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Innovative development in the agricultural sector of the Republic of Kazakhstan

The article discusses the methods of innovative development of the agricultural complex of the Republic of Kazakhstan. It should be noted that the development of the economy has always been carried out on the basis of the introduction of innovations, «but the centuries-old slowdown of this process did not allow it to be tested». Modern innovative processes are distinguished by the fact that they become a condition for development, innovations «form the basis for the development of socio-economic systems, determine the pace and scale of their growth, structural changes». One of the innovations of the innovative organization of production in the agricultural sector of the economy of Kazakhstan is the formation of clusters. Currently, the peculiarity of domestic agriculture is the presence of a large number of scattered small farms less capable of perceiving innovations. Therefore, the innovation direction of entrepreneurship development in the agricultural sector may be the enlargement of enterprises through their combination or merger. Large enterprises are able to diversify their production in order to insure themselves against accidental risks. Thus, the innovation of the agricultural sector of the economy of Kazakhstan can be carried out in many areas, covering both improving methods of state support for agricultural producers and the creation of new structures such as a cluster. The main criterion for innovative development is the formation of competitive advantages.

Keywords: agroindustrial complex, agriculture, agrarian sector, economy, development, infrastructure, innovations, growth potential, entrepreneurship, business, government support.

To bring the agricultural sector of Kazakhstan to new frontiers, it is necessary to fulfill the most important task: «Agriculture of Kazakhstan must be innovative».

Often the concept of innovation causes a simple farmer misunderstanding and even fear. What does it mean to innovate? How to do this in the absence of money? But innovation is not just some fundamental change in technology. Innovations are all those innovations that contribute to lower costs, increase production volumes, improve product quality, and ultimately grow farmers' incomes. Consider some of the remarks about the innovations of Michael E. Porter, a recognized specialist in strategies and competition, in his book «Competition».

«Companies are gaining competitive advantage through innovation. They approach the understanding of innovations in the broadest sense, using both new technologies and new methods of work... Innovations can be announced in a new product design, in a new production process, in a new approach to marketing or in a new training methodology. «Citing an example of the production of Japanese automobiles, M.Porter points out the growth factors of Japanese enterprises: «innovations in technological processes that provide leadership in creating new products that meet the requirements of the time, as well as the introduction of other practical methods to improve quality and productivity». The following provisions follow from this:

– innovation is a factor in increasing the competitiveness of enterprises;

– innovations are understood not only as new technologies, but also new methods of work: a new product design, a new production process, a new approach to marketing, a new methodology for advanced training, product quality and labor productivity.

M.Porter writes that for the most part, innovations are quite simple, do not lead to significant improvements and a major technological breakthrough. In other words, innovation must be understood not only as fundamental changes in technology and working methods, but also as small innovations that allow firms to gain competitive advantages.

Further, M.Porter analyzes the sources of innovation: investments in research on development or market research, new companies, expanding the scope of company activity, attracting new resources, another country with different conditions or methods of conducting competition [1]. Another important methodological point considered by M.Porter: «After the company achieves a competitive advantage through innovation, it is only able to maintain it through continuous improvements». It follows from this that the one-time introduction of innovation into production is not a guarantee of many years of effective functioning of the enterprise,

innovation must be introduced constantly: «the only way to maintain the gained competitive advantage is to constantly improve it». That is, innovation, like any product, has a life cycle.

Of particular relevance in modern conditions is the construction of an economic mechanism that ensures the effective, balanced and stable development of the sectors that form the agro-industrial complex. For the stable functioning of agriculture, which is represented by a sufficiently large number of large, medium-sized producers, and is subject to monopoly «pressure», both from the side of service and processing enterprises, and from the part of retail chains, it seems necessary to systematically consider the concept of agriculture. This will allow a deeper understanding of the laws, principles, methods, forms of building and implementing an effective organization of agricultural production, in cooperation with enterprises of other sectors of the agricultural sector based on cooperation, integration and modern concepts of strategic management.

It should be noted that the development of the economy has always been carried out on the basis of the introduction of innovations, «but the centuries-old slowdown of this process did not allow it to be tested». Modern innovative processes are distinguished by the fact that they become a condition for development, innovations «form the basis for the development of socio-economic systems, determine the pace and scale of their growth, structural changes».

