

**THE CONSTRUCTION OF PREDICTIVE-MATHEMATICAL
MODELING IN PLANNING THE EFFECTIVE USE OF ARABLE LAND
AT THE REGIONAL LEVEL**

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When making effective managerial decisions in various sectors of the economy, forecasting is used to predict the consequences of implementing measures. In agriculture, unlike other industries, to obtain a constant economic profit, one must take into account the quality of soils and climatic features. Therefore, for land resources forecasting is of particular importance. Such predictions are calculated using various prediction methods and models with application.

A number of scientific papers have been devoted to the theoretical basis for forecasting and planning effective measures in the efficient use of land resources. However, the issue of determining, assessing and further predicting the effectiveness of introducing optimization measures for the use of land resources for the example of arable land requires constant research through mathematical predictive modeling. The object of forecasting is the use of arable lands, which have a negative manifestation of degradation processes in the forest-steppe Pravoberezhnaya province of the Kiev region.

For qualitative forecasting and obtaining accurate quantitative measurements of the likely opportunities at the initial stage of forecasting, we use statistical data on soil quality and yield of grain crops. Insufficient soil quality data and yields of grain crops will be determined by extrapolation methods and the trend line. The parameter of changing the quality of soils is proposed to be divided into variants.

For effective decision-making in the process of constructing the forecast model, we set the forecast period for 10 years from 2018 to 2027

The forecasted version presupposes the restoration of soil quality, to the data of the 2010 survey round by a score of 55.7 points with the possibility of subsequent soil restoration with the removal of all degraded and unproductive arable land from processing

For the calculation, we use the predictive-adaptive method. With the help of this model and the mathematical model, we can calculate the effect of the qualitative potentialities of soils on the further change in the yield of grain crops.

At the first equidistant period for the variant of soil restoration the yield will be 65.5 centner / ha in 2022. In the second equidistance period, the predicted yield will be 82.5 centner / ha. According to the forecasted calculation, when the implementation of all optimization measures is implemented, the yield of grain units will increase by 38% over 10 years. With a similar calculation of the current negative trend in the use of arable land, the predicted yield of cereals will be 2027 58.4 c / ha.

The results obtained with different forecasting options indicate that when yielding on the processing of erosive plowing areas and the gradual restoration of the balance of nutrients, the yield of agricultural crops increases. It will also correspond to the indicators of the yield of grain crops of the developed countries of the West.

Keywords: mathematical model, forecasting, optimization, degradation processes.