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## **Abstract**

### **Recycling Agro-industrial and municipal wastes into nutrient-rich organic fertilizer**

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This work was focused on recycling different typology of pollutant wastes (olive pomace and orange residues; municipal wastes and sulphur residue of hydrocarbon refining processes) with the triple objectives of limiting wastes in landfill, reducing greenhouse gas emission and producing organic-mineral fertilizers. The specific objectives were: 1) innovation in waste management techniques by reducing the accumulation of different typology of wastes with a unique process 2) verifying the efficiency of the obtained fertilizers on soil and Onion and Garlic growth 3) improving soil and crop quality connecting waste, food, and environment. The experiment was a randomized complete block design with three replications. Our results showed that all sulphur bentonite fertilizers improved soil quality in respect to not fertilized soil. Sulphur bentonite linked with agricultural and/or municipal wastes were more effective than sulphur bentonite itself.

The best soil improvement was observed when orange residues were contained in the fertilizing pads. Onion and Garlic showed the best growth when cultivated in presence of sulphur-based fertilizers (+20%), the best performance was observed when orange residues were contained in the fertilizer

(+45%). Onion and Garlic quality in terms of antioxidant compounds and antioxidant capacity increased in presence of sulphur-based fertilizers (+ 30%) mostly when sulphur-bentonite with orange residues were used (+90%). In short, in addition to the environmental advantages, numerous economic benefits coming from the decrease in the production and use of chemical fertilizers, the reduction of costs for landfilling and the gain rising from the sale of the new fertilizers produced, emerged.



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## **Biography**

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. She has over 200 papers in international journals with IF, Citations: **3940**; H index: **34**. She is editorial board member of many International Journals. She is Associate Editor for JFR and Forests. She is part of the list “World’s Top 2% of scientist of their main subfield discipline, for 2020 and 2021 (Ioannidis JPA, Boyack KW, Baas J; 2020 Updated science-wide author databases of standardized citation indicators. PLoS Biol 18(10): e3000918. <https://doi.org/10.1371/journal.pbio.3000918>)