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## **Innovations in agrarian-industrial complex of the Republic of Kazakhstan**

The article examines the main trends in the innovation development policy in the agro-industrial complex of the Republic of Kazakhstan. Analysis of current state and the main problems of innovative development of the agro-industrial complex of the Republic of Kazakhstan, as well as the role of state authorities in its development. Classified conditions and factors affecting the innovation development of the agro-industrial complex of Kazakhstan Republic. Identified the main priorities for the development of innovative processes in agro-industrial complex of the country.

*Key words:* innovations, agro-industrial complex, economics.

The Republic of Kazakhstan as one of the fast-growing CIS countries, at the same time it is the country that owns large supplies of strategic resources, so it can't stand aside from the extending world integration. During the last several years the state leaders have been pursuing active policy directed to receiving equal partner conditions in trade, achievements of which is considerably connected with joining the World Trade Organization.

While examining the innovative type of development of agrarian economy, it should be marked out that the above mentioned innovative type, in many respects, is defined by scientific technical policy of the state, by forming the innovative mechanism. Subjects possess an important role in anti-recessionary program realization, using innovations related to selection and genetic, technological, organizational and administrative and also social types.

Innovative process is a multi-stage procedure of scientific knowledge formalization into innovation. It contains the following stages: science — equipment (technology) — production — consumption. In agro-industrial complex (further — AIC) innovative process is a continuous stream of transformation of discoveries, researches and development turned into modified and improved products, materials, technologies, new forms of organization and management and also, leading them up to the use in production to gain effect [1].

It is known that the backbone beginning of innovative development of agrarian and industrial complex (AIC) in the Republic of Kazakhstan is agricultural innovations reproduction and in mass practice developing more updated methods of maintaining agricultural production that define innovative development of agriculture in total. Procurement of innovative development of agrarian and industrial complex consists of two blocks: resource and institutional ones. The resource block includes financial, personnel, material and technical, information provision. As for the institutional one, it contains organizational and economic, infrastructural, standard legal support; the development of innovative focused managing forms belong to the given group as well.

It should be noted that getting the growing value of innovative development and expectations connected with it during the acceptable time the required outcomes don't allow to be intended just to developed innovative system of AIC, the mentioned system is insufficiently capable in its contemporary form to apply innovations in mass practice of agricultural production in extended scales and sufficient rates. Mechanism base of crisis phenomena in the agrarian sphere of economy was made by the destructive policy during the reform and now the above mentioned mechanism base related to providing measures of innovative development of AIC is defined by the given policy as well.

To make innovative development of AIC meet its mission and justify laid hopes in the near future, full and comprehensive procurement of this process is needed; it allows overcome the features of its inertial, and quite often stagnant and even regressing character. It belongs to the all directions of innovative development provision of agrarian and industrial complex [2].

The agrarian and industrial complex is a priority sector of the economy of the Republic of Kazakhstan. According to the European Commission assessment Kazakhstan advances some developed countries related to general expenditures on agrarian and industrial complex development. Alongside, transition of AIC to qualitatively new level of development is interfered by a number of problems, among which there is a weak

mechanism of attracting private investments, shortage of launching new agro-industrial technologies, a poor increase of production infrastructure of villages and insurance system, the absence of incentives concerning the creation of large merchandise productions. The government of the Republic of Kazakhstan developed the industry program on AIC development in the Republic of Kazakhstan for 2013–2020. The program considers the following key items of AIC development:

- measure son development of key production industries for product processing of agrarian and industrial complex (AIC).
- sales markets for key types of product processing of agrarian and industrial complex (AIC).
- veterinary and food safety of production of agrarian and industrial complex (AIC).
- level of security and need in the development of providing infrastructure of AIC.
- innovative development of key industries of agrarian sector.

Besides, it was charged by N.A. Nazarbayev to increase by 2020 the volume of the state support of agriculture 4,5 times, to develop system of legislative and economic incentives on creation of goods that are of average and large sizes in agricultural productions focused on the use of the latest agrarian technologies, and also to launch high tax rates on lands which haven't been developed yet during the certain period after their providing.

Concerning the development of farming and small and medium business (SMB) in agricultural processing and trade, Nazarbayev underlined the need to change farming standard and to revive our traditions of animal husbandry taking into consideration new scientific, technological, administrative achievements.

