

## Analysis and assessment of the of innovative processes management system in agricultural sector of Kazakhstan

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**Abstract.** Particularities of the system of innovative processes management system are identified. The state of agriculture in Kyzyl-Ordyn region in conditions of innovative development and the current system of innovative processes management are assessed. Economic essence of innovations and the system of innovative processes management is specified. Implementation of innovation-oriented strategy of agricultural development of Kyzyl-Ordyn region is offered. Basic ways of improvement of the system of innovative processes management in agriculture are formulated.

[Talapbaeva G.E., Kalmakova Z.A., Duzelbaeva G.B., Kazybaikyzy A., Erniyazova Z.N. **Analysis and assessment of the of innovative processes management system in agricultural sector of Kazakhstan.** *Life Sci J* 2014;11(6s):210-213] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 40

**Keywords:** innovation priorities, innovation processes, innovation policy, innovative development, innovative processes and projects, institutional infrastructure, reproductive material.

### Introduction

Management system for control of innovative processes in agriculture of Kazakhstan is defined as complex of technical, production, organizational, marketing, financial operations and R&D. Thanks to this modern state of agriculture is characterized by positive trends: volumes of GDP grow, assortment of innovative products is broadened, privileged credits for agricultural enterprises are provided.

### Main part

Agrarian policy of the state must be oriented to innovative development, for that innovative processes management system is necessary, including innovative policy and specific programs [1-5]. Systematic management of innovative processes in agriculture of Kazakhstan includes organizational-economic measures and law regulations which are intended for solution of the following tasks:

- evaluation of modern state of agriculture and provision of its innovative development;
- forecasting and planning of development targets and the targets of innovative processes;
- development of state innovative programs and projects providing increase in efficiency of agriculture production;
- adjustment of innovative programs with due regard to dynamics of resource support;
- aid in establishing scientific and business contacts, distribution of information in regard to issues related to realization of innovative processes in agriculture and processing branches;

- giving more authorities to entrepreneurial structures and corporative entities in realization of innovative processes;
- directing investments into perspective scientific-technical projects in agriculture;
- creation of data banks, inspection system for innovative products, support in their certification.

In our opinion, current management mechanism must be supplemented with two measures which will improve innovative processes in agriculture:

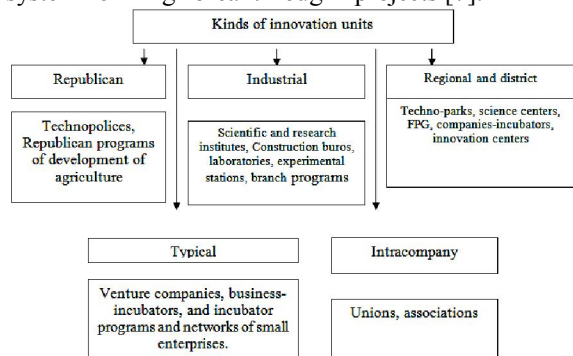
- insurance of innovative activity risks;
- stimulation of sales of end innovative products.

Performed analysis of current regulatory framework points out to the necessity of development of a number of regulatory acts, in particular, Resolution of the Government of the Republic of Kazakhstan "About state financing of works related to state tests of selection achievements, issuing patents and keeping patents in force"; Resolution of the Republic of Kazakhstan government "About state support (financing) of R&D works on servicing and depositing of funds of original selection material and maintenance of cultivar keeping nursery"; the law of Republic of Kazakhstan "About private-public partnership when exploring results of scientific and technical activity in the form of Republican and branch targeted innovative programs and projects".

Institutional infrastructure of the innovative processes management system includes units shown in Figure 1 [6]. In conditions of world financial crisis development of innovations which produce economically effective and progressive influence on different production spheres and spheres of society

management can become the base for further recovery of economy.

Strategy of industrial-innovative development of the Republic of Kazakhstan for 2003-2015 approved by the Decree of the President of the Republic of Kazakhstan of 17.05.03 suggests active use of state levers and private business on the base of private-public partnership for formation of modern industrial infrastructure, development of which will be decisive factor for successful realization of big system-forming "breakthrough" projects [7].



**Figure 1. Institutional infrastructure of innovative processes management system**

Note: was prepared by the author on the base of research work.

With the purpose of providing support for development of prioritized, initiative, innovative, risk-assessment and R&D works which can be implemented in agriculture AO KazAgroInnovation was established: this is main coordinating innovative unit on state level. The aim of AO KazAgroInnovation is realization of innovations through the chain "agrarian science - production - consumption". In 2007 the Government of Kazakhstan decided to reform the agrarian science system in the country. All research organizations of the Ministry of agriculture of the Republic of Kazakhstan are put together in the AO KazAgroInnovation. Key measure of recent time was re-organization of agrarian science. Today its results for scientific organizations are as follows:

- optimization of the management structure and internal structure;
- less duplication of activity.

