

Curriculum vitae Prof. Muscolo Adele

Author details:

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Scopus ID: [6602976307](https://scopus.org/authorid/6602976307)

Education

1980- High school diplomas in scientific studies.

1985 - Graduated in Biological Sciences (MSc), at the University of Messina, Faculty of Science.

1985-1987- Practice attendance at biological laboratory of the “Riuniti” hospital, Reggio Calabria, Italy.

1987- Professional qualification with honor, to exercise the biology profession, Biology Faculty, University of Messina, Sicily, Italy.

1987, 1988 - Fellowship with grant at the Cybernetic Department, CNR, Arco Felice”, Naples on “signal transduction pathway in nervous system of amoebas”.

1988- PhD in Food Science at University Polyclinic “Federico II”, Naples Italy. Studies and researches performed at the “Policlinic, Federico II University of Naples, Italy have been concretized in scientific papers published in national journals.

Professional position

1988- Researcher at the Department of Agrochemistry and Agrobiology of the Agricultural Faculty “Mediterranea” University of Reggio Calabria, Italy.

Since 2001- Associate professor of Pedology, Biochemistry and Soil Ecology in the Agricultural Faculty of “Mediterranea” University of Reggio Calabria, Italy.

Since 2010 –Eligible for Full professor position in Soil Chemistry and Biochemistry, and Soil Ecology, July 2010-Bolzano University Italy

Since 22 December 2016 to now Full Professor of Soil Ecology and Soil Chemistry in charge to Mediterranea University of Reggio Calabria.

Teaching experience

Course taught

1993-1994, 1994-1995, 1995-1996, 1996-1997 - Courses in Forestry Soil Chemistry

1995-1996, 1996-1997, 1997-1998 - Courses in Pedology

1997-1998, 1998-1999, 1999-2000, 2000-2001 - Courses in Plant Biochemistry

1998-1999, 1999-2000, 2000-2001 Courses in Pedology: theory and practice

2001-2002- Courses in Pedology, Plant Biochemistry and Forestry Soil Chemistry

2002-2003, 2003-2004- Courses in Pedology, Plant Biochemistry

Since 2004- Courses in Forestry Soil Chemistry and Soil Ecology

Seminars on specific interest of Agricultural Chemistry

1995- Course on Food and Environment organized by the National Order of Biologists and Calabria Region.

1996- Chemistry lectures in professional training course for operators of "Food Biotechnology Fund" organized from ENAIP, Calabria Region.

1997 - Teaching in the course, for training technical operator in the laboratory.

2000- Lecture titled "Biological activity of humic matter" at the Centre for Research in Plant Sciences, Faculty of Health and Life Sciences, Bristol University (UK).

2001- Lectures in "Biochemistry and Physiology, Geology and Pedology", in the International Master, II Level in collaboration with the *Ecole Nationale Supérieure d'Architecture de Paris la Villette* at "Mediterranea" University of Reggio Calabria.

2005- Course in Soil Chemistry, (4 CFU), for Technical Training Education Course supported by Calabria Region IFTS titled "Senior technician for the management of agro-environmental area", held at the office of C.R.A. (Lamezia Terme, CZ).

2006-2007- Soil Chemistry (60 hours) at the Secondary Teacher Training School (SSIS)-AA Cycle VIII (UNICAL, Cosenza, Italy).

2007-2008- Soil Chemistry (60 hours) lessons at the Specialization School for Secondary Teacher Training School (SSIS)-IX AA Cycle 2007-2008 (UNICAL Cosenza).

2008- Pedology (10 hours) lessons in the Training (Project FIXO) course for "expert in technological transfer innovation, design and turf management in Mediterranean environments", held at the Faculty of Agriculture of Reggio Calabria, Italy.

Since 2008- Lecturer and trainer in the School of Doctoral Research “PhD in cultivation and defense of tropical and subtropical crops”. Coordinator: Prof. Rocco Zappia, Department of Agriculture and Forest System Management.

2009- “Soil quality: assessment and management” lessons in the International Master Level “Technological innovation and sustainability of Mediterranean olive” at the Mediterranean University of Reggio Calabria, Italy.

Since November 2011- Member of the teaching committee of PhD School “PhD Science and technology for forestry and environment management. Tuscia University, Viterbo, Italy
Coordinator: Prof. Rosanna Bellarosa Department of Agriculture, Forests, Nature and Energy (D.A.F.N.E.) Tuscia University, Viterbo, Italy.

Since 1988- She follows students in the preparation of thesis and in the internship and she is tutor and co-tutor of Master, and PhD thesis.

Research field

Since 1988 my research investigates connections between soil chemistry, biochemistry and function in regulating ecosystem-level processes. Because I focus on quantifiable material common to many ecosystems, my interests are not limited to any one environment. Consequently, the setting for my research includes forests, managed ecosystems (e.g. tree nurseries), grasslands, as well as urban environments, which welcomes collaborations across a range of disciplines. My research is hypothesis-driven and tends toward experimental discovery, as opposed to descriptive observation. The goal is to conduct research to provide innovative solutions for soil management that will increase profitable crop production and ensure soil and environmental quality. Knowledge derived from my research activities is disseminated to the scientific community and industry, and used to develop management guidelines, recommendations and tools for sound soil management.

- Dynamic and evolution of organic matter in forest soil and effects of humic substances separated in fractions (different molecular weight and composition) on seed germination, plant growth and metabolism. Relationship between soil organic matter (labile and recalcitrant C fractions) and soil biodiversity in driving soil ecosystem functioning.
- Role of water-soluble phenolic compounds (WSP) in influencing the accumulation and availability of soil nutrients and the rate of nutrient cycling in forest ecosystem. Effects of WSP on seed germination, seedling growth and metabolism.
- Effects of forest management, waste disposal and environmental constraints on soil properties, organic matter trend, microbial biomass, nutrient cycles and enzyme activities.

- Identification of biochemical markers to be routinely used and applicable to most ecosystems as early warning indicators of soil quality changes.
- Effects of abiotic stress (salinity, drought and heat) on seed germination, seedling growth and metabolism. Studies on the physiological biochemical and adaptive response of plants to different environmental constraints, considering their productive response and effects on soil properties. Halophytes used as crops, including bioenergy, for the restoration and rehabilitation of salinized or contaminated soils.
- Use of polluting recalcitrant agricultural wastes (olive wastes and citrus pulps), and inorganic sulfur obtained from the residues of the desulfurization of natural gas and oil, as fertilizers for a sustainable recovery of saline and alkaline soils, and for an eco-friendly agriculture.
- Relationship between microbial ecology and plant physiology. Plants respond to environmental factors by altering growth and longevity of fine roots, which, in part, control the amount and types of organic substrates available for microbial metabolism in soil. Changes in belowground plant growth influence the composition and function of soil microbial communities. My work is focused on understanding the link between plant and microbial activity within terrestrial ecosystems, and the influence climate change may have on these dynamics.
- Improving food quality in terms of bioactive compounds by using waste as bio-stimulant in crop species. Agro-industrial wastes have been used composted, crude (linked with sulfur-bentonite) and after anaerobic digestion (digestate) to increase soil fertility and plant quality.

Academic service

- Referee for the international journals: “Biotechnology Progress”, “Environmental Progress”, “Journal of Chemical Ecology”, “The Science of the Total Environment”, “Journal of Tropical Forest Science”, “ International Journal of Environmental Pollution”, “Acta Oecologica”, “Soil Science Society of America Journal”, “Acta Physiologiae Plantarum”, “Annals of Applied biology”, “Journal of Experimental Botany”, “Plant and Soil”, “Forest Ecology and Management”, “Journal of Forestry Research”, “Journal of Sustainable Agriculture”, “Biology letters”.
- Editorial Board Member for: The Open Enzyme Inhibition Journal; Dynamic Soil, Dynamic Plant; Tree and Forestry Science and Biotechnology; The European Journal of Plant Science and Biotechnology; Functional Plant Science and Biotechnology (Global Science Book, UK);; Open Journal of Forestry; Journal of Plant Science and Molecular Breeding, London, UK; Dataset Papers in Agriculture; Agricultural Science and Applications (JASA); American V-

King Scientific Publishing, LTD USA. Sector Editor for Journal of Forestry Research and Forests

Editorial Service

2009- Invited Editor of the book "Soil Phenols" (2009) Nova Science Publisher (NY)

2010- Guest Editor of the Special Issue on "Olive oil Mill waste water in the Mediterranean area" on Terrestrial and Aquatic Environmental Toxicology (publication date 2010) (Global Science Book, UK)

2011- Guest Editor of the Special Issue on "Halophyte and salinity" in Dynamic soil Dynamic plant (Global Science Book, UK) (publication date 2011) Flowers T and Muscolo A (Eds).

2013- Guest Editor of Special Issue titled "Sustainable cultivation and exploitation of halophyte crops in a salinizing world" in the journal "Environmental and Experimental Botany". (Eds) Flowers T, Rozema J and Muscolo A.

2014- Guest Editor of SI titled "Physiology and ecology of halophytes – plants living in salt-rich environments" in Annals of Botany Plant (AoBP) Flowers T and Muscolo A (Eds)

2014- Book evaluator for Scientific Research Publishing (SCIRP)

Since 2013- Subject Editor of Journal of Forestry Research in charge of all submission in the topic of forest soil.

