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Technologies and mechanisms of sustainable development of agriculture of the Republic of Kazakhstan

In the article the features of the formation and development of innovative market relations in the agricultural sector that predetermine the development of institutional factors affecting the revitalization of entrepreneurial activity in this field of activity are introduced. The introduction of new technological solutions for the processing of agricultural products, as well as infrastructural changes in the field of technological equipment of production can significantly increase the potential for economic growth in the agro-industrial complex. It should be noted that the agriculture of the Republic of Kazakhstan for most elements of the specialization of agricultural production is concentrated in the field of activity of peasant and private farms. In recent years, thanks to the participation of the state in the framework of development programs, much has been done to support small and medium-sized businesses, including in agriculture. Thus, the doctrine of agro-industrial security is currently more expressive and stable compared with the previous post-crisis period. The agricultural sector has sharp differences from other sectors of the economy, first of all, its dependence on soil and climatic conditions. As a result, agriculture cannot develop steadily without adequate state support. State support is provided in order to increase the economic efficiency of agricultural production.

Keywords: agro-industrial complex, agriculture, agrarian sector, economy, development, infrastructure, technological solutions, growth potential, entrepreneurship, business, government support.

Sustainable development of the agro-industrial complex is a priority in the process of forming efficient agricultural production that is able to fully ensure the food security of the domestic market, as well as partially offer its products for export.

Features of the formation and development of innovative market relations in the agricultural sector predetermine the development of institutional factors affecting the activation of entrepreneurial activity in this field of activity. The introduction of new technological solutions for the processing of agricultural products, as well as infrastructural changes in the field of technological equipment of production, can significantly enhance the potential for economic growth in the agro-industrial complex. It should be noted that the agriculture of the Republic of Kazakhstan for most elements of the specialization of agricultural production is concentrated in the area of activity of peasant and private farms.

In recent years, thanks to state participation in the framework of development programs, quite a lot has been done in support of small and medium-sized businesses, including in agriculture. Thus, the doctrine of agro-industrial security is currently more expressive and stable in comparison with the previous post-crisis period.

The scientific basis of economic transformations in the functioning of integrated structures in the agro-industrial complex involves the use of resource-saving technologies, the mobilization of innovative technological solutions in infrastructure development, but the greatest effectiveness, in our opinion, is contained precisely in the complementary dependence of production on an efficient distribution system. The complex profile of agriculture cannot be initially considered effective without the formation of such a distribution system, and even less so to make it export-oriented. At the same time, it is necessary to state the serious structural changes that have taken place in the agro-industrial complex since the end of 2014, when the agro-industrial complex had to activate itself, strengthening its position in the framework of national security.

The gradual transformation of land relations in the Republic of Kazakhstan, focused on a market economy and the development of business activities of citizens, enterprises and organizations, is one of the most important tasks of state policy. Land relations are regulated by a system of political, socio-economic, legal and technical measures implemented by the state. Currently, in Kazakhstan, with the mass irrational land use, the presence of abandoned and unused lands, an artificial shortage of land has been created, which adversely affects the development of the agro-industrial complex.

The agro-industrial complex is a complex of industries that have close economic and industrial relations, specializing in the production of agricultural products, their processing and storage, as well as

providing agriculture and the processing industry with the means of production. The branches of the agro-industrial complex are united by a single ultimate function — supplying the country with food and agricultural raw materials. There are three spheres in the structure of the agro-industrial complex: 1) industries supplying the means of production for agriculture and related industries, as well as carrying out production and maintenance services for agriculture; 2) agriculture; 3) industries engaged in processing and bringing agricultural products to the consumer (harvesting, processing, storage, transportation, sale). The balanced development of all parts of the agro-industrial complex is a necessary condition for solving the problem of providing the country with food and agricultural raw materials.

The agricultural sector has sharp differences from other sectors of the economy, primarily its dependence on soil and climatic conditions. As a result, agriculture is not able to develop steadily without adequate state support. State support is provided in order to increase the economic efficiency of agricultural production. Indicators of the effective use of state funds are: an increase in the productivity of fields and farms, as well as ensuring the profitability of all branches of agricultural production. An important problem impeding the normal, balanced development of the whole complex is the underdevelopment of the market of means of production [1].

