Wheat, barley, sugarbeet, potato, alfalfa, and corn are common crops produced in Iran, which need the most virtual water volume compared to other crops. Determination of the virtual water for these crops would assist in better management of water resources. The main objective of this study is to find out the best technique for estimating and mapping of virtual water. In this research, the virtual water volume was determined by crop water requirement and crop yields using three ANN structures as well as ANFIS technique. Based on RMSE and R2 the comparison of obtained results predicted through the applied ANNs structures indicate that the RBF outperforms the other models for estimating virtual water for wheat, potato, corn, and barley. Moreover, a comparison between RBF and ANFIS revealed that ANFIS is a promising model, which can be efficient mathematical tool for estimation of crop’s virtual water.
Application of Artificial Neural Network and Adaptive Neural-based Fuzzy Inference System Techniques in Estimating of Virtual Water

References

- Wang, Y.-m., Chang, J.-x., and Huang, Q. 2010. Simulation with RBF neural network model for reservoir operation rules. Water resources management 24, 2597-2610.

Index Terms

Computer Science
Artificial Intelligence

Keywords
virtual water ANN MLP RBF GRNN ANFIS