

Curriculum Vitae et Studiorum of Prof. Antonella Pane

First Name and Surname and: Antonella Pane

Nationality: Italian

Date of Birth: December 21, 1962

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Number of Publications in Peer-Reviewed Journals: 86

H-index: 19; Total Citations: 1,496

EDUCATION AND PROFESSIONAL CAREER

Current Academic Position

Associate Professor at the Department of Agriculture, Food, and Environment, University of Catania, in the academic sector 07/D1 (Plant Pathology and Entomology) - Scientific-Disciplinary Sector (SSD) AGR/12 (Plant Pathology) since January 5, 2005.

Confirmed University Researcher in Plant Pathology (AGR/12) from 1995 to 2004, University of Catania, Faculty of Agriculture (later Department of Agriculture, Food, and Environment).

1992-1993 – Awarded an annual research fellowship at the Department of Life Sciences and the Queen's Medical Center, University of Nottingham (UK), where she conducted research on the regulatory mechanisms of the invertase gene in *Aspergillus nidulans*. Supervisors: Prof. John Peberdy and Dr. Alistair Chambers.

1991-1992 – Recipient of a health-related research grant from the Ministry of Health of the Sicilian Region for project 2/1075/P on biological and integrated control, testing the simultaneous use of fungicide-resistant entomopathogenic fungi in a protected environment.

1987 – Degree in Agricultural Sciences, University of Catania, with a grade of 110/110 with honors and the IRFIS award for the thesis entitled: "Characterization of *Phoma tracheiphila* strains, the agent of citrus wilt."

1987-1991 – Researcher at the Plant Pathology Institute, Faculty of Agriculture, University of Catania.

TEACHING ACTIVITIES

For undergraduate and postgraduate students: Introduction to Microbiology; Elements of Plant Pathology; Mycology and Phytopathology; Plant Pathology Applied to the Environment; Forest Pathology; Pathology of Agroforestry and Ornamental Plants; Plant Pathology (Pharmaceutical Sciences Program, Herbal and Nutraceutical Sciences Curriculum); Environmental Plant Pathology; Plant Physiology and Pathology (Biotechnology Program, Plant Biotechnology Curriculum). Seminars on specialized topics for PhD students. Tutor and Co-tutor activities for the preparation of undergraduate and PhD theses.

Teaching in IFTS (Higher Technical Training Courses):

1990 - E.C.A.P. (Confederal Professional Training Agency of Catania), "Expert in Biological and Integrated Pest Control"; 1996 - I.S.V.I.R. (Institute of Rural Research and Training of Catania), "Specialized Programmer of Horticultural Production with a focus on Integrated Pest Control";

2003 - Teaching in 1st level Master's Program: "Master in Biotechnology for Sustainable Crop and Agro-food Production Defense";

2004–2015 - Member of the Teaching Board of the PhD Program in "Eco-compatible Plant Health Management in Agro-forest and Urban Environments" – University of Palermo;

2016–2019 - Member of the Teaching Board of the International PhD Program in "Agricultural, Food, and Environmental Science" – University of Catania. Supervisor of a PhD scholarship funded by the MIUR - PON RI 2014-2020 European Social Fund, Action I.1 "Innovative PhDs with Industrial Characterization";

Since 2022 - Teaching as part of the "OUI, anywhere from here" PNRR Project – MISSION 4 "Education and Research", COMPONENT 1 "Enhancing the education services offer: from nurseries to universities" INVESTMENT 1.6 - "Active guidance in the school-to-university transition. LABORATORY - Physiopathology and etiology of fungal diseases in agricultural, ornamental, and forest plants: morphological and molecular characterization of phytopathogenic fungal species populations".

