

Adriano Sofo--deleted

Subjects: Agriculture, Dairy & Animal Science | Plant Sciences

Contributor: Adriano Sofo

Adriano Sofo graduated with a Master Degree in Biological Sciences from the University of Bari, Italy, in 1997. He spent three years (1999-2002) at the University of Basilicata, Italy, with a Doctorate in Crop Productivity. From 2000 to 2001, he also was a Researcher at the National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Italy. As Postdoctoral Training, in 2002, he worked at the Institute of Molecular Biology and Biotechnology, Heraklion, Greece, within a Marie Curie Fellowship. In 2007, he graduated with a second Master Degree in Plant Biotechnology from the University of Basilicata. He then trained as a Postdoctoral Researcher at the University of Basilicata, where he also worked as Assistant Professor in Agricultural Chemistry. In 2015, he was awarded a Fulbright Research Scholar grant to spend at the University of California, Davis. In 2017, he received a fellowship award from the OECD Co-operative Research Programme at the University of Waikato, New Zealand. In 2019, he was a visiting professor at Kindai University, Nara, Japan, within a JSPS Research Scholar Grant. In 2021, he benefited from a DAAD Research Stay at the University of Bremen, Germany. Currently, he is Associate Professor of Agricultural Chemistry and Plant Biology at the University of Basilicata. His research fields are: a) physiological and biochemical response of plants to stresses; b) soil chemistry/microbiology and soil sustainable management; c) food quality and plant secondary metabolites. He is actively working on the following topics: a) response of plants to abiotic and biotic stresses; b) response of plants and fungi to soil pollutants; c) soil quality and fertility in sustainable agro-ecosystems; d) food quality and improvement of plant material. He is the author of over 150 papers published in peer-reviewed journals and books. He is Editor-in-Chief of the International Journal of Plant Biology (PagePress) and Section Editor-in-Chief of Plants - Plant-Soil Interactions (MDPI). He is Associate Editor of Functional Plant Biology (CSIRO) and Soil Use and Management (Wiley), and member of the Editorial Board of Plant Signaling & Behavior (Taylor & Francis), Sustainability - Section Sustainable Agriculture, Food and Wildlife Section (MDPI), Soil Systems (MDPI), PeerJ - the Journal of Life and Environmental Sciences - Section Plant Biology (PeerJ Inc.), and Acta Agriculturae Scandinavica - Section B, Soil & Plant Science (Taylor & Francis). In 2020 and 2021, he was listed among 2% of the most cited scientists in the world (doi: 10.17632/btchxktzyw.2, doi: 10.17632/btchxktzyw.3) and among the Top Italian Scientists, Natural & Environmental Sciences macroarea (<http://www.topitalianscientists.org>).

Keywords: Agricultural and Environmental Chemistry ; Environmental Botany ; Plant Physiology ; Soil Ecology ; Biogeochemistry ; Plant-Soil Interactions

Name and affiliation

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[Top Italian Scientists](#)

[La Belle Verte - Scientific blog](#)

Professional history

Aug-Sep 2021. DAAD Research Stay. University of Bremen, Germany.
Jul-Sep 2019. JSPS Research Scholar Grant. Kindai University, Nara, Japan.
Oct 2015-ongoing. Associate Professor in Agricultural Chemistry and Plant Biology. University of Basilicata, Italy.
Jan-Mar 2017. OECD Co-operative Research Grant. University of Waikato, Hamilton, New Zealand.
May-Nov 2015. Fulbright Research Scholar grant. University of California, Davis, CA, USA.
Dec 2008-Oct 2015. Assistant Professor in Agricultural Chemistry. University of Basilicata.
Feb 2004-Jan 2008. Postdoctoral Researcher. University of Basilicata.
Jul-Oct 2002. Marie Curie Fellowship. Institute of Molecular Biology and Biotechnology, Heraklion, Greece.
Jul 2000-Sep 2001. Research Fellow. National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Matera, Italy.
Mar-Jun 2000. European MURST research grant. Experimental Institute of Cereal Growing, Foggia, Italy.

Education

Oct 2007. Master of Science in Plant Biotechnology. University of Basilicata.
Mar 2005. Bachelor's Degree in Biotechnology. University of Basilicata.
Feb 2003. Doctorate in Crop Productivity. University of Basilicata.
Nov 1997. Master of Sciences in Biology. University of Bari, Italy.

Research fields

- a) Physiological and biochemical response of plants to stresses.
- b) Soil chemistry/microbiology and soil sustainable management.
- c) Food quality and plant secondary metabolites.

Based on the publications and expertise, his scientific interests can be divided into four major research areas, here below summarized.

a) Response of plants to abiotic stresses

Abiotic and biotic stresses are the major cause of loss of productivity in plants of agronomic interest. The combination of water deficit or excess, high soil salinity and radiation, and extreme temperatures causes photoinhibition and growth inhibition in several edible plant species. The studies were carried out on tree and herbaceous crops cultivated in different environments. A particular emphasis was given to the effects of stresses on plant primary and secondary metabolites, antioxidant defense, hormonal balance, other biochemical responses adopted by plants under stress conditions. The researches included biochemical, chemical-analytical, eco-physiological and microscopy techniques. Among the physiological responses of the plants, photosynthetic efficiency, photoinhibition mechanisms, and structural and functional changes of the roots were studied in detail.

b) Response of plants and fungi to soil pollutants

The use of plants and microorganisms to remove, contain, disable or degrade pollutants (e.g., heavy metals, xenobiotics, excess of fertilizers) and the remediation of contaminated sites are influenced by several factors, such as the extent of biotic and abiotic soil contamination, the availability and the accessibility of contaminants to plants and microorganisms, the conditions in the rhizosphere, root absorption, and the ability of the plants and plant-associated microorganisms to intercept, absorb, accumulate and/or degrade pollutants. The major aim of this research area was to study the complex interactions between pollutants, soil, fungi (e.g., *Trichoderma* spp.), and model/cultivated plants. The investigations included a combination of molecular, biochemical and microscopy techniques.

c) Soil quality and fertility in sustainable agro-ecosystems

The optimization and innovation of agricultural techniques with low environmental impact, particularly those related to soil and irrigation management, cover crops choice and application, and mineral nutrition could allow recovering the normal levels of soil fertility in agro-ecosystems, with positive on soil quality and on the production. Sustainable soil management can stimulate soil microbial communities that, in turn, can influence soil fertility and plant growth. In this line of research, experiments were carried out using molecular (e.g., metagenomics and metatranscriptomics) and culture-based

techniques for analyzing the quanti-qualitative changes of soil microbiome and macrofauna, particularly in orchards (e.g., olive and kiwifruit) subjected to different management systems. The effects of soil management on the absorption, storage, and partitioning of carbon in the soil, and on the fluxes of soil gases (e.g., CO₂, CH₄ and H₂O_{vap}) were studied.

d) Food quality and improvement of plant material

Food quality is a very broad concept including many components, such as appearance, odor, nutritional properties, health-promoting compounds (e.g., antioxidants, vitamins and micronutrients), and sanitary aspects (e.g., pollutants and pesticides). This line of research provided chemical-analytical investigations on the main antioxidants and other nutraceutical compounds in grapes and wine, olives and oil, tomato, lettuce and other foods. In the case of grapevine and olive trees, the interactions between abiotic stress and the quality of the final products were deeply studied. In both tree and herbaceous crops, studies on the use of microorganisms (particularly *Trichoderma* spp. and *Bacillus* spp.) were carried out to improve crop quality and enhance plant defenses against some pathogens. Research on the quality of novel propagation material to improve fruit quality was conducted.

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