

# Curriculum Vitae

## Elisa Pellegrino

### 1. Personal information

Name and Surname: Elisa Pellegrino

Citizenship: Italian

Sex: Female

E-Mail: [elisa.pellegrino@santannapisa.it](mailto:elisa.pellegrino@santannapisa.it)

Source	URL
Present Employer website	<a href="https://www.santannapisa.it/it/elisa-pellegrino">https://www.santannapisa.it/it/elisa-pellegrino</a>
ResearcherID	<a href="http://www.researcherid.com/rid/B-5091-2011">http://www.researcherid.com/rid/B-5091-2011</a>
Google Scholar	<a href="https://scholar.google.it/citations?user=41e85voAAAAJ&amp;hl=it&amp;oi=sra">https://scholar.google.it/citations?user=41e85voAAAAJ&amp;hl=it&amp;oi=sra</a>
Research Gate	<a href="https://www.researchgate.net/profile/Elisa_Pellegrino">https://www.researchgate.net/profile/Elisa_Pellegrino</a>
Scopus	<a href="https://www.scopus.com/authid/detail.uri?origin=resultslist&amp;authorId=15127923600&amp;zone=">https://www.scopus.com/authid/detail.uri?origin=resultslist&amp;authorId=15127923600&amp;zone=</a>
Web of Science	<a href="https://apps.webofknowledge.com/DaisyOneClickSearch.do?product=WOS&amp;search_mode=DaisyOneClickSearch&amp;colName=WOS&amp;SID=C1hdW64yaQVgESCWcro&amp;author_name=Pellegrino,%20Elisa&amp;dais_id=1817034&amp;excludeEventConfig=ExcludelfFromFullRecPage">https://apps.webofknowledge.com/DaisyOneClickSearch.do?product=WOS&amp;search_mode=DaisyOneClickSearch&amp;colName=WOS&amp;SID=C1hdW64yaQVgESCWcro&amp;author_name=Pellegrino,%20Elisa&amp;dais_id=1817034&amp;excludeEventConfig=ExcludelfFromFullRecPage</a>
Publons	<a href="https://publons.com/researcher/2809608/elisa-pellegrino/">https://publons.com/researcher/2809608/elisa-pellegrino/</a>

### 2. Current position

From June 2019:

**Assistant Professor in Agronomy and Field Crops** at Scuola Superiore Sant'Anna "settore concorsuale 07/B1" and "settore disciplinare AGR/02".

### 3. Education

November 2004-Januray 2008:

**Ph.D. in "Scienza delle Produzioni Vegetali Eco-Compatibili"** at the University of Pisa (Unipi), Italy. Thesis title: Mycorrhiza for sustainable management of agro-ecosystems. Field studies on molecular and functional biodiversity of native and inoculated arbuscular mycorrhizal fungi.

October 2003:

**M.Sc. Degree in "Scienze e Tecnologie Agrarie"** at the Unipi, Italy (110/110 *magna cum laude* = with honours). Thesis title: Evaluation of efficiency of arbuscular mycorrhizal fungi in symbiosis with *Medicago sativa* and *Trifolium alexandrinum*.

### 4. Habilitation and eligibility at national and international competitions

April 2017:

**National Scientific Habilitation as Associate Professor** in Agronomy and Field Crops AGR/02 ("Tornata 2016 primo quadrimestre").

April 2021:

**National Scientific Habilitation as Associate Professor** in Agriculture Microbiology AGR/16 ("Tornata 2018 sesto quadrimestre")

### **National competitions**

December 2021

**Eligible as Associate Professor** in the competition sector 07/B1 Agronomy and Field Crops at the Department of agro-food, environmental and animal sciences, **University of Udine**, d.r. n. 574 of the 23<sup>rd</sup> July 2020.

October 2020:

**Eligible as Associate Professor** in the competition sector 07/B1 Agronomy and Field Crops at the Department of Agricultural and Environmental Sciences - Production, Territory, Agroenergy, **University of Milan**. Code of the procedure 4326.

November 2017:

**Eligible as Assistant Professor** in the competition sector 07/B1 RTD AGR/02 letter b) at the **University of Pisa**, Temporary researcher art. 24 paragraph 3 letter b (senior), Law 240/2010.

October 2016:

**Eligible as Assistant Professor** (October 2016) in the competition sector 07/B1 RTD AGR/02 letter a) at the **University of Catania**, Temporary researcher art. 24 paragraph 3 letter a, Law 240/2010.

June 2016:

**Eligible as Assistant Professor** in the competition sector 07/B1 RTD AGR/02 letter b) at the **Scuola Superiore Sant'Anna**, Temporary researcher art. 24 paragraph 3 letter b (senior), Law 240/2010.

December 2010:

**Eligible as Assistant Professor**, procedure for a position as university researcher for the scientific-disciplinary sector AGR/02 at the Agricultural Faculty of the **University of Turin**, banned with D.R. N. 6711 of 2/12/2010, with notice published in the Official Gazette N. 97 of 7/12/2010 - IV Special Series - Competitions and exams.

### **International competitions**

2011:

**Short-listed at the School of Biological Sciences, University of Aberdeen, UK**, for a three-year postdoc fellow on "Effects of intra- and interspecific diversity of ectomycorrhizal fungi on ecosystem processes".

2008:

**Short-listed at the Department of Plant Ecology, Freie University of Berlin, Germany**, for a three-year postdoc fellow on "Manipulative and observational studies along land use gradients at three locations in Germany".

2006:

**Short-listed at the Department of Biology of the University of York, UK**, for a three-year postdoc fellow on "The diversity of natural communities of arbuscular mycorrhizal fungi: niche or neutral model?".

## **5. Career**

October 10-16 (1 week):

**Visiting Scientist** at the Escola Superior Agrária Instituto Politécnico de Viana do Castelo Refoios do Lima, Portugal. Project: Microorganisms for field crop production. Supervisor: Prof. Ana Paula M. R. Vale.

November-December 2017 (2 weeks):

**Visiting Scientist** at the Universidad Tecnica del Norte (UTN), Ibarra, Ecuador. Project title: Arbuscular mycorrhizal fungal diversity in roots and soil of *Coffea arabica* cultivated at different altitudes. Supervisor: Prof. Maria Cristina Echeverria.