RESEARCH PROJECTS

Scientific Coordinator

- 2004-2005 - Research project funded by University funds (former 60% quota) – "Development of a molecular method for the diagnosis of *Phytophthora palmivora*".
- 2003-2005 - PRIN (Research Projects of National Interest) – "Diseases caused by soil-borne *Phytophthora* species: etiology, molecular diagnosis, epidemiology, and new defense methods", within which she organized the theoretical-practical course "Isolation and identification of soil-borne *Phytophthora* species".
- 2004-2005 - Interregional Program "Research and applied experimentation, transfer of innovations to supply chain operators" – Project 6B – Floriculture of the Sicilian Region. Research title: "Use of suppressive soils for the control of root rot caused by *Phytophthora* and other soil-borne fungi". The final results were presented at the conference "Floriculture in Sicily: Issues and Prospects", where she played an active role in the Technical-Scientific Committee (2005).
- Vice Coordinator of PRIN 2008 – "Emerging diseases caused by soil-borne pathogens: molecular monitoring of nurseries of ornamental plants and control strategies".
- 2011-2014 - P.O. F.E.S.R. 2007/2013 - Intervention line 4.1.1.2. "SAMAGRUMI - Environmental Sensors for the Improvement of Citrus Production Quality".
- 2010-2011 - Regional Department of Agricultural and Food Resources – Regional Department of State Forests of the Sicilian Region, 7th Forestry Phytosanitary Service. Executive Project: "Studies and investigations on the presence and spread of biotic threats of forestry interest and on control strategies".
- 2005-2010 - University research projects on "Development and validation of diagnostic methods for studying the ecology and epidemiology of soil-borne *Phytophthora* species potentially harmful to forest and agricultural ecosystems".

Member of Research Units and/or Research Groups

- PRIN 2004 – "Monitoring and characterization using genetic markers of fungal populations associated with cucumber collapse for the development of integrated defense strategies (IPM)".
- PRIN 2005 – "Soil-borne *Phytophthora* species: genetic variability and population dynamics in agricultural and forest ecosystems". National Coordinator: Prof. G. Magnano di San Lio.
- PRIN 2006 – "Differentially expressed genes in the model plant system sweet orange on sour orange in response to biotic stress (Citrus tristeza virus and *Phytophthora*

citrophthora) and the effects of treatments with xenobiotics and symbionts".
Coordinator: Prof. A. Catara.

- 2011-2013 - Trilateral Project Italy-Sweden-Vietnam, Initiation Grant STINT; "Tree Diseases caused by species of *Phytophthora* that threaten forests and orchards on different continents".
- 2014-2015 - FIR: "Sustainable strategies for soil and substrate disinfestation from soil-borne pathogens". Coordinator: Prof. G. Polizzi. 2016 - Italy-Vietnam Project: "Quality certification of tropical and subtropical fruits for export to Europe: guidelines for producing fruits free from toxic pesticide residues, pathogens, and invasive insects".
- 2016-2018 - University Research Plan: "Characterization of emerging phytopathogenic agents and control strategies". Coordinator: Dr. A. Vitale.
- 2018-2019 - Italy-Iran Project - "PIETRO DELLA VALLE" mobility program: "Pomegranate and pistachio diseases and selection of ecotypes resistant to fungal diseases in Iran". Partner: Prof. R. Mostowfizadeh-Ghalamfarsa, Department of Plant Protection, University of Shiraz.
- 2020/2022 - MEDIT-ECO - University Research Incentives Plan, Intervention Line 2: "Investigation of phytopathological issues in the main production contexts of Sicily and ecosustainable defense strategies".
- 2020-2023 - PON "RESEARCH AND INNOVATION" 2014-2020, Action II – Specific Objective 1b - "Improvement of Mediterranean agro-food productions under conditions of water scarcity – WATER4AGRI FOOD". Coordinator: Prof. S. Barbagallo.
- 2020-2023 - PRIMA Project, Section 2 – "Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit" (BiOrangePack) (36 months, biorangepack.eu), 6 countries, 14 partners. Coordinator: Prof. S.O. Cacciola.
- 2021-2023 – PROMETEO - Italy-Tunisia: "A cross-border village: to protect Mediterranean tree crops by sharing knowledge". Coordinator: Prof. S.O. Cacciola.
- 2021-2023 – ENI CBC MED Programme C_A.2.1_0069 - WEF - CAP: "The Technology Transfer and Capitalization of the Water Energy Food Nexus". Scientific Coordinator: Prof. S.O. Cacciola.
- 2021-2023 - PNRR "Smart System for Precision Agriculture" within the project "Sicilian Micro and Nano Technology Research and Innovation Center (SAMOTHRACE)" under the M4C2 – from research to business – Investment 1.3: Creation of "Partnerships extending to universities, research centers, and businesses for funding basic research projects" – funded by the European Union – Next Generation EU.
- PSR 2024-2025 - Azioni Innovative per la Produttività del Distretto dell'Ortofrutta di Qualità – INNOVAPROD", "Azioni Innovative per la Produttività del Distretto

