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INNOVATIONS IN AGRICULTURE AND THE INDICATORS OF THE LEVEL AND EFFECTIVENESS OF THEIR APPLICATION IN PHYTOTECHNICAL BRANCH

Diana MEMET

The State Agrarian University of Moldova, 44 Mirceşti Street, MD-2049, Chişinău, the Republic of Moldova, Phone: + 37322600309. E-mail: diana.cotruta@mail.ru

Corresponding author: diana.cotruta@mail.ru

Abstract

The integration of scientific and technical progress in agriculture development strategies contribute to stimulating sustainable economic growth, based on a scientific basis, which takes into consideration the objectives of mankind: conservation of natural resources, promoting the development of healthy and competitive economies, improving the social conditions of life and work of people, protection of the environment etc. On the background of deepening internal and external competition and the struggle for markets and in order to support local producers of phytotechnical production, one of the main priorities of agricultural development policy should be widely assimilation development and innovation in this field. In terms of implementation of innovation projects and technology transfer we consider appropriate and necessary the development of new indicators which characterize the intensivity and intensification efficiency in phytotechnics with the direct reflection of the level of implementation of innovative methods and technologies.

Keywords: *innovations, new indicators, scientific and technical progress*

INTRODUCTION

It is doubtless the role of the science and technical achievements in promoting of a system of durable agriculture. The technological and genetic progress led to the practicing of an intensive agriculture with the help of the agricultural technology which enhanced the productivity of agricultural crops by several times. The contemporary agriculture is exposed to some rapid modifications due to its technical and technological progress: "Who does not support the dynamics of innovations and change processes – is being lost his place on the market – either internal, national, or external, and enters very rapidly in the situation of a structural crisis, that is followed by diverse negative unforeseeable manifestations in the entire economy" [1]. Actually in such a state is today the branch of vegetal production in Moldova Republic.

MATERIALS AND METHODS

This paper aims highlighting the importance of implementation of innovational technologies in agriculture and the need to apply new indicators that would analyze and characterize the intensivity level and the economic efficiency of intensification in phytotechnics in terms of their use.

RESULTS AND DISCUSSIONS

The development on the basis of innovational technologies is one of the most vulnerable aspects of autochthons agricultural business. Taking into account the specific nature of agriculture branch as a biosystem, the innovational mechanism of the agribusiness presents certain peculiarities, fact that decreases investment attractiveness of this area. In the branch of the vegetal production as in none of other sector of economy the production process is being combined with natural ones and is in close dependence of these ones. The relationship between innovations and development of phytotechnical branch has a contradictory character. On the one hand the obtaining of the over profit in a short period of time from the implementation of innovational projects in

this sector is impossible, the optimum solution being the resources allocation in projects of long length, which are hazardous. On the other hand, the innovational projects with ecological and social aspects require great investments and a long recuperating length, fact doing them unattractive for banking capital as they suppose a little and uncertain profit and respectively a degree of a bigger risk. Taking into account these realities it is necessary to elaborate a new mechanism concerning the providing of agricultural risks.

A problem of underdevelopment of the phytotechnical branch in Moldova Republic should be a poor spreading of the innovations. The innovations spreading of agricultural science in this sector presents certain peculiarities, it can not be manifested in a short period of time, but needs more years. By this it is also being explained the pessimist attitude of the autochthonous agricultural producers regarding the technologies and innovational products. We refer to the varieties, hybrids, technologies of crops growing. Against the background of external and internal competition accentuation and the struggle for the sale market, as well as in protecting of autochthonous producers, one of the basic priorities of agriculture developing policy must be the development and assimilation in great detail of the innovations in this area. The world agriculture is centered on the increasing capacity of knowledge assimilation in producing vegetal production. This thing is obvious having as example the economically developed countries. That is just the point that offers them the possibility to maintain the equilibrium between demand and offer of food products on the internal market and to easily penetrate in the world developed agriculture products markets. In the Republic of Moldova there is a great scientific potential concerning the development on intensive and durable way of the plants cultivation system. We may mention that are realized and are in the disposal of the farmers basic works and also practical recommendations how we must efficiently process the soil, how to maintain its fertility for future generations. The main factors of intensifying of this sector are soils, hybrids, seeds, qualitative planting material, etc [2].

