

Determination of the Economic Value of Water and Simulating Farmers' Behavior in Takestan Region in Response to Reducing the Agricultural Water Resources

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Abstract

The main objective of the present study was determination of the economic value of irrigation water and simulation of the farmers' behavior in response to reducing available water resources policy in Takestan Township, in Qazvin province. To achieve this goal, we used the positive mathematical programming (PMP) method and state wide agricultural production (SWAP) functions. First, the economic value of irrigation water in the studied township was determined. Then, farmer's response to the scenarios of 5%, 10%, 20% and 30 percent reduction in available water resources was investigated. The required data belonged to crop year 2013-2014. To solve the presented experimental, software GAMS Version 24/1 was used. After solving the model, the economic value of irrigation water in Takestan Township was calculated at 1690 Rial. The results showed that there was huge difference between the economic value of irrigation water and water charge rates in this township. In addition, the results showed that with reduction in irrigation water availability in Qazvin, economic value of irrigation water increases and farmers' gross profit decreases. Finally, in order to avoid the indiscriminate use of water in agriculture sector, it is recommended to determine water charge for farmers of Takestan Township according to trend of changes in economic value and considering equity.

Keywords: Water demand management, Production function, Water charge.

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