In the conditions of market relations, the supply of the necessary material and technical means is carried out through direct relations with manufacturers, through wholesale intermediaries, as well as by purchasing through an organized market infrastructure (commodity exchanges, auctions, fairs, etc.). The formation of the market of means of production, the improvement of the quality of the products of the branches of the first sphere is necessary for the creation of highly efficient agricultural production in Kazakhstan. Agriculture is a very special area of production. The land, unlike other means of production, is not a product of human labor, the size of the land cannot be increased. When used properly in agriculture, the land not only does not lose its qualities, but even improves them, while all other means of production are gradually becoming obsolete morally and physically, being replaced by others. The earth, being the universal means of production, acts both as a means of labor and as an object of labor. The functioning of the agricultural sector depends on the natural conditions that lead to the uneven use of labor during the year, the uneven supply of products and cash income throughout the year. The influence of natural factors also affects the cultivation of certain crops in appropriate environmental conditions. Achievements of science and technology make it possible to weaken the influence of natural conditions, but only to certain limits and in the presence of other factors. Socio-demographic factors are extremely important for the development of agriculture.

The specialization of agriculture is influenced by the ratio between urban and rural population. In addition, the population provides reproduction of labor resources for the industry. Depending on the availability of labor resources, taking into account the labor skills of the population, this or that agricultural production is developing, which is characterized by unequal labor-intensiveness. The most labor-intensive is the production of vegetables, potatoes, sugar beet and other industrial crops, some livestock industries. The use of specialized qualified personnel contributes to the growth of labor productivity, reducing labor costs for the production of these products. Increased population migration in a number of regions currently limits the production of labor-intensive products. The location and specialization of agricultural production are also influenced by the interests of the local population, which in the past were not sufficiently taken into account [2].

The most significant economic factors of placement and specialization of agricultural production include:

1. The location of farms in relation to sales markets and the availability of processing enterprises, containers for storing raw materials and final products, the quality of vehicles and means of communication. The types of agricultural products differ sharply in their transportability. This largely determines the creation of suburban and resource zones around major cities and enterprises of the processing industry. The presence of large settlements creates a high population density, determines the specialization of agricultural enterprises in the production of fresh milk, eggs, potatoes, vegetables and other low-transportable products. The nature and condition of the railways also have a direct impact on the location of industries and the specialization of agriculture. Production of products that are easy to transport, can be concentrated in places where it is most effective. The ability to transport products in large volumes also causes cheaper transportation.

2. Created production potential of agriculture: reclaimed land, livestock of productive livestock, agricultural buildings, industrial buildings, etc.

3. Area of agricultural land, their structure: the size of arable land and farmland per capita.

4. The economic efficiency of agricultural production, determined by a system of indicators, the main of which are the yield of agricultural products and gross income per unit of land area and unit of material and labor costs, profitability of production. It should be noted that the combination of all the factors of placement and specialization of agriculture under consideration affects economic efficiency.

5. Features and stability of interregional relations in the production and exchange of agricultural products. The possibility of purchasing agricultural products, their warranties create the basis for the development in certain regions of only those branches of agriculture for which there are most favorable conditions. Of course, this takes into account the costs of purchasing the necessary agricultural products, their transportation in comparison with the costs of its production in the region.

6. The security of agriculture means of production supplied by industry. The conformity of the price level for these industrial products with the price level for agricultural raw materials and products of its processing.

7. Size of agricultural enterprises. For example, small farms limit the possibilities of specialization. There are two ways to increase the production of agricultural products — extensive, i.e. by increasing the area under crops, increasing the number of livestock without upgrading the material and technical basis, and intensively envisaging an increase in the yield of products per unit area as a result of the use of more efficient means of production and the use of the achievements of scientific progress. The possibilities of extensive development are almost exhausted, so intensification is the most effective and only possible way to develop production. The main areas of intensification are: integrated mechanization, chemicalization of agriculture, land reclamation, increasing the energy intensity of labor in agriculture, and improving the production technologies used. Intensification is carried out on the basis of deepening the specialization of agricultural production, the further development of agro-industrial integration.

The integration of domestic sectoral enterprises involves the creation of innovative processing facilities that provide a competent distribution system, since production in agriculture suffers a certain amount of losses, it is not having a rational system of product distribution. In this plan, it should be noted that in the final cost of the product from 20 to 70 % are the costs of bringing the finished product to the final consumption zone. These characteristics are particularly relevant for agricultural production, which, due to the seasonality and low threshold of product safety, has a high level of losses. Even a stable yield and high stability in the development of rural areas cannot be complex and effective a priori without a rational scientifically verified and practically developed distribution system.

In recent years, the development of agricultural cooperation has become widespread in the format of peasant farms, which, thanks to vertical and horizontal integration, have been able to strengthen their positions in investment and credit, technical, technological and infrastructure provision.