dell'Ortofrutta di Qualità” PSR Sicilia 2014-2022 / Misura 19 Sottomisura 19.2 / Bando a Regia Gal 2023

- PSR 2024-2025 - “Nuove soluzioni tecnologiche per la filiera degli agrumi – (NewCitrusTech)”, a valere su “Azione 1.3.1. - ADDENDUM Piano di Azione Locale” (PAL) “Eloro 2020” – Progetto a regia GAL; Misura 16.1 PSR Sicilia 2014/2020.
- 204-2026 - Horizon Europe - Call: HORIZON-CL6-2024-FARM2FORK-02 Project: 101182461 — “EmergeNOW - Emergent plant pest digital services”.
- Since 2009 - Member of the international research group of COST Action IUFRO Working Party 7.02.09 "Phytophthora diseases of forest trees".
- Since 2018 – Diagnosis and specialist consultancy on plant samples and related necessary support in line with the objectives of Legislative Decree 214/2005. Scientific coordinator of an agreement with the 4th Phytosanitary Regional Service and Anti- Counterfeiting Service (SFR) of the Regional Department of Agriculture, Rural Development, and Mediterranean Fisheries.
- Supervisor of a PhD scholarship funded by the MIUR - National Operational Program Research and Innovation 2014-2020 (CCI 2014IT16M2OP005), European Social Fund, Action I.1 "Innovative PhDs with Industrial Characterization". Project Title: "Development of sustainable management strategies for major fungal diseases caused by pathogens in Mediterranean agroecosystems, through the association of innovative diagnostic methodologies with the use of antagonistic microorganisms and eco-friendly antifungal agents".
- Scientific coordinator of a collaboration agreement with CREA-OFA of Rende (CS) for research on the etiology of emerging olive diseases.
- 2019 – Member of the Working Group of the Erasmus+ Program contributing to the university's application for funding of mobility to and from non-EU partners - International Credit Mobility (KA107) – Winner of the 2019-2020 Second Semester "Outgoing Staff Mobility for Teaching" call.
- 2023-2025 – Scientific Task Leader in the ERASMUS-EDU-2023-EMJM-DESIGN project "Mediterranean Forest Health in a Global Climate Change Scenario" (FORCLIMED).

SCIENTIFIC COLLABORATIONS

Professor Antonella Pane has established productive collaborations through national and international research projects in which she participated as scientific coordinator or as a member of the research group. Some of the most significant collaborations include:

- University of Berkeley, USA (Prof. M. Garbelotto);

- The James Hutton Institute (formerly Scottish Research Crop Institute), Scotland (Dr. D.E.L. Cooke);
- Phytophthora Research Centre, Mendel University, Brno, Czech Republic (Dr. T. Jung);
- North Carolina State University, North Carolina, USA (Prof. J. B. Ristaino);
- Plant Protection Institute, Centre for Agricultural Research, Hungarian Academy of Sciences, Hungary (Dr. Jozsef Bakonyi);
- Sicilian Region, Service 9 - Innovation, Research, Dissemination, Forest Nursery and Forest Protection (Dr. A. Sidoti);
- Regional Institute for Floriculture, Sanremo (Dr. P. Martini).