One of the principal innovational directions are the biotechnological systems of creating new technologies of cultivation, hybrids and varieties of crops with new technical-economical qualities with a higher potential, resistant at low and high temperatures, etc.

The agriculture is apparently a branch being less exposed to the product innovations, the nature can not be changed from day to day, as it happens with a series of industrial products. At the same time, also in this branch the technical, biotechnological innovations of other type penetrate more and more rapidly influencing the competitiveness of the farmer's labor. [1] The harmonization of agriculture and environment development may be realized only by a systemic approach from the political, ecological, economical and social point of view in which the scientific investigation must bring him the contribution by innovations in the domain of biotechnology and technologies regarding the increase of the soil fertility. Under the aspect of the projects implementation innovations and technological transfer and the efficiency of developing process of intensive phytotechnical branch we consider timely to suggest the elaboration of indicators that should characterize the intensivity level and intensification efficiency in phytotechnics that include technologies and means application with innovational character, as:

$$N_i = \frac{Inov}{Sa_i} \qquad (1),$$

where: N_i – level of production intensity in the branch of phytotechnics with taking into account the innovational technologies and means application;

Inov – the means value with innovational character utilized in producing of vegetal production;

Sa_i - the surface of agricultural land on which were applied means and technologies with innovational character, ha

$$R_{inov} = \frac{VPG_{f.inov.}}{Sa_i} \quad (2)$$

where: R_{inov} - yield of farmland on which were applied means and technologies with innovational character , lei/ha;

$VPG_{f.inov}$ – the value of vegetal global production (in comparable prices) obtained as a result of applying means and technologies with innovational character, lei.

$$E_{\text{int}.inov} = \frac{VPG_{f.inov}}{Inov} sau \frac{Pb_{f.inov}}{Inov} \quad (3)$$

where: $E_{int.inov}$ – economical efficiency of phytotechnical branch intensification, taking into account means and technologies with innovational character applied, lei

$Pb_{f.inov}$ - raw profit obtained as a result of applying of technologies and means with innovational character, lei.

It would also be timely to select and promote the most efficient crops, plant varieties, hybrids creation, production of planting material, perfecting the technologies of cultivation and production with application of irrigating technologies systems with high and stable output bringing in the highest profit per agricultural lot unity with high efficiency and demand on the external and internal food market. It is also recomendable the implementation of power crops based on the world new technologies generating high maximum results, such as artichoke, autumn raps, as the realiest energy regenerable sources (bioethanol, biomass, biodiesel) presenting for Moldova Republic a great ecological and economical interest; the projects implementation with modern technologies for processes organizing of processing, preserving, packing, transporting, selling with high rewarding results; the consolidation and efficient utilization of own financial resources of selected enterprises of the physical persons involved in the project as well as the directionning necessity of considerable financial sources from the state part and attraction of foreign capital.

CONCLUSIONS

Taking into account the actual tendencies of agricultural production developing based on innovational production technologies, the indicators that should characterize the intensivity level and intensification efficiency in phytotechnics that include technologies and means application with innovational character will permit a more exact appreciation of the intensivity level of vegetal production and economical efficiency of intensification. But in the practice the evaluation of these ones is difficult enough, because of identifying of technologies and means value with innovational character in the total sum of the fixed means of production and production current consumptions as well as the obtained results. In spite of the impediment, these indicators must be determined on the basis of analytic book-keeping as at the moment the innovations represent one of decisive factors of economical efficiency of phytotechnical production intensification. In specialized forms of agricultural enterprises is necessary to include natural indicators as: consumption of fertilizers, kg., use of organic fertilizers, t / ha, surface inoculated (fruit plantations), including mechanized processing complex partial and applying innovative methods and technologies, ha, standard conventional surface sown (fruit plantations) irrigated, ha, consuming work, man-hours, required for the analysis and identification of reserves to increase the process efficiency.

It is also necessary to integrate scientific and technical progress in agricultural development strategies that will help stimulate sustainable economic growth, made on a scientific basis, to take into consideration the overall objectives of mankind: conserving natural resources, promoting sustainable development of national economy and competitive, improving the social conditions of life and labor of the people, environment and so on. is necessary to perform adaptive technologies implemented with low production consumption. In this context, an important role in the technological chain occupies selection of new varieties and hybrids native

seedlings production under business specializing in regional profile, applying irrigation systems with high and stable yields.

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