Moreover, according to him, it is necessary to define «on what mass production of products we will stake to win the large export markets».

«Outcomes of the taken measures allow to increase by 2050 production share of agriculture in GDP of the country by five times», — the message sounded.

Today in the framework of the program and target financing of JSC «Kazagro innovation» all in all 37 research projects are being realized. 48 research organizations, from which 32, the affiliated organizations of JSC «Kazagro innovation» act as collaborators. All primary branches of agrarian and industrial complex (AIC) and agricultural regions of Kazakhstan are captured by the given researches.

According to the head of «Kazagro innovation», among the research works the project on studying resource-saving technologies in agriculture should be noted.

Innovative processes in agrarian and industrial complex can be characterized by a wide range of regional, branch, functional, technological and organizational peculiarities. Conditions and factors that influence innovative development of agrarian and industrial complex can be subdivided into negative ones (constraining innovative development) and positive ones (promoting acceleration of innovative processes).

Negative factors include:

- inefficient interaction of scientific institutions with implementation structures, department all dissociation;
- decrease in scientific potential of agrarian science;
- difficult structure of agrarian production;
- big risk of innovation introduction in agrarian and industrial complex;
- low level of financing;
- price disparity for agricultural and industrial output;
- qualified personnel deficiency in agriculture;
- strengthening of monopolization in agriculture;
- shortage of the state innovative strategy;
- lack of a control system and innovative coordination
- activity at the state level;
- increase in a share of import food production;
- undeveloped system of crediting of agrarian sector and innovations in it;
- unpreparedness of personnel structure of agro-industrial sector in the field of innovative management.

Positive factors include:

- systematic withdrawal from command methods of AIC management;
- possibility of launching various managing forms;
- presence of scientific and educational potential of AIC;

- food market of high capacity;
- systematic introduction of new technologies in the production sphere of ecologically safe products.

Certainly, important factors promoting progressive innovative development of agrarian and industrial complex (AIC) are the transition to the market way of managing, existence of extensive base of natural resources of the country, considerable scientific and educational potential and huge capacity of the food market both, inside and outside the country, opportunity to make environmentally friendly and natural food as well.

The significant problem comes from the outflow of young scientists because-of decrease in science funding.

It should be noted that complexity and features of agricultural production are characterized by the high level of innovative processes risks in agrarian sector. Financing risk of research and production results, also risk of a temporary gap between expenses and outcomes, demand uncertainty for innovative production don't promote interest of private investors to invest the capital in agriculture development.

Researches on studying resource-saving technologies are conducted in 12 regions of Kazakhstan, and distribution of the acquired experience is spread in parallel. Therefore the areas of application of moisture resource-saving technologies are increased annually in Kazakhstan, the above mentioned areas made more than 12 million hectares in 2015. According to the experts of International Center for improvement of corn and wheat, the approximate gain of wheat crop in the current year made 720 thousand tons, or in terms of money — about 220 million dollars due to the use of moisture resource-saving technologies.

Alongside, among the most perspective projects the chairman specified the researches related to diversification of production in plant growing, innovative technologies of crop cultivation, genomic selection launch of cattle and biological methods development of plant protection.

In spite of the above mentioned results in agrarian and industrial complex (AIC) and progressing elements in scientific and research direction, there is a number of problems, the role of which is important in agriculture development in Kazakhstan:

- non-provision of scientific organizations with modern scientific, material and technical infrastructure. Today most part of buildings and constructions (71,1%) have been in operation over 30 years and 22,1% — over 20 years, is subject to write-off 71,4% of all available agricultural machinery;
- limitation of financial resources on carrying out research and developmental works (the amount of the allocated funds doesn't exceed 0,3% of gross output of agriculture whereas in the countries with the developed agriculture this indicator makes from 1% to 4%);
- low level of enterprise culture based on the use of new technological decisions and innovations, low innovative activity of subjects of agrarian and industrial complex (AIC);
- backwardness of introduction system of scientific development into production;
- low level of competitiveness of scientific products and technologies in the international scientific market. Because-of the lack of financial resources training of young specialists in the leading foreign scientific centers is poorly performed, joint international scientific researches aren't conducted, measures for involvement of the leading foreign scientists aren't realized;
- shortage of the effective fixing mechanism, motivation and social support of young scientific shots in domestic agrarian science have led to deterioration of the social status (decrease in authority of scientists in the society) of scientists and continuity rupture of generations of scientists;
- low level of remuneration for work in agriculture;
- shortage of qualified personnel because-of the lack of effective forecasting techniques related to the necessity for specialists, insufficient allocation of state orders on agrarian personnel training and low level of employment assistance of graduates who are engaged in agricultural and veterinary specialties (16-30% of the number of higher education graduates). Also, the shortage of specialists is noted in the areas where there are no educational institutions of technical and professional education;
- lack of social support measures related to young specialists, the mentioned measures stimulate young shots' stay in villages;
- backwardness of social and engineering infrastructure of villages in general, including cultural leisure organization;
- weak interaction of agrarian and industrial complexes enterprises and higher educational institutions and colleges, and also awareness absence of university graduates and colleges concerning vacant positions availability in enterprises.