August 2016 –Guest Editor for the Special Issue "Soil carbon sequestration in Forests" for the Journal "Forests" publication due in March 2017.

January 2017 Permanent reviewer of Frontiers in Plant Science

February 2017 –Permanent member of Board evaluators *ad hoc* of Planta Daninha Journal

July 2019- Subject Editor of Forests

January-2021 Guest Editor for the Special Issue Plant Responses to Biotic and Abiotic Stresses: Crosstalk between Biochemistry and Ecophysiology, *for the Journal "Plants" MDPI*

Professional Society

Member of Italian Society of Agriculture Chemistry (S.I.C.A), Italian Society of Soil Science (SISS) and International Humic Substances Society (IHSS).

Referee of national and international Projects

Since 2008- Reviewer of research for research funding agencies in Czech Republic, besides the Italian MIUR

Since 2008- Reviewer of research projects for young scholars, for Agriculture Department, Padua University, Italy.

Since 2008- Reviewer of research Projects for Agriculture Department, Padua University, Italy.

Since 2008- Reviewer of National Research Projects (PRIN, FIRB), for the Italian Minister of Research and Education.

Since 2009- Reviewer of research projects, for Romanian Government through the National Research Council (CNCS).

2013- Reviewer for TPD of the COST PROJECT proposals: 1. oc-2013-1-15308 Agroforestry: From ancient wisdom to meeting future challenges.

2014- Reviewer TDP for the COST PROJECT proposals: Call oc-2013-2- 17308)

2014- Reviewer of a research project on indicators of sustainability for the Icelandic Center for Research (<http://www.rannis.is>),

2015- Reviewer of Research Project **New PPPOP** for the **French National Research Agency**.

2015- Reviewer for Cooperative Projects of Technological Transfer, and First Industrialization For Businesses Innovative at High Potential. Titles: PLASMA and REFLOX. Campania Region Italy, (FUNDED by FESR P.O.R. Campania-2007-2013)

2015- External evaluator of Biology University courses for the Ministry of Education, Portugal

2015-July External reviewer for a research Project for Agriculture Department, Padua University, Italy.

2016- External evaluator for the Ministry of Education, Science and Technological Development of the Republic of Serbia.

2016-2017 External evaluator for the Ministry of Education, Science and Technological Development of the Republic of Romania.

2018- Examiner for a grant application titled “Climate change impacts on the diversity and functioning of the Amazon forest” (registration number ALWOP.565). ALWOP.565 Review request from the Netherlands Organization for Scientific Research.

2019- Evaluator for National Project (CINECA)

2019 Evaluator as independent scientific expert for 'University of Padua, independent scientific experts Uni-Impresa 2019 call for applications for the funding of joint research projects between the University and the business world.

2019 Evaluator of the "2019 Innovation Plans" - Emilia-Romagna Region, Italy

2019 – Evaluator for the central agency of finance and contracts (CFCA) of the Republic of Latvia for project proposals submitted under measure 1.1.1.1 "Industrial research".

2019 Evaluator of Ministry of Education and Research Projects (Romania) and for Development and Innovation Agency (UEFISCDI) Romania.

2019 November, 20 Reviewer/rapporteur for the evaluation process that will take place between November 2019 and March 2020 for the Ministry of Education and Research and the Executive Agency for Higher Education, Research, Development and Innovation Funding, Romanian (UEFISCDI - www.uefiscdi.gov.ro) for Postdoctoral research and Young research teams Projects.

2020 September Reviewer/rapporteur for the evaluation process Exploratory Research Projects – PCE 2020 of The Romanian Ministry of Education and Research - National Council for Scientific Research (CNCS) and its Executive Agency for Higher Education Research Development and Innovation Funding (UEFISCDI)

2021 Evaluator as independent scientific expert for 'University of Padua, independent scientific experts Uni-Impresa 2019 call for applications for the funding of joint research projects between the University and the business world.

2021 July Reviewer/Rapporteur for the evaluation of Research Project for the Romanian National Research Council (CNCS) and its Executive Agency for Higher Education Research Development and Innovation Funding (UEFISCDI)

2021 September Reviewer/Rapporteur for the Latvian Council of Science (LCS) of the Republic of Latvia is conducting evaluation of project proposals submitted within the Call for proposals for Fundamental and Applied Research Projects.

2022 January, April and June Reviewer/Rapporteur for the Latvian Council of Science (LCS) of the Republic of Latvia is conducting evaluation of project proposals submitted within the Call for proposals for Fundamental and Applied Research Projects

2022 June Appointed by European Research Executive Agency as Independent expert (Monitor) of to assist REA UNIT B3 to review SEA2Land Project

2022 Evaluator as independent scientific expert for 'University of Padua, independent scientific experts Uni-Impresa 2019 call for applications for the funding of joint research projects between the University and the business world.

2022 August external expert evaluator for Puglia Sviluppo S.p.A. for assignment concerning the evaluation of a Research and Development project presented to the Puglia Region - Policy Area for Economic Development, Labor and Innovation - Production Systems Competitiveness Service

September 2022 expert evaluator for POR FESR LAZIO 2014-2020 projects, AQUAFOOD Project.

October 2022 Expert evaluator for the National Research and Development Agency (ANID) of the Ministry of Science, Technology, Knowledge and Innovation of Chile to review a project

submitted for the 2023 Regular Fondecyt National Projects Competition, an initiative of the Sub-Directorate for Research Project.

April 2023 external expert evaluator for Puglia Sviluppo S.p.A. for assignment concerning the evaluation of a Research and Development project presented to the Puglia Region - Policy Area for Economic Development, Labor and Innovation - Production Systems Competitiveness Service

Management and administrative experiences

2001-2007- Elected member within the Academic Senate of “Mediterranea” University of Reggio Calabria.

2002- Member of the selection board of qualifying examination as Doctor of Agronomy and Forestry.

2006 -2009 - Coordinator of the Class 12/A-Agriculture chemistry, for the Training of Teachers for Secondary School Teaching (SSIS) (UNICAL, Cosenza-Italy).

2007- Member of the selection board of qualifying examination as Doctor of Agronomy and Forestry.

2007- Member of the examination committee for access to the ninth cycle SSIS, AA 2007-2008 – in Natural Science (Grades 12 /A, 13 /A, 54 and 60).

2007- Expert representative of Agriculture Faculty, for the technical Strategic Plan preparation of the municipality of Reggio Calabria in the context “Environment, Waste and Energy”

2007- Head of the Boarding Committee for the internal selection to cover No. 8 vacancies Category D area, technical, scientific and technical data processing positions.

2008- Member of committee evaluator, for internships in soil chemistry, supported by Calabria Region

2008- Deputy Chair of the Committee for the final examination of schoolteachers D.M. 85/05 (SSIS-UNICAL, CS).

2008- April - member of the selection Committee for the comparative assessment designed to cover a university researcher position in the AGR /13, Agricultural Chemistry.

2008- Representative of the Agriculture Department in the AUDIT technological innovation committee. Ministerial Project (System for the Territorial Research and the Transfer Technological Organized, protocol MIUR 3265, 11/07/2006).

2009- Deputy head of GESAF Department at the Agriculture Faculty of “Mediterranea” University Reggio Calabria Italy

Since 2009- Head of the University Committee for Safety and Risk of workers at Mediterranean University of Reggio Calabria Italy.

Since 2008- Head of the Committee for the training of the technical scientific personnel of “Mediterranea” University of Reggio Calabria Italy.

2009-2014 - Chair of Editorial Committee of the COST Action FA0901.

2009-2014 - Chair of the Working Group 1 of the COST Action FA0901.

2009-2014- Member of the Management Committee MIUR of the COST project “Putting Halophytes to Work: From Genes to Ecosystems”. Chair: Timothy Flowers University of Sussex (UK) Action FA0901

Since 2010- Head of University Committee for the training of technical-scientific staff of Mediterranea University of Reggio Calabria Italy.

Since 2010- Delegate of Agriculture department Mediterranea University of Reggio Calabria for the Erasmus Program and International Relationships.

2010- Member of the Committee for the assignment of No. 4 scholarships, funded by the Province of Reggio Calabria (DP Notice No. 27 of 19 September 2007).

2010- Head of the University Committee for the Safety of workers, at “Mediterranea” University of Reggio Calabria Italy.

2011- Director of Master (Academic year 2011-2012) “Biomass and Energy: Production and use of biomass for bio-energy new technology for a sustainable development” Mediterranea University Reggio Calabria Italy

2014- Head of the committee for the Internship Active Training for High School Teachers. Class Certification A012 A.A. 2014-2015

2016- April 6th Head of Pillar 5 for the Italian Section for Global Soil Partnership Project (FAO)

2016- Delegated of “Mediterranea” University of Reggio Calabria Italy, to manage the active job training to train high school teachers.

2017 - April - 7 Member of the Commission for the selection of the Director of the Agriculture Research Center at Environment CREA. Rome Italy.

2017-2018 Member of the Commission for the Didactic Quality of Agriculture Department

2018- External Advisory Board Member to Evaluate the Research Quality of the Department of Agriculture, Food and Environment, Catania University, Italy.

2019 November, 14. Designation from MUR as Italian alternate representative in the Mission Board Sub-group SOIL HEALTH AND FOOD in the Horizon Europe Mission Board Sub-group SOIL HEALTH AND FOOD.

