Mauro **Maver**

PostDoc Researcher in Plant Science, Agriculture & Biotechnology

Bolzano 39100, Italy

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Summary

Accomplished and dedicated Plant Scientist with a Ph.D. and over five years of postdoctoral research experience. Progressive and extensive background in plant nutrition, physiology, biochemistry, allelopathy, rhizosphere, soil chemistry, and plant-microbe interactions.

- Can easily adapt to diverse work environments and collaborate seamlessly with international and interdisciplinary teams to achieve project goals. Known for bringing enthusiasm and a strong collaborative spirit.
- Skilled communicator able to convey complex scientific concepts clearly and effectively across language barriers.
- Experienced educator, having developed and delivered teaching course content and mentored students in their thesis projects.
- Can craft and execute successful strategies to lead and develop projects effectively.
- Analytical and data-driven mindset, excelling in statistical analysis and data visualization, ensuring accurate interpretation of key effects and reducing bias.
- Proficient scientific writing and presentation skills, with a portfolio of published articles and research presentations.
- Demonstrated ability to effectively manage time, prioritize tasks, and work independently with a target-oriented approach.
- Passionate about research dissemination, as evidenced by founding *Omnia*, an open-access journal aimed at sharing cutting-edge findings with a broader audience.
- Expertise in plant responses to environmental stress, focusing on nutrient dynamics, hydroponics, secondary metabolites, and abiotic factors. Proficient in bioinformatics, R, Python, and IoT automation and sensors.

Working Experience

PostDoctoral Researcher — **Bolzano, Italy**

Competence Center for Plant Health - Free University of Bozen-Bolzano — February 2021 - February 2024

- Focused on understanding the processes in the rhizosphere influenced by interactions among soil, microorganisms, and plants, a crucial area of study that significantly advances plant science.
- Use of molecular, genetic, chemical, and biochemical methods to investigate how plants perceive environmental signals and their effects on plant physiology under biotic and abiotic stress.
- Characterization of the rhizospheric processes affecting nutrient dynamics, from soil mobilization to plant uptake, translocation, and internal nutrient allocation.
- Application of various methodologies to examine the interactions and processes involved in nutrient dynamics.
- Evaluation of how different cultivation practices impact the chemical, physical, and biological properties of the soil.

PostDoctoral Researcher
Bolzano, Italy

Faculty of Science and Technology - Free University of Bozen-Bolzano October 2019 - January 2021

Rhizosphere processes affect copper bioavailability in vineyard soils - RHIZOPRO Project.

- Qualitative and quantitative analyses of root exudates from selected plants under varying copper (Cu) levels in both hydroponic and soil conditions.
- Assessment of the microbial community in the rhizosphere and bulk soil of plants grown in Cu-contaminated soils, focusing on grapevines.
- Characterization of the biochemical mechanisms triggered by Cu toxicity in plants.

Teaching Assistant
Bolzano, Italy

Faculty of Science and Technology - Free University of Bozen-Bolzano Febraury 2019 - February 2024

Bachelor and Master courses:

- Biochemistry and Physiology of Agricultural Plants - II semester, Bachelor in *Agricultural and Agro-Environmental Sciences* - 2022-2023.
- Biochemistry and Physiology of Agricultural Plants - II semester, Bachelor in *Agricultural and Agro-Environmental Sciences* - 2021-2022.
- Biochemistry and Physiology of Agricultural Plants - II semester, Bachelor in *Agricultural and Agro-Environmental Sciences* - 2019-2020.
- Chemistry of fertilizers and mineral nutrition of grapevine - I semester, Master in *Viticulture, Enology and Wine Marketing* - 2019-2020.
- Mineral Nutrition - I semester, Master in "*Horticultural Science* - 2019-2020.
- Biochemistry and Physiology of Agricultural Plants - II semester, Bachelor in *Agricultural and Agro-Environmental Sciences* - 2018-2019.

Mentoring
Bolzano, Italy

Faculty of Science and Technology - Free University of Bozen-Bolzano January 2018 - March 2023

Thesis Supervisor:

- Bachelor Thesis in Agriculture, Food, and Mountain Environment Sciences: "*The role of brassinosteroids in root architecture and adaptation in Arabidopsis thaliana in limiting phosphate conditions.*" - March 15th, 2023 by Asia Colmagro.
- Bachelor Thesis in Agricultural and Agro-environmental Sciences: "*Allelopathic effects on soil-plant-systems.* " - September 29th, 2020 by Sarah Fuchsbrugger.
- Bachelor Thesis in Agricultural and Agro-environmental Sciences: "*Study and characterization of the alkaloid hordenine in barley roots cv. Solist.*" - July 23rd, 2019 by Fabio Trevisan.

