

Abstract

Agriculture is an activity that is always influenced by natural factors such as flood, drought, insect attack, and the like. On the other hand, various factors such as prices, changes in performance and costs along with natural factors like lack of rainfall and depletion of groundwater have caused considerable risks and uncertainty in this activity. Therefore, decision-making process in such circumstances requires more proper and efficient tools to consider the above-mentioned factors in designing cropping systems. Numerous patterns have emerged and developed in recent decades and in most of them, it has been attempted to involve risks in decision-making. In this study, a linear programming model is used. This research has been done in Sistan region and in four parts; Zabol, Zahak, Nimrouz and Hirmand in order to provide an optimized culture pattern according to current drought and comparison between optimized pattern and existing one. In this work we used linear programming, data have been collected from Jihad Agriculture Organization of each region and analyzed by Excel software. Also comparison between current culture patterns with recommended ones has been done to find suitable amount of increasing and decreasing in each of products. Therefore in addition to maintain water resource, farmers and market will benefit from this situation. The results showed that in linear programming and in limited water resources, the area under cultivation of onion increased significantly, whereas in case of melon and watermelon, it had no increase. So, in order to conserve water resources and also, due to labor constraints, frequent need of water, and high cost of irrigation, planting of these two crops is not recommended.

Keywords: Sistan, linear programming, dehydration, optimum cropping pattern



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