From December 2020 she is an active member of the International Network on Fertilizer Analysis, to build and strengthen the capacity of laboratories in fertilizer analysis and improve quality standards (GLOSOLAN and FAO)

From December 2020 she is registered as soil expert and active part of Global Soil Laboratory Network (FAO).

2021 9/7 Appointed by MUR as member of the commission for national scientific qualification for the competition sector 07/E1-Agricultural Chemistry, Agricultural Genetics and Pedology (art.8, paragraph 1, D.D. n. 251 of 29 January 2021) (ASN) for the period 2021/23.

June 2022 Appointment as member of the Intergovernmental Technical Panel on Soils, Global Soil Partnership FAO.

Supervision and evaluation

PhD dissertation examiner and Graduate school student evaluator

2011- External evaluator for the PhD Thesis (Área de Edafología y Química Agrícola), Departamento de Ciencias Agroforestales ETS de Ingenierías Agrarias de Palencia. Universidad de Valladolid Spain.

2012 (21 March)- Member of the Committee Defense, to evaluate the PhD Thesis for the Department of Biological Science Vigo University, Spain.

2012 (23 November)- Head of PhD thesis Committee at the Department of Scienze Agrarie, Alimentari e Agro-Ambientali (DiSAAA), Pisa University, Italy.

2013 (3-April)- PhD External examiner for the thesis “Responses of Quinoa to salinity and temperature regimes” dissertation in Copenhagen University.

2013 (8-April)- External evaluator of applications for LSM International Summer Research Program **2013**, at the Graduate School Life Science Munich (LSM).

2014- External examiner for PhD thesis on Production and evaluation of biochar for improving soil quality and Maize production" at University of Agriculture Faisalabad, Pakistan.

2015- External examiner for PhD thesis on the impact of biochar in ameliorating drought and salinity stress in plants. Defense 30 April, 2015 at the University of Copenhagen, Denmark.

2016-May 19th External examiner for PhD thesis on “Management of dry land salinity in Central West New South Wales: phytoremediation trials using *Mellitus siculus* (Fabaceae), *Tecticornia pergranulata* (Amaranthaceae: *Salicornioideae*), *Thinopyrum ponticum* (Poaceae), and *Cynodon dactylon* (Poaceae)”, School of Agricultural & Wine Sciences Charles Sturt University Orange, NSW 2800, Australia.

2016-July 7th External examiner for PhD thesis on Improving abiotic stresses tolerance of quinoa. University of Copenhagen, Denmark

2016- May 19th External examiner for PhD thesis Management of dry land salinity in Central West New South Wales: phytoremediation trials using *Mellitus siculus* (Fabaceae), *Tecticornia*

pergranulata (Amaranthaceae: Salicornioideae), *Thinopyrum ponticum* (Poaceae), and *Cynodon dactylon* (Poaceae) School of Agricultural & Wine Sciences Charles Sturt University Orange, NSW 2800, Australia.

2016 March 04 External examiner for PhD thesis Effect of biochar in improving the nodulation, growth and yield of Rhizobium inoculated mung bean (*Vigna radiata* L.) Institute of Soil & Environmental Sciences, University of Agriculture, Faisalabad Pakistan

2016 March 21 External examiner for PhD thesis "Improving resilience of maize against water deficit stress through polyrhizobial inoculation" Institute of Soil & Environmental Sciences, University of Agriculture, Faisalabad Pakistan Title of PhD. thesis: "PGPR with enzymatic activity to improve the growth, yield and oil content of Sesame (*Sesamum indicum* L)".

2016 March 12 External examiner for PhD thesis "Role of endophytic bacteria containing carbonic anhydrase in improving the photosynthesis and plant biomass of cereals at different moisture regimes" for foreign evaluation Soil Microbiology & Biochemistry Lab. Institute of Soil & Environmental Sciences, University of Agriculture, Faisalabad (Pakistan)

2018 October External examiner for the evaluation of PhD. thesis of Miss. Faiza, Reg. No. 2005-ag-1778, a PhD. student in the Institute of Soil and Environmental Sciences of Soil & Environmental Sciences, University of Agriculture, Faisalabad (Pakistan)

2019 External evaluator of PhD. thesis entitled " Mitigating the effect of salinity and drought stress in wheat (*Triticum aestivum* L.) through combined application of rhizobacteria containing ACC-deaminase and organic amendment" in Department of Soil Science Faculty of Agricultural Sciences and Technology Bahauddin Zakariya University Multan, Pakistan.

2019 External evaluators of PhD thesis entitled "The influence of mixed forest of two pine species against pure ones on the carbon stock and exchangeable cations in the soil profile. Escuela Técnica Superior de Ingenierías Agrarias Universidad de Valladolid, Spain.

2019 November, 15. Assessment committee member for a Professor position in Crop Stress Physiology Department of Plant and Environmental Sciences Faculty of Science University of Copenhagen, Denmark.

2020 Reviewer and Organizing Committee Member for the 3rd Congress WaterEnergyNEXUS (www.waterenergynexus.org).

2021 External Examiner for the evaluation of PhD. thesis of Mr. Sulman Siddique , Reg. No. 2010-ag-3513, a PhD. student in the Institute of Soil and Environmental Sciences

Supervision of foreign graduate, PhD students and post Doctor Fellow

2008- PhD student from Isfahan University of Technology for thesis compilation.

2011-2012- PhD student from Science faculty, Sofia University, Sofia, Bulgaria.

2012- PhD student from Copenhagen University, Copenhagen, Denmark.

.2012- Post Doc fellowship from Coimbra University, Coimbra, Portugal.

2013- Post Doc fellowship from Valladolid University, Palencia, Spain.

2014 - PhD students from Sousse University, Tunisia.

2015- PhD student from Sousse University, Tunisia.

2015- Post Doc from Sousse University, Tunisia (Erasmus Mundi).

2015- PhD student from Sousse University, Tunisia (PhD program).

2015- PhD student from Valladolid University, Palencia, Spain.

2016-Post Doc student from Valladolid University, Palencia, Spain

2016 PhD student Sousse University, Tunisia

2016 PhD student Sfax University, Tunisia

2016 PhD student Sfax University, Tunisia

2016 Post Doc Varsavia University, Poland

2017-Post Doc University of Sari, IRAN

2018- PhD Student Institute of Advanced Agronomic Studies of the Chott Mariem & Olivier
Institute - Sousse – Tunisia

2018 PhD Student at the Department of Science, University of Urmia (Iran)

2019 PhD Student at the Department of Soil Science Faculty of Agricultural Sciences and Technology
Bahauddin Zakariya University Multan, Pakistan.

2019 PhD Student at the Department of Soil Science Faculty of Agricultural Sciences and **2019** PhD
Student at Technology Bahauddin Zakariya University Multan, Pakistan.
Department of Agronomy, University of Agriculture, Faisalabad, Pakistan

National and International Research agreement

Since 2011- International Agreement with Professor Edward Someus Sweden. Biochair technology
EU FP7-Refertil 289785.

2011 (December)- International Agreement with Prof. Vladimir Jacoviski Faculty of Technology and
Metallurgy, Skopje, Macedonia, for a Scientific cooperation “Utilization of different products
obtained from biomass-waste for application in agriculture”.

Since 2012- National research agreement for a scientific cooperation with Euro-Energy Industry
(Milan). The agreement aims to introduce no-food species to produce biodiesel in the degraded
soils of Calabria, Southern Italy with the dual objective to recover degraded areas and produce
green energy.

Since 2013- National research agreement for a scientific cooperation with “Cooperativa Fattoria della Piana”, Società Agricola and “Mediterranea” University, Reggio Calabria Italy on “Analysis and monitoring of quality and quantity of biomass input, and digestate output for agro-energy purpose.”

Since 2014- National research agreement for a scientific cooperation with Steel Belt System s.r.l on the use of polluting recalcitrant agricultural wastes (olive wastes and citrus pulps), and inorganic sulfur obtained from the residues of the desulfurization of natural gas and oil as fertilizer for a sustainable recovery of soils, an eco-friendly agriculture, while reducing sulfur gas emission in the atmosphere.

Since 2016 National research agreement for a scientific cooperation with ARSAC on the production of vermicompost from municipal waste to be used as fertilizer and soil improver to recovery degraded and unfertile lands in Southern Italy.

Since 2017 National research agreement for a Scientific Cooperation with AICAL on the role of bergamot power as fertilizer

Chairman, Invited Speaker and Organizing Committee Member

12/13 March 2010- Invited speaker at the International conference “Putting Halophytes to Work - From Genes to Ecosystems” Crop and Forage production in saline and arid environments: an overview. Federico II University, Naples.

7 October 2010- Invited speaker at the National Congress Social responsibility, Lecture: It is time to change: environmental issues and Social Responsibility. Province Palace, Reggio Calabria, Italy.

October 2010 Invited Speaker Meeting “Qualita’ E Sicurezza Degli Alimenti” The role of Public Research in Calabria; “Valutazione e potenziamento della qualità, della sicurezza e della salubrità degli alimenti”, Uni-Cal, Cosenza.

- November 2010 Chairman National Congress “Le statine del Bergamotto: Nuovi orizzonti terapeutici. Auditorium dell’Osservatorio Epidemiologico ACE e ISS, Pellarò Reggio Calabria, Italy.