April – May 2017 (10 days):

**Visiting Scientist** at the Institute of Soil, Water and Environmental Sciences Agricultural Research Organization, The Volcani Center, Israel. Project title: Removal of pharmaceuticals from wastewaters by microorganisms and plants. Supervisor: Dr. Daniel Kurtzman.

August 2015 (3 weeks):

**Visiting Scientist** at the Department of Agricultural Sciences, West Virginia University, Morgantown, USA. International Culture Collection of (Vesicular) Arbuscular Mycorrhizal Fungi (INVAM). Project title: Taxonomical and molecular diversity of arbuscular mycorrhizal fungi retrieved in soils cultivated with modern and old varieties of bread wheat. Supervisor: Prof. Joseph Morton.

March 2015:

**Expert in the area** of Agronomy and Field Crops AGR/02 at the Department of Earth Sciences, Unipi, Italy.

August 2013-June 2019:

**Permanent Technician** at Scuola Superiore Sant'Anna (SSSA) D7 B1. Currently under unpaied leave from the position.

2011-2013 (2 years):

**Postdoctoral research fellow** at the Institute of Life Sciences, SSSA, Pisa, Italy. Project title: Development of an instrument to evaluate the agro-environmental sustainability of agricultural systems. Supervisor: Prof. Enrico Bonari.

2010-2011 (6 months):

**Research Fellow** at the Institute of Life Sciences, SSSA, Pisa, Italy. Project title: Field monitoring of the quality of soil amended by olive mill wastewater. Supervisor: Prof. Enrico Bonari.

2008-2010 (2 years):

**Postdoctoral Fellow** at the SSSA, Pisa, Italy. Project title: Interactions between weeds and arbuscular mycorrhizal fungi in biological and sustainable agro-ecosystems. Supervisor: Prof. Paolo Barberi.

2008 (6 months):

**Research Fellow** at the Department of Plant Biology, Faculty of Agricultural Science, Unipi, Italy. Project: SOILSINK, Italian national research project on climatic change and agricultural and forest Systems. Project title: Mycorrhizal markers for the carbon cycle. Biodiversity study of arbuscular mycorrhizal fungi within grassed and non-grassed vineyard soils using molecular analysis of the 18S-Ribosomal-Portion DNA Sequences. Supervisor: Prof. Manuela Giovannetti.

2007 (1 month):

**Research Fellow** at the Department of Plant Biology, Faculty of Agricultural Science, Unipi, Italy. Project: SOILSINK, Italian national research project on climatic change and agricultural and forest systems. Project title: Gene-Bank research and comparative analysis of the data by bioinformatics tools. Supervisor: Prof. Manuela Giovannetti.

April - October 2006 (6 months):

**Visiting Scientist** at the Department of Biology, University of York, UK. Project title: Molecular diversity of arbuscular mycorrhizal fungi of a low input agricultural soil. Fellowship supported by Unipi, Italy. Supervisor: Prof. J. Peter W. Young.

2006 (5 months):

**Research Fellow** at the Department of Biology, University of York, UK. Project: UK Population Biology Network project. Project title: Influences of management and plant diversity on arbuscular fungal communities, using

molecular techniques of fingerprinting (T-RFLP) and cloning and sequencing. Supervisor: Prof J. Peter W. Young.

## 6. Accademic and Teaching activities

Elisa Pellegrino is **member of two PhD courses** in “**Agrobiosciences**” and in “**Agrobiodiversity**” at the Scuola Superiore Sant'Anna (Pisa, Italy).

The main teaching activities and exam evaluator activities of Elisa Pellegrino are at the Scuola Superiore Sant'Anna. Other courses were also held at the Escola Superior Agrária Instituto Politécnico de Viana do Castelo Refoios do Lima, Portugal, at the Universidad Tecnica del Norte (UTN), Ibarra, Ecuador, at the University of Bologna and of Pisa, at primary and secondary schools in Pisa, for the Italian Confederation of Agriculture (CIA), Agricoltura è Vita, Cieffe Servizi and Enfap-Toscana. Recently, I have been appointed as coordinator of the **Annual Course of the Italian Society of Agronomy (SIA) Techniques of multivariate analyses in agricultural sciences**.

### Teaching activity at the Scuola Superiore Sant'Anna (SSSA)

2021-2022: **Techniques of Agronomy and Agroecology** for undergraduated students (30 hours); **Fungal Biology and Ecology** for undergraduated students (10 hours); **Plant microbiome and its importance for plant and human health** for undergraduated students (10 hours); **Introduction to Systematic Review and Meta-Analysis** for PhD students in Agrobiosciences (10 hours); **Course Permutational Multivariate Analysis of Variance for complex experimental designs** for PhD students in Agrobiosciences (20 hours); **Bioinformatics applied to the study of soil diversity** for PhD students in Agrobiodiversity (20 hours).

2020-2021:

Organizer of the **Course on Biostimulants in Agriculture** at the SSSA (20 hours) (<https://www.santannapisa.it/it/formazione/corso-di-alta-formazione-biostimolanti-agricoltura>) (Lectures were given by several experts (Dr. B. Faraglia MIPAAF, Prof C. Ciavatta University of Bologna; Dr G. Giovannetti CCS, Dr G. Masoero Accademia di Agricoltura Torino, Prof.ssa Sara Villa Università Bicocca Milano) as well as by Dr Elisa Pellegrino (teaching for 5.5 hours within the course), Prof Laura Ercoli and Prof Emeritus Marco Nuti.

2020-2021

**Techniques of Agronomy and Agroecology** for undergraduated students (30 hours); **Fungal Biology and Ecology** for undergraduated students (10 hours); **Plant microbiome and its importance for plant and human health** for undergraduated students (10 hours); **Introduction to Systematic Review and Meta-Analysis** for PhD students in Agrobiosciences (10 hours); **Teaching the course Permutational Multivariate Analysis of Variance for complex experimental designs** for PhD students in Agrobiosciences (20 hours); **Summer School on the Water and Food Nexus** (6 hours).

2019-2020:

**Course Techniques of Agronomy and Agroecology** for undergraduated students (30 hours).

2019-2020:

**Course Introduction to Systematic Review and Meta-Analysis** for PhD students in Agrobiosciences (10 hours).

2019-2020:

**Course Permutational Multivariate Analysis of Variance for complex experimental designs** for PhD students in Agrobiosciences (20 hours).

2018-2019, 2017- 2018, 2016-2017, 2015-2016, 2014-2015, 2013-2014:

**Teaching assistant in the course Analysis of Multivariate Data using CANOCO** for PhD students (total hours of my lectures within the course 8.5 for each academic year; in 2019).

