

METODOLOGY OF CALCULATION OF INDICES OF EFFICIENCY OF SELECTED COMPONENTS OF AGRICULTURAL TECHNOLOGIES LINES IN CONDITIONS OF PRODUCTION

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Actuality. The effectiveness of agrotechnologies is estimated using indicators of economic characteristics of their impact on the adequacy of yield crops to its resource supply, as well as indicators of energy and economic feasibility of the costs of their implementation for environmental safety of the environment and cultivated products. It is important not only to analyze the effectiveness of the whole technology, but also its constituent elements and links.

However, for the evaluation of the effectiveness of individual components of agricultural technologies in the production environment, there is no appropriate methodological resource. Insufficient methodological support and the acute need for it for producers have become the basis for this investigation.

The goal of the investigation is to identify and to process the methodology for calculating the specific indicators of economic and energy efficiency of the actual production of certain components of the technologies of cultivating crops.

Materials and methods for investigation. In our investigation, the information that is used is about the influence of agricultural crops on the factors affecting. In addition, it is about agrotechnologies, derived from the results of the dispersion analysis of the data of a long-term stationary experiment on agricultural systems conducted during the period from 1981 to 2016 in the conditions of the Right Bank Forest-steppe of Ukraine (Agro-industrial research station of National University of life and environmental science of Ukraine). This information becomes the starting point for calculating the specific efficiency indicators of the individual components of the agrotechnologies used in production in adequate natural and agricultural conditions.

We should note that the accuracy of the determination of these performance indicators substantiate by 5%, equal to the statistical significance of research in

agronomy; therefore, the significant difference between the comparable variants of research should be considered triple accuracy, 15%. To assess the levels of economic efficiency of agro-technologies or their individual components, the scale proposed by them for which their profitability is 50% or more consider as a high, in edition 10 - 49% consider as an average and less than 10% consider like low. The gradations of these levels scientifically based on the presence of statistically significant differences between their average modulus of 15%, considering that they correspond to a triple accuracy of observation.

The level of energy efficiency of production according to another offer estimates by the scale of the value of the coefficient of energy efficiency K_{ee} (the ratio of energy intensity of cultivated plant products to the costs of non-renewable energy for its production). So if $K_{ee} < 2$, then production is energy ineffective; if K_{ee} is 2-4 so it is low effective, if K_{ee} is 4-6 so it is medium-effective; if K_{ee} is 6-8 so it is highly effective; if $K_{ee} > 8$ so it is very energy efficient.

The results and discussion. For practical demonstration of the application of the proposed method was used the information that is based on the results of the production of two farms located in the forest-steppe. The LLC “Agro-Boguslavschina Eco” of the Kyiv region determined the economic efficiency of the main soil cultivation for the cultivation of soya.

Based on the scale of the economic efficiency of agro-measures, the main cultivation of soil for soya cultivation in the investigated farm proved to be moderately effective.

The farms of “Latoritsa 2014” Transcarpathian region LLC determined the economic efficiency of implementing a composite project of four-field crop rotation.

The results of the conducted calculation indicate the high economic efficiency of the implementation of a composite project of crop rotation in the investigated farm. The following examples of the application of the proposed method indicate the need for a specific definition of the values of the basic characteristics of the investigated segment of agrotechnology – the cost or energy share of the general effect caused by it, and the costs of its implementation.

Conclusions. The conducted research revealed methodologically and statistically substantiated method of calculation of specific efficiency indicators of individual

components of the whole agrotechnology, actually executed in production conditions. The ability of this methodology substantiated methodologically by the laws of agriculture and the statistical use of the results of the dispersion analysis of multifactorial multi-year field experiments conducted in natural and agricultural conditions, adequate to the conditions of the object of analysis, a specific production enterprise. The indicated arguments serve as the basis for the possibility of using the proposed methodology in the practice of agro-economic analysis of production activities in the field of agriculture for the improvement of agrotechnologies.