Domestic agrarian science development is directed to the solution of problems related to efficiency increase of resource potential usage, growth of animal efficiency, increase of productivity of main types of crops, resource-saving, personnel potential enhancing etc. now. However all developments coordinate with food security ensuring need of the country and competitiveness provision of domestic agricultural production in the conditions of joining WTO. At the same time not enough attention is paid to methodical and practical development of providing economic security of agrarian and industrial complex, namely, food security of the country can't be ensured if agricultural producers and recycling enterprises haven't worked out a common effective mechanism of organizational and economic interrelations, and state support level doesn't lead to self-sufficiency growth in the main types of food.

Let's consider the following problems related to innovative development of agrarian and industrial complex (AIC). The major problem is connected with commercialization: nobody understands how to commercialize ideas. In Israel everyone simply patents everything with a view to possible interest from the investors/industry in the future. On the other hand, quite good ideas are demanded by additional researches conceptions that aren't financed by the Center for transfer and commercialization of agrarian technologies [3].

One more known problem is the lack of direct link between scientists and business. For example, in Australia it is solved with the help of levy — a certain tax which is withheld from the income of agricultural producers and making 40–50% from scientific researches financing (the rest part is financed from the state budget).

Funds are controlled by Grains Research & Development Corporation representing interests of cereal-growers and the state. It allows keeping in contact between scientists' initiatives related to research directions and interests of business.

Currently the first stage of Strategy realization has been finished; it was carried out during the measures performance of preparatory character on legislative base formation, development institutes, on defining effective projects and professional shots training as well. Also, the implementation of the second stage measures of Strategy related to capacity creation on the basis of world science advances, implementation of projects on industry modernization and economy diversification, formation of scientific and innovative infrastructure and financing system of innovations has begun. However the condition of innovative activity in the country is characterized by the low innovative activity of the industrial enterprises estimated at the level of 3,4% in 2013, low knowledge intensity of GDP, a component of 0,29% against 2,5–3% in the technologically developed countries of the world so far. It testifies to backwardness of the innovative sphere despite the taken state measures for formation of its elements, participation in priority scientific and technical projects, creation of technical policies and business incubators, innovative orientation of tax system.

In the framework of tasks realization of this Strategy, by the resolution of the government of the Republic of Kazakhstan 25 scientific organizations of the Ministry of Agriculture were reorganized by conflation of the start-up Kazagroinnovation joint-stock company, RSE «The Kazakh State Agrotechnical University after S. Seyfullin» is reorganized into JSC «The Kazakh Agrotechnical University after S. Seyfullin» and 15 skilled enterprises were transformed into the limited liability companies. For today in the structure of JSC «Kazagroinnovation» 18 limited liability partnerships have been created. The main tasks of «Kazagroinnovation» are the integration of science, education and production, commercialization of 80 innovative activities and attraction of investments into agrarian science.

The government of Kazakhstan undertakes these measures to bring out the republic's agriculture from prolonged idle time, and ineffective use of capacities is possible only on the basis of innovative processes development directed to essential modernization of agro-industrial production by means of introduction of science and technology attainments. Efficiency of agro-industrial production is defined by science and practice interaction, by introduction of the advanced innovative technologies into production.

Thus, at the present stage of market transformations the importance of researches is increasing related to improvement of organizational innovative activity forms and defining mechanisms of their effective functioning. Innovative policy implementation demands radical improvement of innovative activity management in agrarian and industrial complex by means of creating more favorable investment climate on the basis of a rational combination of public financing of science with innovative entrepreneurship in branch.

