

ENVIRONMENTAL ASSESSMENT OF VITICULTURE WASTE VALORISATION THROUGH COMPOSTING AS A BIOFERTILISATION STRATEGY FOR CEREAL AND FRUIT CROPS

A. Cortés; L.F.O. Silva; V. Ferrari; S.R. Taffarel; G. Feijoo; M.T. Moreira

Abstract

Composting is a solid waste management alternative that avoids the emission of methane associated with its disposal in landfill and reduces or eliminates the need for chemical fertilisers if compost is applied. The main objective of this study was to analyse the environmental burdens of composting as a way to achieve a more circular valorisation of wine waste. To do so, with the purpose of identifying optimal operational conditions and determining the “hotspots” of the process, the life cycle assessment (LCA) methodology was used. The consumption of diesel fuel in machinery was determined to be the main critical point in the environmental effects of the system, followed by the transport and distribution of the compost. After the application of compost instead of mineral fertilisers, corn, tomato and strawberry crops would have a better environmental performance in most impact categories. In this sense, a maximum improvement of 65% in terrestrial ecotoxicity is achieved in strawberry cultivation. In light of the results obtained, it is demonstrated that composting is a suitable way of organic waste valorisation according to Circular Economy principles.

Keywords

Life cycle assessment, Viticulture waste, Composting, Valorisation, Mineral fertilisers