CURRICULUM VITAE

Dr. *MAURO CENTRITTO*

Education

Doctorate degree in Agricultural Sciences - Università degli Studi di Napoli Federico II, Naples, Italy.

Ph.D. in Plant Ecology, Institute of Ecology and Resource Management, Faculty of Science and Engineering, University of Edinburgh, UK.

Position

Director, CNR-Institute for sustainable Plant Protection, May 2019 - present.

Director, Trees and Timber Institute - National Research Council of Italy (CNR), May 2014-April 2019.

Director, CNR-Institute for Plant Protection (IPP), November 2012-April 2014

Research Director, CNR-IPP, August 2012-November 2012

Research Director, CNR-Institute of Agro-Environmental & Forest Biology (IBAF, Rome, Italy), January 2007-August 2012

Professional Activities

Adjunct Professor, PMAS Arid Agriculture University Rawalpindi-Department of Environmental Sciences (Rawalpindi, Pakistan), 2010-present.

External Professor, Chinese Academy of Forestry-Research Institute of Forest Ecology and Environment (Beijing, China), 2009-2014.

Member of the Academic Scientific Committee of the Strathmore University (Nairobi, Kenya), 2015-2016.

Lecturer at the University of Molise (Italy), Faculty of Agricultural Sciences:

- *Agricultural Ecology* (1996-2002)
- *Plant Resource Protection and Management* (1998-1989)
- *Agrometeorology and Climatology* (2003-2004)
- *Ecology* and *Agroclimatology* (2004-2005).

Member of the Doctorate Board Ph.D. Program in Forest Ecology, University of Tuscia (Italy), 2009-2012.

Member of the Doctorate Board Ph.D. Program in Agriculture, Food and Environment, University of Pisa (Italy), 2013-2017.

Member of the Doctorate Board Ph.D. Program in Life Science, University of Siena (Italy), 2017-present.

Member of the "Tang Prize Selection Committee" (http://www.tang-prize.org/en/award.php), third prize cycle (2017-2018), prize category *Sustainable Development*.

Project Evaluator: EU (Framework Programmes); Belgium (Fonds de la Recherche Scientifiqe); Czech Republic (Czech Science Foundation); Greece (Ministry of Education, Lifelong Learning and Religious Affairs); Bulgaria (National Science Fund); Italy (Ministry of Science and Education and Ministry of Economic Development); Horizon 2020-"SUSCROP" ERA-NET; Sweden (International Foundation for Science).

Supervisor of PhD and Postdoc students, many from overseas.

Evaluator for Academic Promotions:

- Blaustein Institutes for Desert Research - French Associates Institute for Agriculture and Biotechnology of Drylands (University of the Negev), 2010;
- Ministerului Educaţiei Naţionale, Aurel Vlaicu University, Romania, 2014;
- Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, Italy 2016;
- Associate Professor Selection, University of Sargodha, Pakistan 2017
- Evaluator/Expert for the Technical Review Panel for Appointment of Associate Professor at the Department of Environmental Sciences-COMSATS Institute of Information Technology, Islamabad, Pakistan, 2018.

Multirater FAO-Senior Officer performance 2016 Competencies Appraisal.

Member of the Delegation of the Italian Ministry of Foreign Affairs at the Italian-Mexican "Binational Commission", Mexico City, Mexico, 2015.

Member of the Delegation of the Italian Ministry of Foreign Affairs at the UNCCD COP12 Ankara, Turkey, 2015.

Member of the Delegation of the Italian Ministry of Foreign Affairs at the UNCCD COP13 Ordos, China, 2017.

Member of the Italian Delegation at the UNFCCC COP 22 Marrakech, Morocco, 2016.

Consultant to FAO-Forestry, project *Forest Restoration in Algeria, Egypt, Morocco and Tunisia using Treated Waste Water to Sustain Smallholders and Farmers Livelihoods*, 2010-2013.

Italian member, Steering Committee, EU-COST action FP0601, *FORMAN - Forest Management and the Water Cycle*, 2008-2011.

Member of the organising/scientific committee of several international conferences and workshops.

Keynote Speaker and Chair at several international conferences and workshops.

