



## **Application of water footprint in a fertirrigated melon crop under semiarid conditions: A review.**

María Teresa Castellanos Serrano (1), María Isabel Requejo Mariscal (2), Raquel Villena Gordo (1), María Carmen Cartagena Causapé (1), Augusto Arce Martínez (1), Francisco Ribas Elcorobarrutia (2), María Jesús Cabello Cabello (2), Ana María Tarquis Alfonso (3,4)

(1) Departamento de Química y Tecnología de los Alimentos. Technical University of Madrid, Madrid, Spain., (2) Servicio de Investigación y Tecnología Agraria. Consejería de Agricultura de Castilla-La Mancha. Centro Agrario El Chaparrillo. Ciudad Real, Spain., (3) Departamento de Matemática Aplicada. Technical University of Madrid, Madrid, Spain., (4) CEIGRAM, Technical University of Madrid, Madrid, Spain.

In recent times, there has been a major increase in the use of water and fertilizers in order to increase agricultural production, while at the same time there has increased evidence that aquifers are reducing their water level, enriched by nutrient and degraded as a result of pollution. So best management practices are needed for much of cropped, irrigated and fertirrigated land, to avoid contamination of fresh water and groundwater.

The concept of “water footprint” (WF) was introduced as an indicator for the total volume of direct and indirect freshwater used, consumed and/or polluted [1]. The WF distinguishes between blue water (volume of surface and groundwater consumed), green water (rain-water consumed), and grey water (volume of freshwater that is required to assimilate the load of pollutants based on existing ambient water quality standards).

This study is focused in calculating the crops WF using a real case of study in a fertirrigated melon crop under semiarid conditions which is principally cultivated in the centre of Spain declared vulnerable zone to nitrate pollution by applying the Directive 91/676/CEE. During successive years, a melon crop (*Cucumis melo* L.) was grown under field conditions applying mineral and organic fertilizers. Different doses of ammonium nitrate were used as well as compost derived from the wine-distillery industry which is relevant in this area. This application help us to review the different concepts in which is based WF.

**Acknowledgements:** This project has been supported by INIA-RTA04-111-C3 and INIA-RTA2010-00110-C03-01.

**Keywords:** Water footprint, nitrogen, fertirrigation, inorganic fertilizers, organic amendments, winery waste, semiarid conditions.

[1] Hoekstra, A.Y. 2003. Virtual water trade. Proceedings of the International Expert Meeting on Virtual Water Trade, Delft, The Netherlands, 12-13 December 2002. Value of Water Research Report Series No. 12, UNESCO-IHE, Delft, The Netherlands.