Considering of the agro-industrial complex from the point of view of balance in ensuring food security and the development of the domestic economic complex, we should note the reality and the primacy of state participation in supporting, cooperating and subsidizing import substitution programs, which significantly affected the possibility of adaptive economic growth in the agricultural complex. The cooperation of agricultural enterprises, the state and banking institutions in practice has yielded the desired results, which in a relatively short period of time have significantly transformed the domestic market of agricultural food, providing domestic goods with missing goods.

Considering of the development of agriculture in the Republic of Kazakhstan in terms of the cyclical nature of the recent crises, which, from our point of view, will be most effective from the economic side and will provide an opportunity to explain the dynamics of interpretation of the growth in the identification of agricultural production. Since 1998, it is possible to state the development of import substitution programs. In this context, it should be noted that due to the reduction in the volume of imports in the parameters of 15–20 %, many inefficiently used production facilities in agriculture were able to be activated. It should be noted that since 1999, due to the processes of intensification of domestic production, an increase in industrial activity and entrepreneurial business was initiated, which affected the total GDP, compared with previous years, in which, in scientific understanding, the Russian market of food and non-food products was more saturated with imported products [3].

Then after a decade in 2008–2009. The Republic of Kazakhstan is experiencing the next crisis, in connection with which there has been an increase in the import substitution programs in relation to a largely non-food area. During this period, government support has significantly affected the development of the railway industry, steel and light industry. The new intensive wave of state support initiated by the fall of the national currency during this period significantly affected production facilities, and did not affect the

revitalization of geopolitical development potential. In this context, it should be noted that the Republic of Kazakhstan, a state, rich in minerals, for many years has been carrying out, for economic reasons, priority export of the latter to the countries of near and far abroad. If we talk about the period of 2008–2009, then from the theoretical and methodological side it should be noted that the qualitative development of agriculture, its activation to self-sufficiency was not a global goal within the period under study. Meeting the needs of the domestic market already dictated the need for such development, but a unique natural resource base was used to meet the needs of the strategic sectors of the economic complex.

The course towards globalization, the integration of the economic system of the Republic of Kazakhstan into the world community should not be completely biased by ensuring exclusively the domestic market. In this respect, it is the compromise that is important, the balance of interests of ensuring the agro-industrial security of the state with a huge territory, with the orientation of the output of the most productive industries to foreign markets, their integration into the world system of commodity movement [4].

Another impetus to the rapid development of import substitution programs was received in 2014. The forced reaction to currency restrictions received from the foreign market at the end of 2014 materialized in the development of strategically important industries and the need to carry out countermeasures from the domestic market. It is during this period that the doctrine of agro-industrial security is rapidly developing, as a result of which a set of problematic aspects is solved.

The nominal level of state support is shaped into the nature of substantial subsidies, which are quite effectively used under the control and supervision of the relevant republican structures.

Low labor productivity is changing significantly, increasing the percentage of using innovative developments and technologies, as a result of which Russian manufacturers can compete on a par with a number of foreign products isolated from the Kazakhstan market as a result of the crisis.

Science and state support of educational programs are developing, benefits and subsidies are provided to small and medium-sized enterprises, accompanied by the control of rational use of resources, which today brings significant positive results.

Cooperation of agricultural productions, their integration and interdependence within the framework of state import substitution programs is growing.

As a result of competent state policy and targeted support for agricultural specialization, at the end of 2016, the production of meat-processing products reached a new level of performance, providing more than 75 % of the active demand of the domestic market. The transition to domestic dairy products was fully accomplished, which was impossible a few years ago, although it is not clear and not productive from a scientific and institutional position.

The problem, which is still relevant today, is the infrastructural underdevelopment and high depreciation of fixed assets in agriculture. At the same time, given that the development of agriculture and the agro-industrial complex as a whole is a guarantee of stable national security, it must be emphasized that in the complex balance of interests of producers and financial institutions, the state can highlight the priority of transition to subsidies and the development of larger agricultural facilities. A breakthrough in this regard can positively affect the distribution system of products, which, as we have repeatedly said, is at this stage a weak link in the chain «production — processing — sale».

Although Kazakhstan is relatively well provided with agricultural land, their size is constantly decreasing due to the withdrawal of land for industrial, transport, housing and communal construction. The size of agricultural land and arable land per capita is gradually decreasing. Therefore, the main direction of further development of agriculture is its all-round intensification.

Acceleration of measures for the development of the agro-industrial complex can be facilitated by preferential loans, protection and assistance to citizens wishing to run their own farms, housing young professionals wishing to work in the agricultural sector.