National Scientific Qualification to the functions of Full Professor in the competition sectors 05/A2 Plant Physiology and 07/B2 Sciences and Technologies of the Arboreal and Forestry Systems.

Editorial Work:

Editorial Board of *Soil and Environment*, 2011-present

Editorial Advisory Board of *Functional Plant Biology*, 2009-present

Editorial Advisory Board of *Frontiers Environmental Science*, *Frontiers in Plant Science*, 2014-present

Associate Editor di *Advances in Horticultural Science*, 2016-present

Editorial Advisory Board of *Agriculture Ecosystems & Environment*, 2003-2015

Referee for: *Acta Biologica Cracoviensia Series Botanica*, *Acta Oecologica*, *African Journal of Agricultural Research*, *African Journal of Biotechnology*, *Agricultural Water Management*, *Agriculture*, *Agriculture and Forest Meteorology*, *Agriculture Ecosystems & Environment*, *Annals of Botany*, *Applied Soil Ecology*, *Atmospheric Environment*, *Biosystems Engineering*, *Ecological Indicators*, *Environmental and Experimental Botany*, *European Journal of Forest Research*, *Field Crops Research, Forest@*, *Frontiers In Sustainable Food Systems*, *Frontiers Plant Science*, *Functional Plant Biology*, *Global Change Biology*, *iForest*, *International Journal of Global Warming*, *Italian Journal of Agronomy*, *New Phytologist*, *New Zealand Journal of Crop and Horticultural Science*, *Science of the Total Environment*, *Photosynthesis Research*, *Photosynthetica*, *Physiologia Plantarum, Plant Biology*, *Plant Biosystems*, *Plant Cell and Environment*, *Plant Ecology & Diversity*, *Plant Physiology*, *Plant Physiology and Biochemistry*, *Plant Science*, *Plos One*, *Scientia Horticulturae*, *Scientific reports*, *Tree Physiology*, *Water Air & Soil Pollution*.

Research synopsis and activities

Agricultural and forest related topics including: photosynthesis, biogenic volatile organic compounds, growth and carbon allocation; impact of elevated CO_2 concentration and rising

temperature on the physiology and growth of agricultural and forest ecosystems; plant growth and water use efficiency along the gradient of desertification; water saving irrigation techniques and water harvesting technologies.

Main grants

- *Influenza della fotosintesi sulla crescita, formazione delle riserve ed allocazione della biomassa*. CNR-Progetto Speciale *Biologia e Produzioni Agrarie per una Agricoltura Sostenibile 1996-1999;* Team Leader.
- *Study of the physiological basis of salt tolerance of the main olive cultivars*, Italian-Greek Programme of Scientific and Technological Cooperation, Italian Ministry of Foreign Affairs, 1999-2001; Coordinator.
- *The likely impact of climate change and environmental stresses on crop productivity in the Mediterranean basin*, National Research Council - Agenzia 2000; Coordinator.
- *Combating desertification with native plants: ecological characteristics and water use efficiency of Nitraria tangutorum along desertification gradient*, Sino-Italian Scientific and Technological Cooperation, Italian Ministry of Foreign Affairs; 2002-2005; Coordinator.
- *Monitoring Biodiversity and Vegetation Gas Exchange Using Remote Sensing*, Italian-Argentinean Scientific and Technological Cooperation, Italian Ministry of Foreign Affairs; 2004-2005; Coordinator.
- *PRD: A sustainable irrigation system to optimise water use* (project involving Italy, Morocco and Tunisia), NATO Science for Peace and Security Programme; 2004-2005; Coordinator.
- *Predicting the impact of climate change on agricultural forest ecosystems*, Italian-Estonian Scientific and Technological Cooperation, Italian Ministry of Foreign Affairs; 2005-2008; Coordinator.
- *Gas exchange between natural and managed ecosystems and the atmosphere*, National Research Council sub-project; 2005-2008; Coordinator.
- *Water use optimisation of crops in drought prone areas*, CNR-CNRST (Morocco) Scientific and Technological Cooperation; 2006-2007; Coordinator.
- *Functional and Molecular Ecology*, National Research Council sub-project, € 447,000; 2006-2010; Coordinator.
- *Optimization of water use by native plants in arid lands facing global change and desertification*, Projects of major importance in the Scientific and Technological Collaboration Executive Programmes of the Italian Ministry of Foreign Affairs; 2007-2009; Coordinator.
- *Study of the impact of climate change on Mediterranean ecosystems*, National Research Council sub-project; 2007-2010; Coordinator.
- *Ecophysiological characterization of native plant species with high agro-ecological potentials*, CNR-CNRST (Morocco) Scientific and Technological Cooperation; 2008-2009; Coordinator.
- *Use of remote sensing in the estimation of emissions of biogenic hydrocarbons*, National Research Council - "Curiosity driven project"; 2008-2010; Coordinator.
- *Integrated infrastructure for airborne Earth Observation*, National Research Council sub-project; 2008-2011; Coordinator.
- *Preparatory Meeting for the Project Plan for the Science for Peace Project Recovering "Climate Proof" Plants to Combat Drought*, NATO Science for Peace and Security Programme; 2010; Coordinator.
- *Environmental and molecular physiology of abiotic stress*, National Research Council project; 2011-2014; Coordinator.
- *Training and capacity building in sustainable agricultural water management: Addressing food security and social instability in Pakistan*, Italian Ministry of Foreign Affairs; 2012-2018; Coordinator.