ATTIVITÀ EDITORIALE

Guest Editor of a Special Issues published in a journal with a high IF of the publisher MDPI, Forests: "Fungal and Oomycete Diseases in Forest Environments: Implications for Nurseries and Beyond (https://www.mdpi.com/journal/forests/special_issues/380P17ILC7).

Guest Editor of a Special Issues published in a journal with a high IF of the publisher MDPI, Journal of Fungi: "Recent Advances in Oomycete–Plant Interactions" (https://www.mdpi.com/journal/jof/special_issues/HQKSF73MD6).

Associate Editor for Frontiers in Plant Science, section Plant Pathogen Interactions.

Reviewer Board Member of the Journal Pathogens.

Editorial Board Member of the Journal of Fungi

Referee for scientific articles for international journals such as Plant Disease, Plant Pathology, Journal of Plant Pathology, Forests, Plants, and Frontiers in Plant Science.

AFFILIATIONS WITH SCIENTIFIC SOCIETIES:

Member of the American Phytopathological Society.

Member of the Italian Society of Plant Pathology (SIPaV).

RESEARCH ACTIVITIES

The research activity is documented by over 150 publications in proceedings of national and international conferences and/or journals indexed in Web of Science and/or Scopus databases, as well as collaborations in writing book chapters.

Summary of the main research areas:

- **Studies on *Phytophthora* oomycetes:** These studies have addressed various aspects, such as genetic variability in populations of *P. nicotianae* and *P. infestans*,

characterization of interspecific hybrids, community diversity, and population dynamics of these oomycetes in agricultural, forest, and natural ecosystems. The development of molecular diagnostic methods for their identification and detection in infected tissues and environmental samples, the study of phenotypic and genetic interactions in multifactorial diseases and complex systems, exemplified by *Phytophthora*/Tomato/*Trichoderma* and *Phytophthora*/Pine/*Fusarium*, the determination of inoculum levels in soil and inoculum threshold values for some crops, management of *Phytophthora* diseases with chemical products and biocontrol agents, and reporting of emerging diseases caused by these pathogens.

- **Identification and classification of phytopathogenic fungi and oomycetes** using polyacrylamide gel electrophoresis of mycelial proteins.
- **Studies on the variability of virulence factors** of the pathogen causing citrus gummosis and the physiological alterations in infected citrus plants. Research on gummosis has focused on various aspects of the disease, particularly molecular diagnostic methods, pathogen variability, the physiological responses of infected citrus plants, and the mechanisms of pathogenesis. In collaboration with the research group of Prof. Q. Migheli at the University of Sassari, molecular diagnostic methods based on traditional PCR and Real-Time PCR were developed for the identification of *P. tracheiphilus* in infected plant tissues.
- **Development of molecular diagnostic methods** for identifying species of phytopathogenic fungi and oomycetes.
- **Studies on anthracnose caused by *Colletotrichum* species:** Various aspects of this group of diseases have been examined, such as taxonomy, molecular diagnostics, population diversity of *Colletotrichum* species associated with different hosts (olive, citrus, basil), ecosustainable management of these diseases, and the etiology of new emerging diseases caused by these pathogens.
- **Emerging and re-emerging diseases** of crops of significant economic interest in Southern Italy. This includes studies on black heart of pomegranate, gummy cancer of prickly pear, and gummy cancers and rots in citrus.
- **Studies on the etiology of new or poorly known diseases** of agricultural, ornamental, and forest plants, as well as the reporting of exotic pathogens.
- **Research on innovative solutions for managing post-harvest fruit rots** with ecosustainable products and methods. This is a relatively recent area of research. The results achieved so far have included the selection of biocontrol fungal agents, the

characterization of antifungal metabolites produced by *Trichoderma* antagonistic fungi, the characterization of mycotoxigenic fungi, the use of natural substances acting as biostimulants or resistance inducers, and the genetic mechanisms underlying the immune response of plants treated with biocontrol agents or natural substances.