Achievements of science and technology in the modernized economy have a direct impact on the observance of the main task of the land user — the rational use of land, preventing depletion of the soil. The efficiency of land use is the basis for the development of any sector of the national economy, where this concept is multifaceted in its meaning and includes the effectiveness of social production, the beneficial effect of invested costs, as well as a certain return on all investments made.

The use of land in agricultural production is based on the following indicators:

- the share of agro-industrial areas in the total area represented by land;
- the proportion of arable land in agro-industrial areas;
- the proportion of crops in the total area of land intended for arable land.

In terms of efficient use of land in the agricultural sector, a significant role is given to production costs for fertilizers, which can lead to both a reduction in the yield of marketable products and an increase. Consequently, increasing the efficiency of crop production is associated with an increase in the cost of fertilizer. In this aspect there is a special documentation (agrochemical certification), which involves the introduction of fertilizers in accordance with the quality of the land, the level of fertility. Increased yields, on a national scale, lead to the fulfillment of food production tasks.

The economic assessment of land (in individual zones, districts and enterprises) contributes to the leveling of management on lands of different fertility and quality.

The unprofitability of agricultural enterprises can be regarded as the lack of agricultural land, not only meaningful, but also the formal characteristics of the product, and as a result, the lack of economic interest among potential buyers to acquire land and its subsequent productive use. The functioning of the agricultural sector directly depends on the degree of responsibility of the bureaucracy for universal assistance to novice farmers.

It is advisable to consider this issue of efficient agricultural land use in several aspects:

– The first aspect is organizational and economic. The mechanism for the redistribution of land may include the terms of the option provided for when concluding a land lease agreement. It is also necessary to regulate the price at which the tenant can redeem land from state and municipal agricultural land used by him for lease on agricultural production in cases established by law. Over time, the share of the price of land itself falls in the price of the entire land plot, since the use of land plots with a particular goal requires, as a rule, more and more capital investments. Consequently, it is possible to draw a parallel, which will show that the more years the land has been leased, provided it is properly used, the lower the price for which it should be acquired by the tenant.

– The second aspect is territorial and legal: municipalities often differ significantly in terms of agricultural land and production specialization; therefore, a single norm established by the legislation should be abandoned to establish the maximum size of land plots; this should be differentiated. In the case of establishing the maximum size of the relevant norm, the unit of measurement can be the absolute values of the area, expressed in hectares.

– The third aspect is social: it is necessary to determine the mechanisms for providing social support to rural residents, who lead their personal subsidiary farms and transfer their land shares to state ownership on a fee-based basis.

There is also the problem of an acute shortage of qualified specialists in certain regions. The main reason is low wages. The lack of skilled workers in this area can lead to the wrong solution of the problem. Here it is necessary in practice to use the theory of human capital.

The idea of human capital and the intensive development of this direction in economic theory is associated with the desire to take into account the real national economic changes generated by progress and expressed in the fact that in modern conditions the accumulation of non-material elements of wealth has become paramount to the entire course of social reproduction.

Human capital is not only a set of skills, knowledge, abilities that a person possesses. First, it is an accumulated stock of skills, knowledge, and abilities. Secondly, it is such a stock of skills, knowledge, and abilities, which is expediently used by a person in a particular sphere of social reproduction and contributes to the growth of labor productivity and production. Thirdly, the expedient use of this stock in the form of high-performance activities naturally leads to an increase in employee earnings. And, fourthly, the increase in income stimulates and interests a person through investments that may relate to health, education, etc., to increase, accumulate a new stock of skills, knowledge and motivation in order to apply it effectively again later.

Investments in human capital are costs that increase its productivity. The status of these investments is not ancillary, designed to serve the production process, but the same as that of direct investment in fixed assets. The source of investments in human capital can be the state (government), non-state public foundations and organizations, regions, individual firms, households (individuals), international foundations and organizations, as well as educational institutions.

The most important forms of investment in human capital, most economists call education, job training, health care, migration, the search for information about prices and income, the birth and upbringing of children.

For the effective functioning of the agro-industrial complex, it is necessary to direct investment funds to the training of specialists in this field. In this issue, an important role should be played by the system of state programs and projects aimed at supporting the agro-industrial complex.

To ensure the competitive selection of large enterprises is also necessary for the organizational and economic aspects of the management of objects in agriculture to have promising development. So, the importance is the substantiation of forecasts and prospects for the development of the agro-industrial complex and agriculture in conceptual integration with ensuring the food security of the country and regions.