Besides that, specific measures have been developed for development of the system of agrarian science in the Republic of Kazakhstan. In particular, key target groups have been identified to which agrarian science must orientate. They are:

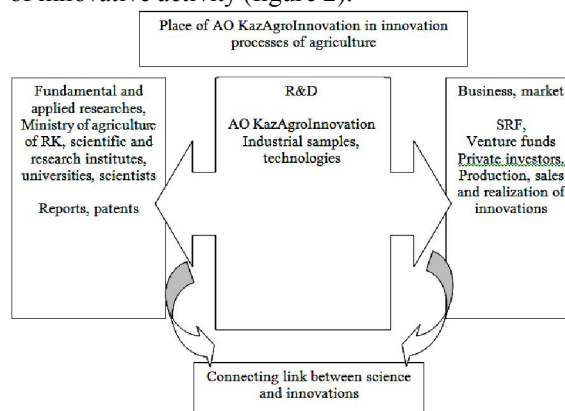
- Government of the Republic of Kazakhstan represented by authorized body - Ministry of agriculture of the Republic of Kazakhstan;
- manufacturers acting in agro-industrial complex (AIC);

- population - end consumer of AIC's products.

Basic needs of targeted groups have been structured. In accordance with them the activity of the AO KazAgroInnovation was revised, oriented to 4 basic directions:

- R&D;
- transfer and commercialization of technologies;
- staff training;
- knowledge distribution [8].

In the structure of innovative processes AO KazAgroInnovation is a connecting link between fundamental and applied researches performed by scientific teams, scientists and business. Efficiency of innovative development of agriculture depends not only on efficient activity of independent economic structures (scientific organizations, scientists, universities and entrepreneurs) separately but on efficiency of relationship between them in the process of innovative activity (figure 2).



**Figure 2 Place of AO KazAgroInnovation in innovative processes of agriculture**

Note: the source: data on AO KazAgroInnovation's activity

Scientific organizations of AO KazAgroInnovation perform research work in the framework of budget program 042 "Applied scientific researches in sphere of AIC. Agro science has achieved the following results:

In the sphere of plant-growing and land use:

- 64 new sorts and hybrids of berry and other cultures were created and passed over for tests;
- national information system in regard to generic resources of plants, energy-saving technologies of cultivation of agrarian cultures, scientific foundations of complex management and use of water resources are being developed;
- the systems of forest economy management are being improved, methodic recommendations on adaptive-landscape and biological systems of land use, of ridge-groove technology of water sprinkling etc. are being developed,

In the sphere of cattle-farming and veterinary services:

- 3 types of 6 new lines of agriculture animals, including 4 lines of ... sheep, 2 internal-breed types of ... sheep, ... type of .... Akarys, 2 factory lines of .... bovine cattle were selected and tested;
- 1 breed, 12 types and 5 lined are at the stage of approbation by state Commission of Ministry of agriculture of the Republic of Kazakhstan;
- in the sphere of veterinary science 6 diagnostic preparations were produced, the works on creation of 7 vaccines and 7 medicines (3 – chemical preparations and 4 – parasiticide);

In the sphere of food and processing industry:

- 8 cultures of microorganisms were selected for production of bio-preparations and food products;
- 20 technologies of processing and storage of agriculture products, production of food products and mixed fodders are being developed;
- scientific grounded procedures were developed for production of 22 food products, including medicines and 8 recipes of mixed fodders and 4 fodder admixtures for treatment;
- 4 units of equipment for production of food products have been developed [9];

Algorithm of evolutionary transition of AO KazAgroInnovation to a new system of scientific development was developed, in the framework of its strategy. The algorithm was based on best world practices. Measures must be implemented stage by stage - in 2 stages. The first stage - technological audit - is completed. Realization of this stage involved World Bank; audit plan was developed and the group of world experts was identified. The audit allowed to evaluate real scientific and technical potential in AIC and develop detailed measures on further development of science.

Next stage is development and implementation of new model of scientific management. For that specific target indicators have been developed, which must be achieved in the course of scientific activity.

