



# UNIVERSITÀ POLITECNICA DELLE MARCHE

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**Innovative compounds in plant  
protection to reduce food loss and  
waste of fresh fruit and vegetables**

**Supervisor: Prof. Gianfranco  
Romanazzi**

Department of Agricultural Food and  
Environmental Sciences

<https://www.d3a.univpm.it/en>



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## Supervisor: Prof. Gianfranco Romanazzi

### Research Group Description

#### **Prof. Gianfranco Romanazzi**, Professor of Plant Pathology (AGR/12)

Description of the professor expertise

**Past job positions:** PostDoc at University of Bari (1999-2002), PostDoc at UNIVPM (2002-2004), Researcher at UNIVPM (2004-2010), Associate Professor at UNIVPM (2010 to today)

**Research interests:** He is interested in setting up innovative approach for plant disease management, both in the field and postharvest, to reduce loss and waste of fresh fruit and vegetables. Most investigated crops: grapevine, table grapes, peach, strawberry, vegetable seed-bearing crops

**Teaching activity:** Teaching of 'Plant pathology' at BSc in Agricultural Science and Technology (since 2001) and 'Plant disease management' at MSc in Agricultural and Land Sciences (since 2010). He also taught in International courses in Turkey (2009) and at CIHEAM in Bari (since 2020), with the course 'Induced resistance in plant disease management'

**Research grants:** Prof. Romanazzi coordinates a list of national and international projects, including PRIMA "Innovative Sustainable technologies TO extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE – StopMedWaste", MAECI Italy-China "Biosynthesis regulation of metabolic markers and correlation with quality safety during fruit decay (BioQuaSA), the Euphresco Network "Basic substances as an environmentally friendly alternative to synthetic pesticides for plant protection (BasicS)", and the COST FA22134 Action "Sustainable Network for agrofood loss and waste prevention, management, quantification and valorisation (FoodWaStop)"



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### Research Group Description

#### Prof. Gianfranco Romanazzi, Professor of Plant Pathology (AGR/12)

**Academic duties:** He Coordinated the BSc in Agricultural Science and Technology and the MSc in Agricultural and Land Sciences since November 2015 to October 2021. Since 2020, he is President of Italian Association for Plant Protection (AIPP) and since 2024 he is Chair of ISPP Seed Pathology Committee

**Research Unit:** Prof. Gianfranco Romanazzi (<https://orcid.org/0000-0003-0390-4008>), Prof. Lucia Landi (<https://orcid.org/0000-0003-1533-0873>), Prof. Sergio Murolo (<https://orcid.org/0000-0001-7269-1734>), Dott. Marwa Moumni (<https://orcid.org/0000-0003-3201-2105>), Dott. Sarah Makau (<https://orcid.org/0000-0003-4598-1968>), Dott. Simone Piancatelli (<https://orcid.org/0009-0005-6104-7894>), Dott. Lucrezia D'Ortenzio (<https://orcid.org/0009-0003-4596-7653>), Dott. Mehdiye Tunc (<https://orcid.org/0009-0009-9717-3576>)

#### Most recent publications:

- Prusky D., Romanazzi G. 2023. Induced resistance in fruit and vegetables: a host physiological response limiting postharvest disease development. Annual Review of Phytopathology, 61, 279-300, doi: <https://doi.org/10.1146/annurev-phyto-021722-035135>
- Moumni M., Brodal G., Romanazzi G. 2023. Innovations in seedborne pathogen management. Food Security, 15, 1365-1382, doi: <https://doi.org/10.1007/s12571-023-01384-2>
- Álvarez-García S., Moumni M., Romanazzi G. 2023. Antifungal activity of volatile organic compounds from essential oils against the postharvest pathogens *Botrytis cinerea*, *Monilinia fructicola*, *Monilinia fructigena*, and *Monilinia laxa*. Frontiers in Plant Science, 14, 1274770, doi: <https://doi.org/10.3389/fpls.2023.1274770>
- Romanazzi G., Moumni M. 2022. Chitosan and other edible coatings to extend shelf life, manage postharvest decay, and reduce loss and waste of fresh fruits and vegetables. Current Opinion in Biotechnology, 78, 102834, doi: <https://doi.org/10.1016/j.copbio.2022.102834>
- Romanazzi G., Orçonneau Y., Moumni M., Davillerd Y., Marchand P.A. 2022. Basic substances, a sustainable tool to complement and eventually replace synthetic pesticides in the management of pre and postharvest diseases: reviewed instructions for users. Molecules, 27(11), 3484, doi: <https://doi.org/10.3390/molecules27113484>



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# The Department of Agricultural, Food and Environmental Sciences

Director: Prof. Davide Neri



The **Department of Agricultural, Food and Environmental Sciences (D3A)** provides research and teaching activities in several subject areas: agronomy, agro-engineering, biochemistry, plant and forest biology, chemistry, tree crops, genetics, plant pathology, entomology, food, forestry, industrial and environmental microbiology, economic sciences in agricultural and territorial systems, physical sciences, food science and technology, soil science and animal production.

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## AT A GLANCE D3A

**70**  
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STAFF

**100**  
PhD,  
Research  
fellows



STAFF

20 SCIENTIFIC AREAS

AGR/01;  
AGR/02; AGR/03;  
AGR/05; AGR/07;  
AGR/09; AGR/10; AGR/11;  
AGR/12; AGR/13; AGR/14;  
AGR/15; AGR/16; AGR/17;  
AGR/18; CHIM/06;  
CHIM/10; FIS/07  
BIO/03; BIO/10

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**160**  
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RESEARCH INCOME IN 2023



Research

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**1** PhD COURSE



Training



## Supervisor: Prof. Gianfranco Romanazzi

### Project idea: Innovative compounds in plant protection to reduce food loss and waste of fresh fruit and vegetables

**Background:** More than half of fresh fruit and vegetables is lost moving from the growers to the retailer, or wasted from the retailer to the consumer home, so it is mandatory to set up strategies to half this amount, to meet sustainable development goals (SDGs) where numbers 2 and 12 relate to 'Zero Hunger' and 'Responsible Consumption and Production', respectively. These SDGs, and in particular Target 2.4 sustainable food production and resilient agricultural practices and target 12.3 halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including postharvest losses by 2030.

**Project objectives:** The project have the aims to set up lab and field trials to i) test in the lab *in vitro* the effectiveness of natural compounds (chitosan, essential oils, biocontrol agents) toward plant pathogens; ii) verify in postharvest trials the effectiveness of selected compounds on fresh fruit; iii) apply in the field (e.g. vineyard) selected strategies to control main diseases (downy mildew, powdery mildew, gray mold)