As noted above, M.Porter said that the introduction of innovations provides competitive advantages. Russian scientists call the main socio-economic effect of implementing innovation to reduce the cost of a unit of output, that is, reduce total costs (living and materialized) per unit of output: «this determines the target function of introducing innovation, which resolves the contradiction between the ever-expanding economic needs of society and limited opportunities to satisfy them. « In principle, the cost reduction of a unit of production is nothing but a competitive advantage. On this, in general, the activity of any enterprise should be directed. At the same time, the entrepreneur must measure the additional costs of innovation with the effect obtained from its implementation: the effect should be higher than the innovative costs, only in this case does innovation make sense. Innovation should not beend in itself. The contradiction here is that new technology is always more expensive than old. But the prudent introduction of innovation allows you to get that very competitive advantage.

One of the innovations of the innovative organization of production in the agricultural sector of the economy of Kazakhstan is the formation of clusters. «A cluster, or an industrial group, as M.Porter notes, is a group of geographically neighboring interconnected companies and related organizations operating in a certain area, characterized by common activities and complementing each other». By this definition, a cluster is close to the concept of «agro-industrial complex». As we know, the agro-industrial complex is a functional diversified system, due to the close interconnection and interaction of agriculture and its associated sectors of the economy for the production of means of production for agriculture, processing and sale of agricultural products. So what is the difference between an agrarian cluster and agribusiness? The formation of the agro-industrial complex in the Soviet Union was accompanied by the directive establishment of relations between its spheres. Moreover, these relations passed through power structures. At the moment, the most important difference is that the agro-industrial complex is a group of unrelated industries and enterprises. The agro-industrial complex, which used to be a single functioning organism, lost its position during the reforms. This was a consequence of privatization by breaking up integral technological systems into property units and dividing material and technical resources, as a result of which large-scale production was replaced by small-scale production, the material and technical base of the complex was crushed, and it became impossible to use modern technologies and farming systems, that is, it was practically blocked the possibility of organizing production for a full cycle of agricultural work. Currently, this is a big brake on development. M. Porter emphasizes the main advantage of the cluster: «The cluster can be defined as a system of interconnected firms and organizations, the value of which as a whole exceeds the simple sum of the components».

M.Porter also defines other advantages of clusters:

1) «Clusters are better aligned with the very nature of competition and the sources of competitive advantage»;

2) «Clusters are better than industries, they use important connections, the complementarity of industries, the dissemination of technology, experience, information, marketing, as well as consumer awareness»;

3) «The perception of a group of companies and organizations as a cluster allows us to identify favorable opportunities for coordination and beneficial mutual influence in the areas of common interests without distorting competition or limiting the intensity of competition»;

4) «The cluster provides the opportunity for constructive and effective dialogue between related companies and their suppliers, with the government, as well as other involved institutions»;

5) «STATE and private investments aimed at improving the conditions for the functioning of the cluster benefit many companies at once» [2].

The most important feature of the cluster is that it stimulates the introduction of innovations: «Clusters influence the competition in three ways: firstly, by increasing the productivity of their member firms and industries; secondly, by increasing the ability to innovate and, thus, to increase productivity; thirdly, with the help of stimulating new business formations, obsessing with innovation and expanding the boundaries of the cluster. « Thus, the main difference between the cluster and the agro-industrial complex is that it contributes to increasing labor productivity, introducing innovations, and the emergence of new innovative business structures. The following factors contribute to the growth of labor productivity within the cluster:

– access to specialized factors of production and labor. M.Porternotes that «the availability of local resources minimizes the need for inventories and eliminates the need for import costs and the associated delays»;

– access to information: «proximity to each other, communications on supplies and technologies, as well as the presence of constant personal contacts and public relations facilitate the flow of information flows within clusters»;

– complementarity: «for example, in the tourism business, guest satisfaction depends not only on the supply of primary tourist facilities (beaches, historical sites), but also on the level of comfort and service in hotels in this region, restaurant services, availability and quality of souvenirs, and the state of airports, transport infrastructure, etc.;

– access to organizations and public goods: the ability to use the results of public investment in specialized infrastructure, educational programs, information, trade shows.