23 November 2010- Invited speaker at the national congress “Recovery of Mediterranean Forest. Soil the factory of life: its biodiversity and function. Agriculture Faculty, “Mediterranea” University, Reggio Calabria, Italy.

14 April 2011- Lecturer at the Workshop - PEER Behavioral project. Loughborough University, LE11 3TU LONDRA, UK.

29 April 2011- Invited Speaker “National Congress on European Education Information “International Mobility to develop Education Abilities”, Calabria Regional Palace, Reggio Calabria, Italy, 29 April 2011.

30-31 May 2011- Invited speaker at the Better-Practice-Exchange 2011 – ENERGY In The German Capital Region From Regional To International – Cooperating With European Community. Oral Presentation: Biomass for Bioenergy

28/29 September 2011- Invited speaker at the Regional Congress on “Quality and Food security. Lecture on “Enhancing the quality of vegetable products through eco-friendly measures on soil quality University of Calabria, Rende, Cosenza, Italy.

5/7 December 2011- Invited speaker at the IHSS Congress Lecture: Humic substances: relationship between structure and activity. Is its changing structure responsible for different and controversial biological activity? Royal Palace of Portici, Naples.

30 March 2012- Italian representative at the Workshop -The Global Soil Biodiversity” The ExCel Centre, London.

18/19 April 2012- Member of the Scientific Committee for International Workshop on Sustainable cultivation and exploitation of halophyte crops in a salinizing world. Amsterdam, Netherlands.

18-19 April 2012. Invited speaker at International Workshop on Sustainable cultivation and exploitation of halophyte crops in a salinizing world. Lecture ”Ecophysiology of Pennisetum clandestinum: a valuable salt tolerant grass. Amsterdam, Netherlands.

7 May 2012- Invited speaker at the National Congress alternative energy for a sustainable development. Lecture: Biomass for biodiesel production, Palazzo Foti, Sede del governo Provinciale, Piazza Italia, Reggio Calabria, ITALY.

7 May 2012 Chairman National Congress Renewable Energy for a sustainable development. Reggio Calabria, Palazzo Foti, Sede del governo Provinciale, Piazza Italia, Reggio Calabria.

2-6 July 2012- Member of National Organizing Scientific Committee of “Eurosoil World Congress”, Bari, Italy.

2-6 July 2012 Convener of Oral Session ”Soil organic matter dynamic and climate” 4th International Congress EUROSIL, Bari, Italy.

16 July 2012- Invited participant at the brokerage event and face to face meeting for the FP7 Proposal, Charles Magne Palace, Brussels.

Since 2013- Representative of Agriculture Department for the International Relationship with European and Extra-European Universities.

9 April 2013- Invited lecturer at IPK Gatersleben, Germany “Plant responses to saline and arid environments: impact of plant stress on growth and root features” Heterosis GroupDPPN Leibniz

Institute of Plant Genetics and Crop Plant Research Gatersleben (IPK) Corrensstrasse 3D-06466
Gatersleben, Germany

10 May 2013- Member of the Scientific Committee for the 7th World Congress on Allelopathy, 28
July-1st August 2014, Vigo Spain.

16 May 2013- Member of Scientific Committee for the International Conference “Bioscience -
development and new opportunities” - KLIMENT'S DAYS”, Sofia, Bulgaria, 20- 22 November
2013.

20-22 November 2013 Chairman for Ecology, environment and sustainable development section in
the International Congress KLIMENT'S DAYS”, Sofia, Bulgaria.

20-22 November 2013- Invited speaker at the International Conference Bioscience - development
and new opportunities KLIMENT'S DAYS”, Sofia, Bulgaria. Lecture: Soil in the context of a
green economy for a sustainable development.

9/14 April 2014. Member of the Scientific Committee for the International Conference Halophytes
from gene to ecosystem, University of Coimbra, Portugal.

12/13 May 2014- Member of Scientific Committee of the international conference on “Halophytes
for Food Security in Dry Lands” Centre for Sustainable Development (CSD), Qatar University,
Doha, Qatar.

20/22 July 2015 Co-Chair of the track 6-9-10 Waste water recycling; Environmental impact of
Recycling and Agriculture waste recycling at the 1st World Congress and Expo on Recycling
2015. 20-22 July Barcellona Spain.

20/22 July 2015-Invited speaker at 1st World Congress and Expo on Recycling, Barcellona, under
track 10, “Agricultural waste recycling”. Oral presentation: Using agriculture waste and/or sulfur
obtained from the residues of the desulfurization of natural gas and oil as fertilizer for productive
purposes.

July 2016 Member of the organizing Committee for the 2nd World Congress and Expo on Recycling
July 25-27, 2016 Berlin, Germany

25-27 July 2016 Co-chair Session 2: Recycling Basics|Solid Waste Management|Waste Water
Recycling| Agricultural Waste Recycling. 2nd World Congress and Expo on Recycling July 25-
27, 2016 Berlin, Germany.

25-27 July 2016 Oral Presentation ”Recalcitrant agriculture waste to produce biogas and
amendments” 2nd World Congress and Expo on Recycling July 25-27, 2016 Berlin, Germany.

2-4 November 2016 Member of the organizing Committee for the International Conference XI
International Symposium on Recycling Technologies and Sustainable Development to be held in
Hotel "Albo" in Bor from 2 - 4 November 2016.

2-4 November 2016 Invited Speaker XI International Symposium on Recycling Technologies and Sustainable Development. Oral presentation: Using agricultural, municipal wastes and sulfur from the residues of gas and oil industries, to produce fertilizers, Bor from 2 - 4 November 2016 Serbia.

2017 July-27-29 invited honorable organizing committee member for the Recycling Expo-2017-Roma

2017 June Organizing Committee Member of 8th International Conference on Environmental Science and Technology, 12.-14 June 2017 Madrid Spain

2017 September Member of Scientific Board for 2nd International and 14th National Congress of Soil Science Society of Serbia "Beneficial Soil Solutions, Projections and Recommendations", which will take place in Novi Sad, Serbia, 25-28 September 2017.

2017 October Organizing Committee Member of 2th International Conference, Pollution Control and Sustainable Environment, London 5-6 October 2017.

2017 June 12-14 Madrid Invited Speaker ICEST Conference: Erosion of Brassica incana genetic resources: causes and effects.

2017 July-27-29 Roma invited speaker Recycling Expo-2017-Roma: Comparison of composts obtained from olive pomace and vegetable residues as alternative to synthetic fertilizers

2017 Italian Representative of Pillar 5 "Harmonization of methods, measurements and indicators for the sustainable management and protection of soil resources. Global Soil Partnership FAO. 25-28 September 2017. Invited speaker to 2^o International Meeting of Soil Science, Novi Sad University, Serbia, with a lecture "Effect of composts and digestates obtained from organic wastes on quality, as sustainable alternative to synthetic fertilizer.

2018 September 13-15. 17th World Congress on Nutrition and Food Chemistry. "Changes in soil available nutrients, by using NaCl, improve nutritive and health promoting compounds in the edible seeds of three different variety of lentil (*Lens culinaris* Medix)".

2018 June 25-26 Berlin, Germany. 8th World Congress and Expo on RECYCLING "Agro-reminders, municipal wastes and sulfur recovered from refineries as sulfur-based organic fertilizer"

2018 June 25-26 8th Organizing Committee 8th World Congress and Expo on RECYCLING, Berlin Germany.

2018 July 23-25 Organizing Committee Member of 3th Edition of International Conference on Agriculture & Food Chemistry Roma, Italy.

2018 July 23-25 3th International Conference on Agriculture & Food Chemistry. "Agricultural wastes pelletized with elemental sulfur and bentonite increase health-benefiting phytonutrients in red onion" Roma, Italy.

2018 13-15 September London, UK invited Speaker 17th World Congress on Nutrition and Food Chemistry, “Agricultural wastes pelletized with elemental sulfur and bentonite increase health-benefiting phytonutrients in red onion”

2018/13-15 September London, UK Organizing Committee member 17th International Congress, Nutrition and Food Chemistry.

2018/07/02 Scientific Chair of National Congress “Nutrition and Longevity”, Mediterranean University of Reggio Calabria Italy.

2019 20-22 May *Pint of Science conference* “Incredible world beneath our feet: telling story from underground, Reggio Calabria, ITALY

2019 June 5 35^o Anniversary SBS Steel Belt Systems Use of Sulfur bentonite and agricultural wastes to produce bio-fertilizer for a sustainable agriculture.

2019 13-14 June Edinburgh, Scotland Organizing Committee member 11th World Congress and Expo on Recycling,

2019 13-14 June Edinburgh, Scotland Key note speaker at 11th World Congress on Expo and Recycling “Different methods for turning olive pomace in resource: benefits of the end products for agricultural purpose”

2019 5 June Speaker “Sulfur bentonite and agricultural wastes as organic fertilizer for a sustainable agriculture” at 35^o foundation anniversary of SBS Steel Belt Systems, Varese ITALY

2020 5-6 March Organizing Committee member of SCON World Convention on Waste Recycling and Reuse, Tokyo Japan.

2021 15-17 December Key note Speaker at the International Conference on Integrated Approaches towards Sustainable Management of Environment for Safe Food, Nutrition and Improved Health. University of Kalyani, Kalyani, India “Turning agricultural, municipal and industrial pollutant wastes into fertilizers for a sustainable healthy food production”.

