

THE SYSTEM AND MECHANISMS OF MASTERING INNOVATIONS IN CROP PRODUCTION OF PSKOV REGION

IVAN VOIKU

Pskov Agricultural Research Institute, Russia

The article outlines the theoretical aspects of the system of mastering innovations in agriculture, defines the basic premises of its formation. The process of mastering innovations presented in the form of a sequence of four interrelated stages. The list of the main participants of the system of mastering innovations in crop production of Pskov region and the interaction between them is presented.

New macroeconomic challenges and the need to improve existing market relations requires new business forms, innovative approaches to managing the development of regional agro-industrial complex based on innovation.

The stagnation of the main sectoral indicators, the deterioration of the competitiveness of agro-industrial enterprises in Russia is largely owed to a lack of sufficient flow of innovation and finance and investment support of their mastering. The solution of this problem lies in the activation of innovative processes at the Federal, regional and municipal levels.

In accordance with the Concept of the long-term social and economic development of the Russian Federation until 2020 innovation is defined as the leading factor of economic growth in all sectors of the economy [1].

The implementation of this basic programming document requires the formation of a national innovative system, consisting of elements such as a system of scientific research and development, integrated with higher education, malleable to requests from economy, engineering business, innovation infrastructure, market institutions of intellectual property, innovations promotional mechanisms and others [2].

The main condition of the national innovative system formation is ensuring the primary and large-scale mastering innovations – one of the five phases of the life cycle of both product and process innovations.

The primary (pioneer) mastering innovations are the implementation of the development results into production, which involves the following steps [3]:

1. Technological mastering – individual production of new products needed in single quantities, mastering of the mass production of new products, commissioning of new constructions, technological processes and managerial systems, the practical use of new methods;

2. Industrial mastering - achievement of the planned capacity and designed volume of the usage of innovations;

3. Industrial and technological mastering includes development and approval of technological and organizational project, prices, engineering specifications, standards, norms for consumption of resources, and preparation of construction and construction and installation works, installation of new equipment. Managerial and engineering support of production besides organizational and technical measures includes staff training and retraining, provision of consulting and implementation services.

Economic mastering is the achievement of the final results of scientific and technical development, designed socio-economic efficiency of innovations.

Economic mastering ends with the achievement of the planned capacity and economic indicators: materials-output ratio, energy-output ratio, labor capacity, production cost, profitability, capital productivity ratio. At this stage of mastering the additional work on elimination of the shortcomings, revealed in the process of industrial and technological mastering is implemented, the activation of the human factor, the formation of the essential (corresponding) innovative climate are taken place.

Large-scale mastering is the economic mastering on a large scale in enterprises, where it's effective, accompanied by dissemination of information, copying of documentation, materials and equipment, staff training and retraining [3]. At this stage the innovation is beginning to bear real effect.

The use of the systematic approach involves the compensated accumulation and distribution of innovative potential, which includes material, labor, financial, information resources, at each stage of the process of mastering innovations. Furthermore, the basic principle of the systematic approach is the consideration of an open system with input and output, controlling and controlled subsystems.

The elements of the system of mastering innovations are innovative and productive structures, organizational and economic mechanisms of implementation, techniques and tools [4].

The mechanisms, presented as a set of forms and methods, sources, tools, and leverage, in particular, are the link of any system.

Economic mechanisms (financial security and taxation of the participants of innovation processes) are designed to create the conditions for expanded reproduction of agricultural production. Organizational mechanisms aim at the formation of adaptive and accurate organizational system of management of the innovation processes in industry [5].

All this are the general approach to the definition of system and mechanisms of the mastering.

The mastering innovations in crop production is to apply advanced agricultural technologies, varieties, fertilizers and crop-protection agents, new machines and mechanisms at each stage of cultivation of cultivated plants.

Pskov region is one of many regions of Russia, requiring innovative approaches to the solution of acute problems, including problems of the development of the crop production.