In Kazakhstan, grain companies of the republic are an example of the effective functioning of associations formed through vertical integration on the basis of a cluster approach to the organization of production. These enterprises began to do their business mainly in the financial and commercial sphere. Subsequently, through the acquisition of procurement, processing, serving and trading enterprises of the bakery system, they began to penetrate the grain business. Currently, several dozen large grain companies are powerful agrarian, industrial, commercial and financial groups in the grain market of the republic. Their penetration into this market was associated with the need to stabilize the supply of raw materials from agricultural enterprises. Later they began to invest in grain production. The ways of such penetration were the conclusion of contracts for the supply of fuels and lubricants, machinery, fertilizers, etc. to agricultural producers. in exchange for the harvest and transfer of the agricultural enterprise to the management of grain companies. The first path was accompanied by the transfer of the property of indebted enterprises as a result of a lack of working capital to repay the debt to grain companies. The second way, that is, transfer to management, was accompanied by the investment of agricultural production by grain companies on the security of land and property, which led to the formation of shared ownership in the process of gradual redemption of the agricultural enterprise by the grain company. In addition, the latter bought out property of financially insolvent enterprises during their reorganization and liquidation [3].

Currently operating on the grain market, grain companies of the republic have several advantages. Firstly, as a result of diversification of production, they carry less risk, which is associated with instability of weather conditions and the possibility of crop loss. Secondly, using the scale of production, they get the effect of reducing the average cost of production. Thirdly, they have collateral and can receive loans. Fourthly, for many of these companies the funds available to them allow them to build their own infrastructure units.

Food security of the country is an important component of the national security system and, as such, characterizes the economic stability and political independence of the state, its ability to provide the basic primary needs of its citizens without prejudice to national-state interests. The systemic model of food security in Kazakhstan contains problems of the country's agro-industrial complex and its economic security. The food security system is formed as a complex of subsystems, necessary and sufficient to ensure the intended purpose of food security — continuous, quantitative, structural and high-quality food supply for the population. The combination of elements of the food safety system into subsystems is based on functional, organizational, resource and technological principles. The backbone factor for the formation of the food security system is the agro-industrial complex. Subsystems of the agro-industrial complex, consumption, marketing, and distribution of food, as well as the food reserve, realize the main goal of the food security system. The remaining subsystems provide the implementation of this goal.

In livestock breeding, it is envisaged to develop transhumance livestock breeding by irrigating pastures, increasing the area of fodder crops with the aim of developing a fodder base, creating farm-reproducers,

feedlots and farms for breeding beef cattle, developing fisheries, fish processing industries, and increasing the export of fish products. Currently, the economy of Kazakhstan is demonstrating stable economic growth, ensuring sustainable development of agricultural production. However, many of its species do not undergo industrial processing due to the insufficient development of the processing sector of the agro-industrial complex. The processing of agricultural products in our region will develop through stimulation of the enterprise for the procurement of raw materials for the processing enterprise, as well as state support in the form of partial compensation of expenses for investments aimed at creating new or expanding existing production capacities in priority sectors of the agro-industrial complex.

According to the theory of M. Porter, innovations can also include new methods of state support for the agro-industrial complex sectors (preferential taxation, lending and subsidies, cheaper leasing of agricultural machinery and equipment), which contributed to the growth of agricultural productivity. In 2018, thanks to state support, half of all areas were sown and harvested with high-performance latest technology, and more than 70 percent of all crops used moisture-saving growing technologies. Grain-producing enterprises raised their productivity to 18.5, and in some places to 30 centners per hectare. The drip irrigation method was widely used for the first time in Israel, where in the conditions of water shortage in the 1950s, experiments on its introduction began. At first it was used in greenhouse production, but now it is widely used in open ground for growing vegetables, fruits and grapes [4]. The use of drip irrigation gives the greatest effect in areas of insufficient moisture, and this is also characteristic of Kazakhstan. The method is the most economical and at the same time effective way of watering. The main feature of drip irrigation is the supply of water to the root zone of each plant. Due to this, the minimum consumption of water and other resources (fertilizers, energy, labor costs) is ensured; the risk of plant diseases is reduced, since the vegetative mass and fruits do not get wet; spread of weeds is prevented, as the area between the rows remains dry. As a result, productivity is growing.

In previous years, large crop losses were associated with the use of obsolete equipment, old combines. The support provided by the state allowed agricultural producers to use leasing to purchase new machines. The state subsidizes up to 80 percent of the interest rate on loans issued by financial institutions to agricultural enterprises on equipment leasing.

Currently, the peculiarity of domestic agriculture is the presence of a large number of scattered small farms less capable of perceiving innovations. Therefore, the innovation direction of entrepreneurship development in the agricultural sector may be the enlargement of enterprises through their combination or merger.