2018-2019, 2015-2016:

**Teaching assistant in the course Plant-Soil Interaction and Soil Fertility** for undergraduated students (10 hours each academic year).

2016-2017:

**Teaching assistant in the course of Climatology** for undergraduated students of all disciplines at the SSSA, Italy (2 hours).

January 2017:

Lecture on **Plant signalling and communication within the course of Crop Physiology** organized by the Italian Society of Agronomy (SIA) and the SSSA at the SSSA in Pisa, Italy (2 hours).

2013-2014:

**Teaching assistant in the course of Ecology** for undergraduate students of Agricultural Science and Biotechnology, SSSA, Italy (6 hours).

2013-2014:

**Teaching assistant in the course of Agrometereology** for undergraduate students of of Agricultural Science and Biotechnology, SSSA, Italy (6 hours).

2008-2009:

**Cycle of seminar on Molecular Sequences and Genomics** for PhD students in Agrobiosciences at the SSSA, Italy (20 hours).

### **Teaching activity at the Escola Superiore Agraria, Punta de Lima, Portugal**

October 2019:

**Tecniques in arbuscular mycorrhizal fungal research** at the Escola Superiore Agraria, Punta de Lima, Portugal (18 hours; 20 undergraduated, master, postdoctoral students as well as professors)

<https://www.facebook.com/revitagri/>

<https://docs.google.com/forms/d/e/1FAIpQLSeKPKEr0KIDzwEdoMhaNhnV822Urr7ChIUG185csdzvwLLNuw/closedform>

### **Teaching activity at the Universidad Tecnica del Norte, Ecuador**

November-December 2017:

**Arbuscular mycorrhizal fungal research** at the Universidad Tecnica del Norte (UTN), Ibarra, Ecuador (40 hours; 25 undergraduated, master, postdoctoral students as well as professors)

Video of the course of biofertilizers in Ibarra, Ecuador: <https://youtu.be/eQQi6HDgF1>.

### **Teaching activity at the University of Bologna**

2020-2021

**Mycorrhizas for agriculture productions** at the Master Degree of Sciences and Agriculture Technology (6 hours; 150 students; online course) within the course of Plant nutrition (N:85862).

2019-2020

**Mycorrhizas for agriculture productions** at the Master Degree of Sciences and Agriculture Technology (6 hours; 161 students; online course) within the course of Plant nutrition (N:85862).

### **Teaching activity at the University of Pisa**

2020-2021:

Co-lecture helded for the **course in Agrometereology** (2 CFU) (18 hours over a total of 48 hours) **“Laurea Magistrale”** in **Environemtal Sciences**.

2004-2005

**Seminars in the Agricultural Microbiology Course**, Faculty of Agricultural Sciences, Unipi, Italy; **Lab Practices in the Agricultural Microbiology Course**, Faculty of Agricultural Sciences, Unipi, Italy.

## Teaching activity for the Italian Confederation of Agriculture (CIA), Agricoltura è Vita, Cieffe Servizi and Enfap-Toscana

May 2021:

**Lecture** Project AGROCIRCOLIVE results and discussion (2 hours; Enfap-Toscana).

April 2021:

**Lecture** Valorization of biodiversity. The use of residues of the olive production process <https://www.migliorolio.net/progetto/suolo/> (2 hours; Enfap-Toscana).

April 2021:

**Lecture** Best practices for the use of soil in orchard cultivation <https://www.migliorolio.net/progetto/suolo/> (2 hours; Enfap-Toscana).

March 2021:

**Lecture** Biodiversity as heritage for the protection of soil (within the Project INFOCEREALIMAREMMA PSR 2014/2020, Tuscany) (<https://www.infocerealimaremma.it/incontri-tematici.php>) (3 hours; Enfap-Toscana).

February 2021:

**Lecture** Biofertilization: technical and legislative aspects ([https://fertibio.ciatoscana.eu/wp-content/uploads/2020/12/aevetruria\\_corso-gratuito\\_fertibio\\_locandina.pdf](https://fertibio.ciatoscana.eu/wp-content/uploads/2020/12/aevetruria_corso-gratuito_fertibio_locandina.pdf)) (1.5 hours; Agricoltura è Vita)

February 2021:

**Lecture** Old practices for the modern use of soil (20 farmers within the Project INFOCEREALIMAREMMA PSR 2014/2020, Tuscany) (<https://www.infocerealimaremma.it/incontri-tematici.php>) (3 hours; Cieffe Servizi).

January 2021:

**Lecture** Microorganisms in agriculture ([https://fertibio.ciatoscana.eu/wp-content/uploads/2020/12/aevetruria\\_corso-gratuito\\_fertibio\\_locandina.pdf](https://fertibio.ciatoscana.eu/wp-content/uploads/2020/12/aevetruria_corso-gratuito_fertibio_locandina.pdf)) (1.5 hours; Agricoltura è Vita)

January 2021:

**Lecture** Organic fertilization techniques ([https://fertibio.ciatoscana.eu/wp-content/uploads/2020/12/aevetruria\\_corso-gratuito\\_fertibio\\_locandina.pdf](https://fertibio.ciatoscana.eu/wp-content/uploads/2020/12/aevetruria_corso-gratuito_fertibio_locandina.pdf)) (1.5 hours; Agricoltura è Vita)

December 2020:

**Lecture** Interaction plant-environment for the development of a sustainable agriculture (within the Project INFOCEREALIMAREMMA PSR 2014/2020, Tuscany) (<https://www.infocerealimaremma.it/incontri-tematici.php>) (3 hours; Cieffe Servizi).

May 2020:

**Lecture** on New frontiers of sustainability in agriculture: innovative ways to reduce environmental impact (CIA and CIPA-AT) (2 hours).

November 2018:

**Lecture** on Mentoring and start-up: the Scuola Superiore Sant'Anna, at the Biolabs, Institute of Life Sciences, SSSA, Pontedera, Italy (4 hours; 6 farmers aiming to develop new enterprises in Tuscany).

## 7. Research activity

From the beginning of my career, I focused on the sustainable management of agro-ecosystems studying the effect of management techniques, such as the biofertilization by beneficial microbes, on crop yield, plant nutrient

uptake, soil physico-chemical parameters and belowground microbial community shifts. I firstly focused on the study of the extraradical arbuscular mycorrhizal fungal (AMF) mycelium, as main fungal functional parameter for the selection of isolates for agriculture purposes.