PostGraduate Researcher
Bolzano, Italy

Faculty of Science and Technology - Free University of Bozen-Bolzano July 2016 - October 2016

- Investigate the impact of nutrient availability on fruit quality parameters, specifically the molecular and chemical analysis of hydroponically grown (cultivated) strawberry fruits.
- Develop and implement strategies for sustainable vine nutrition to enhance production and soil biodiversity.

Education

Ph.D. in Mountain Environment and Agriculture
Bolzano, Italy

Free University of Bozen-Bolzano November 2016 - November 2019

Ph.D. Thesis: Soil-plant-microorganism interactions involved in plant responses against biotic and abiotic stresses. *Supervisors: Prof. Tanja Mimmo, Prof. Stefano Cesco and Dr. Davide Bulgarelli.*

Ph.D. Visiting Researcher — **Dundee, Scotland, UK**

THE JAMES HUTTON INSTITUTE & UNIVERSITY OF DUNDEE — June 2018 - March 2019

Project: Characterization of the impact of gramine, a secondary metabolite of barley, on bacterial communities at the root-soil interface. *Supervisor: Dr. Davide Bulgarelli.*

M.Sc. in Plant, Food and Agro-Environmental Biotechnology — **Milano, Italy**

UNIVERSITY OF MILANO — October 2013 - November 2015

Master Thesis: Morpho-functional analysis of mitochondrial alteration induced by nutritional deficiencies in plants: characterization of ultrastructure, ionome and physiological parameters through live imaging analysis. *Supervisors: Prof. Graziano Zocchi and Prof. Gianpiero Vigani.*

B.Sc. in Plant, Food and Agro-Environmental Biotechnology — **Milano, Italy**

UNIVERSITY OF MILANO — October 2010 - October 2013

Bachelor Thesis: Mitochondrial modification induced by Fe deficiency: biochemical and ultrastructural analyses by electron microscopy and tomography. *Supervisors: Prof. Graziano Zocchi and Prof. Gianpiero Vigani.*

Projects

Omnia Journal — **mauromaver.eu/omnia**

EDITOR-IN-CHIEF, EDITOR — March 2024 - Present

Omnia is an independent, multidisciplinary, open-access journal dedicated to enhancing the communication of science-related topics.

- Open-access journal focused on describing and narrating science-related topics, currently emphasizing plant science.
- The journal features a *Focus* section that summarizes recent open-access scientific research into concise, accessible highlights, encouraging readers to explore the full original articles.

Skills

Laboratory & Research

- Experimental design - Plant cultivation in controlled environments (hydroponics, substrate and soil) - Lab techniques & organization - Plant Nutrition & Physiology - Plant Molecular Biology & Biochemistry - Soil Chemistry & Microbiology.
- Data & Statistical analysis - Data report & visualization - Scientific writing - Presentation skills - Research papers & Project evaluation.

Computer skills

- Windows, Linux, and MacOS operating systems - Microsoft Office Suite (Word, Excel, Powerpoint, and Teams) - Adobe Creative Suite (Acrobat Reader, Illustrator, and InDesign) - Waters Empower software.
- RStudio - Quarto - Coding languages (R, Python and HTML/CSS) - Bioinformatic tools - GitHub - IoT sensors and integration.

Language Skills

- **English**: Full professional proficiency
- **Italian**: Native proficiency
- **Spanish**: Basic proficiency
- **Irish**: Basic proficiency

Publications

[1] Bouaicha O, **Maver M**, Mimmo T, Cesco S & Borruso L. (2024). Microplastic influences the ménage à trois among the plant, a fungal pathogen, and a plant growth-promoting fungal species. *Ecotoxicology and Environmental Safety*. DOI: 10.1016/j.ecoenv.2024.116518.

[2] Allarà C, Ciocca M, **Maver M**, Mimmo T & Petti L. (2023). A Novel Automatic Method for Primary Roots Length Measurements in Arabidopsis thaliana. *IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor)*. DOI: 10.1109/MetroAgriFor58484.2023.10424201.

[3] **Maver M**, Trevisan F, Miras-Moreno B, Lucini L, Trevisan M, Cesco S & Mimmo T. (2022). The interplay between nitrogenated allelochemicals, mineral nutrition and metabolic profile in barley roots. *Plant and Soil*. DOI: 10.1007/s11104-022-05553-8.

[4] Escudero-Martinez C, Coulter M, Terrazas RA, Foito A, Kapadia R, Pietrangelo L, **Maver M**, Sharma R, Aprile A, Morris J, Hedley PE, Maurer A, Pillen K, Naclerio G, Mimmo T, Barton GJ, Waugh R, Abbott J & Bulgarelli D. (2022). Identifying plant genes shaping microbiota composition in the barley rhizosphere. *Nature Communications*. DOI: 10.1038/s41467-022-31022-y.