The advantage of large-scale production over small-scale production is proved by the experience of the USA, where 72 % of small farms, owning 31 % of machinery and equipment, concentrating 44 % of the workforce, produce only 10 % of gross farm income. At the same time, they use land and equipment 4 times, and labor is 7 times worse than the remaining 28 % of large farms. Small farms cannot fully utilize advanced equipment and the latest technologies [5]. We agree with the opinion of Kazakhstani economists who believe that «the desire to increase the efficiency of agriculture by intensively reviving small farms at the beginning of the 21st century means a hopeless way to return to a historically outdated form of management»; «The experience of fermentation has shown that this path is associated with a huge decline in agricultural production, a greater loss of the created production and social potential in the countryside.

The most acceptable way for the development of agriculture turned out to be the reform of property relations based on the preservation of large-scale production. « Russian researchers point to «the limited and non-universal nature of small business in the modern economy, primarily due to its incapacity for large and capital-intensive projects and the deployment of large-scale R&D, as well as its instability».

In the Soviet period, Kazakhstan was a powerful agricultural region, an important supplier of many agricultural products that were produced on large-sized collective farms and state farms. A rather ill-conceivedprivatization policy in the agricultural sector has led to the destruction of large agricultural enterprises. The transformation of the latter into small disparate farming and peasant farms significantly reduced the efficiency of their management. Small plots of land were unsuitable for the use of modern agricultural machinery and technologies. The massive transition to small-scale land ownership contributed to the massive naturalization of the country's agriculture. Small-scale production became suitable only to meet the needs of the producer and his family and does not provide expanded reproduction. Due to the size of their business, only large enterprises are able to fully comply with the necessary technological cycle, introduce advanced technologies, and increase profitability due to production and sales volumes.

Large-scale enterprises of various forms of ownership have the following advantages:

– they are more susceptible to the achievements of scientific and technological progress;

– they have more opportunities to resist unfavorable natural and economic factors, solve issues of rural social development, improve intraeconomic economic relations, strengthen incentives for labor results, develop infrastructure;

– they mainly combine technologically more advanced production with the development of private ownership of the means of production, including land;

– Large farms can more effectively use fixed assets, production and social infrastructure, apply new equipment and technology.

A higher proportion of technological labor with the use of machinery and equipment in large agricultural enterprises leads to higher labor productivity in comparison with small farms; — they have more opportunities for the rational use of land, the use of scientifically based crop rotation. Owing to the economies of scale, they have costs per unit of land area, and the harvesting of land is significantly lower and the production efficiency is higher. Primary processing or deep processing of agricultural products, their storage and sale are also more efficiently carried out at large enterprises;

– at a large enterprise, the human factor is used more rationally. It has more opportunities to ensure a rational regime of work and rest; it is cheaper to share objects of non-production infrastructure;

– State subsidies also bring great benefits to large farms, since small-scale farming with a small production volume cannot produce and sell enough products on the market to receive significant assistance from various forms of price support. Due to its large volume of production, it is large-scale farming that benefits;

– in large corporate structures, as noted in the economic literature, the synergistic effects of concentration of production, centralization of capital and intersectoral integration are realized. This occurs as a result of the balance, coordination and synchronization of all stages of production, processing, storage and sale of products, elimination of their losses, improvement of their quality and degree of compliance with standards, elimination of many intermediary links between agriculture, industry and consumers, reduction of overhead and transportation costs, improved use of labor and raw materials;

– large enterprises have the opportunity to diversify their production in order to insure themselves against accidental risks. Along with grain production, they can grow industrial crops, vegetables, cattle for meat and milk, pigs, sheep, etc. In this case, even when the crop dies from natural disasters, for example, spring frosts, it is possible not to go broke and get income from other activities. The effect that is obtained in industry and other sectors as a result of narrow production specialization, which allows the use of highly skilled workers, to improve the quality of products, etc., is rather unstable in agriculture, again due to the dependence on natural and climatic conditions and a high degree of risk. The narrow specialization of agricultural enterprises cannot but show their negative impact on their financial stability in the event of inevitable fluctuations in market conditions. Experience shows that those who have a diversified structure of production can prevent a crisis. In addition to agricultural production, the activities of such large enterprises may include processing and other industrial production, which is a manifestation of vertical integration. Along with traditional agricultural activities, non-agricultural activities are developing, for example, storage, cleaning, drying of grain and oil seeds on on-farm elevators, the production of flour, vegetable oil, the manufacture of bricks and other building materials, MTS, a garage, a construction workshop, housing and communal services, social facilities areas (often unprofitable), etc. According to some reports, the sale of meat products in processed form can increase the profitability of livestock rearing by 15–20 %, ensuring the financial stability of the enterprise. Diversification of the economy brings even greater benefits when creating trade and marketing structures, since they form at least 20 % of the final retail price of food products.

