

Effect of mineral and organic fertilization on grey water footprint in a fertirrigated crop under semiarid conditions.

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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).

In semiarid scenarios with low water quality, where the irrigation is necessary to maintain production, green WF is zero because the effective rainfall is negligible. As well as blue WF includes: i) extra consumption or irrigation water that the farmer has to apply to compensate the fail of uniformity on discharge of drips, ii) percolation out of control or salts leaching, which depends on the salt tolerance of the crop, soil and quality of irrigation water, to ensure the fruit yield. The major concern is grey WF, because the irrigation and nitrogen dose have to be adjusted to the crop needs in order to minimize nitrate pollution.

This study is focused in assessment mineral and organic fertilization on grey WF 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. Different doses of ammonium nitrate were used as well as compost derived from the wine-distillery industry which is relevant in this area.

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[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.