2022 9-10 May Key note speaker at the 10th International Conference on Recycling and Waste Management Barcelona Spain, “Recycling Agro-industrial and municipal wastes into nutrient-rich organic fertilizer”

2022 30 June. Key note Speaker at the Opening Conference Life Project RecOrgFert PLUS Venegono Varese Italy, “Using agriculture wastes and sulfur as fertilizer for productive purposes.

2022 26-29 July Scientific Committee Member for the Virtual Global Symposium on Soil for Nutrition (GSOIL-4N)-(FAO)

2022 August invited organizing committee member of the World Convention on Recycling and Reuse, 7-8 December 2023 Dubai

2022 October 24-25 Key note speaker at the Third INFA Meeting held virtually FAO, GSP

2022-December 5 Key note speaker at the World Soil Day—Soils: where food begins >
(<https://www.un.org/en/observances/world-soil-day>), held virtually and organized by MDPI.

Visiting scientist

Visiting Professor Vigo University, Spain, September 2009. European Project arrangement.

Visiting Professor Coimbra University, Portugal, February 2010.

Visiting Professor Coimbra University, September 2011.

Visiting Professor Sussex University Organizing Meeting, November 2013.

Visiting professor Seed Bank Kew, UK. Research Program, February 2013.

Visiting Professor IPK, Gatersleben, Germany, Research Program, April-May 2013.

Visiting Professor IPK Gatersleben Germany, Research Program, September-October 2013.

Visiting Professor Seed Bank, Kew UK, Research program, April-August 2014.

Visiting Professor Seed Bank, Kew UK, Research program, May 2015.

Visiting Professor Seed Bank Kew UK, Research program, June 2016

Visiting Professor Seed Bank Kew UK, Research Program June 2017

AWARDS:

- **Knight of the Italian Republic:** in view of the special merit in the scientific field, and on the proposal of the President of the Council of Ministers, after consultation with the junta of the Order of Merit of the Italian Republic, with decree dated June 2, 2012, she was awarded with the honors of **Knight of the Italian Republic for the work done in the research field.**
- **Recognition as Valuable Italian Researcher**, in the domain of Food and Agriculture, selected researcher for the EXPO Milan 2015. http://www.cibiexpo.it/s14_scienza-ricerca.php.
- **Recognition** of outstanding services rendered in organizing the second world congress on recycling Berlino 25-27 July 2016
- **Recognition** for the phenomenal and worthy oral presentation at the second world congress on recycling Berlino 25-27 July 2016
- **Recognition** for co-chairing the section on Recycling Basics, solid waste management, waste water recycling and Agricultural waste recycling. of the second world congress on recycling Berlino 25-27 July 2016
- Recognition in appreciation of the esteemed support as organizing committee member at the second world congress on recycling Berlino 25-27 July 2016

- Recognition in appreciation of the esteemed support as organizing committee member at the 4th world congress on recycling-expo 2017 Rome 27-29 July 2017
- Awarded Certificate for the Excellent work and great contribution to Journal of Forestry Research as Associate Editor during 2014-2017
- 2020 Recognition Stanford University's World's Top Scientist List "A standardized citation metrics author database annotated for scientific field" (PLOS Biology 2019)
- 2021 Recognition Stanford University's "World's Top Scientist List" Updated science-wide author databases of standardized citation indicators. PLOS Biology 2020 update
- 2022. Appointed as Member of the Intergovernmental Technical Panel on Soils (FAO-Global Soil Partnership 2022-2025).
- 2022 Recognition Stanford University's "World's Top Scientist List" Updated science-wide author databases of standardized citation indicators. PLOS Biology 2021

National and International Research Project (2005-2019)

2005- Regional Project "Issues related to the olive oil sector in the Province of Reggio Calabria its redevelopment and revitalization." Scientific Responsible: Prof. D. Gioffre, **Scientific Coordination Prof. Muscolo Adele, Attinà Emilio**. Funded by the 'Department of Industry and Local Development and Agriculture Province of Reggio Calabria.

2005- National Project PRIN (ex 40%) "Biological activity of humic substances on nitrogen metabolism in maize seedlings and in embryogenic cultures of forest tree species in relation to the structure of humic substances themselves", Scientific Unit of Padova Prof. Nardi Serenella, Scientific Coordinator of the National Prof. Alessandro Piccolo University of Naples Federico II. Operative National Project (PON) (2006). Trasferimento tecnologico e l'innovazione di PMI. Nell'ambito dell'area tematica "Analisi e prevenzione del rischio di siccità e di desertificazione".

2007-2013- National Operative Project: "Laboratory Public/private RRL - Railways Research Laboratory (Jatropha as energy source).(financed)

2007-2013- National Operative Project Laboratory Public/private RRL "Nanotechnology Detection Sensors and Omich Tecnology for Food Safety, Authenticity and Traceability - NANOFOOD (financed)

2007-2013- National Operative Project (PON) Research and Competitiveness 2007-2013 Plant Biodiversity Agriculture and Forestry and the Environment As Source Of Renewable Energy (Financed).

- 2008- European Project FP7 Call KBBE 2008-2B** Proposal n° 226839 (HUMRUS 2008). Prof.ssa Muscolo Adele leader del WP5 “Biological effect of Humus”. Leader del Progetto Dr. Miloslav Pekar, Institute of Physical and Applied Chemistry, Brno University of Technology, Faculty of Chemistry (mark 9/10 threshold).
- 2009- National Operative Project APQ (2009)** "Experimental research project on the upgrading of the indigenous grape Gaglioppo area Cirò (Caparra and Siciliani) within 3 APQ action funded by Calabria Region, WP." Soil quality in a pedo-climatic of Crotone and analysis of the root/soil cultivation systems confined to the identification of grapevine rootstocks, in combination with the variety Gaglioppo, suitable environment under study and adaptable in soils characterized by nutritional deficiency Funded by Italian Research Minister (2010).
- 2009- National Operative Project APQ 2 laboratory** “Conservation and enhancement of soil resource: definition of the quality of the soil for agricultural eco-management and quality of the products” as part of the Project, Food Quality and Safety. Funded by Italian Research Minister.
- 2009- European Project COST** "Putting Halophytes to Work: From Genes to Ecosystems". Component of Management Committee, and WG1 Chair. Chair of the COST project FAO901: Prof. Timothy Flowers University of Sussex (UK).
- 2009- PSR Measure 124, Winery Iuzzolini (KR)** “Sustainable Soil Management's Vineyard for improving Quality of Grape And Wine” (not funded).
- 2009- European Project P7 (Call KBBE2010-4 Proposal n° 266286), “METACROP“** Chair WG 13 Prof. Muscolo Adele. Scientific European Chair Prof. Manuel Reigosa Roger, University of Vigo, Spain (not funded, mark 9.5/10 threshold).
- 2009-2010-** Head of research team participants to the teaching and Research Project: BIOLOGICAL INVASION BY *Prosopis Juliflora* (SW.) DC IN CAATINGA: IMPACTS ON THE QUALITY OF NON-SALINE SOILS AND SALINE. Chairs Leonaldo Alves de Andrade and Adele Muscolo. Funded by FEDERAL UNIVERSITY OF PARAÍBA. Brasil.
- 2010-2013-** National District Project "Food Processing High-Tech" use of citrus biomass in agriculture as fertilizers. funded
- 2010-2013- National Operative Project:** "Agribusiness HighTechnology District" use of biomass residues in crop protection funded.
- 2010- European Project (FP7)** “Multipurpose living crops for sustainable Agriculture in Europe (MULCROSA) Chair WG 2 Prof Muscolo Adele. Chair: Prof Manuel Reigosa Roger, (Vigo), Spain
- 2010- National Project PRIN.** Enhancement of lignine biomass residues for energy l. Role in the bioactivity and plant rhizosphere and in the production of biodegradable polymers National Co-Chair Prof. Alessandro Piccolo University of Naples "Federico II" Local Chair Prof. Muscolo Adele