I observed, for the first time *in vivo*, a strong relationship between the extension and the interconnection of mycelium, plant growth and nutrient uptake (i.e., N, P) of a main forage crop, such as *Medicago sativa* (alfalfa) (Avio et al., 2006). Within this thematic, I studied the infectivity of several AMF isolates on alfalfa and *Trifolium alexandrinum* (Egyptian clover) (Pellegrino et al., 2010). I also studied the effect of AMF isolates on the development of the root systems of those forage crops and on the production of a specific soil protein, such as the glomalin, a fundamental component of soil fertility and stability (Bedini et al., 2009).

I studied the relationship between mycorrhizal establishment in plants inoculated with different AMF species and isolates and glomalin related soil protein concentration, soil aggregate stability and soil organic matter. I performed innovative studies applying in field AMF selected inoculants on leguminous food and feed crops, such as alfalfa, *Cicer arietinum* (chickpea), Egyptian clover, and cereals, such as *Zea mays* (maize), focusing on the evaluation of persistence of the inoculants in soil and roots and on the inter- and intra-specific functional differences in the effectiveness of exotic and indigenous AMF isolates, with the aim of selecting isolates as biofertilizers for sustainable agriculture systems (i.e., Pellegrino et al., 2011; Pellegrino et al., 2012; Pellegrino and Bedini, 2014). I developed and validated a molecular genetic probe for monitoring the AMF establishment and persistence after inoculation of an efficient exotic isolate of *Funneliformis mosseae* (Pellegrino et al., 2012). This allowed also detecting the community changes of native AMF. In these studies, I dissected the agroecological services of native and exotic AMF, inoculated as single or mixed inocula, in term of productivity and plant nutrient uptakes (N, P, Fe and Zn). Moreover, I found a strong biofortification effect, in term of Fe and Zn plant uptake, of some isolates of AMF on chickpea.

Later, I extended my interests in agroecology by evaluating soil fertility in soils cultivated with biomass crop for energy purposes and following the spreading of agriculture by-products, such as olive mill wastewaters (OMW) (Pellegrino et al., 2011; Di Bene et al., 2013). In these studies, by evaluating soil fertility using soil chemical, biochemical and biological parameters, I have found that a long-term management with poplar short-rotation coppice improved soil quality in comparison to intensive and uncultivated agricultural systems and that long-lasting repeated OMW land spreading had no residual effects or negative trends on soil chemical and biochemical parameters, even though there were relevant effects in the short-term.

In the latest years, I focused on the study of soil fertility in term of soil microbial diversity (fungi, AMF, bacteria, N-cycling related bacteria and archaea) using molecular tools and measuring CO<sub>2</sub> and N<sub>2</sub>O emission (Pellegrino et al., 2014; Ciccolini et al., 2015; Ciccolini et al., 2016a,b; Pellegrino et al., 2019). In these studies, I have disclosed the relationship between soil microbial diversity and soil physico-chemical parameters, land uses, and host plant species. I have applied molecular techniques together with bioinformatics and multivariate approaches and performed evaluations at different microbial phylogenetic levels. I have also analyzed big data set of rainfall and highlighted the temporal increasing trends of the extreme rainfall intensity and erosivity in the Mediterranean region (Vallebona et al., 2014).

Recently, I approached the study at field level of the role of agronomic biofortification and AMF inocula on uptake of micronutrients and production of beneficial secondary metabolites (nutraceutical substances) of old and modern wheat genotypes, as well as on the role of reduced tillage on wheat agronomic and economic performance (Pellegrino et al., 2015; Ercoli et al., 2016, 2017; Ciccolini et al., 2017). I have recently dissected in the field the key role-played by specific fungal taxa for the management of their services, the improvement of chemical and enzymatic parameters of soil and of crop yields in a long-term wheat-soybean rotation (Piazza et al., 2019, 2020). Moreover, I dissected the physical and biological mechanisms in soil aggregates, which affect SOC stabilization and persistence (Piazza et al., 2020). I have performed meta-analyses of big data sets with the aim of answering to large agronomic and environmental questions (Pellegrino et al., 2015, 2018).

I have also tightened collaborations with eminent scientists worldwide. With Dr Barbara Mazzolai, director of the Centre for Micro-BioRobotics (CMBR) of the Italian Institute of Technology (IIT), through a PhD fellowship IIT funded to the PhD in Agrobiosciences (SSSA) (PhD student Alessio Cardini). This led to the development of a new semi-automated pipeline for measuring root and fungal hyphal lengths (Cardini et al., 2020) and to the

dissection of the physiological and molecular pathway of Zn translocation from the leaf to roots, in order to model it for efficient field crop biofortification plans (Cardini et al., 2021a Plants). Along with this line of research, with Prof Stephan Declerk (UCL Louvain, Belgium), I developed a collaboration for developing the production of *in vitro* culture of AMF. This recently allowed me to develop a line of research based on the study of communications between plants mediated by the AMF hyphal network (Cardini et al., 2021b; new experiments are on-going under my tutoring by the current PhD student, Myriam Arcidiacono). These results are promising for the construction of new “fungal inspired” models that may support the development of new technologies (bioinspired robotics). With Dr Thorunn Helgason (University of York, UK) I am currently developing new molecular tools for the characterization of soil diversity and for the analysis of the interactions in terms of belowground networks [prokaryotes (bacteria and archaea), eukaryotes, fungi, AMF] (Pellegrino et al., under-review by SBB; Pellegrino et al., manuscript under preparation for Microbiome). This collaboration allowed one of my PhD students (Gaia Piazza, PhD) to be hosted by the Helgason Lab in York (UK) for a period of four months. With Dr Christian Thierfelder (CIMMYT, Zimbabwe) I am developing studies on the effect of conservation agriculture on yield and soil microbial diversity in Africa. The first agronomic manuscript about a multi-location test of the interactive effects of conservation agriculture components on maize yield in southern Africa was recently accepted by Agriculture and Sustainable Development (Mhlanga et al., 2021), while others are in preparation. The PhD student (Blessing Mhlanga) who I am tutoring set up also field experiments in Zimbabwe to study the residue degradation using litterbags and the microbial community functionality under conservation agriculture. With Prof Timothy Cavagnaro (University of Adelaide, Australia) I have studied the role of AMF in Zn uptake using labeled Zn in two major crops, such as wheat and barley. This resulted in a publication (Coccina et al., 2010) where we calculated for the first time the mycorrhizal pathway of Zn uptake in the edible parts of wheat and barley. With Prof Maria Cristina Echeverria (Universidad Tecnica del Norte, Ibarra, Ecuador) I am carrying over a study on *Coffea arabica* under organic systems by dissecting the effect of agroforestry management and altitude on AMF diversity for the development of AMF biofertilizers in Ecuador (funded Ecuador Project to the SSSA; Ortega Andrade et al., 2019). Moreover, I am still collaborating with Dr Arthur Schussler (Munich; 1 paper Ercoli et al. 2017 and two papers in preparation), Dr Maarja Opik (2 papers: Pellegrino et al., 2015, Ciccolini et al., 2016) Prof Maria Cristina Moscatelli (Università della Tuscia; 1 paper: Piazza et al., 2019), Prof Diana Di Gioia (University of Bologna; I was co-supervisor of a master student of Prof Di Gioia: Valentina Marassini is now under my tutoring as PhD) and Prof Andrea Onofri (University of Perugia; 1 paper Mhlanga et al. 2021). Recently, I also started a collaboration with Dr Johnathan Dalzell and Prof Tancredi Caruso (Queen's University of Belfast) with whom I wrote a project for the Biotechnology and Biological Sciences Research Council (BBSRC Grant proposal) aiming to study the links between climatic changes (i.e., temperatures) and plant/rhizosphere microorganism performances. The BBSRC grant proposal passed the first step and we will be evaluated by an oral interview.