After successful realization of stages we plan to form highly efficient market-oriented system of agrarian science which must be attractive for private investors in terms of realization of joint projects. In the sphere of transfer and commercialization of technologies focus will be made on formation of efficient tools. Activity of experimental and production farms will be concentrated on the following key directions:

Firstly, this is large-scale production of reproduction material. In research organizations works on creation of new highly reproductive sorts of agro cultures and cattle breeds must be invented. Reproductive material will be distributed to experimental and production farms for reproduction and then will be sold in the market. A part of profit in form of royalty must be distributed to R&D organizations. In parallel, interacting with manufacturers in the process of sales of reproductive material, experimental and production farms will provide in practice feedback loop between organizations and market.

Secondly, on the base of experimental and production farms scientific inventions in the sphere of selection will be tested, their feasibility in different climatic zones will be defined. The Center of commercialization of technologies suggests coordination of activity of all scientific and research organizations on implementation of inventions into practice. World experience testifies that such structures improve significantly the level of interaction between scientific organizations and entrepreneurial sector's entities.

Key tools of the Center of commercialization of technologies are: development of patent strategies of scientific organizations; intellectual property deals; share interest in innovative projects.

So, in Kazakhstan the following management system of scientific researches and innovative processes has been developed:

- Ministry of agriculture of the Republic of Kazakhstan is authorized body and acts as customer and administrator of budgetary program and structures prioritized directions;
- AO AgroInnovation is general contractor, operator of budgetary program; it performs selection of projects in the framework of some priorities and is reliable for their realization;
- project coordinator is an operator of specific research project who manages money allocated for its realization, provides achievement of targets of the project. It is selected from a number of scientific organizations of AO AgroInnovation in accordance with project's specifics. It manages activity of co-operators in the framework of project implementation.

Realization of planned measures of AO AgroInnovation, realization of measures on development of the system of agrarian science and innovations in the Republic of Kazakhstan, Strategy of industrial- innovative development of the Republic of Kazakhstan for 2003-2015, Strategy of territorial development of the Republic of Kazakhstan up to 2015, Results of current management system of

innovative processes in Kazakhstan are shown in Table 1.

**Table 1. Indicators of innovative development by regions of the Republic of Kazakhstan in 2012**

Region	Innovation potential			
	volume of issued scientific technical works	Gross costs for R&D	number of employees who performed scientific research work	Number of organizations
	millions tenge	Millions tenge		
Republic of Kazakhstan	152500,6	34 761,6	19563	421
Akmolinsk	41235,6	464,7	579	8
Altyubinsk	11680,0	498,1	659	16
Almaty	8577,4	486,4	694	12
Atyrau	186,9	2 053,2	654	11
Eastern Kazakhstan	26015,4	4 273,4	1606	35
Zhambylsk	2241,6	1 123,3	459	11
Western Kazakhstan	2343,8	478,7	542	10
Karagandy	37986,5	1 190,2	1812	40
Kstanaï	1344,8	214,2	399	13
Kyzil-Ordy	8,0	59,5	96	7
Mangystau	7353,0	3 425,5	822	7
Pavlodar	2002,7	258,3	197	11
Northern Kazakhstan	959,9	131,1	216	5
Southern Kazakhstan	2715,1	384,9	427	11
Astana-city	13,0	4 768,4	1136	41
Almaty-city	7836,9	14951,7	9265	183

Note: source: CMAI Report. Assessment of competitiveness of Kazakhstan regions.

Table 1 shows that in 2012 the volume of performed research works in the Republic of Kazakhstan in general was 152 500,6 million tenge, including Kyzil-Orda Region - 8,0 million tenge; gross costs for R&D were 34761,6 million tenge, in Kyzil-Orda region - 59,5 million tenge.

Assessment of efficiency of innovations use is done with the use of innovative development index (IDI) which includes the following components: production volume of new products, volume of issued scientific-technical works, number of employees who performed scientific-research work, costs for information technologies, own production sales, index of access to Internet [10].

### Conclusion

Control over state and dynamics of key indicators and factors of innovative competitiveness must be performed on the base of efficient system. Such system allows to manage operatively and effectively not only its innovative activity but produce multiplicative impact on the whole range of socio-economic indicators and processes, in particular it allows to select optimal ratio of internal and external innovations and adjust it to changes in external and internal environment.

### Inference

Stable development of agriculture of the region, achievement of targets, systematic

management of innovative processes is possible through realization of measures only under sufficient financing. Introduction of scientifically grounded technologies and innovations into agrarian production is not possible without attracting financial means from all possible sources, without conditions for long-term and medium-term crediting of agriculture organizations. Realization of such measures by 2015 will bring significant improvement of technical and technological base, growth of share of big and medium farms in production of innovative agriculture products, and in such a way competitive agrarian sector will be formed.

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4/14/2014