- Ministero delle politiche agricole alimentari e forestali *Progetto per l'attuazione delle attività contenute nel programma triennale 2014-2016 per la conservazione, caratterizzazione, uso e valorizzazione delle risorse genetiche vegetali per l'alimentazione;* Team Leader.
- SSNIF Training (Servizi Sensoriali Nous Index Factory) 2014-2015, Fondo Sociale Europeo, Regione Siciliana; Coordinator
- EU Project KBBE.2012.3.1-01: Development of improved perennial non-food biomass and bioproduct crops for water-stressed environments (WATBIO) 2012-2017; Team Leader.
- EU Project KBBE.2011.3.1-01: 3to4: Converting C3 to C4 photosynthesis for sustainable agriculture (3to4) 2012-2016; Team Leader.
- Gestione sostenibile della risorsa acqua in agricoltura (Aqua); Progetto Premiale MIUR 2014-2015; Coordinator.
- *Realizzazione di camere di crescita per lo studio degli effetti della qualità della luce sulla fotosintesi e sulla produzione di metaboliti secondari di interesse fitosanitario - FITOLED*", Ente Cassa di Risparmio Firenze 2015-2016; Coordinator.
- "Indirizzi di Sanità, Sostenibilità ed Eccellenza della olivicoltura MedIterraneA - SEMIA", Bando PIF Sottomisura 16.2 - Regione Toscana 2017-2018*;* Team Leader.
- Coordinatore scientifico del progetto CNR-Chinese Academy of Sciences (CINA) 2017-2019 "Effetti dell'ozono troposferico sugli ecosistemi vegetali cinesi e italiani".
- Ministero delle politiche agricole alimentari e forestali *Progetto per l'attuazione delle attività contenute nel programma triennale 2017-2019 per la conservazione, caratterizzazione, uso e valorizzazione delle risorse genetiche vegetali per l'alimentazione;* Team Leader.