My current areas/lines of research are:

- **Biological fertilization of crops (i.e., bread and durum wheat, barley, soybean, buckwheat, millet, alfalfa, chickpea, sunflower, tomatoes)**
- **Effect of land use intensity and conservation agriculture on crop yield and soil quality in different climatic areas**
- **Emerging pollutants and use of microbes for the removal or degradation of pharmaceuticals**
- **Nutritional and nutraceutical properties of cereals and pseudocereals and other cultivated and wild plant species and development of functional foods and feeds**
- **Interplant communication and software development for the study of root and AMF mycelium for discovering plant inspired algorithms for engineering purposes**
- **Agroecological synthesis of big data using meta-analytical techniques**

#### **Future directions of research**

I am strongly motivated in continuing my research on crops and soil science for the enhancement of ecosystem services in cropping and forage systems using the biotic component of soil, such as the beneficial microbes. I am



highly motivated in using microbes as biofertilizers, especially for improving the nutritional and nutraceutical quality of crop production and derived foods, as well as for bioremediation, contrasting climatic changes and for medical purposes. Thanks to my broad experience, I feel experienced for teaching agronomy and field crops and I am highly also motivated in applying for funds at national and international level.

### **Scientific or/and technological bottlenecks**

The principal scientific or/and technological bottleneck is the understanding of the link between soil biodiversity and agroecosystem functionality at farm and regional scale. Thanks to the next generation sequencing approach, to the advanced statistics for planning and analysing data, to geostatistics and bioinformatics, such bottleneck can be overcome for precision agriculture. This would allow giving answers to scientists for basic agroecological questions as well as to farmers and institutions for precision farming studies related to the sustainable management of agroecosystems, with the final aim to increase yield and quality of food and feed crops, taking into account the quality of soil. Thus, the assessment of agroecosystem services is a key step for future agronomic research across different climatic areas/conditions in the context of precision agriculture.

## **8. Research expertises**

- Set-up and running of agronomic field experiment at plot and farm level
- Soil physical, chemical and enzymatic analyses by wet-sieving aggregate separation, fluorimeter CHN analyser and fluorogenic methylumbelliferyl-substrates method
- Physical and chemical analyses of soil and chemical analyses of plant tissues (i.e., C, P, N, Fe and Zn)
- Construction and maintenance of bacterial and fungal cultures on solid media or liquids
- Maintenance and development of arbuscular mycorrhizal fungi (AMF) collections. Cultivation of trap-hosts for the propagation of the AM fungi. Isolation and maintenance in pure culture of strains of AMF
- Isolation of microorganisms with selective media, differential or enrichment techniques, microbial counts and taxonomic identification
- Extraction and identification of spores of AMF from soil samples by the wet-sieving and saccharose method. Identification and quantification of AMF structures both by light and confocal microscopy
- Visualisation and staining of mycorrhizas in roots and of fungal mycelium by epifluorescence, trypan-blue, succinate-dehydrogenase and diaminophenylindone
- Visualisation of the extraradical mycelium by destructive and non-destructive methods and *in vitro* reproduction of AMF
- Preparation and observation protocols for *in vitro* and *in vivo* plant cultures
- Use of laboratory equipment, such as autoclave, thermostat, laminar flow and chemical fume hoods, spectrophotometer
- Molecular analysis: DNA and RNA extraction, PCR and cloning set up, DNA/RNA purification, RFLP analysis, T-RFLP, Sanger, 454-sequencing, Illumina MiSeq sequencing preparation, nanodrop and QBIT fluorimeter quantification.
- Bioinformatics for phylogenetic studies (Bioedit, Seaview, Mega, ITol, Cytoscape etc)
- Dataset management and statistical analysis (e.g., uni- and multivariate data analyses, meta-analysis, network analysis) using different software packages and the R platform
- Characterization of nutraceuticals in food and feed
- Scientific and project writing

## **9. Scientific training**

February 2020-April 2021:

**Primer and Permanova + Advanced Course** - 2 weeks online course

May 2020:

**Introduction to systematic review and meta-analysis** – 5 weeks. Johns Hopkins University.

January 2019:

**Course on statistics: linear and generalized models** - 1 week. Italian Society of Agronomy, CREA-AA, Rome.

May 2016:

**Course on comprehensive meta-analysis** - 1 week. Prof Michael Borenstein, London, UK.

May 2015:

**Training on in vitro culture of arbuscular mycorrhizal fungi** - 1 week. University Catholique de Louvain, Louvain-la-Neuve (Belgium), Laboratory of Mycology (UCL-ELI-ELIM), CESAMM and GINCO.

October 2012:

**Theoretical and practical course on Real-Time PCR** - 5 days. Bio-rad Laboratories s.r.l., Life Science Group, Milan, Italy.

