

Application of Linear Programming Model in Agricultural Economic Management

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Commentary

Agriculture is not only the basis for human survival but also an important driving force for social and economic development. With the ever-increasing population, food shortage has become an increasingly serious problem, which is greatly restricting social and economic development. In the process of agricultural production, attention should be paid to the protection of water and soil resources. The use of water and soil resources should minimize the damage to them and maintain a constant or increased reserve of natural resources. That is, while pursuing the maximization of economic benefits, we should maintain and improve the production conditions and environmental basis of natural resources. Therefore, rational development and utilization of water and land resources and maintaining agricultural economic development have become one of the keys to regional sustainable development.

Agricultural economic management requires corresponding systems and mechanisms. However, from the perspective of industrial development, agricultural development tends to be consistent, and the poor utilization of resources restricts the development of agricultural economic management. In recent years, regional agriculture has tended to be homogenized, and there is generally no situation in which measures are adopted according to local conditions, which has led to imitating the models of other regions to develop their own agriculture. Therefore, the efficiency of agricultural economic management is low, and traditional agriculture is widespread in many areas.

The responsibility of agricultural economic managers is to guide and encourage farmers to do the right things at the right time. Agricultural economic managers must first analyze the entire task, then assign each part of the task to farmers, organize and coordinate all farmers to participate in production, and supervise and manage farmers. This requires agricultural economic managers to have the corresponding professional skills and basic knowledge. However, at this stage, China's personnel engaged in agricultural economic management in my country generally suffer from a lack of professional skills and basic knowledge. Therefore, some new technologies cannot be applied to agricultural production in time, and the speed of agricultural economic development is also restricted. As a result, agricultural economic managers cannot innovate agricultural economic development according to the current status of local agricultural development. This situation will inevitably have a greater impact on the development of China's agricultural economy.

China's modernization started later than Europe and the United States and other developed countries. Due to the gap in productivity level, there is still a large gap between China's agricultural development level and the world advanced level, and the mechanization level is relatively low. Especially in

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some underdeveloped areas, production activities mainly rely on manpower. So far, a considerable part of rural areas in China have not paid enough attention to agricultural science and technology. They believe that blindly promoting agricultural mechanization and technology will cause huge losses to rural economic management and finance, resulting in the lack of financial support for the development of agricultural science and technology, resulting in a low degree of mechanization and technology. Therefore, it is not necessary to apply for the development of the agricultural economy with advanced technology. In addition, there is still much room for improvement in the introduction of agricultural talents. In real life, the frontline work in rural areas needs technical talents who are willing to contribute to the development of the agricultural economy. They should have a solid working attitude and excellent working ability. However, such talents are scarce.

With the emergence of problems in agricultural economic management, people pay more and more attention to the use of mathematics to quantitatively solve various problems in the economic and management fields. Among them, the proper establishment of economic mathematical models related to these problems is the key. The establishment of the mathematical model is not only the first step to solve agricultural economic and management problems with mathematics but also runs through the whole process of solving problems. There are many kinds of economic mathematical models. This article mainly analyzes the fuzzy linear programming mathematical model through the development zone to achieve the development goals and discusses the standard form of the fuzzy linear programming mathematical model and the principle of the simplex solution, so as to study and solve some specific economic problems.

There are two main kinds of problems in the study of fuzzy linear programming: one is how to make an overall arrangement after a certain task is determined and try to use the least input material resources to complete the task. Second, there are already a certain amount of human and material resources, and it is important that how to arrange and use them so as to accomplish most of the tasks. In fact, these two kinds of problems are two aspects of the same problem, which is the so-called problem of seeking the best overall index of the whole problem [1-5].

Therefore, many scholars have done a lot of research work on fuzzy programming. Rojas first proposed the concept of decision-making in a fuzzy environment. Alemany studied a class of fuzzy linear programming problems with elastic constraints. Subsequently, Mansoori and Crainic gave their respective solutions to the fuzzy linear programming problems with elastic constraints. Wang and Peng obtained the optimal solution of a class of linear programming models when the parameters were fuzzy. Hamadameen and Hassan considered the linear multiobjective programming problem in which the objective coefficients were fuzzy numbers and then used the function ranking method to give a solution. Nasser considered fuzzy variable linear programming and gave a solution method by using the concept of fuzzy number comparison. Jiang and Chen proposed the unified principle of stochastic programming and fuzzy programming and laid the foundation for optimization theory under general uncertain environments.

In addition, an intuitionistic fuzzy set was applied by Taghikhani on the basis of a fuzzy set. It belonged to the degree and does not belong to the degree to describe fuzzy phenomena. It more objectively expressed the human thinking methods and subjective fuzzy quantities. It is a generalization of fuzzy set theory. The intuitionistic fuzzy set theory had been applied in many fields

such as medical diagnosis and pattern recognition. Singh and Yadav studied the optimization problem in the intuitionistic fuzzy environment, proposed a mathematical programming model about intuitionistic fuzzy sets, and gave the solution method. Luo and Zhu studied the multiattribute decision-making problem with intuitionistic fuzzy sets, established several linear programming models, and gave the solution method, but the amount of calculation is relatively large. So far, fuzzy multiobjective programming has not only made a series of progress in theory but also been applied in many fields [1-5].

This paper constructs and discusses a class of multiobjective fuzzy linear programming problems with elastic constraints, that is, a class of multiobjective fuzzy linear programming problems with full fuzzy coefficients except for the elastic constraint condition coefficients. Then, a method of the optimal solution is given by using the fuzzy structural element method and applied in agricultural economic management.

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