The state provides preferential loans, tax holidays and other preferences that can maximize the effect of import substitution. And high performance, through state support, provides confidence that the Republic of Kazakhstan should fully and can manage with domestic agricultural production. Forced measures have become a kind of impetus, a priority condition for the development of import-substituting grocery imports, export-oriented, possessing the necessary competitive advantages, is credit security in the framework of state support.

The analysis of promising areas for the development of agricultural cooperation implies a further increase in the use of the competitive advantages of the territory, which are capable, thanks to its tolerant potential and labor resources, to produce agricultural products demanded by the market. In this direction, it is necessary to develop the material and technical base of agriculture, in-depth specialization of agro-industrial and other industries. At the same time, it is necessary to develop information support and advisory systems in the agro-industrial complex, institutional transformations in agriculture.

Thus, the main directions of development of economic policy in agriculture of the Republic of Kazakhstan, provided with natural and geographical opportunities, labor resources and many other reasons, can lead the economic complex of the Republic to a completely new qualitatively competitive level. At the same time, developing the multifaceted orientation of the economic complex of the Republic, it is necessary to develop agriculture as an industry that consistently ensures the growth of the welfare of the Republic of Kazakhstan.

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Е.А. Жусупов

Қазақстан Республикасының ауыл шаруашылығын тұрақты дамытудың технологиялары мен механизмдері

Мақалада аграрлық сектордағы кәсіпкерлік белсенділікті жандандыруға ықпал ететін институционалдық факторлардың дамуын айқындайтын инновациялық нарықтық қатынастарды қалыптастыру мен дамыту ерекшеліктері келтірілген. Агроөнеркәсіп кешеніндегі экономикалық өсудің әлеуетін ауылшаруашылық өнімдерін қайта өңдеудің жаңа технологиялық шешімдерін енгізу, сондай-ақ өндірісті технологиялық жабдықтау саласында инфрақұрылымдық өзгерістер болуы мүмкін. Айта кету керек, Қазақстан Республикасының агроөнеркәсіп кешені ауылшаруашылық өндірісінің мамандануының көптеген элементтері үшін шаруа және фермерлік шаруашылықтар қызметіне шоғырланған. Соңғы жылдары мемлекеттік бағдарламалардың даму бағдарламаларына қатысуы арқасында шағын және орта бизнесті, оның ішінде ауылшаруашылығында қолдау көрсету үшін көптеген жұмыстар атқарылды. Осылайша, агроөнеркәсіптік қауіпсіздіктің доктринасы алдыңғы дағдарыстан кейінгі кезеңмен салыстырғанда қазіргі уақытта тұрақты және белсенді. Ауылшаруашылық секторы экономиканың басқа секторларынан, бірінші кезекте, топырақ-климаттық жағдайлардан тәуелді. Нәтижесінде ауыл шаруашылығы тиісті мемлекеттік қолдаусыз тұрақты түрде дами алмайды. Ауыл шаруашылығы өндірісінің экономикалық тиімділігін арттыру мақсатында мемлекеттік қолдау көрсетілді.

Кілт сөздер: агроөнеркәсіптік кешен, ауыл шаруашылығы, аграрлық сектор, экономика, даму, инфрақұрылым, технологиялық шешімдер, өсу әлеуеті, кәсіпкерлік, бизнес, мемлекеттік қолдау.

Е.А Жусупов

Технологии и механизмы устойчивого развития сельского хозяйства Республики Казахстан

В статье представлены особенности формирования и развития инновационных рыночных отношений в аграрном секторе, которые определяют развитие институциональных факторов, влияющих на активизацию предпринимательской деятельности в этой сфере деятельности. Внедрение новых технологических решений для переработки сельхозпродукции, а также инфраструктурные изменения в области технологического оборудования производства могут существенно повысить потенциал экономического роста в агропромышленном комплексе. Следует отметить, что сельское хозяйство Республики Казахстан по большинству элементов специализации сельскохозяйственного производства сосредоточено в сфере деятельности крестьянских и частных хозяйств. В последние годы благодаря участию государства в рамках программ развития было сделано немало для поддержки малого и среднего бизнеса, в том числе и в сельском хозяйстве. Таким образом, доктрина агропромышленной безопасности в настоящее время является более выразительной и стабильной по сравнению с предыдущим посткризисным периодом. Сельскохозяйственный сектор имеет резкие отличия от других секторов экономики, прежде всего, его зависимость от почвенно-климатических условий. В результате сельское хозяйство не может стабильно развиваться без адекватной государственной поддержки. Государственная поддержка оказывается в целях повышения экономической эффективности сельскохозяйственного производства.

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

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