[5] Bouaicha O, Tiziani R, **Maver M**, Lucini L, Miras-Moreno B, Zhang L, Trevisan M, Cesco S, Borruso L & Mimmo T. (2022). Plant species-specific impact of polyethylene microspheres on seedling growth and the metabolome. *Science of the Total Environment*. DOI: 10.1016/j.scitotenv.2022.156678.

[6] **Maver M**, Escudero-Martinez C, Abbott J, Morris J, Hedley PE, Mimmo T & Bulgarelli D. (2021). Applications of the indole-alkaloid gramine modulate the assembly of individual members of the barley rhizosphere microbiota. *Peerj*. DOI: 10.7717/peerj.12498.

[7] Kolega S, Miras-Moreno B, Buffagni V, Lucini L, Valentinuzzi F, **Maver M**, Mimmo T, Trevisan M, Pii Y & Cesco S. (2020). Nutraceutical Profiles of Two Hydroponically Grown Sweet Basil Cultivars as Affected by the Composition of the Nutrient Solution and the Inoculation With Azospirillum brasilense. *Frontiers in Plant Science*. DOI: 10.3389/fpls.2020.596000.

[8] **Maver M**, Miras-Moreno B, Lucini L, Trevisan M, Pii Y, Cesco S & Mimmo T. (2020). New insights in the allelopathic traits of different barley genotypes: Middle Eastern and Tibetan wild-relative accessions vs. cultivated modern barley. *PloS One*. DOI: 10.1371/journal.pone.0231976.

[9] Marastoni L, Pii Y, **Maver M**, Valentinuzzi F, Cesco S & Mimmo T. (2019). Role of Azospirillum brasilense in triggering different Fe chelate reductase enzymes in cucumber plants subjected to both nutrient deficiency and toxicity. *Plant Physiology and Biochemistry*. DOI: 10.1016/j.plaphy.2019.01.013.

[10] Vigani G, Pii Y, Celletti S, **Maver M**, Mimmo T, Cesco S & Astolfi S. (2018). Mitochondria dysfunctions under Fe and S deficiency: is citric acid involved in the regulation of adaptive responses?. *Plant Physiology and Biochemistry*. DOI: 10.1016/j.plaphy.2018.02.022.

[11] Valentinuzzi F, **Maver M**, Fontanari S, Mott D, Savini G, Tiziani R, Pii Y, Mimmo T & Cesco S. (2018). Foliar application of potassium-based fertilizer improves strawberry fruit quality. *Acta Horticulturae*. DOI: 10.17660/ActaHortic.2018.1217.48.

[12] Vigani G, Faoro F, Ferretti AM, Cantele F, Maffi D, Marelli M, **Maver M**, Murgia I & Zocchi G. (2015). Three-dimensional reconstruction by TEM tomography of the ultrastructural modifications occurring in Cucumis sativus L. mitochondria under Fe deficiency. *PloS One*. DOI: 10.1371/journal.pone.0129141.

Books

[1] Masia V, Bréartúin CÓ & **Maver M**. (2024). L'irlandese contemporaneo. Storia, cultura, struttura e identità. *Tab Edizioni*. ISBN 978-8892958685.

Scientific writing

[1] **Maver M**. (2024). Floral synchrony: the role of FLOWERING LOCUS T in the leaf-specific vernalisation response in Arabidopsis. *Omnia Focus*. DOI: 10.5281/zenodo.10955449.

[2] **Maver M**. (2024). ^{13}C dynamics in forest rhizosphere microbial communities under drought and rewetting. *Omnia Focus*. DOI: 10.5281/zenodo.11148076.

[3] **Maver M**. (2024). Enhanced photosynthesis in rice with far-red light supplement: unveiling dual roles beyond shade avoidance. *Omnia Focus*. DOI: 10.5281/zenodo.11216924.

[4] **Maver M**. (2024). Enhancing root-knot nematode invasion resistance in clover through root uptake of benzoxazinoids. *Omnia Focus*. DOI: 10.5281/zenodo.11491221.

[5] **Maver M**. (2024). Modulation of lettuce responses to salinity by Graminaceae-derived protein hydrolysates. *Omnia Focus*. DOI: 10.5281/zenodo.11965373.

[6] **Maver M**. (2024). Plant-mediated soil effects on microbiota in plant-herbivore systems. *Omnia Focus*. DOI: 10.5281/zenodo.12188671.

[7] **Maver M**. (2024). TWA1: a novel thermosensor enhancing plant thermotolerance. *Omnia Focus*. DOI: 10.5281/zenodo.12582848.

