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DECISION SUPPORT SYSTEM FOR ECOLOGICALLY FRIENDLY AGRICULTURE INTEGRATING PARTICLE SWARM OPTIMIZATION ALGORITHM AND AGRICULTURAL ECONOMIC INDICATORS

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Abstract

The growth of green agriculture is highly valued by the party and the government, and additional changes to the agricultural industry's structure are necessary. Currently there is an urgent need for accurate analysis and prediction results of agricultural data to help the relevant departments formulate the development strategy of eco-friendly agriculture. Therefore, the study proposes a prediction model that integrates the particle swarm optimization algorithm based on lightweight gradient lifting machine and agricultural economic indicator to provide accurate data support for the eco-friendly agricultural decision support system. The experimental results revealed that the particle swarm optimization algorithm based on lightweight gradient elevator has a mean square error of 0.079, a coefficient of determination of 93.57%, and an expected value of 92.8%. The maximum relative error between experimental and predicted values was 1.8%. This verified that the proposed algorithm of the study had a good prediction performance. The analysis of the actual data revealed that the largest difference was 0.105 in the index of agricultural economic development dynamics. It was followed by the index of economic development dynamics, with a difference of 0.053. This indicated that there was a large difference in the internal development of ecologically friendly agriculture in China, and that the relevant departments could formulate policies from this aspect. Thus, it is proved that the use of the model can provide a reliable basis for the development of rational policies for an eco-friendly agricultural support system, which in turn promotes the co-development of ecological balance and agriculture.

Key words: agricultural decision making, agricultural economic indicators, ecological friendliness, lightweight gradient elevator, particle swarm algorithm

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