

Abstract

Water allocation in agriculture water distribution systems are usually based on the factors such as anticipated water demand for crops and the amount of available water. Uncertainty in these factors is the inherent of these systems. In this study, to optimize water allocation of Diversion Dam Nekooabad and land covered by it was paid for the years 2012-2014. Optimization with Degree of Conservative Controller Parameters used to survey the effect of uncertainty on the allocation of irrigation water and land in this region. Also, various scenarios applied to analysis sensitivity of the model with respect to increase of degree of conservatism, irrigation water efficiency and price of irrigation water. The model evaluated for 35, 45, 55 and 65% of irrigation water efficiency, 10, 20 and 30% increasing in the price of irrigation water, different levels of uncertainty and combination of these scenarios. The results showed that, increase in irrigation water price and the degree of uncertainty causes decreasing of the gross margin of farmers resulting from transfer irrigation water. Maximum net flows and cultivated area in three-years of the planning horizon is devoted to Falavarjan and Nadjafabad regions. Considering the old structures of network irrigations in two regions, reforming and restructuring the network irrigations are recommended to reduce water loss. Also, a part of the income obtained from increasing irrigation water price can be allocated to investment in the water saving technologies to compensate farmers for gross margin loss.

Keywords: Nekooabad, Uncertainty, Irrigation Water Prices, Efficiency



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**The Thesis Submitted for the Degree of Master of Science
(In the Field of Agricultural Economics)**

Optimization of water allocation in Nekuabad irrigation network under uncertainty

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June 2011