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Short Communication

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Different methods for turning olive pomace in resource: Benefits of the end products for agricultural purpose

Muscolo Adele

Mediterranea University, Italy

Abstract

In Mediterranean countries the olive oil industry produces, yearly, a huge quantity of pollutant wastes in a short time affecting soil and groundwater quality for their high content of phenols and wax. With the use of biological processes, we can transform these wastes into fertilizers for a sustainable agriculture. We used different methods anaerobic digestion, aerobic digestion, and crude agricultural waste management system to produce organic fertilizers. The obtained compounds were chemically analysed to verify if their characteristics fell into the marketability limits permitted by the current Italian regulation. Their effects on soil were subsequently assessed. Results evidenced that all the by-products obtained were suitable as fertilizers. They were able to increase soil organic matter, microbial biomass, and nutrients with beneficial effects on soil fertility, but at different extent. The best effects were in following order: compost, vermicompost, olive-pomace-pads and digestate. Considering that the different methodologies dispose different amounts of olive pomace (90% in composting, 70% in vermicomposting, 12% in anaerobic digestion and 5% in sulphur based fertilizer) in different time (4 months for compost, 3 months for vermicomposting, 1 month for anaerobic digestion and 1 day for sulphur-bentonite) and processing set-up, each method can be differently competitive for environment and/or agriculture. Composting and vermicomposting have economic advantage over other alternatives and have the greatest fertilizer effect even if the production time is longer than other two. Digestate use reduce the environmental impact of CO2 and CH4 emissions coming from the industrial fertilizer production process; it is rich in nutrients and can be obtained in a shorter time than compost. Olive pads production represents a crude waste management systems that reduce greenhouse gas emission in the atmosphere producing fertilizers able to generate, mainly in alkaline soils, a soluble zone of nutrients while minimizing leaching losses to the environment.

Biography:

Muscolo Adele graduated in Biological Sciences (MSc), has completed her PhD in Food Science at the age of 26 years at the Policlinic Federico II University of Naples, Italy. In 1988 she started is professional carrier as researcher at "Mediterranea" University of Reggio Calabria where she is still working as Full Professor in soil chemistry and ecology. Since 1990 she is reviewer for International Scientific Journals and since 2008 she is evaluator of projects for European Community, International Funding Research Agencies and Italian and Foreign Research Ministries. She is examiner of international PhD dissertation. She has over 189 papers in international journals with IF. Citations: 2249; H index: 27. She has been serving as an editorial board member of many International Journals. She is Associate Editor for JFR.