May 2012:

**Course on bioinformatics and comparative genome analysis** - 2 weeks. Fellowship by the EMBO, Naples, Italy.

July 2011:

**Course on multivariate analysis** in ecology and environmental science for complex designs, using Permanova+ for primer v6 - 1-week. Marine Biological Association, Plymouth, UK.

January 2010:

**Course on molecular evolution** - 3 weeks. Organized by the University of Boston, USA in Český Krumlov, Czech Republic.

January 2009:

**Course on multivariate analysis of ecological data** - 2 weeks. University of South Bohemia, Faculty of Biological Sciences, České Budějovice, Czech Republic.

May 2008:

**Course on numerical analyses of biological and environmental data** - 10 days. University College of London, Department of Geography, London, UK.

October 2006:

**Module on molecular techniques in ecology - 1 week.** Master course in Ecology and Environmental Management, University of York, UK.

January - June 2004:

**Advanced course on statistical sciences.** Scuola Superiore Sant'Anna, Italy.

March 2004:

**Course on techniques in arbuscular mycorrhizal research** - 1 week- Department of Biology, University of York, UK.

## 10. Foreign languages

Italian: native language; English: advanced level. June 2009: First Certificate in English: 70/100 (grade: C); 8 August - 30 September 2005: Course of English for Academic and Research Purposes, Centre for English. Language Teaching, University of York, UK; 9 August – 27 August 2004: IELTS Course at Intermediate Level, Cambridge Campus, APU, UK. French: proficiency level. Spanish: basic level. Latin and Ancient Greek: advanced level.

## Computer skills

*Operating Systems:* Windows (XP, Vista, 7, 8.1, 10), macOS (Sierra, High Sierra, Mojave, Catalina), Linux environments (Ubuntu 16.04). *Windows and macOS user:* Microsoft Office™ package (Word, Excel, PowerPoint, OneNote), Adobe (Illustrator, Photoshop), AutoCad and Inkscape tools. *Reference management:* EndNote.

*Statistical Analysis Software*: SPSS Statistics, CoStat, R software, Canoco 5, Primer6, Permanova+ for Primer, Comprehensive Meta-Analysis and R platform. *Molecular Data Analysis*: CLUSTALX, Treeview, FigTree, Bioedit, Seaview, Muffit, Muscle, Mega. *Molecular Data visualization*: Circos, ITOL. *Sequence Analysis*: Chromas 2, NCBI Research, BLAST, QIIME2.

## 11. Third mission

I have performed activities to accomplish the third mission of the universities, which includes all the initiatives carried out to support the economic, social and cultural development of the community. These initiatives are aimed to strengthen knowledge transfer through educational activities and research exploitation.

Among these activities, I participated to the organization and teaching of the following courses:

5 May 2021:

Talk on “Microbial consortia as biostimulants: from the lab to the field (15 minute; 14:00) at the TSD2021 e, within the area Environmentally Sound Technologies; Post Linkedin Scuola Sant’Anna, Sant’Anna Magazine News and Pagina ufficiale del webinar

2017:

Teaching sessions and practice lessons for primary and secondary students at the Institute Fibonacci in Pisa, Italy on **microorganism and phytodepuration** (4 hours); **energy production from agricultural residues** (4 hours); **olive production and climate change** (4 hours); **old genotypes of wheat and climate change** (4 hours). I was responsible of the project at the SSSA that was funded by the Tuscany Region, Lamma and MIUR within the project “Ecosystem and Climate Change”. The whole activity involved about 75 students.

2016:

Teaching sessions and practice lessons for primary and secondary students of the Comprehensive Institute Renato Fucini in Pisa, Italy on **Phytodepuration** (4 hours), **Cultivation of old wheat varieties** (4 hours) and **Utilization of agricultural residues for energy production** (4 hours). ). I was responsible of the project at the SSSA that was funded by the Tuscany Region, Lamma and MIUR within the project “Ecosystem and Climate Change”. The whole activity involved about 75 students.

2015:

Teaching sessions and practice lessons for primary and secondary students of the Institute Borsellino of Navacchio in Pisa, Italy on **Physico-chemical and biological parameters of soil** (4 hours); **Laboratory of soil** (4 hours); **Evaluation of erosion caused by extreme rainfall events with GIS tools** (4 hours); **Soil Reclamation in Tuscany** (4 hours). I was responsible of the project at the SSSA that was funded by the Tuscany Region, Lamma and MIUR within the project “Ecosystem and Climate Change”. The whole activity involved about 64 students.

## 12. Science communication

I have been active also in public communication of science-related topics to non-experts. I have edited two texts specifically aimed at communicating science results to the public as well as many project reports:

Pellegrino E. 2020. Pane e salute: primi risultati del progetto Pinfoid. Festa del pane. April 2019, Certaldo Firenze.

Pellegrino E. 2020. The project FERTIBIO: use of beneficial microorganisms in agriculture. Intermediate workshop of the Life Project ZEOWINE – Life 17 – Env – IT – 000427 (28<sup>th</sup> January 2020) (oral presentation)

Pellegrino E. 2019. Viticulture Innovation. The variable-rate technology to improving the distribution of organic fertilizers. VITISOM Life project. Protection of soil and viticulture and agriculture ecosystems: the green book for the development of a European Strategy (Book).

Pellegrino E., Righini C. 2019. Inspirational ideas. Biofertilisers to improve soil fertility. Developing local production of biofertilisers to increase quality and yield of herbaceous crops in Tuscany. EIP-AGRI Newsletter November 2019 pp. 1-2.