Pubblications: H index 37 (Google Schoar); Selected papers

1. Haworth M., Centritto M., Giovannelli A., Marino G., Proietti N., Capitani D., De Carlo A. & Loreto F. (2017) Xylem morphology determines the drought response of two *Arundo donax* ecotypes from contrasting habitats. *Global Change Biology Bioenergy* 9, 119-131.
2. Haworth M., Cosentino L.S., Marino G., Brunetti C., Scordia D., Testa G., Riggi E., Avola G., Loreto F. & Centritto M. (2017) Physiological responses of *Arundo donax* ecotypes to drought: a common garden study. *Global Change Biology Bioenergy* 9, 132-143.
3. Dani K.G.S., Marino G., Loreto F., Taiti C., Atwell B.J., Mancuso S. & Centritto M. (2017) First detection of a de novo post-illumination monoterpene burst in *Quercus ilex*. *Planta* 245, 459-465.
4. Salerno G., Frati F., Marino G., Ederli L., Pasqualini S., Loreto F., Colazza S. & Centritto M. (2017) Effects of water stress on emission of volatile organic compounds by *Vicia faba*, and consequences for attraction of the egg parasitoid *Trissolcus basalis*. *Journal of Pest Science* 90, 635-647.
5. Chakhchar A., Haworth M., El Modafar C., Lauteri M., Mattioni C., Wahbi S. & Centritto M. (2017) An Assessment of genetic diversity and drought tolerance in argan tree (*Argania spinosa*) populations: potential for the development of improved drought tolerance. *Frontiers in Plant Science* 8, 276; doi: 10.3389/fpls.2017.00276.
6. Feller U., Kingston-Smith A.H. & Centritto M. (2017). Editorial: Abiotic stresses in agroecology: a challenge for whole plant physiology. *Frontiers in Environmental Science* 5, 13; doi: 10.3389/fenvs.2017.00013.
7. Tattini M., Sebastiani F., Brunetti C., Fini A., Torre S., Gori A., Centritto M., Ferrini F., Landi M. & Guidi L. (2017) Dissecting molecular and physiological response mechanisms to high solar radiation in cyanic and acyanic leaves: a case study on red and green basil. *Journal of Experimental Botany* 68, 2425-2437.
8. Ederli L., Brunetti C., Centritto M., Colazza S., Frati F., Loreto F., Marino G., Salerno G. & Pasqualini S. (2017) Infestation of broad bean (*Vicia faba*) by the green stink bug (*Nezara*

viridula) decreases shoot abscisic acid contents under well-watered and drought conditions. *Frontiers in Plant Science* 8, 959; doi: 10.3389/fpls.2017.00959.
9. Haworth M., Catola S., Marino G., Brunetti C., Michelozzi M., Riggi E., Avola G., Cosentino L.S., Loreto F. & Centritto M. (2017) Moderate drought stress induces increased foliar dimethylsulphoniopropionate (DMSP) concentration and isoprene emission in two contrasting ecotypes of *Arundo donax*. *Frontiers in Plant Science* 8:1016; doi: 10.3389/fpls.2017.01016.
10. Fini A., Brunetti C., Loreto F., Centritto M., Ferrini F. & Tattini M. (2017) Isoprene responses and functions in response of plants to environmental pressures associated to climate change. *Frontiers in Plant Science* 8:1281, doi: 10.3389/fpls.2017.01281.
11. Marino G., Brunetti C., Tattini M., Romano A., Biasioli F., Tognetti R., Loreto F., Ferrini F. & Centritto M. (2017) Dissecting the role of isoprene and stress-related hormones (ABA and ethylene) in *Populus nigra* exposed to unequal root zone water stress. *Tree Physiology* 37, 1637-1647.
12. Drielly Sousa Santana Vieira D., Emiliani G., Bartolini P., Podda A., Centritto M., Luro F., Del Carratore R., Morillon R., Gesteira A. & Maserti B. (2017) A L-type lectin is involved in the response to hormonal treatment and drought in Volkamer lemon. *Journal of Plant Physiology* 218, 94-99.
13. Haworth M., Marino G., Cosentino L.S., Brunetti C., De Carlo A., Avola G., Riggi E., Loreto F. & Centritto M. (2018) Increased free abscisic acid during drought enhances stomatal sensitivity and modifies stomatal behaviour in fast growing giant reed (*Arundo donax*). *Environmental and Experimental Botany* 147, 116-124.
14. Tang J., Cheng R., Shi Z., Xu G., Liu S. & Centritto M. (2018) *Fagaceae* tree species allocate higher fraction of nitrogen to photosynthetic apparatus than *Leguminosae* in Jianfengling tropical montane rain forest, China. *Plos One* 13: e0192040. doi.org/10.1371/journal.pone.0192040.
15. Saleem A.R., Brunetti C. Khalid A., Della Rocca G., Raio A., Emiliani G., De Carlo A., Mahmood T. & Centritto M. (2018) Drought response of *Mucuna pruriens* (L.) DC. inoculated with ACC deaminase and IAA producing rhizobacteria. *Plos One* 13: e0191218, doi.org/10.1371/journal.pone.0191218.
16. Pollastri S., Savvides A., Pesando M., Lumini E., Volpe M.G., Ozudogru E.A., Faccio A., De Cunzo F., Michelozzi M., Lambardi M., Fotopoulos V., Loreto F., Centritto M. & Balestrini R. (2018) Impact of two arbuscular mycorrhizal fungi on *Arundo donax* L. response to salt stress. *Planta* 247, 573-585.
17. Haworth M., Belcher C., Killi D., Dewhirst R., Materassi A., Raschi A. & Centritto M. (2018) Impaired photosynthesis and increased leaf construction costs may induce floral stress during episodes of global warming over macroevolutionary timescales. *Scientific Reports* 8:6206, DOI:10.1038/s41598-018-24459-z.
18. Haworth M., Scutt C.P., Douthe C., Marino G., Gomes M., Loreto F., Flexas J. & Centritto M. (2018) Allocation of the epidermis to stomata relates to stomatal physiological control: stomatal factors involved in the evolutionary diversification of the angiosperms and development of amphistomaty. *Environmental and Experimental Botany* 151, 55-63.
19. Catola S., Centritto M., Cascone P., Ranieri A., Loreto F., Calamai L., Balestrini R. & Guerrieri E. (2018) Effects of single or combined water deficit and aphid attack on tomato volatile organic compound (VOC) emission and plant-plant communication. *Environmental and Experimental Botany* 153, 54-62.
20. Zegada-Lizarazu W., Della Rocca G., Centritto M., Parenti A. & Monti A. (2018) Above- and belowground drought adaptation of two *Arundo donax* L. genotypes from contrasting habitat of provenance. *Physiologia Plantarum* 163, 490-501.

