Abstract

Global researches show that shortage of water resources in the Middle East and competition over the operation of water resources in the region has an important role in the security of each of these countries. One of the main current water sources is surface water resources and specifically water in the reservoirs, their optimal utilization due to their large scale as well as complex operational problem will reduce the possibility of solving problem with the conventional optimization methods. Meta-heuristic algorithms are used to optimize complicated problems. In this study, ant colony algorithms, genetic algorithms, particle swarm optimization algorithm, and colonial competitive algorithm firefly algorithm are used to optimize the utilization of Doroudzan reservoir located in Fars province and to reduce difference of demand and release. Likewise, reliability criterion is used to evaluate the algorithms' performance. Based on this criterion, which is one of the most important criteria in determining system performance, Ranking ants system, max-min ants system, Elite ants system, Genetic algorithm, Firefly algorithm, Particle Swarm Optimization algorithm, Ant colony algorithms, continuous ants system, and Imperialist Compotation algorithm, respectively as 0.988, 0.987, 0.963, 0.959, 0.954, 0.943, 0.783, and 0.777, had the most suitable performance.

Keywords: Doroodzan Reservoir, Meta-Heuristic Algorithms, Optimization, Reliability

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