

## **Evaluation of the Water Status in Syria by Applying the Virtual Water Concept in Agricultural Sector**

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### **Abstract**

Fresh water is considered as a top priority concern that captures Syria because of limited water resources and high rate population growth (2.52%). This paper focuses on virtual water concept and studies the possibility of utilization it in agricultural sector, and calculate the water balance of Syria accurately. The virtual water volume was calculated for most of the crops that are planted in Syria and the total water footprint and its indicators were calculated. A mathematical optimization model is developed for the selection of the cropping patterns distribution in Syria that use water with higher efficiency and better economic income, and minimize the food gap by offering two scenarios. As a findings of this research, the food demand was not covered completely but mostly because of water shortage, and the food gap value was decreased in the first scenario from 10950 million Syrian pounds to 9850 million Syrian pounds and to 5100 million Syrian pounds in the second scenario because of the productivity improvement of some crops and the increase in the production of some crops (wheat, maize) which are the main crops in food balance.

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**Keywords:** virtual water – agriculture sector in Syria

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For the abstract in Arabic see pages (69-84).

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