**LIFE CYCLE ASSESSMENT IN THE GRAPE TO WINE CHAIN APPLYING PRE- AND POST-HARVEST PRACTICES FOR THE EXAMINATION OF OCHRATOXINS CONTAMINATION**

**R. Goulimaris1, C. Drosou1,\*, C. Boukouvalas2, D. Tsitsigiannis3, G. Xanthopoulos4**

1KPAD Ltd., Barnet, UK

2National Technical University of Athens, School of Chemical Engineering, Iroon Polytechneiou 9, Zografou Campus, 15780, Athens, Greece

3Department of Natural Resources Management and Agricultural Engineering, Agricultural University of Athens, Athens, Greece

4Department of Crop Science, Agricultural University of Athens, Athens, Greece

*\** *Email* *address of the corresponding author*

**ABSTRACT**

Grapes are one of the most widely grown fruit crops throughout the world; vineyards cover a total area of 7.8 million hectares and produce a total yield of about 65 million metric tons. Several diseases can affect grapes during the cultivation, harvest, transport and/or storage, causing quantitative and qualitative yield losses, which mainly associated with fungal contamination. Among fungi species, the genus *Aspergillus* and *Penicillium* constitute a very severe problem for viticulture as they possible produce ochratoxin A (OTA). OTA contamination in crops and all along the vine chain (in various derived products such as raisins/currants, grape juices and wines) is a highly important and complex issue which may be mitigated by adopting appropriate management strategies in the vineyard [1,2]. In the context of OchraVine Control project, an integrated management strategy developed to control and minimize, to the possible higher level, the risk of contamination of OTA in grapes, raisins/currants and wine. In this study, the evaluation of the environmental impact through the grape to wine chain was performed applying the pre- and post-harvest practices developed for the examination of ochratoxins contamination. The comparison with the current practices, before the implementation of OchraVine Control practices, was performed. Life Cycle Assessment was performed according to ISO 14040 & 14044, using GaBi software, utilizing ReCiPe 2016 (H)\* methodology with 18 midpoints and 3 endpoints. To this end, to define the Goal of the study, Cradle-to-gate boundaries were set and the functional unit was defined as 1 bottle (750 ml) of red wine. The results of the examined cases revealed that the environmental impacts were lower when pre- and post-harvest practices for the examination of ochratoxins contamination applied through the grape to wine chain.

**KEYWORDS:** Enviromental impact, Grape, Life Cycle Assessment, Ochratoxins, Wine.

**REFERENCES**

[1] Agoritsis S.P., G. Zakynthinos, T.H. Varzakas, S.E. Tjamos, P.P. Antoniou, M. Dimakopoulou , G. Karnavas, E.I. Paplomatas, E.C. Tjamos, T.J. Michailides, D.I. Tsitsigiannis (2014). *Phytopathol. Mediterr.* 53 (2): 361

[2] Amo-Salas M., Ortega-López V., Harman R., Alonso-González A. (2011).*Crop Prot.*, 30, 1586-1593.