes made that the introduction of the achievements of science and technology in agriculture is ineffective.

Methods of research

The implementation of scientific and technological progress in agriculture is based on economic and biological laws inherent in it. As a result, scientific and technological progress in agricultural production has its own characteristics that follow from the specifics of cultivation, harvesting, storage, transportation and processing of agricultural products.

Cultivation of agricultural crops is carried out on fertile soils, and obtaining high and stable yields is achieved both through rational processing of land plots and through the use of organic and mineral fertilizers, optimal doses of plant protection products. The efficient use of land, means of production and material resources depends on the introduction of scientifically grounded crop rotations, new technologies and high-performance equipment.

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Many types of crops for cultivation are very labor intensive. This primarily applies to row crops and industrial crops. Their cultivation requires much more living labor than the cultivation of grain crops. Thus, in the cultivation of vegetable crops, labor costs per 1 ha of crops are 40-60 times higher than in the production of grain crops.

The acceleration of scientific and technological progress should contribute to the development of new machinery and equipment, primarily for the cultivation of labor-intensive crops with the comprehensive mechanization of production processes.

Low-income countries have their comparative advantages, namely in agriculture, which makes agriculture a priority sector for growth in an open economy. As leading economists on economic development note, agriculture offers comparative advantages in the short term and through the agro-industrial complex a path to industrialization in the long term. For these countries, investment in agriculture may be the most cost-effective growth strategy towards industrialization and successful structural transformation. Evidence also shows that agricultural development has been a powerful source of poverty reduction in Asia.

Harnessing the potential of agriculture for economic development and growth in the well-being of the population, choosing more effective approaches to using this potential and mastering tools for the effective use of agricultural resources for development is the main task of public policy in countries with relatively low incomes, such as Uzbekistan.

In Uzbekistan, approximately 16.4 million people (49.4% of the total population) live in rural areas (2018). The country also has a high birth rate (23.3 ppm), and, accordingly, there is a surplus of labor in rural areas. The population under the age of 25 is 45.5%, more than 55% of the population is under 30.

At the same time, the agri-food industry is the economic basis of many villages and small towns throughout the country, since there are few alternative sources of income besides agriculture. Consequently, a large number of people:

- live mainly on agriculture (including crop production, livestock production, forestry and fishing). They have access to natural capital (land, water, animals, trees) and use natural capital as the main asset of their existence;
- use mainly family labor in production, hence the meaning of “family farm”. Wage labor may be present, but to a limited extent compared to family labor;
- partially integrated into markets, while having a certain degree of self-sufficiency in consumption (production for household consumption) and resource use (family labor on the farm, domestic production resources such as seeds, organic fertilizers).

In 2018, the contribution of the agricultural sector to the GDP of Uzbekistan amounted to 28.8%. In 2019, 3.543 million people worked in the agricultural sector (26% of the total employed), of which 1.066 million were officially employed and 2.477 million were employed in the informal sector or self-employed. Sales of agricultural products abroad bring Uzbekistan up to 25% of total export revenues.

In the course of the analysis of the distribution of the shares of gross agricultural output by categories of farms, it was revealed that the highest rates in all regions are in dehqan (personal subsidiary) farms. So, in 2018, they produced 88.4% of the total volume of potatoes, 74.3% of vegetables, 60.8% of melons and gourds, 62.6% of fruits and berries, 55.0% of grapes, 92.3% of meat, 95.1% milk, 52.6% eggs, 7.4% fish. Farms produce 78.7% of grain and 96.2% of harvested raw cotton. Organizations engaged in agricultural activity mainly produce eggs (36%), fish (64.1%), and vegetables (18%).

