

A Bi-Objective Stochastic Mathematical Model for Agricultural Supply Chain Network

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Abstract : Nowadays, in advanced countries, agriculture as one of the most significant sectors of the economy, plays an important role in its political and economic independence. Due to farmers' lack of information about products' demand and lack of proper planning for harvest time, annually the considerable amount of products is corrupted. Besides, in this paper, we attempt to improve these unfavorable conditions via designing an effective supply chain network that tries to minimize total costs of agricultural products along with minimizing shortage in demand points. To validate the proposed model, a stochastic optimization approach by using a branch and bound solver of the LINGO software is utilized. Furthermore, to accumulate the data of parameters, a case study in Mazandaran province placed in the north of Iran has been applied. Finally, using ϵ -constraint approach, a Pareto front is obtained and one of its Pareto solutions as best solution is selected. Then, related results of this solution are explained. Finally, conclusions and suggestions for the future research are presented.

Keywords : perishable products, stochastic optimization, agricultural supply chain, ϵ -constraint

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