21. Brunetti C., Loreto F., Ferrini F., Gori A., Guidi L., Remorini D., Centritto M., Fini A. & Tattini M. (2018) Metabolic plasticity in the hygrophyte *Moringa oleifera* exposed to water stress. *Tree Physiology* 38, 1640-1654.
22. Haworth M., Marino G., Brunetti C., Killi D., De Carlo A. & Centritto M. (2018) The impact of heat stress and water deficit on the photosynthetic and stomatal physiology of olive (*Olea europaea* L.) - A case study of the 2017 heatwave. *Plants* 7, 76; doi:10.3390/plants7040076.
23. Haworth M., Marino G. & Centritto M. (2018) An introductory guide to gas exchange analysis of photosynthesis and its application to plant phenotyping and precision irrigation to enhance water use efficiency. *Journal of Water and Climate Change*, jwc2018152, doi.org/10.2166/wcc.2018.152.
24. Haworth M., Marino G., Riggi E., Avola G., Brunetti C., Scordia D., Testa G., Gaudio Gomes M.T., Loreto F., Cosentino S.L. & Centritto M. (2019) The effect of summer drought on the yield of *Arundo donax* is reduced by the retention of photosynthetic capacity and leaf growth later in the growing season. *Annals of Botany* 124, 567-579.
25. Brunetti C., Gori A., Marino G., Latini P., Sobolev A.P., Nardini A., Haworth M., Giovannelli A., Capitani D., Loreto F., Taylor G., Scarascia Mugnozza G., Harfouche A. & Centritto M. (2019) Dynamic changes in ABA content in water-stressed *Populus nigra*: effects on carbon fixation and soluble carbohydrates. *Annals of Botany* 124, 627-644.
26. Moriondo M., Leolini L., Brilli L., Dibari C., Tognetti R., Giovannelli A., Rapi B., Battista P., Caruso G., Gucci R., Argenti G., Raschi A., Centritto M., Cantini C. & Bindi M. (2019) A simple model simulating development and growth of an olive grove. *European Journal of Agronomy* 105, 129-145.
27. Tang J., Sun B., Cheng R., Shi Z., Luo D., Liu S. & Centritto M. (2019) Seedling leaves allocate lower fractions of nitrogen to photosynthetic apparatus in nitrogen fixing trees than in non-nitrogen fixing trees in subtropical China. *Plos One* 14(3): e0208971, DOI.org/10.1371/journal.pone.0208971.
28. Salvi L., Brunetti C., Cataldo E., Niccolai A., Centritto M., Ferrini F. & Mattii G.B. (2019) Effects of *Ascophyllum nodosum* extract on *Vitis vinifera:* Consequences on plant physiology, grape quality and secondary metabolism. *Plant Physiology and Biochemistry* 139, 21-32.
29. Tang J., Sun B., Cheng R., Shi Z., Luo D., Liu S. & Centritto M. (2019) Efects of soil nitrogen (N) defciency on photosynthetic N-use efciency in N-fxing and non-Nfxing tree seedlings in subtropical China. *Scientific Reports* 9:4604, DOI.org/10.1038/s41598-019-41035-1.
30. Sebastiani F., Torre S., Gori A., Brunetti C., Centritto M., Ferrini F. & Tattini M. (2019) Dissecting adaptation mechanisms to contrasting solar irradiance in the Mediterranean shrub *Cistus incanus*. *International Journal of Molecular Sciences* 20: 3599, doi.org/10.3390/ijms20143599.
31. Riggi E., Avola G., Marino G., Haworth M., Cosentino S.L. & Centritto M. (2019) Open field experiment for the evaluation of Arundo donax ecotypes ecophysiology and yield as affected by soil water content. *Industrial Crops and Products* 140: 111630, doi.org/10.1016/j.indcrop.2019.111630.
32. Gori A., Tattini M., Centritto M., Ferrini F., Marino G., Mori J., Guidi L. & Brunetti C. (2019) Seasonal and daily variations in primary and secondary metabolism of three maquis shrubs unveil different adaptive responses to Mediterranean climate. *Conservation Physiology* 7(1): coz070; doi:10.1093/conphys/coz070.
33. Costa J.M., Marques da Silva J., Pinheiro C., Barón M., Mylona P., Centritto M., Haworth M., Loreto F., Uzilday B., Turkan I. & Oliveira M.M. (2019) Opportunities and limitations of crop phenotyping in southern European countries. *Frontiers in Plant Science* 10:1125, doi: 10.3389/fpls.2019.01125.
34. Cocozza C., Brilli F., Miozzi L., Pignattelli S., Rotunno S., Brunetti C., Giordano C., Pollastri S., Centritto M., Accotto G.P., Tognetti R. & Loreto F. (2019) Impact of high or low levels of