[8] **Maver M**. (2024). Repressive role of GLK in vindoline and TIA pathway regulation in Catharanthus roseus. *Omnia Focus*. DOI: 10.5281/zenodo.12608361.

[9] **Maver M**. (2024). Role of ExAD in salt-induced directional root response in Arabidopsis thaliana. *Omnia Focus*. DOI: 10.5281/zenodo.12633958.

[10] **Maver M**. (2024). Impact of intraspecific chemodiversity on growth and reproduction in Tanacetum vulgare. *Omnia Focus*. DOI: 10.5281/zenodo.12723623.

[11] **Maver M**. (2024). Independent effects of drought and cultivation systems on wheat: insights from the trait space concept. *Omnia Focus*. DOI: 10.5281/zenodo.12732498.

[12] **Maver M**. (2024). Identification of HvPIN1a as a key regulator of root development and vascular patterning in barley. *Omnia Focus*. DOI: 10.5281/zenodo.14007903.

[13] **Maver M**. (2024). Unveiling the ethylene-inhibiting mechanism of the allelochemical Myrigalone A. *Omnia Focus*. DOI: 10.5281/zenodo.14010143.

[14] **Maver M**. (2024). Auxin-mediated xylem modifications in tomato mutant dgt improve drought resistance and hydraulic recovery. *Omnia Focus*. DOI: 10.5281/zenodo.14131878.

Awards

2022. "*Award for the best Ph.D. thesis, 2020-2021 edition*", released by Società Italiana di Chimica Agraria (SICA).

2014. "*Award for the best poster*" - Società Italiana di Chimica Agraria (SICA), Sept. 7 - 9, Bolzano (Italy).

Conferences and Seminars

Conferences

2023. IEEE international workshop on Metrology for Agriculture and Forestry. Nov. 6 - 8 2023, Pisa (Italy).

2023. 13th International Conference on Biotechnology and Bioengineering. Sept. 28 - Oct. 1 2023, Pozzuoli (Italy).

2023. 8th Green and Sustainable Chemistry Conference. May 13 - 15 2024, Dresden (Germany).

2023. FEMS 2023 - Federation of European Microbiological Societies. July 9 - 13 2023, Hamburg (Germany).

2023. BSSS 2023 - British Society of Soil Science annual conference. Dec. 1 - 4 2023, Belfast (UK).

2022. Nachwuchsakademie - Engineered living materials. June 17 - 21 2022, Saarbrücken (Germany).

2022. III Convegno AISSA UNDER40. July 14 - 15 2022, Bolzano (Italy).

2022. European Land and Soil Alliance (ELSA). Sept. 29 – 30 2022, Bolzano (Italy).

2022. Le Mille e una Scienza. Oct. 11 – 13 2022, Bolzano (Italy).

2021. Second Joint Meeting on Soil and Plant System Sciences (SPSS). Sept. 20-23 2021, Torino (Italy).

2019. IS-MPMI XVIII Congress. July 17 2019, Glasgow (UK).

2019. First Joint Meeting on Soil and Plant System Sciences (SPSS). Sept. 23 - 26 2019, Bari (Italy).

2017. Future IPM 3.0: Towards a sustainable agriculture. Oct. 15 - 20 2017, Riva del Garda (Italy).

2016. Società Italiana di Chimica Agraria (SICA). Oct. 5 - 7 2016, Perugia (Italy).

2014. XVII International Symposium of Iron Nutrition and Interaction in Plants (ISINIP). July 6 - 10 2014, Gartersleben (Germany).

Seminars

- **Maver M**, Luoni L., Costa A & Vigani G. (2015). Live Imaging per lo studio delle risposte metaboliche a carenze nutrizionali nelle piante mediante l'espressione di nanosensori mitocondriali. Italian Chapter of the International Humic Substance Society (IHSS) and Società Italiana di Chimica Agraria (SICA), Sept. 16 - 18, Bologna (Italy).
- Vigani G, Faoro F, Ferretti AM, Cantele F, Maffi D, Marelli M, **Maver M**, Murgia I & Zocchi G. (2014). Ricostruzione tridimensionale, mediante tomografia elettronica, delle modificazioni ultrastrutturali di mitocondri indotti da una carenza di Fe in Cucumis sativus. Società Italiana di Chimica Agraria (SICA), Sept. 7 - 9, Bolzano (Italy).
- Vigani G, Faoro F, Ferretti AM, Cantele F, Maffi D, Marelli M, **Maver M**, Murgia I & Zocchi G. (2014). TEM tomography reveals a three-dimensional reconstruction of the ultrastructural modifications occurring in Cucumis sativus mitochondria under Fe deficiency. European Society of New Methods in Agriculture (ESNA), Sept. 3 - 6, Bolzano (Italy).