Despite the low commitment to innovation across the board in the crop production, the region already has the experience of the effective mastering innovations.

The yield index of the Limited Liability Company "Idavang" - one of the most innovatively active enterprises – is above the average not only on regional and Russian indexes, but also comparable to the yield indexes of the regions of black soil zone (fig. 1). It is interesting to note that the very yield index is the leading resulting indicator of innovative activity.

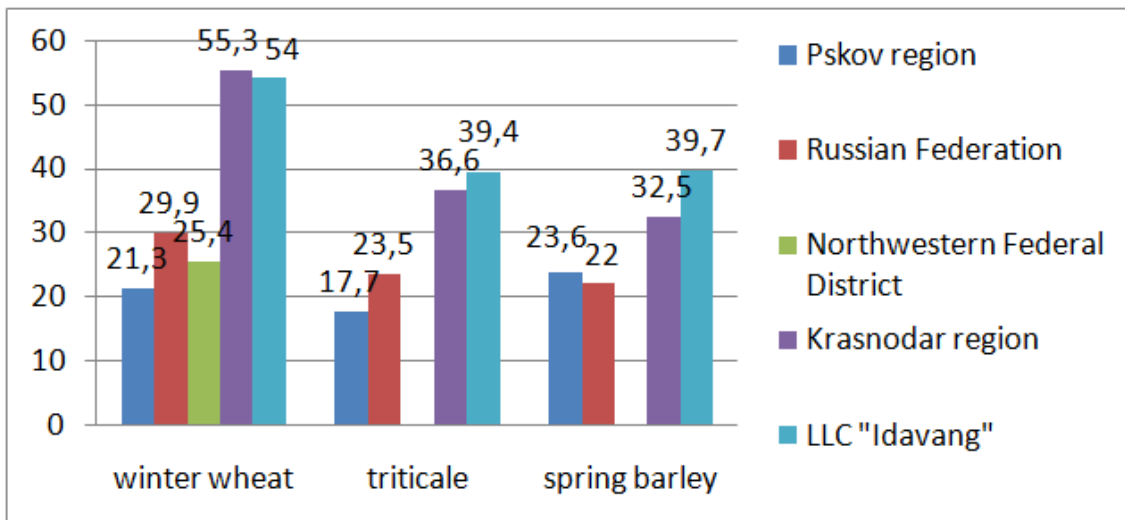


Figure 1. – The comparison of yield indexes of the major crops of the Limited Liability Company "Idavang" with similar indexes of Pskov region, the Russian Federation, Northwestern Federal District and Krasnodar region

The enterprise produces crops on the area of more than 4.5 thousand hectares, using only 12 harvesters operated by 35 mechanics, uses agrometers – specialized equipment for organic manuring of the soil with the hose method, which allow to exclude contact of nutrients with the air. At the stage of inception the enterprise has invested in the soil preparation to crop rotation 13260 rubles per hectare.

In addition to the Limited Liability Company "Idavang", also the Peasant Farm "Prometey", the Limited Liability Company "Pankratovskoye", the Agricultural Production Co-operative "Svetoch" and the Agricultural Production Co-operative "im. Suvorova" are innovatively active enterprises of the region. These enterprises are actively implementing new crop varieties, use new types of fertilizers, new crop-protection agents, new machines and technologies.

The positive experience of innovatively active enterprises must spread on all agricultural enterprises of the region. The system of mastering innovations, model of which is presented further, is aimed to accelerate this process.

The proposed system is dynamic in nature, i.e. considering the process of mastering as a sequence of the certain stages. Besides, the system is goal-oriented, i.e. acting in accordance with goals, clearly defined by higher-order systems, and open using linear and nonlinear relationships between their basic elements (fig. 2).