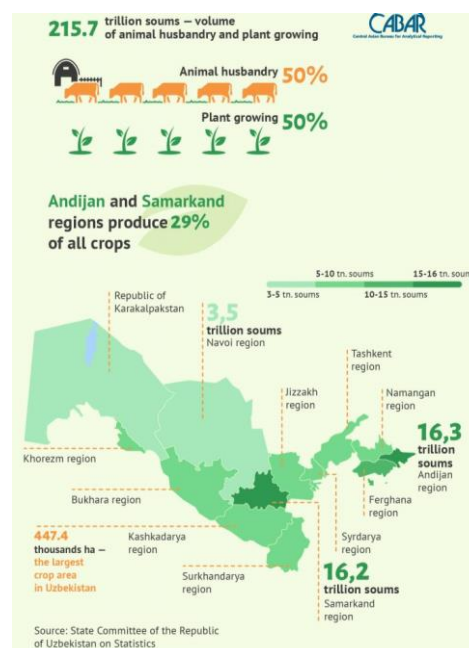


Fig.1. Agricultural Sector To the Limit of Uzbekistan

Farms, with 85.2% of the land allocated for crops, orchards and vineyards, produced 26% of agricultural products in 2018. Dekhkan farms accounted for 71.2% of the total volume of agricultural production, with only 11.3% of the land allocated for sowing areas, orchards and vineyards. Organizations engaged in agricultural activities account for 2.8% of manufactured products.

Household survey results show that among the main agricultural products, eggs and fish are consumed below the level recommended by the Ministry of Health. The situation looks even less favorable in low-income households, in which the level of consumption is below the norm, not only for eggs and fish, but also for meat and meat products, fruits, milk and dairy products. The reason for this may be the factor of availability and high prices for these types of agricultural products.

Uzbekistan is pursuing an active policy of reforming the agricultural sector. Refusal to export cotton and an emphasis on food production, the formation of clusters instead of scattered farms, the unification of the agricultural sector with processing production are the main directions of agricultural policy during the reform period.

In October 2019, the President issued a decree approving the strategy for the development of agriculture in the republic for 2020-2030. The main objectives of this strategy are:

- ensuring food security of the population;
- creation of a favorable agribusiness climate and value chains;

- reducing the role of the state in managing this area and increasing investment attractiveness;
- ensuring the rational use of natural resources and environmental protection;
- development of modern systems of public administration;
- gradual diversification of government spending in support of the sector;
- development of science, education, systems of information and consulting services in agriculture;
- rural development;
- development of a transparent system of industry statistics.

Also, the President's resolution "On the implementation of the program" Every family is an entrepreneur "No. PP-3777 dated 06/07/2018 was adopted, which provides for the creation of conditions for families to engage in entrepreneurship, mainly in rural areas, to obtain a stable source of income. In 2019, more than \$ 700 million were allocated to support entrepreneurial initiatives through commercial banks on preferential terms.

The government pays special attention to the creation of clusters in agriculture as a more competitive form of organization of production and business, facilitating the entry of manufactured products to foreign markets. So, in 2019, the number of cotton and textile clusters was 73, while in 2018 there were only 15. In these clusters, 1.8 million tons of cotton were procured in 2019, which amounted to 66% of the total cotton harvest.

Results and discussions

Among the positive effects of clusters, one can emphasize an increase in productivity, creation of new jobs, an increase in exports, cost savings and much more. The average yield in the clusters was 27 c / ha. The yield in the cotton fields of the clusters is 4.1 kg / ha higher than in the fields outside the clusters. In particular, in 2019, the growth in yield in clusters was 25%. In 40 regions of the country, crop yields were higher than in the last 10 years. The export volume of 53 clusters amounted to \$ 376 million. Another positive effect of the clusters is the cost savings, which amounted to \$ 1.1 trillion in 2019. soums. In 2019, the clusters created 11 thousand new jobs.

Within the framework of agricultural clusters, it is planned to implement 96 projects to organize the processing, storage and drying of products with a capacity of 430 thousand tons. Projects have also been developed to create intensive orchards on 6 thousand hectares and vineyards on about 8 thousand hectares.