phosphorus and high sodium in soils on productivity and stress tolerance of *Arundo donax* plants. *Plant Science* 289: 110260, doi.org/10.1016/j.plantsci.2019.110260.
35. Taylor G., Donnison I.S., Murphy-Bokern D., Morgante M., Bogeat-Triboulot M.-B., Bhalerao R., Hertzberg M., Polle A., Harfouche A., Alasia F., Petoussi V., Trebbi D., Schwarz K., Keurentjes J.J.B., Centritto M., Genty B., Flexas J., Grill E., Salvi S. & Davis W.J. (2019) Sustainable bioenergy for climate mitigation: developing drought tolerant trees and grasses. *Annals of Botany* 124, 513-520.
36. Marino G., Haworth M., Scartazza A., Tognetti R. & Centritto M. (2020) A comparison of the variable *J* and carbon-isotopic composition of sugars methods to assess mesophyll conductance from the leaf to the canopy scale in drought-stressed cherry. *International Journal of Molecular Sciences* 21, 1222, doi:10.3390/ijms21041222.
37. Gori A., dos Santos Nascimento L.B., Ferrini F., Centritto M. & Brunetti C. (2020) Seasonal and diurnal variation in leaf phenolics of three medicinal Mediterranean wild species: what is the best harvesting moment to obtain the richest and the most antioxidant extracts? *Molecules* 25, 956; doi:10.3390/molecules25040956.
38. Brunetti C., Savi T., Nardini A., Loreto F., Gori A. & Centritto M. (2020) Changes in abscisic acid content during and after drought are related to carbohydrate mobilization and hydraulic recovery in poplar stems. *Tree Physiology*, doi.org/10.1093/treephys/tpaa032.
39. Cocozza C., Brilli F., Pignattelli S., Pollastri S., Brunetti C., Gonnelli C., Tognetti R., Centritto M. & Loreto F. (2020) The excess of phosphorus in soil reduces physiological performances over time but enhances prompt recovery of salt-stressed *Arundo donax* plants. *Plant Physiology and Biochemistry* 151, 556-565.