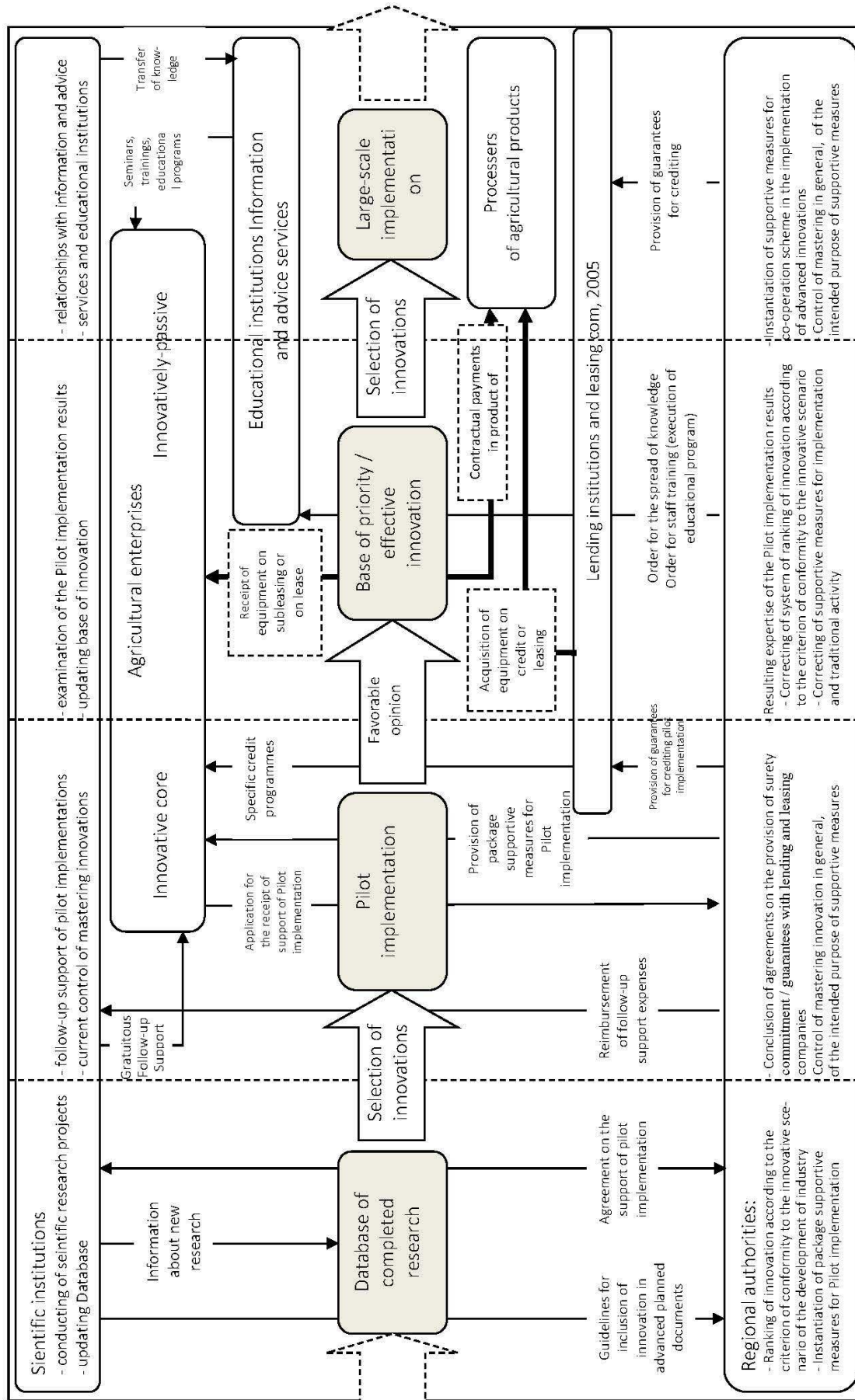


Figure 2. -- The model system of mastering innovations in the crop production in Pskov region

Thus, figuratively, the process of mastering is divided into four stages [6]:

1. Formation of a database of completed research. The main task is periodic information sharing about the advanced innovations from scientific institutions of the regional authorities, preparation of sound recommendations on enabling innovation in the sectoral and subsectoral development programs of crop production of Pskov region. The recommended innovations should be ranked by the regional authorities according to the criterion of conformity to the innovative scenario of the development of sector or subsector.

