

EVALUATION OF THE ENVIRONMENTAL IMPACT OF PRE- AND POST-HARVEST PRACTICES FOR THE EXAMINATION OF OCHRATOXINS CONTAMINATION THROUGH THE GRAPE TO WINE CHAIN

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Abstract

The risk of mycotoxins is a global issue that represents a serious risk for human and animal health. Ochratoxin A (OTA) is a very toxic mycotoxin that constitutes a severe problem for viticulture and taking into account the extreme climatic events that are frequently faced in recent years, the OTA problem is arising along the vine value chain ^[1,2]. In the context of OchraVine Control project, integrated and innovative precision agriculture management strategies will be developed in order to reduce the occurrence of ochratoxins along the vine value chain products, such as grapes, raisins/currants and wine. The evaluation of the sustainability of the technologies that will be used for the examination of OTA contamination will be performed through the Life Cycle Assessment (LCA) methodology. LCA will assess the environmental impact of the approaches developed within the project and compare them to the currently applied practices while LCC analysis will reveal the economic feasibility and cost-effectiveness of the selected case studies.

In the present study, the evaluation of the environmental impact of the current pre- and post-harvest practices for the examination of ochratoxins contamination was performed through the grape to wine chain. The Life Cycle Assessments were performed according to the ISO 14040 and 14044 standards and were implemented using LCA software tools and standards-based methodology for the evaluation of carbon, energy and water footprints taking into account a number of critical factors in the life cycles of products and processes. In a first step, the life cycle inventory (LCI) data were collected by questionnaires and interviews with different stakeholders (e.g. experts, farmers, industries, etc.) in order all data to be actual operating data. Data were then used to determine the environmental profile by the life cycle impact assessment using the SimaPro software. The results of the analysis were used to determine the main environmental impacts of the overall production processes of the studied products, such as grapes and wine, and to identify what steps have the greatest level of criticality.



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