INSTITUTIONAL ROLES

Member of:

- Board of the Department of Plant Health Sciences [(DiSTeF, now Di3A)] - 2003-2006.
- Orientation Committee for the Bachelor's Degree in Agricultural and Food Sciences and Technologies. From 2004 to 2010.
- Library Committee of DiGESA, University of Catania. From 2006 to 2010.
- Educational Committee of the Bachelor's Degree in Agricultural and Food Sciences and Technologies at the Faculty of Agriculture, University of Catania. From 2006 to 2012.
- Reference Lecturer for the First-Level Bachelor's Degree in Land and Landscape Planning and Protection. From 2014 to present.
- Educational Tutor. Academic Year 2018/2019.
- Committee for Teaching Laboratories. From 2019 to 2022.
- Quality Assurance (QA) Committee - Bachelor's Degree in "Land and Landscape Planning and Protection" (L21). From 2019 to 2022.
- Library Committee of the Department of Agriculture, Food, and Environment. From 2021 to present.
- Parity Committee of Di3A for the 2022-2026 term.
- Head of the Molecular Plant Pathology Laboratory at the Department of Agriculture, Food, and Environment. From 2005 to present.

ORGANIZATIONAL ACTIVITIES

- 2000 – Member of the Organizing Committee of the 5th Congress of the European Foundation for Plant Pathology (EFPP) held in Taormina from May 18 to 22, 2000.
- 2004 to 2010 – Annual organization of the "Salone dello Studente" and promotion of orientation activities in secondary schools of Eastern Sicily. November 11-12, 2005 – Member of the Technical-Scientific Committee for the Conference “Floriculture in Sicily: Issues and Perspectives” organized in collaboration with the Ministry of

Agricultural and Forestry Policies and the Department of Agriculture and Forestry of the Sicilian Region, within the presentation of the final results of the Interregional Program “Research and Applied Experimentation, Transfer of Innovations to the Supply Chain Operators” – Project 6B – Floriculture.

- 2007 – Curator of photographic documentation of symptoms of various plant diseases. Some slides were selected for the cover of the journal *Plant Disease* by the American Phytopathological Society.
- February 21 – March 4, 2005 – Coordinator of the theoretical-practical course “Isolation and Identification of Soilborne Phytophthora Species” within the PRIN 2003-2005 project “Diseases Caused by Soilborne Phytophthora Species: Etiology, Molecular Diagnosis, Epidemiology, and New Defense Methods.”
- May 17-18, 2018 – Member of the Organizing Committee of the Workshop “Rapid Diagnostic Tools for Phytophthora” within the U.S. Fulbright Lecturers and Research Scholars to Italy – A.Y. 2017-18. University of Catania, May 17-18, 2018.
- September 27, 2019 – Participated in the European Researchers' Night – “Sharper (H)aring Researchers' Passion for Enhanced Roadmaps) European Researchers' Night project” – organizing, in collaboration with colleague Santa Olga Cacciola, a stand on the topic: “The Chemistry of Plants in Herbal Medicine and Cooking,” with the sponsorship of SIPaV, to celebrate the International Year of Plant Health (IYPH), established by the UN General Assembly and FAO. Palazzo Minoriti, Catania, September 27, 2019.
- Member of the organizing committee for the XXX Conference of the Italian Society of Plant Pathology (SIPaV): “Plant Health: Contributions of Plant Pathology for a Sustainable Future,” Catania, Italy, September 15-17, 2025.

Languages

- Italian (native language)
- English, excellent written and spoken skills

Catania, 20/09/ 2025

A handwritten signature in black ink, reading "Antonella Pace". The signature is written in a cursive, flowing style. Below the signature, there is a faint, light blue rectangular stamp or watermark.