- "Effects of lignin derivatives on germination, growth, root morphology and mechanisms antioxidative in seedlings of *Arabidopsis thaliana* and *Zea mays* " (not funded)
- 2010 National Project FIRB.** Proposal number (RBFR109NSH_002). Department GESAF Prof. Muscolo (Dr Sidari Rossana) (not funded)
- 2011 National Project MIPAAF** "Sustainable Management of Olive For Improving The Productivity 'Thematic "Development of Calabrian olive oil sector through Research and Experimentation
- 2011 MIPAAF National Project** Sustainable Soil Management for improving the quality of grapes Theme: Viticulture Research and Experimentation.
- 2011 Marie Curie Intra-European grants** (opening dates = 15/02/2011) Influence of phenolic compounds on the net nitrate uptake, physiological responses and stress tolerance induction in maize. Dr M. Iftikhar Hussain (Vigo University Spain) (not funded).
- 2010-2013** Head of Trans National Project ROBINWOOD (2010-2013) Plus, INTERREG IV C European Project "Forest System Management: better Practice (funded).
- 2011** Participant to the **COST Action** Proposal **oc-2011-1-9981 Chair** Raphael Th. Klumpp Universitaet fuer Bodenkultur Wien. Proposal "Managing European fir species under climate change conditions (FIRCLI)" (not funded)
- 2011** Participant to the European Project ENPI CBC MED (08-2011) "Development of Salicornia and Sarcocornia as food for human (vegetable), Cattle and Fish" Leader Prof. Moshe Sagi French Associates Institute for Agriculture and Biotechnology of Drylands, Blaustein Institutes for Desert Research, Sede Boqer campus Ben-Gurion University, P.O.B. 653, Beer Sheva 84105, Israel. Not Funded
- 2011** Participant to the Project ARimnet september 2011. Coordination of Agricultural Research in the Mediterranean Area: Degraded soil, waste-water and or saline water resources used for halophyte cultivation as vegetable and ornamental crops for the recovery and conservation of Mediterranean soils. (SALTCROPS) . Chair Prof. Manuel Reigosa Rogers Vigo University, Spain. Not Funded
- 2011-2013** Participant to the LIFE PROJECT (2011-2013) "Monitoring Soil Biodiversity, in Pollino National Park, Biodiversity and Cave restoration. (funded by Italian Minister)
- 2012-2015** Participant to the National Research Project: **PRIN** Increasing the value of lignin residues from biomasses for energy. Role in the bio-activation of plant growth and rhizo-sphere soil and in the production of biodegradable co-polymers. (not funded)
- 2013 FP7 Project EPPN.** European Research Project. **Responsible** for the project entitled "Phenotypic and metabolic responses to drought and salinity of four lentil genotypes" in cooperation with IPK-MP and IPK-APPP, (Leibniz University Germany) funded

- 2013** FP7 Project Participant as leader of the WP titled “Digestate: from Identification to Valorization of high Value Compounds (fertilizers, herbicide etc)” in FP7 Project (2013) “Preventing and valorising bio-waste in bio refineries (large-scale integrating projects targeted to SMEs) Call: FP7-KBBE-2013-7 – single stage selected but not funded (due to a lack of funding)
- 2013** Scientific Coordinator of FP7 Project KBBE.2013.1.2-05: Biological control agents in agriculture and forestry for effective pest and pathogen control.
- 2013-2015** Head of the Regional Research Project PSR mis 214 action 6, “Preservation and recovery of *Brassica incana* in Calabria funded.
- 2013-2015** WP leader of the Regional Research Project PSR mis 214 action 6. “Preservation and recovery of *Lavandula multifida* in Calabria Leader Prof Panuccio MR. funded.
- 2013-2015** Head of the research team participants to International Project: Bioenergy crop production under drought and salinity for better feed and fuel First Annual PSSP Competitive Grants Program Pakistan
- 2013-2015 WP** leader of the Regional Research Project (PSR mis 124 action 1). entitled “Energetic valorization of Agriculture Biomass for Biogas Production”
- 2013** Marie Curie Intra-European Fellowships (IEF): FP7-PEOPLE-2013-IEF: Impact of Phenolic compounds on nutrient uptake, on stress tolerance induction and on improving food safety in n maize (PHENOTOMAZ) **Applicant:** Ana Martínez-Peñalver Mas PhD Faculty of Biology. University of Vigo Campus Lagoas-Marcosende s/n E-36310 Vigo (Spain) not funded
- 2013** Marie Curie International Incoming Fellowships (IIF): FP7-PEOPLE-2013-IIF. Morphology and physiology of lentil roots in response to bacterial inoculation in salt-affected soils. **Applicant:** Sajid Mahmood PhD Student Institute of Soil & Environmental Sciences, University of Agriculture, Faisalabad-Pakistan. (not funded)
- 2013** EFIMED Short Scientific Visits, International Call: “Relationship between enzyme activity in soils and productivity of *Pinus sylvestris* L. and *Pinus halepensis* Mill. forest plantations in Northern Spain”. **Applicant:** Teresa de los Bueis Mellado PhD Student in Conservation and Sustainable Use of Forest Systems. Sustainable Forest Management Research Insitute. Valladolid University-INIA ETS Ingenierías Agrarias, Avda. de Madrid 44. 34004 Palencia (Spain) (funded)
- 2013** Head of the Cooperative Research Program: Biological Resource Management for Sustainable Agriculture Systems: OECD 2013: call theme I – The natural resources challenge. Sea Water Irrigation for The Cultivation of Halophytes as sustainable, underutilized crops (SWITCH) **Applicant:** Prof. Muscolo Adele “Mediterranea” University of Reggio Calabria Italy, Host Institution: Royal Botanic Garden Kew UK. Approved on 14th December 2013 and funded.

2013 Joint Programming Initiative (JPI) Water challenges for a Changing World (December 2013).

Chair Prof. Bernhard Huchzermeyer, Institute of Botany Leibniz University Hannover, Muscolo Adele responsible for the WP 6. Effect of contaminate water on soil chemical and biochemical processes. Not funded.

2013-2015 National Project: Private RRL - Railways Research Laboratory (*Jatropha curcas* as energy source) (funded by MIUR).

2014-2015 PSR Calabria mis 214 - action 6 Projects for the preservation of genetic resource in Calabria region project proposal: recovery and reproductive, dissemination and use of Calabria potato "purple Calabrian" (funded)

2014 MARIE SKŁODOWSKA-CURIE ACTIONS Individual Fellowships (IF) Call: H2020-MSCA-IF-2014, ESPLA” “The effects of toxic metals on soil ecosystems and plant growth. (Not funded).

2015 -2016. National Research Program (PON) Agrifoodtech, Vegetal sector Coordinator of the action “*Utilization of industrial and agriculture residues as compost in agriculture*”.(funded)

2015 Coordinator of ARIMNET Project “METABOPHEN” Pre-proposal ID: 526 (not funded)

2015 Horizon 2020, WAVE Project, call Waste 7, (Ensuring sustainable use of agricultural waste, co-products and by-products). Under evaluation

2015 Member of the steering group of COST action “Proposal Reference OC-2015-1-19647

Title: Water for Food and Bioenergy. Under evaluation

2016 Coordinator of The EMBO Long Term Fellowships Project: “The effects of toxic metals on soil ecosystems and plant growth”. Under evaluation

2014 -2017. National Research Program (PON3) Agrifoodtech, Coordinator of the action “Soil quality improvement by using biological compounds”. (funded).

2014 -2017. National Research Program (PON2) Agrifoodtech,. Coordinator of the action “Testing of compost used in agriculture as a fertilizer obtained by-products of the DMF. (funded).

2013-2015 mis 214 azione 6 PSR Salvaguardia e Recupero della Brassica Incana in Calabria (funded)

2016 Horizon 2020 Title of Proposal: Hybrid membrane processes for water and nutrient recycling: from wastewater treatment to resource recovery (ReNuAqua) Type/Topic: Innovation Action/ Circ-02-2016-2017 .

2016 Horizon 2020 Title of Proposal Design and demonstration for circular value and supply chains of recovered Phosphorus. Circ-01 2016-2017.

2016 Steering group member for the Cost action Proposal Reference OC-2015-1-19647 Title: Water for Food and Bioenergy Acronym: WafFaB to be submitted.

2016- Horizon 2020-Title of Proposal Development of different safe alternative N, P organic fertilisers, plant protection products and management practices for minimising the use of external inputs in organic

farming" Chair Dr Someus Edward, biochar S&T senior engineer of Terra Humana Ltd Company, to be submitted to the call SFS08 Organic inputs – contentious inputs in organic farming EU-BIO-CIRC Horizon 2020.

2016-Horizon 2020. "Development of BIO-NPK Nutrient Management and Nutrient Recovery Thematic Network for intensive dissemination of high TRL maturity applied science and RTD results to agri-farmers " Chair Dr Someus Edward, biochar S&T senior engineer of Terra Humana Ltd Company, to be submitted to the call H2020 RUR-10-2016-2017:

2016-Arimnet 2- Title of Proposal “Improvement of glasswort (*salicornia* spp.) Crop cultivation in mediterranean basin Id 9530 Call-Promoting sustainable agriculture for socio-economic development” Chair Helena Silva University of Aveiro, Portugal.

19 May 2017 Joint Research Agreement with AICAL Cosenza and Prof Muscolo to carry on a scientific study on the Chemical Characterization of Bergamot powder for a possible and sustainable use in agrofood chain.

February 2018 PSR CALABRIA Call Misura 16 - 16.2.1 "Sviluppo di nuovi prodotti, pratiche, processi e tecnologie nel settore agroalimentare e forestale" – 2017. Recycling of FORSU in a farm for the production of HUMUS with the aid of earthworms.

February 2018 PSR CALABRIA Call Misura 16 - 16.2.1 "Sviluppo di nuovi prodotti, pratiche, processi e tecnologie nel settore agroalimentare e forestale" – 2017. The microfiltered digestate as a renewable resource for the fertirrigation of the herbaceous and arboreal crops in Calabria, Italy.

April 2018 Principal Investigator of the WP in the PRIN BIOCHARMA, Coordinator Prof Pedrazzi, Dipartimento di Ingegneria "Enzo Ferrari"Università di Modena e Reggio Emilia

April 2018 Principal Investigator of the Italian Group in the PRIMA Project “AGRIRRIMED” (S2 2018) Chair Dr Sara Alvarez Martinez INSTITUTO TECNOLÓGICO AGRARIO Junta de Castilla y León, Valladolid Spain

April 2018 Principal Investigator of the Italian group in the PRIMA Project “NeWaCrop” (S1 2018 MANAGEMENT OF WATER) Chair Junkal Landaburu, Institute Imdea Agua Madrid Spain

April 2018 Principal Investigator of the Italian group in the PRIMA Project “Salsa” (S1 2018 FARMING SYSTEMS) Chair Kalliopi Radoglou, Democritus University of Thrace Greece.