The number of development priorities of innovative processes in regional agrarian and industrial complex (AIC) includes [4–6]:

- technological re-equipment of organizations of the complex;
- power and resource-saving production technologies, storages and agricultural production processing;

- reproduction of soils fertility, prevention of all types of their degradation, adaptive technologies development of agrarian ecosystems and agrarian landscapes;
- development of organic products production of agriculture;
- creation of modern system of information and infrastructure provision of innovative activity in agrarian and industrial complex;
- state information policy development and strategy at the republican and regional level aimed at formation of progressive technological ways;
- formation of organizational and economic mechanism of AIC functioning on the innovative basis;
- strengthening the role of state organizations in innovative activity intensification;
- development of regional innovative advancement programs of agrarian and industrial complex (AIC);
- system modification related to personnel training in the field of innovative activity, the mentioned shots provide innovative activity improvement of organizations and commercialization of scientific researches outcomes.

The priority direction of it is the creation of consulting and information structures at different levels of hierarchy. Research showed that on average in Kazakhstan the priority direction of innovative development of agricultural enterprises first of all is the use of technological innovations. It's true that the high research capacity of agro-industrial complex can consist, in the first place, of modern material base level of research institutes and profile higher educational institutions.

In this regard there is the most actual and urgent problem related to the necessity of creating the market of innovations for agro-industrial complex which is capable to help with the solution of self-financing problem and transition to market mechanisms of scientific establishment existence and competitiveness increase of the domestic agricultural market.

Production of competitive products in itself is possible only when using achievements of scientific and technical progress which cornerstone the innovative processes that allow carrying out continuous updating of agricultural production. Necessity of innovative process invigoration for all spheres of the national economy is confirmed by numerous laws, resolutions, concepts, agreements. The innovative agrarian economy is formed when agro-industrial production is mainly based on the basis of innovative activity which is impossible without new technologies for forming uniform and financial space. However the universal scenario of innovation development applicable for all countries doesn't exist, that is why every country looks for their own approach to the solution of similar tasks.

Priorities in the sphere of innovations of agro-industrial complex are:

- power and resource saving production technologies, storages and agro-cultural products processing;
- innovations that promote filling the domestic market with cheap and qualitative food of local production;
- innovations allowing reliability, efficiency, maintainability of farm vehicles and mechanisms, prolonging service term, increasing productivity;
- measures that allow improving ecological situation.

While creating innovative economy the crucial role has to belong to private and state partnership. Financing can be carried out either by the state or by venture companies, alliances, or enterprise associations. Thus the state provides:

- choice of priorities in the innovation sphere;
- strategic planning, defining the list of goods and services that can become a subject of the state order; creating the mechanisms of self-organization in innovative sphere and creation of conditions for attracting huge capital in innovative projects;
- examination and analysis of innovative projects.

Proceeding from the above the innovative policy in agro-industrial complex has to be implemented on the basis of:

- innovative forecasts of the main directions of production development related to scientific and technical achievements in AIC branches for short-average and long-term perspective;
- choice and realization of basic innovations that have decisive impact on efficiency production increase and product competitiveness;
- creation of complex support system of innovation activity;
- infrastructure development of innovation infrastructure process including the system of consulting and information provision of commodity and personnel training as well;

- maintenance and development of scientific and technical potential;
- assistance to development of small innovative entrepreneurship;
- intensifying collaboration at republican and international levels of all interested parties;
- creation of economic and legislative conditions of innovative policy, modification of tax law.

The enumerated directions of innovative policy should be realized by AIC management organs of republican and regional levels. The aims of the given directions can be achieved at the expense of well thought out introduction of more effective innovative processes that are able to reduce product production expenses, to cut prices and finally, to lead to population welfare and society in whole.

The major innovative policy at the state level must become complex theoretical and methodological regulations, scientific and technical potential.

Problem solution related to food safety and agrarian sector competitiveness of the economy is indissolubly connected with agrarian science development.

Researches cover priority directions of food and recycling industry branches and also agricultural mechanization, AIC economy and rural territories development.

One of the main tasks of AIC system innovation modification is the increase of agrarian innovation potential. Its base contains scientific and technical developments for agricultural production as constantly replenishing and renewable source of continuously growing opportunities of AIC innovation renewal. Scientific achievements often define the significance of transition to AIC stable development, whereas from measures provision realization of innovative system depends how fast such transition will happen.

