Economic Optimizing of Irrigation Scheduling of Selected Agricultural Crops in Zaveh Plain, Khorasan Razavi Province

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Abstract

Most of the water in Iran is used in agricultural sector. In recent years, due to loss of attention to this scares production input and incorrect and excessive use, as well as the droughts, the water shortage issue has turned into a serious crisis. So, the planners should work to make a decision in order to minimizing water consumption and prevent the water from wasted and misused by providing appropriate cropping pattern and also using advanced technologies of irrigation systems. In this study, the applied model is multi-objective genetic algorithms in

MATLAB with nondominated sorting. For this study, for crop seasons 2011-12 to 2014-15, the data of cultivated areas, yield, price and the costs of productions of irrigated crops including wheat, barley, maize, alfalfa and sugar beet crops were obtained from Office of Agriculture in Zaveh plain, Khorasan-Razavi province. Also, the data of Regional Water Authority of Khorasan Razavi and the water supplied from Senobar Station was used. Some required data were obtained

through consultation with experts. Comparing the results of the estimated cultivation areas with the actual statistics of cultivated areas for each crop in each year showed that the optimum cropping area of wheat and barley obtained from the model was lower than the actual cropped area. But, corn crop showed an increase in cultivation area which is highly desirable and increases the irrigation scheduling returns and sustainability of agriculture. Considering the importance of minimization of the deviation of the irrigation schedule presented by the experts and farmers, it is recommended that the irrigation scheduling plan for the farmers should take into account the viewpoints of both the farmers and the experts.