

Application of Heuristic Methods to Solve Dynamic Models with Stochastic Parameters*

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Abstract

The article presents the application of the classical genetic algorithm and the pattern search method to solve a dynamic model with stochastic parameters. The combination of these two algorithms is based on the fact that a solution obtained from the classical genetic algorithm is used as the input data of the pattern search method. A four-year model of plant production with stochastic parameters of the objective function was used for optimization. The presented approach can be used to plan production for several successive periods in order to obtain the optimal yield size, taking into account the stochastic parameters of the model and limiting conditions. Using the methodology presented in the article, we can choose a model in which the actual value of the objective function will not differ significantly from the planned expected value of the model. Additionally, we have the option of analyzing the uncertainty of the results obtained.

Keywords: Classical Genetic Algorithm, Pattern Search, Stochastic Parameters, Optimization.