Abstract

In the present study, the various policies of water supply to agricultural sector from Zayanderood dam were investigated using multistage fuzzy-stochastic quadratic programming (MFSQP). The policies were, not considering the minimum water supply to agricultural sector (C_0), the 100 (C_4), 80 (C_3), 50 (C_2) and 20 percent (C_1) of the minimum water supply to agricultural sector. Results showed that, applying these policies lead to different water allocation to the three sectors (drinking, agriculture and industry). Over the next three years (1389-1391), drinking sector under the worst conditions (dry, dry and dry year) and all policies (C_0 to C_4) will not face with water shortage. Industrial sector in all scenarios and under the same conditions will be faced with serious water shortages. In the agriculture sector, water supply in policies C_0 to C_4 was 4.05, 25.75, 165.65, 302.65 and 812.65 million cubic meters and over the three planning horizon total demand of agricultural sector was in the interval (5022.77-2544.92) million cubic meters. On the basis, in the most inappropriate circumstances and under scenario C_0 to C_4, water allocated to agriculture sector is not profitable. Furthermore, the results showed that tendency to earn high profit from the system; the agricultural sector will face with high risk of water shortage.

Key words: Uncertainty, Zayanderood, Dam, Fuzzy programming

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Zayanderood dam water management, using multistage fuzzy – stochastic quadratic programming

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