Export of cluster products for \$ 410 million is planned for the current year. Based on the study of world experience, the following factors can be attributed to the development of agriculture.

Best practices worldwide show that farmers often respond to price incentives. Farmers in developing countries are poor because they have little land, few other assets, low-productivity traditional technologies, but they efficiently allocate the limited resources they manage in response to price signals. For this reason, securing "right" prices is one of the factors in agricultural growth.

- Organization of integrated value chains. Food markets are transforming into developed integrated value chains such as supermarkets. They bring together farmers, processors, retailers and consumers in complex relationships that enable the exchange of valuable information, provide funding when needed, define and enforce sanitary and phytosanitary standards, promote risk sharing, and fund research and innovation. It also facilitates collaboration with supporting industries such as financial services, telecommunications, transportation, and energy supply.

There are significant economies of scale and product quality guarantees are offered. On the other hand, supermarkets are causing the disappearance of traditional retail stores and the loss of jobs for many people. However, in general, everyone benefits from lower prices.

Due to the limited land resources, the further growth of agriculture depends on the efficiency of their use. In this respect, technology plays a major role. Technologies are of different types: labor-saving, land-saving, minimizing risks, improving product quality and environmentally friendly. In the context of limited financial resources, the priority in choosing technologies depends on the relative prices of production resources. If there is a shortage of land resources and an abundance of labor, then it will be economically rational to develop land-saving technologies (as in the case of Japan), and if vice versa, then labor-saving technologies (as in the case of the USA).

At the same time, the coronavirus pandemic is making significant adjustments to many aspects of public policy. The agricultural sector is no exception. Referring to international indicators, it can be said that in all countries the agricultural sector has suffered significantly due to the decrease in demand from residents as a result of a sharp decrease in their income and uncertainty. In the USA, Germany, Italy, seasonal

workers of farms and livestock complexes (including immigrants), worried about the fear of contracting the coronavirus, do not go to work. The agricultural sector in China from January to March fell by 3.2%, to 1.02 trillion. yuan (about \$ 42.82 billion). In America, the pandemic reduces the profitability of the corn growing business and its own by \$ 50-90 per acre. In India, prices for agricultural products fell by 20%. This alarming trend poses a major challenge to food security in many countries around the world.

However, in Uzbekistan, the pandemic did not result in significant disruptions to agricultural work. During the COVID-19 quarantine, the entire food production chain is classified as an "essential" activity, so agriculture continues to run smoothly. The government took all necessary measures to ensure that the spring work in the fields was successful, the new harvest of fruits and vegetables could reach consumers without hindrance, and industry workers could move relatively freely to complete production tasks. Moreover, the government has taken a wide range of measures to significantly increase the volume of food products, both to strengthen the country's food security and to increase exports in the face of possible disruptions in food supplies in the world.

Nevertheless, a certain impact of the pandemic on the agricultural sector of Uzbekistan still takes place. The closure of restaurants and cafes, restrictions on tourism reduce the demand for fresh products, which negatively affects manufacturers and suppliers. Smallholder farmers are especially vulnerable. Therefore, the moments associated with the new challenges of the outbreak of the pandemic should also be taken into account in the plans for the development of the agricultural sector for the next 2-3 years.

Based on the long-term plans for the development of the agricultural sector, the existing risks from the pandemic, and the study of world experience, the following measures can be formulated aimed at its development:

- Develop territorial programs for the production of liquid and export-oriented types of fruit and vegetable products with high added value on the basis of cooperation of local communities with large foreign trade intermediary and processing enterprises on the principle of "one village - one product".
- To study the advantages and risks of specialization of villages, to make proposals for eliminating the negative consequences of specialization in villages,

as well as for removing barriers to effective specialization.

