

Abstract

In the recent decades increasing population pressures, improving life level and increasing demand to the quality of environment, led the governments to provide better Strategies to efficiently manage the water resources. In this regard, the most of countries try to offer new decisions based on water demand management. The present study is aimed to study the consequences of available water decrease and it's effect on profit and the pattern of farmers planting in Golestan area under different levels deficit irrigation. Positive mathematical programming (PMP) is among the applied methods, today used to assess economic models and make suitable decisions in agriculture area. In PMP used model, the decrease of efficiency per scale in crops level is considered. So in the present study, by applying this model and using the function of CES we tried to study the scenarios of 10% , 20% and 30% decrease of available water under the conditions of deficit irrigation in the irrigation levels of 10%, 20% and 30%. Required data to perform this study involves 2011-2012 that were gathered from related organizations in Golestan province. To solve the provided model, GAMS software 23/9 was used. In this study, at first the yield level of each crop per different levels of irrigation was calculated and then by presenting a simple linear programming model and determining the shadow prices of crops and estimating parameters of cost function, the model was estimated. The results indicated that strategy of decrease in available water causes the decrease in yield and planted area and in the presence of observed deficit irrigation, the planted area of each crop decrease very much relative to irrigation level. Then by saving and storing water for long term, we can increase or achieve an optimal pattern with the least efficiency decrease.

Key Words: Deficit Irrigation, Positive Mathematical Programming, Constant Elasticity Of Substitution, Golestan



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The Thesis Submitted for the Degree of M.Sc
In the field of Agricultural Economics

Title:

**Consequences of Decreasing Water on
Profit and Cropping Pattern of
Golestan Province Farmers under the
Deficit Irrigation**

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September 2014