April 2018 Principal Investigator of the Italian group in the PRIMA Project “BotGourdMed (S1 2018 FARMING SYSTEMS) Chair Ehab Ibrahim, Agricultural Research Center, Egypt.

April 2018 Participant in POR Calabria Mis 16.1 **RIciclo di MAteriale** di scarto per incrementare la produttività e la qualità delle COLture RIMACO, Chair Agostino Sorgonà, Funded

January 2019 Principal Investigator of the Italian group in the PRIMA SECTION 1 RIA Conserving water and soil in Mediterranean dry-farming, smallholder agriculture “SALIMED” Chair Kalliopi Radoglou, Greece.

June 2019 Principal Investigator in the LIFE Project RecOrgFert proposal number Life19 ENVIT000039

October 2019 Research unit chair for the Project ZERO DISERBANTI IN UN SISTEMA PRODUTTIVO INTEGRATO” Bando SNSvS2 CATEGORIA 2 – Area Tematica2.4”, MAAT

October 2019 Scientific Coordinator of a PSR 2014 - 2020 – Regione Calabria MISURA M16.02

“Riciclo della FORSU in Azienda Agricola per la produzione di HUMUS con l’ausilio dei Lombrichi”

October 2019 Scientific Coordinator of a PSR 2014 - 2020 – Regione Calabria MISURA M16.02

Il digestato microfiltrato come risorsa rinnovabile per la fertirrigazione delle colture erbacee ed arboree del territorio calabrese

February 2021. Scientific coordinator of MIPAAF Project in the strategic national plan for the development of a biological system, thematic 6. *Miglioramento della biodiversità e della qualità del suolo e dei prodotti attraverso l’uso di Compost, Vermicompost e Caolino per la riduzione di input esterni.*

April 2021 Scientific coordinator of the Italian research group to PRIMA in thematic area Management of water, Topic: 1.1.1-2021(RIA) Sustainable soil and water management for combating land degradation and desertification and promoting ecosystem restoration. Type of action:(RIA) Research and Innovation action “Restoring degraded agricultural soils and promoting sustainable water management in Mediterranean countries using stress-tolerant plants acronym "PlantsRestore",

July 2021 Scientific coordinator for LIFE20 ENV/IT/000229 entitled “Organic-mineral fertilizers by using recovered sulphur & orange wastes as sustainable soil recovery from desertification” **Funded**

September 2021. Scientific coordinator of LIFE 20 ENV/IT/ 000229 LIFE RecOrgFert PLUS, 2021-2025.

May 2022 Scientific Coordinator of POR CALABRIA FESR-FSE 2014-2020 Poject, Axis I – Research and Innovation Promotion Specific Objective 1.1 – “Increment innovation activity of enterprises Action 1.1.5 – Support for the technological advancement of companies through the financing of pilot lines and early product validation and large-scale demonstration actions. Entitles “Recovery of residues from wood processing and organic waste material for the production of quality organic fertilizers” Funded (2022-2025).

2022. Scientific Responsible of the INGEGNO Project "Recovery of wood processing residues and organic waste material for the production of quality organic fertilizers" in the context of POR CALABRIA FESR-FSE 2014-2020 ASSE I - PROMOTION OF RESEARCH AND INNOVATION

Specific objective 1.1 – Increase in business innovation activity Action 1.1.5 – Support for the technological advancement of businesses through the financing of pilot lines and early product validation actions and large-scale demonstrations.

January 2023. PNRR, Scientific coordinator of the task 3.2.1 “solution for soil quality assessment and protection” in the Thech4you project.

January 2023 Active participant in the PNRR Project National Research Centre for Agricultural Technologies (AgriTech) in the Task 9.1.5 Modelling sustainability and quality of farm processes and food (M1-M36; task leader: UNIRC; partners involved: UNIFI, CNR, UNIRC, UNIRM, UNIBA, UNITO)

May 2023 Active participant member of the funded COST Action “Proposal OC-2022-1-26089 " Exploiting Plant-Microbiomes Networks and Synthetic Communities to improve Crops Fitness ".

National Cooperation:

University of Padua: Prof.ssa Nardi Serenella

University of Bologna: Dr.ssa Francioso Ornella

University of Sassari: Prof.ssa Pusino Alba

University of Naples Federico II: Prof.ssa De Pascale Stefania, Prof. Piccolo Alessandro

University of Basilicata: Dr. Celano Giuseppe

University of Bari: Prof. Senesi Nicola

University of Calabria Prof.ssa Maiolo Loredana

University of Pisa Prof. Durante Mauro

University of TOR Vergata (Roma 2) Prof. Baciocchi Renato

University Cattolica of Piacenza Prof Trevisan

International Cooperation

University of Belgrade, Serbia Prof Miroslava Mitrovic

University of Belgrade, Serbia, Prof Pavle Pavlovic

Vigo University (Spain), Prof Manuel Reigosa Roger

Bristol University (UK), Prof. Heather MacDonald

Marrakech University Morocco, Dr Abdellatif Boussaid

University of Sfax Tunisia Prof. Sami Sayadi

Universidade de Trás-os-Montes e Alto Douro, Portugal Prof. Carla Maria Amaral

University of Sussex (UK) Prof. Timothy Flowers

Seed Bank Kew UK Dr Seal Charlotte

University of Coimbra (Portugal) Prof. Helena Freitas

University of Sofia Prof. Mariela Odjakova

Université De Savie Laboratoire D'Ecologie Alpine Leca-Tde, Prof.Christiane Gallet;

Universitat Autònoma de Barcelona Prof.ssa Eva Castells, Unitat de Toxicologia
Facultat de Veterinaria

University of Colorado Ecology and Evolutionary Biology (USA) Prof. Steve Schmidt

University Torun (Poland) Prof.ssa Agnieszka Piernik

University of Brno (Czech Republic) Faculty of Chemistry Prof. Miloslav Pekar.

Dr. Uwe Schleiff - Independent Expert for: salinity+Irrigation, Fertilizers+Crops,
Soils+Environment Wolfenbuettel/Germany

Prof. Leonaldo Alves de Andrade Doutor em Ciência Florestal UFPB – CCA- DFCA
Laboratório de Ecologia Vegetal Areia – Paraíba – Brasil (Teaching and research
Cooperation in progress)

Prof. Abdelgawad Alkahal Soils, Water and Environment Research Institute,
Agricultural Research Center, Giza, Egypt

Prof. Dr. Jelte Rozema Systems Ecology Department of Ecological Science
Faculty of Earth and Life Sciences VU University (Vrije Universiteit) Amsterdam
De Boelelaan 1085, 1081 HV Amsterdam The Netherlands

Prof. Moshe Sagi, French Associates Institute for Agriculture and Biotechnology of
Drylands, Blaustein Institutes for Desert Research, Sede Boqer campus
Ben-Gurion University, Beer Sheva, Israel.

Prof Sven-Erik Jacobsen Department of Plant and Environmental Sciences
Crop Sciences University of Copenhagen Højbakkegaard Allé 13
DK-2630 Taastrup Denmark.

Professor Dr. Zahir A. Zahir Institute of Soil & Environ. Sci. University of Agriculture
Faisalabad-38040, Pakistan

Prof. Ajmal Khan, Professor & Research Area Coordinator in Food Security
Center for Sustainable Development College of Arts and Sciences Qatar University

Dr. M Iftikar Hussain International Center for Biosaline Agriculture – ICBA, Dubai -
United Arab Emirates

Congress Participation

She took part in numerous National and International Congress, seminar and study meeting:

- Italian Society of Vegetal Physiology (SIFV) School “Percezione e traduzione del segnale nella piante”, Maratea, 1995.
- Doctorate school “Ruolo delle attività di membrane nella produzione vegetale:dagli aspetti molecolari quelli agronomici”, Verbania (Pallanza) 2-4-luglio 1997.
- VI National Congress of the Italian Society of Agriculture Chemistry (SICA), Udine, 1988.
- VIII National Congress of the Italian Society of Agriculture Chemistry, Bari, 1990.
- XXXIII National Congress of the Italian Society of Vegetal Physiology (SIFV) Palermo, 1993.
- XII National Congress of the Italian Society of Agriculture Chemistry, Piacenza, 1994.
- XXXIII National Congress of the Italian Society of Vegetal Physiology, Verona, 1994.
- XIV National Congress of the Italian Society of Agriculture Chemistry, Rimini, 1996.
- X International Congress FESPP, Firenze, 1996.
- III National Congress of International Humic Substances Society, Bologna, 1997.
- XV National Congress of the Italian Society of Agriculture Chemistry, Viterbo, 1997.
- XXXVI National Congress of the Italian Society of Vegetal Physiology (SIFV), Bari, 1997.
- XVI National Congress of the Italian Society of Agriculture Chemistry, Ravello, 1998.
- XVII National Congress of the Italian Society of Agriculture Chemistry, Portoferraio, 1999.
- International Study Meeting “Lo Stretto di Messina nel Piano Territoriale del 2000: Processi Evolutivi, Stato dell’Arte e Prospettive”, Reggio Calabria, 1999.
- XVIII National Congress of the Italian Society of Agriculture Chemistry, Catania, 2000.
- Study Meeting “Prospettive di Utilizzazione dei reflui Oleari” Bari, 2001.
- XIX National Congress of the Italian Society of Agriculture Chemistry, Reggio Calabria, 2001.
- XX National Congress of the Italian Society of Agriculture Chemistry, Padova, 2002.
- Seminar “Il ruolo della sostanza Organica in una Agricoltura Sostenibile” Lerici, 5-6 Giugno 2003.
- XXI National Congress of the Italian Society of Agriculture Chemistry, Ancona, 2003.
- XXII National Congress of the Italian Society of Agriculture Chemistry, Perugia, 2004.
- XIV National Congress of the Italian Ecology Society, Siena, 2004.
- XXIII National Congress of the Italian Society of Agriculture Chemistry, Torino, 2005.
- XXIV National Congress of the Italian Society of Agriculture Chemistry, Alghero, 2006.
- VII National Congress of the Italian Society of IHSS, Catania, 2007.
- XXV National Congress of the Italian Society of Agriculture Chemistry, Pisa, 2007.