- Pellegrino E. 2019. FERTIBIO: a project on bio-fertilizers to support innovation for Tuscan agriculture. Sept-Nov Terre dell'Etruria Journal n56 pp. 47-48.
- Pellegrino E. 2019. Biofortificazione ed uso di funghi benefici per migliorare le proprietà qualitative di farina e pane da vecchi genotipi di frumento. Il seme della salute, 19<sup>th</sup> May 2019, Certaldo Firenze.
- Pellegrino E., Lulli L. 2019. Operational Group: FERTIBIO. Development of the production process of biological fertilizers and their application for food and feed crops in Tuscany agriculture at the Rural Development Innovation Week 2019. Annual event of the Tuscany Region RDP EAFRD 2014-2020 (26<sup>th</sup>-27<sup>th</sup>-28<sup>th</sup>-29<sup>th</sup> March. Florence - Palazzo dei Congressi (poster).
- Pellegrino E. 2019. Development of the production process of biological fertilizers and their application for food and feed crops in Tuscany agriculture" (FERTIBIO) <https://ec.europa.eu/eip/agriculture/en/find-connect/projects/sviluppo-del-processo-produttivo-di-fertilizzanti>.
- Ercoli L., Pellegrino E. 2018. Le Tecniche di biofertilizzazione. In "I grani antichi toscani. Nuove tecniche di coltivazione". Grant, Firenze (Text).
- Ercoli L., Ciccolini V., Pellegrino E. 2018. Frumenti teneri toscani: caratteri nutrizionali e nutraceutici di varietà iscritte al repertorio regionale. Proprint s.r.l., Ponsacco (PI) (Text).
- Ercoli L., Pellegrino E., Ciccolini V. 2018. Pasta and baked products in Tuscany for subjects with gluten intolerance and celiachia (Project report).
- Ercoli L., Pellegrino E., Ciccolini V. 2018. Tests of adaptability of old genotypes of wheat in the coastal area of Tuscany (PR).
- Ercoli L., Pellegrino E., Ciccolini V., Coccina A., Bonari E., Tozzini C. 2017. Ancient epigenetically active wheat from Tuscany for the prevention of heart failure (Project report).
- Bonari E., Pellegrino E., Di Bene C., Tozzini C. 2014. Bread from old genotypes of wheat to enhance the supply chain and improve health (Project report).
- Bonari E., Pellegrino E., Tozzini C., Mantino A. 2014. Updated forage systems for a typical dairy cheese production in the Maremma, Tuscany (Project report).
- Bonari E., Pellegrino E., Di Bene C., Vallebona C., Mantino A. 2013. Innovative forage and feed for the production of a pecorino made in Tuscany with nutraceutical properties (Project report).
- Pellegrino E., Bonari E., Rossetto R. 2011. Olive mill wastewater and the use in agriculture (PR).
- Bonari E., Pellegrino C., Di Bene C., Debolini M., Silvestri N. 2010. Monitoring of soils affected by the agronomic use of olive mill wastewater and wet pomace (Project report).

I have also disseminated the results of the researches on the improvement of wheat quality and the use of biofertilizers by making professional videos for communication and by social network page building (<https://www.facebook.com/Tuscanafumentitoscani/>). Many journalists disseminate the news of journals and interviewed me in this subject:

- <https://fertibio.ciatoscana.eu>
- Il Tirreno: [https://iltirreno.gelocal.it/regione/toscana/2020/03/18/news/il-bio-e-schizzato-a-106-meno-pane-e-piu-verdure-1.38607174?fbclid=IwAR0VpsKToWW6eNGI9P5Gunp10GO9Hn-ilqZcnHmyM5uqGfLjX1D\\_u-AR1oM](https://iltirreno.gelocal.it/regione/toscana/2020/03/18/news/il-bio-e-schizzato-a-106-meno-pane-e-piu-verdure-1.38607174?fbclid=IwAR0VpsKToWW6eNGI9P5Gunp10GO9Hn-ilqZcnHmyM5uqGfLjX1D_u-AR1oM)
- Facebook: [https://www.facebook.com/Fertibio-102171111133459/?modal=admin\\_todo\\_tour](https://www.facebook.com/Fertibio-102171111133459/?modal=admin_todo_tour)
- Instagram: fertio\_project
- Cimate and Sustainability Fundation: <http://www.climaesostenibilita.it/?p=1984&fbclid=IwAR1sdYfkCGV9w7m9KfqDOeUWX8Puq4GYxMANbNrhQzzYWH3QLFLJ2jm1Znk>
- Gonews: <https://www.gonews.it/2018/09/07/pasta-prodotti-forno-filiera-toscana-soggetti-sensibili-al-glutine-celiaci/?fbclid=IwAR2jGWql1rpOUvRyO9EU82YvuGDfNuoTpgcKw2a1XL76nAcaTaI2YpsAd6k>
- Terraevita.edagricole: [https://terraevita.edagricole.it/pac-e-psr/fatto-grani-antichi-miglio-grano-saraceno/?fbclid=IwAR3dwUH0oWUTDAdbWCyElaYI9G6Q3ML1i2NN93LhL\\_shj6kuwOfIzuoE\\_dQ](https://terraevita.edagricole.it/pac-e-psr/fatto-grani-antichi-miglio-grano-saraceno/?fbclid=IwAR3dwUH0oWUTDAdbWCyElaYI9G6Q3ML1i2NN93LhL_shj6kuwOfIzuoE_dQ)
- Agricoltura.it: [https://www.agricoltura.it/2018/11/30/la-pasta-toscana-senza-glutine-si-presenta-a-foodwine-a-firenze-sabato-1-dicembre/?fbclid=IwAR1v\\_Gv04hkLRv3ihuOWAiE3pW42ogTLopprw2PPpKvSK4Klg54VidOnV44](https://www.agricoltura.it/2018/11/30/la-pasta-toscana-senza-glutine-si-presenta-a-foodwine-a-firenze-sabato-1-dicembre/?fbclid=IwAR1v_Gv04hkLRv3ihuOWAiE3pW42ogTLopprw2PPpKvSK4Klg54VidOnV44)

