Abstract

Considering that the water in between agricultural inputs are used to a greater extent, determination economic value of water can be an important tool for water management and development of practical policy in the field. In order to, the main objective of the present study is determination economic value of irrigation water and farmer's response to price and non-price policies in cities of Qazvin province. To achieve this goal was used of the positive mathematical programming model and agricultural production functions for areas of Qazvin province that have irrigation agriculture (Cities Qazvin, Takestan, Boinzahra, Abyek and Alborz) was raised. To achieve applied results, the production function with constant elasticity of substitution and cost function the exponential or logarithmic in positive mathematical programming model was imported. First, the economic value of irrigation water in each of the regions was determined. Then, framer's response to agricultural products price increase under the scenarios 10, 20, 30, 40 and 50 percent and reduction in irrigation water resource availability under the scenarios 5, 10, 20 and 30 percent was investigated. The dates required for this research is related to crop year 2010-2011 that by referring to the relevant agencies in each of the city of Qazvin province were collected. To solve the models, the software GAMS Version 23/5 was used. After solving the model, the economic value of irrigation water for each of the city of Qazvin, Takestan, Boinzahra, Abyek and Alborz respectively 1204, 1690, 2534, 1656 and 1120 Rials was calculated. The results showed that there is huge difference between the economic value of irrigation water and water charge rates in Qazvin province. The results of agricultural products price increase policy in cities of Qazvin showed that with rising prices of selected products under various scenarios, farmers to achieve greater profits are tending to increase the acreage of these crops. In addition, the results showed that with reduction in irrigation water availability in cities of Qazvin, economic value of water irrigation increases and farmer's gross profit decreases. In the end, in order to avoid the indiscriminate use of water in agriculture department, to determine Water Charge for farmers of Qazvin province due to the changes in the economic value by considering equity recommended.

Keywords: Water Charge, Positive Mathematical Programming, Constant Elasticity of Substitutionl, Qazvin

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