- To develop and distribute free of charge manuals, brochures and other practical manuals on the technology of growing fruits and vegetables and other liquid and export-oriented types of crops with high added value and their processing in cooperation with large enterprises on the principle of "one village - one product".
- Recommend the allocation of microcredits by commercial banks at an interest rate not higher than the refinancing rate of the Central Bank of the Republic of Uzbekistan for dekhkan and private household farms with and without a legal entity for growing and expanding fruit and vegetable and other liquid and export-oriented types of crops and their processing.
- Also consider the possibility of allocating additional land plots to dekhkan and private household farms for growing and expanding the cultivation of fruits and vegetables and other liquid and export-oriented types of crops and their processing.
- Recommend large foreign trade intermediary and processing enterprises to provide technical assistance to dekhkan and private household farms on the quality and standards of growing fruits and vegetables, other liquid and export-oriented types of crops and their processing, to allocate advances with the condition of the subsequent purchase of manufactured products at negotiated prices in consultation with local authorities / structures self-government (SSG and mahalla committees).
- Develop guidelines on global experience in neutralizing production volatility, negotiating with customers, meeting market requirements, and making the necessary information on technology and finance available.
- When betting on cluster development, it is necessary to take into account the likelihood of the effect of blocking companies, i.e. the possibility is not excluded that single companies can be more competitive than cluster ones.

Subjects of the cluster risk losing not only independence, but also, in the event of leaving the cluster, reliable economic counterparties. From

this point of view, a separate program for the development of the cluster approach should be developed with a clear definition of the role of supermarkets as the main links in integrated production chains.

The COVID-19 outbreak and government mitigation measures have already significantly impacted the food system. Bans and quarantines restrict food supply chains, increase consumer spending, and reduce purchasing power.

FAO's calculations show that food supplies in the low-income, food-insecure group of countries that are not self-sufficient to produce food have been severely impacted by virtually any type of economic slowdown. The results show that, on average, one percentage point reduction in GDP growth, food supply in these countries fell by 0.31%.

Referring to international indicators, it can be said that in all countries, the agricultural sector has suffered significantly due to the decrease in demand from residents as a result of a sharp decrease in income and uncertainty. The amount of time, energy and money spent on food is likely to increase in the future. Lack of labor is also becoming a common problem for global agricultural production. In the USA, Germany, Italy, seasonal workers of farms and livestock complexes (including immigrants), worried about the fear of contracting the coronavirus, do not go to work.

The supply may also fail to cope with the existing demand in the context of the impact of barriers to imports of seeds, fuels and lubricants and fertilizers, the necessary technology and other necessary components. Lack of fertilizers, veterinary drugs and other resources can negatively affect agricultural production. Thus, production systems can be disrupted.

Conclusion

Consequently, food prices are expected to rise, again affecting the most vulnerable as they already spend a significant portion of their income on food. Poor performance in many countries since the 2008-2009 global economic downturn has been one of the key factors undermining efforts to eradicate hunger and malnutrition (FAO, IFAD, UNICEF, WFP and WHO, 2019).

As a result, the agricultural sector in China from January to March contracted by 3.2%, to 1.02 trillion. yuan (about \$ 42.82 billion), industry - by 9.6%, to 7.36 trillion. yuan (\$ 1.04 trillion), the service sector - by 5.2%, to 12.27 trillion. yuan (\$

1.73 trillion). In India, prices for agricultural products fell by 20%.

The poultry industry has been particularly affected by rumors that birds are carrying the virus. In America, the pandemic reduces the profitability of the corn growing business and its own by \$ 50-90 per acre.

Thus, in the current environment, the economic stimulus must revolve around not only the health sector, but also the agriculture and food sectors. Health goals will be unattainable without access to food for the most vulnerable, as they are forced to return to negative coping strategies such as selling productive assets, switching to less varied diets to compensate for limited incomes. If, during COVID-19, economic incentive measures do not ensure that all people have physical, social and economic access to adequate, safe and nutritious food at all times, then a pandemic could lead to death and serious health problems due to hunger.

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