Thus, the innovationization of the agricultural sector of the economy of Kazakhstan can be carried out in many areas, covering both the improvement of methods of state support for agricultural producers, and the creation of new structures such as a cluster. The main criterion for innovative development is the formation of competitive advantages.

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Қазақстан Республикасының агроөнеркәсіптік кешенінің инновациялық дамуы

Мақалада Қазақстан Республикасының агроөнеркәсіптік кешенін инновациялық дамыту әдістері қарастырылған. Экономиканың дамуы әрдайым инновацияларды енгізу негізінде жүзеге асырылады, «бірақ бұл процестің ғасырлар бойы баяулауы оны сынап көруге мүмкіндік бермеді». Заманауи инновациялық процестер олардың даму шартына айналуымен ерекшеленеді, инновациялар «әлеуметтік-экономикалық жүйелердің дамуының негізін құрайды, олардың өсу қарқыны мен ауқымын, құрылымдық өзгерістерді анықтайды». Қазақстан экономикасының аграрлық секторындағы өндірісті инновациялық ұйымдастырудың жаңашылдықтарының бірі кластерлерді қалыптастыру болып табылады. Қазіргі уақытта отандық ауыл шаруашылығының ерекшелігі — инновацияларды қабылдауға қабілеті аз шашыраңқы ұсақ шаруашылықтардың көптігі. Сондықтан агроөнеркәсіптік кешендегі кәсіпкерлікті дамытудың инновациялық бағыты кәсіпорындарды біріктіру немесе біріктіру арқылы кеңейту болуы мүмкін. Ірі кәсіпорындарда кездейсоқ тәуекелдерден сақтандыру үшін өз өндірістерін әртараптандыру мүмкіндігі бар. Осылайша, Қазақстан экономикасының аграрлық секторын инновациялау көптеген салаларда жүзеге асырылуы мүмкін, бұл ауылшаруашылық тауар өндірушілерді мемлекеттік қолдау әдістерін жетілдіруді де, кластер сияқты жаңа құрылымдарды құруды да қамтиды. Инновациялық дамудың басты критерийі — бәсекелік артықшылықтарды қалыптастыру.

Кілт сөздер: агроөнеркәсіп кешені, ауыл шаруашылығы, аграрлық сектор, экономика, даму, инфрақұрылым, инновациялар, өсу әлеуеті, кәсіпкерлік, бизнес, мемлекеттік қолдау.

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Инновационное развитие агропромышленного комплекса Республики Казахстан

В статье рассмотрены методы инновационного развития агропромышленного коплекса Республики Казахстан. Нужно отметить, что развитие экономики всегда осуществлялось на основе внедрения инноваций, «но вековая замедленность этого процесса не позволяла его тестировать». Современные инновационные процессы отличаются тем, что они становятся условием развития, инновации «составляют основу развития социально-экономических систем, определяют темпы и масштабы их роста, структурные изменения». Одним из новшеств инновационной организации производства в аграрном секторе экономики Казахстана является формирование кластеров. В настоящее время особенностью отечественного сельского хозяйства считается наличие большого количества разрозненных мелких фермерских хозяйств, менее способных к восприятию инноваций. Поэтому инновационным направлением развития предпринимательства в аграрном секторе может стать укрупнение предприятий путем их объединения или слияния. Большие предприятия имеют возможность диверсифицировать свое производство, чтобы застраховать себя от случайных рисков. Таким образом, инновации в аграрном секторе экономики Казахстана могут вестись по многим направлениям, охватывать как совершенствование методов государственной поддержки сельхозпроизводителей, так и создание новых структур типа кластера. Главным критерием инновационного развития является формирование конкурентных преимуществ.

Ключевые слова: агропромышленный комплекс, сельское хозяйство, аграрный сектор, экономика, развитие, инфраструктура, инновации, потенциал роста, предпринимательство, бизнес, государственная поддержка.

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