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Turning agricultural (orange and olive) and industrial wastes into eco-friendly fertilizers for improving soil and crop quality

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Even if agricultural wastes do not contain toxic compounds and pathogens, when improperly disposed of and / or left in landfills, can cause significant environmental damage with negative effects on soils and crops. The residues of the industrial processing of oranges and olives, of which the Mediterranean countries are the major producers, being still rich in organic matter and bio-compounds, represent an important source of nutritional components. This work aims to recover and enhance the aforementioned biomasses through three different methods: anaerobic digestion, aerobic digestion and use without any transformation (raw waste management) to transform these residues into fertilizers by identifying the most eco-sustainable methodology. The by-products, obtained from the different transformation processes, have been chemically analyzed and tested on soil, and on growth and quality of garlic (*Allium sativum*). The results showed that all the by-products positively influenced the characteristics of soil and the quality of garlic, even if the effects were different and dependent on the type of the by-product used and on the chemical characteristics of the biomass from which the by-products came. The by-products from orange waste (pastazzo) were somewhat more effective than those from olive pomace and among the types of by-products, compost was the most effective. All by-products improved both the productivity and the quality of the garlic.

Biography

Professor Muscolo Adele Graduated in Biological Sciences, completed her PhD in Food Science at Naples University, Italy. In 1988 she started her 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. Since 2008 she is evaluator of projects for EC, International Funding Research Agencies and Italian and Foreign Research Ministries. She is examiner of PhD dissertation.

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