Optimization of Water Allocation and Evaluation of Water Use Efficiency in Moghan Irrigation Network

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ABSTRACT

Lack of consideration to appropriate water distribution in irrigation networks has caused low efficiency in their water productivity. To rectify such problems, water allocation in farm units should be considered with respect to the temporal crops water requirements. This paper develops a modeling framework for optimal water distribution among different crops during their growing season, which maximizes the incomes. The proposed model constitutes of two modules including intra-seasonal and inter-seasonal water allocation. In the first module, the optimal amount of water is allocated throughout the growing season for each crop such that the relative yield gets maximized, while the second module distributes optimally water among the different crops. To explore performance of the developed model, the secondary K canal at Moghan irrigation network is selected to evaluate the water use efficiency. The results showed that the model can improve up to 632 Rls/m³ water use efficiency of the network.

Keywords: Water Allocation, Irrigation Scheduling, Water Use Efficiency, Moghan Irrigation Network