At the present time there is a lag related to actual results of agricultural production from their gaining opportunities in case scientific advances are fully and properly used.

For instance, productive potential of plants and animals are realized at the level that doesn't exceed 35-40% of genetically caused. At the same level possibilities of soil fertility increase are used as well. It demands to increase innovative potential along with development of scientific researches in all other directions, to raise possibilities of wider and effective use of scientific and technical achievements which are available and expected in the future.

Thus, one of the main objectives of the providing innovative system blocks of agrarian and industrial complex, creating favorable conditions for formation of innovations fund and their development in production when smoothing the existing distinctions between gained results in production and potential of scientific and technical development, meaning a quantitative set of innovations available and accessible for consumers, and opportunities to improve their operational, economic and other performance of agro-industrial activity as well [7].

Taking into consideration close intra system connections and dependence, it's necessary complex innovative system improvement of AIC during the provision with suitable proportionality and elimination of bottlenecks in its structure.

Assessment degree of innovative system development of agrarian and industrial complex at the level of the country, regions and economic entities has the features:

- standard legal support of innovative activity, and also financial, personnel and material technical security of agrarian science have especially major importance at the national level.
- at the regional level along with preservation of national criteria high importance of assessment the role of information, infrastructure and organizational and economic support of innovative development of agrarian and industrial complex increases;
- at the level of economic entities limiting factors of innovative development in modern conditions are financial, personnel and material support. All this demands creation of multilevel system of ensuring innovative development of agrarian and industrial complex according to the contents and features of innovative activity management at all hierarchical levels.

### *Conclusion*

There is a need to develop a monitoring mechanism and innovative activity stimulation of agrarian and industrial complex, to carry out estimation of innovative development efficiency of agro-industrial enterprises in innovative infrastructure of the region.

While estimating innovative development efficiency of agrarian and industrial complex it should be noted that its major factors are: achievement of purposes, innovative activity (quality of functioning), rationality of innovative changes (profitability); change in technical and technological basis of agro-industrial pro-

duction; changes in quality of labor; external social economic conditions. Concrete indicators of decision quality in relation to efficiency evaluation of innovative development of regional agrarian and industrial complex are: time lag in decision-making process; timeliness of need identification for decisions; compliance of the analysis of decision importance; detail and clarity of basic data; availability of reserves in decision-making process.

It should be noted that the essence of interaction of public innovations administration in agrarian and industrial complex, on the one hand, economic and economic and local government, with another, means that the state carries out efficiency regulation of innovative development of agrarian and industrial complex due to establishing organizational and legal and economic norms within which bodies of economic and local government are free in making decisions related to choice of a concrete form of innovative activity stimulation of agro-industrial enterprises of the region. State, economic and economic and local government innovations at the agrarian and industrial complexes agro-industrial enterprises is a common thing that bodies operate innovative process of AIC enterprises directly just within their property [8].

Consequently, the necessity of the objective items solution of governing bodies interaction of innovative development of agrarian and industrial complex predetermines the need related to authority expansion of regional representatives of JSC National Holding KazAgro, increase of responsibility of the managing system for timeliness and quality of the made decisions on development of innovative activity at the micro level.

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### Қазақстан Республикасының агроөнеркәсіптік кешенінің инновациялары

Мақалада Қазақстан Республикасының агроөнеркәсіптік кешенінде инновациялық саясатты дамытудың негізгі үрдістері қарастырылды. Қазақстан Республикасының агроөнеркәсіптік кешенінің инновациялық дамуының негізгі мәселелері мен қазіргі жағдайының талдауы, сондай-ақ оның дамуында мемлекеттік органдардың алатын ролі зерттелді. Қазақстан Республикасының агроөнеркәсіптік кешенінің инновациялық дамуына әсер ететін шарттар мен факторлар жіктелген. Еліміздің агроөнеркәсіптік кешенінде инновациялық үдерістерді дамытудың негізгі алғышарттары анықталды.

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### Инновации в агропромышленном комплексе Республики Казахстан

В статье рассматриваются основные тенденции развития инновационной политики в агропромышленном комплексе Республики Казахстан. Проанализировано современное состояние и показаны основные проблемы инновационного развития агрокомплекса, а также роль государственных органов в его развитии. Классифицированы условия и факторы, влияющие на инновационное развитие агропромышленного комплекса, определены основные его приоритеты.

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