- Congress, "Gestione sostenibile delle acque reflue olearie e dei sottoprodotti delle industrie agro-alimentari" "Mediterranea" University of Reggio Calabria 24-07-2008.
- XXVI National Congress of the Italian Society of Agriculture Chemistry, Palermo, 2008.
- International Congress Climate Change: Exchange Global Risks, Challenger & Decision" Copenhagen 10-12 Marzo 2009.
- XXVII National Congress of the Italian Society of Agriculture Chemistry, Matera, 2009.
- XVI National Congress of the IHSS 14-16 December Padua, 2009.
- XXVIII National Congress of the Italian Society of Agriculture Chemistry, Piacenza, 2010.
- **Participant** to Global Forum Climatic changes and salinity Valencia, 25-29 October 2010.
- **Participant** in the International meeting on "BETTER-PRACTICE-EXCHANGE 2011 ENERGY (30-31-May Postdam Berlin, GE)
- **Participant** in the National info Day on FP7 2012-Food Agriculture and Biotechnology, Rome, Italy, 27 June 2011.
- Co-organizer of the International meeting on Halophytes in Torun, Poland, 11-13 May 2011.
- **Participants** to the Info day and Partnering Event on Call FP7 _KBBE -6-2012. Brussel, 15 July 2011.
- **Participant** to Plant abiotic stress tolerance Meeting. Vienna, Austria-22-26 February 2012.
- **Participation** to the International Symposium SEB 700: Soil Enzymology, Soil Enzyme Diversity and Ecology. 3rd Symposium on Enzymes & Biocatalysis (SEB-2012) April 25-28, 2012 Xi'an, China.
- **Participation** to International workshop 18-19 April 2012 Sustainable cultivation and exploitation of halophyte crops in a salinizing world. Vrije Universiteit, Amsterdam, Netherlands
- **Participation to the International Congress on** Halophyte in a salinizing world. Leibniz University Hannover, 29-31 August 2012, Hannover, Germany.
- **Participation** to the International Conference "Bioscience - development and new opportunities" - KLIMENT'S DAYS", Sofia, Bulgaria 20-22th November 2013.
- **Participation to the** 1st World Congress Recycling and Expo 20-22 July 2015, Barcelona.
- **Participation** to the 2nd World Congress and Expo on Recycling July 25-27, 2016 Berlin
- **Participation to the** XXXIII Congress of the Italian Society of Agricultural Chemistry (SICA), September, 16th-17th 2015 Bologna Italy
- **Participation to the** X Congress of the Italian International Humic Substances Society (IHSS) Chapter, September, 18th 2015 Bologna, Italy.

- **Participation** to the Regional Congress on Biomass Valorization VAL.E.BIO. - 13 May 2016. Regional Council Palace Reggio Calabria Italy
- **Participation** to the XXXIV National Meeting of Agricultural Chemistry Italian Society “Environment and Sustainability” 5-7 October 2016 Perugia, Italy
- **Participation** to the 1st World Congress and Expo on Recycling 2015. 20-22 July Barcellona Spain.
- **Participation** to the 2nd World Congress and Expo on Recycling 2016. 25-27 July Berlino Germany.
- **Participation** to the 4th World Congress and Expo on Recycling 2017. 27-29 July Rome Italy.
- **Participation** to the ICEST Conference June 2017 Madrid, Spain

Personal skills and competences

Able to gather and synthesize information on internal and external environments.

Sensitive to diversity and multiculturalism.

Demonstrate ability in conflicting management and dispute resolution.

Demonstrate system thinking ability.

Able to analyze and design organizational structure and processes.

Able to manage change. Comfortable with risk taking understand creative process.

Able to work well in team.

Self-motivated, ample social capacities and facilities to initiate, communicate, interact and maintain positive social relationships with others in work and life.

Acquired travelling, researching, working and collaborating with different people, professionals, teams, institutions, organizations from different multicultural environments and European and non-European countries

Organizational skills and competences

Project management skills for large-scale projects, implementation and productions. Planning evaluation, organization, leading, supervision, decision-making, monitoring, keen anticipation of problems or constraints, problem solving and decision making, adjusting plans to accommodate changes and update situations and priorities. Strong organization, coordinating and communication skills within an interdisciplinary multi-tasking team. Strong assessment skills in determining the

success of a strategy to reach original goals, within the set time frame, resources and budget allocations.

Technical skills and competences

Leadership competence: Research planning, Cooperation among different research team, Laboratory management, Strong human relations, public speaking, writing and motivational skills. Ability to conceptualize and communicate concepts. Verbal and written communication skills, and the ability to interact effectively with individuals and audience members. Effective verbal communication skills: to inform, present, teach, motivate, inspire, and persuade. [Large audiences/reduce group's/individuals/press and media]. Effective written communication skills: for essays, research papers, project descriptions, book reports, thesis papers, reviews, term papers, etc.

Computer skills and competences		Skilled in word processing. Able to use statistical packages, Skilled with Internet.
Artistic skills and competences		Good kitchen skills with extensive product knowledge Specialized in food Science is able to cook healthy food
Other skills and competences,		Demonstrate knowledge of program and planning, Able to conduct research planning for geographic area
Driving licence		Driving licence type B (car) (since1980)

Mother tongue: **Italian**

	Understanding		Speaking				Writing
	Listening	Reading	Spoken interaction	Spoken production			
English	C2	C1	C2	C1			C2
French	A1	A1	A1	A1			A1
Spanish	A1	A2	A1	A1			A1

Author/co-author of 190 original papers published in peer reviewed, national and international journals and books.

Publication list

Articles in International Journals

- Muscolo A., M. Felici, G. Concheri, S. Nardi. (1993). Effect of earthworm humic substances on peroxidase and esterase activity during growth of leaf explants of *Nicotiana Plumbaginifolia*. *Biol. Fert. Soils* 15: 127-131.
- Nardi S., M.R. Panuccio, M.R. Abenavoli, A. Muscolo. (1994). Auxin-like effect of humic substances extracted from faeces of *Allolobophora Caliginosa* and *A. Rosea*. *Soil Biol. Biochem.* 26: 1341-1346.
- Fuggi A., M.R. Abenavoli, A. Muscolo, M.R. Panuccio. (1995). Glutamine Synthetase in cells from carrot (*Daucus carota L*) interaction between phosphinothricin and glutamate. *Current Issues in Plant Molecular and Cellular Biology*. Kluwer Academic Publisher, 589-594.
- Muscolo A., M.R. Panuccio, M.R. Abenavoli, G. Concheri, S. Nardi (1996). Effect of molecular complexity and acidity of earthworm faeces humic fractions on glutamate dehydrogenase, glutamina synthetase, and phosphoenolpyruvate carboxylase in *Daucus Carota* α II cells. *Biol. Fert. Soils* 22: 83-88.
- Muscolo A., S. Nardi (1997). Auxin or auxin-like activity of humic matter. In: *The Role of Humic Substances in the Ecosystems and in Enviromental Protection*. Drozd J., Gonet S.S., Senesi N. and J. Werber (Eds.), pp.987-992.
- Nardi S., D. Pizzighello, A. Muscolo, F. Della Vecchia, G. Concheri (1998). Effects of forest humus on biological activity in roots of *Pinus sylvestris* related to chemical humus fraction characteristics. *F.E.B.* 7: 203-208.
- Muscolo A, M. Sidari (1998). Evolution of phenolic compound and humic substances in different forest soils of Aspromonte (Southern Italy) under different tree species. *F.E.B.* 7: 197-202.
- Muscolo A., M. Sidari (1998). Biological activity of humic substances and phenolic compounds extracted from two different forest soils of Aspromonte (Southern Italy). *F.E.B.* 7: 695-700.

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- Muscolo A., M.R. Panuccio, M. Sidari, S. Nardi (2000). Effect of two different humic substances on some glycolytic enzymes in callus culture of *Pinus laricio*. *Humic Subst. Environ.* 3: 25-29.
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- Sidari M., Mallamaci C., Attinà E., Muscolo A 2010. Response of soil properties and microbial communities to the application of Olive Mill Wastewaters *Terrestrial and Aquatic Environmental Toxicology* 4 104-108 Guest Editor (Muscolo Adele)
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