2. Pilot implementation. Testing innovations under production conditions is conducted mainly by agricultural enterprises of the innovative core. The very agricultural enterprises have the maximum opportunity for implementation of innovative crop varieties, application of new means of protection and fertilizers, the purchase of new machinery, implementation of innovative technologies in the crop production.

3. Formation of the base of priority / effective innovation. Current control of the pilot mastering innovations is provided by a scientific institution, the final control - by the regional authorities. Then, the representatives of the regional authorities form a council of experts to make decisions about the effectiveness of the mastered innovations and the feasibility of the further large-scale implementation. Information about all the innovations that received a favorable opinion is sent to the Database of priority innovations – the alternate Database of the completed research, subjected to the selective treatment by the pilot implementation during the particular period of time.

4. Large-scale implementation involves the use of proven innovation which gives the guaranteed result. The long stage of the mastering innovations ends with a complete replacement of the previously implemented innovation by fundamentally new one.

Key economic mechanisms, allowing to link all the innovation, production and other structures in the proposed model, can be [6]:

- Provision of state guarantees on a competitive basis at the expense of the regional budget for investment projects approved by Administration of the region;
- Provision of tax advantages in the form of lower payment of the corporate property tax for implemented investments;
- Establishment of preferential rates on taxes (on property and profits of organizations) for investment projects approved by Administration of the region;
- Innovative grants for implementation of innovations;
- Subsidies on reimbursement of the part of expenses for the development and implementation of innovative technologies;
- Subsidies on reimbursement of expenses of the real estate lease or the use of unique equipment on a competitive basis;
- To compensate for scientific institutions expenses related to the provision of services to subjects of innovative activity;
- Others.
- Model system of the mastering innovations also provides for a perfection of the organizational mechanism of innovation processes development [6]:
 - Formation of cooperative relationships between financial institutions, processors and agricultural enterprises, involving the implementation of various innovations;
 - Conclusion of contracts between regional authorities, scientific and educational institutions, information and advice services on the realization of special training programs, holding of seminars, other forms of replication of new knowledge;
 - Formation of the principles of the distribution of volumes of state support for large-scale implementation of innovations in crop production.

Undoubtedly, the proposed model system and mechanisms of mastering innovations in crop production of Pskov region have a number of significant assumptions and limitations. However, in general, they define the key participants of the innovative development of the industry and the prospects of their relationship.

REFERENCES

1. О Концепции долгосрочного социально-экономического развития РФ на период до 2020 года [Электронный ресурс] : распоряжение Правительства Рос. Фед. от 17 ноября 2008 г. № 1662-р (с изм. и доп.) // Система ГАРАНТ. – Режим доступа: <http://base.garant.ru/194365/#ixzz3bKpv 2trM>.
2. Концепция долгосрочного социально-экономического развития [Электронный ресурс]. – Режим

Economics

- доступа: <http://fip.kpmo.ru/fip/info/13429.html>.
3. Дармилова, Ж.Д. Инновационный менеджмент : учеб. пособие для бакалавров / Ж.Д. Дармилова. – М. : Торговая корпорация «Дашков и К°», 2013. – 168 с.
 4. Савенко, В.Г. Формирование системы освоения инноваций в сельском хозяйстве : автореф. ... дис. д-ра экон. наук / В.Г. Савенко. – М., 2005. – 52 с.
 5. Организационно-экономический механизм развития инновационных процессов в АПК : метод. рекомендации. – М. : ГНУ ВНИИЭСХ, 2005. - 102 с.
 6. Ефимова, А.А. Разработка системы освоения инноваций в растениеводстве Псковской области / А.А. Ефимова, И.П. Войку, Е.В. Степанова // Известия международной академии аграрного образования. – 2015. – № 21. – С. 5–9.