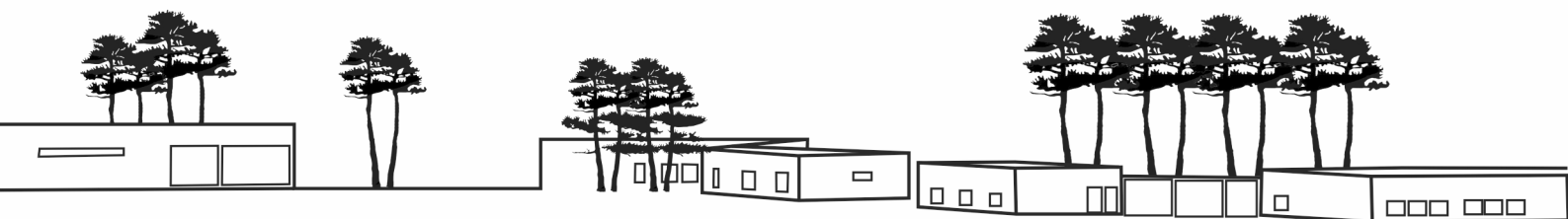




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WATER FOOTPRINT OF A WINE BOTTLE FROM THE SOUTHERN REGION OF PORTUGAL BY USING A LIFE CYCLE ASSESSMENT APPROACH

MANUEL FELICIANO¹, PEDRO PRESUMIDO¹, ARTUR GONÇALVES¹, ARTUR SARAIVA², CÉLIA JORGE³, SOFIA RAMÔA³, PEDRO OLIVEIRA E SILVA³, JOSÉ SILVESTRE⁴, ANTÓNIO CASTRO RIBEIRO¹, MARGARIDA OLIVEIRA^{2,5}

¹ Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Bragança, Portugal. Email: msabenca@ipb.pt; pedrohpresumido@gmail.com; ajg@ipb.pt; antrib@ipb.pt

² ESAS, UIIPS, Instituto Politécnico Santarém, Santarém, Portugal. Email: artur.saraiva@esa.ipsantarem.pt

³ ESAB, Instituto Politécnico Beja, Beja, Portugal. Email: sramoa@ipbeja.pt, pedrosilva@ipbeja.pt

⁴ INIAV, Instituto Nacional de Investigação Agrária e Veterinária, Torres Vedras, Portugal. Email: jose.silvestre@iniav.pt

⁵ LEAF - Linking Landscape, Environment, Agriculture and Food, Instituto Superior de Agronomia, Universidade de Lisboa, Lisboa, Portugal. Email: margarida.oliveira@esa.ipsantarem.pt

Abstract: The Water Footprint (WF) is currently the best tool to assess the amount of freshwater that is needed to produce a certain amount of product or service, by incorporating not only direct water uses, but also indirect water use and waste production. The main objective of this research was to calculate the WF of a common 0.75 L wine glass bottle, produced in the southern region of Portugal, by using a Life Cycle Assessment methodology. The system boundary was defined based on a cradle-to-gate approach, in order to analyze and improve the water use in both stages of wine production, i.e. the agricultural and the winery stages. Primary data was gathered from two different vineyards and wineries over two consecutive years of growing grapes and producing wine. The GaBi software, with its professional database, was used to assess the potential environmental impacts related to water availability and water quality as set out in the ISO 14046:2014 standard. Water availability was assessed with the main water scarcity regional characterization factors, such as Water Scarcity Index (WSI) and Available Water REmaning (AWARE) and water quality was evaluated through acidification, eutrophication and aquatic ecotoxicology impact categories. The main results point out that the main wine hotspots are the viticulture phase, mainly due to fuel, fertilizer and pesticides consumption, and the wine primary packaging production. Water saving and efficiency measures are necessary to reduce the risks of severe water stress and water pollution.

Keywords: Water Footprint; Wine sector; Life cycle assessment; Environmental impacts

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