- Tadà RTV38 channel (<https://www.youtube.com/watch?v=IVJDHd8SKP8>).
- Toscana in Onda Telegranducato channel (<https://www.facebook.com/Tuscanafumentitoscani/videos/2252596798105452/>)
- Agri Informa (<https://m.youtube.com/watch?list=PLjYpvjldWtZJy2ZAQqjm-d6G0sewcWpA-&t=517s&v=ro6tk0t9ay4&fbclid=IwAR0iR-YkE-wE3Mn6fsJrsB67s3V5sni2ThANnGMBf8Tj8mSbmeDJHYEvo9k>)
- Toscana24 ([http://toscana24.ilsole24ore.com/art/oggi/2018-01-23/agenda-giorno-gennaio-200329.php?uuid=gSLAo6L9YC&fbclid=IwAR1bvoGGh7NvOupSzFUKdUOw\\_ljpfU-WDRLOuu9eZO3gzhcelb9uyvelKY](http://toscana24.ilsole24ore.com/art/oggi/2018-01-23/agenda-giorno-gennaio-200329.php?uuid=gSLAo6L9YC&fbclid=IwAR1bvoGGh7NvOupSzFUKdUOw_ljpfU-WDRLOuu9eZO3gzhcelb9uyvelKY))
- Intoscana ([https://www.intoscana.it/it/enogastronomia/articolo/le-antiche-variet%C3%A0-toscane-di-frumento-sono-antitumorali/?fbclid=IwAR10Nt5Gxr0-gtrDkZzXc7K130Yy\\_4\\_7ioNMrOAP4Xo14zvnOO3SEb2Qu0Y](https://www.intoscana.it/it/enogastronomia/articolo/le-antiche-variet%C3%A0-toscane-di-frumento-sono-antitumorali/?fbclid=IwAR10Nt5Gxr0-gtrDkZzXc7K130Yy_4_7ioNMrOAP4Xo14zvnOO3SEb2Qu0Y))
- Gonews: [https://www.gonews.it/2018/01/24/frumento-toscano-antico-migliora-le-propriet%C3%A0-nutraceutiche-dei-nostri-piatti/?fbclid=IwAR1Dbno3gc7NW9LQPp4r\\_c9S\\_1NzJJKM9nmUq5LTBFF2Kr2j-ycwewHzgeY](https://www.gonews.it/2018/01/24/frumento-toscano-antico-migliora-le-propriet%C3%A0-nutraceutiche-dei-nostri-piatti/?fbclid=IwAR1Dbno3gc7NW9LQPp4r_c9S_1NzJJKM9nmUq5LTBFF2Kr2j-ycwewHzgeY)
- Santannapisa: <https://www.santannapisa.it/it/event/recupero-e-valorizzazione-nutritiva-e-nutraceutica-del-germoplasma-vegetale-presentazione-del/?fbclid=IwAR0BHPv5XimqrSA5yl8wwNnBmJ2cjUP4-tm-aXoZNDtbvuuFeu98qxgpNjY>
- Toscana24: [http://toscana24.ilsole24ore.com/art/oggi/2018-01-19/agenda-settimana-143147.php?uuid=gSLAa2OsYC&fbclid=IwAR3iTdj4kyskY1sjzB7S\\_4wfosGB1SfRQEnKV\\_qMnRiEjJGkGtlt1G\\_e4Ew](http://toscana24.ilsole24ore.com/art/oggi/2018-01-19/agenda-settimana-143147.php?uuid=gSLAa2OsYC&fbclid=IwAR3iTdj4kyskY1sjzB7S_4wfosGB1SfRQEnKV_qMnRiEjJGkGtlt1G_e4Ew)
- Gonews ([https://www.gonews.it/2018/01/19/frumenti-teneri-patrimonio-nutrizionale-valorizzare-lo-sviluppo-dellagricoltura-toscana/?fbclid=IwAR3-metr-vcBQOh7pYK-5aLLDa5glAcOTPYZIndgGIQF1AixKmdLmxQk4YA#.WmG\\_EJeKPZE.facebook](https://www.gonews.it/2018/01/19/frumenti-teneri-patrimonio-nutrizionale-valorizzare-lo-sviluppo-dellagricoltura-toscana/?fbclid=IwAR3-metr-vcBQOh7pYK-5aLLDa5glAcOTPYZIndgGIQF1AixKmdLmxQk4YA#.WmG_EJeKPZE.facebook))
- Google site: [https://sites.google.com/view/toscana-frumentitoscaninutrace/home?fbclid=IwAR30gMjPpORVcK-\\_d\\_Is16SePFCNznRXwfvx7kG5iL\\_89tXK9j7MOqPXD03Q](https://sites.google.com/view/toscana-frumentitoscaninutrace/home?fbclid=IwAR30gMjPpORVcK-_d_Is16SePFCNznRXwfvx7kG5iL_89tXK9j7MOqPXD03Q)
- Youtube link to the produced communication video: <https://youtu.be/OzQRbTSHZLY>
- Youtube link to the produced communication video: <https://youtu.be/6rY7vWkZ7is>

Fruitful collaborations were set with producer organizations, regional policy makers and stakeholders (i.e. Granai di Toscana Soc. Coop. Agr., Consorzio di tutela Pane Toscano DOP, Proceva Farmer Association).

In addition, I gave presentation on several workshops for research exploitation, both locally and at European and international level and I carried out meetings, writing dissemination books, booklets, and videos targeted at disseminate agronomic biofortification and fertilization using microorganisms in agriculture, especially aiming to promote the improvement of the nutritional and nutraceutical quality of food. As examples, I gave presentations at **three workshops** for the dissemination of the results of the project “Tuscan Pasta and bakery products for celiacs and gluten intolerants - PRINCE” (6<sup>th</sup> December 2017, Santa Luce, Pisa, Italy; 31<sup>th</sup> of July 2018 Castelfiorentino, Florence, Italy; 2018; 7<sup>th</sup> September 2018 at Sala Pegaso, Palazzo Strozzi, Florence, Italy); at **two workshops** for the dissemination of the results of the project “Tuscan Pasta and bakery products for celiacs and gluten intolerants - PRINCE” (31<sup>th</sup> of July 2018 Castelfiorentino, Florence, Italy; 7 September 2018 at Sala Pegaso, Palazzo Strozzi, Florence, Italy), at **one workshop** for the dissemination of the results of the project “New techniques of cultivation for Old wheat genotypes – GRAnt” (7 September 2018 at Sala Pegaso, Palazzo Strozzi, Florence, Italy) and at the Food&Wine (1<sup>st</sup> December 2018; La Leopolda, Firenze, Italy). I also participated to the Rural Development Innovation Week in Firenze, Italy (28<sup>th</sup> of March 2019) for the dissemination of the results of the GO FERTIBIO.

Another example of science communication is the **organization of the FERTIBIO partnership** by focus groups, within the context of the European Innovation Partnerships in Agriculture. To achieve this aim, the EIP-AGRI brings together innovation actors (farmers, advisors, researchers, businesses, NGOs, etc.) and helps to build bridges between research and practice.

In addition, I have been interviewed many times by national and regional radio and TV broadcasts on the subject of GMO crops following the publication of the Scientific Reports paper (February 2018). Example of science

communication in journals and interviews in meeting, TV and radio broadcasts are listed bellow (more than 140 citations):

- La repubblica: [https://www.repubblica.it/ambiente/2018/02/15/news/mais\\_ogm\\_nessuna\\_evidenza\\_di\\_rischi\\_per\\_la\\_salute-188912173/](https://www.repubblica.it/ambiente/2018/02/15/news/mais_ogm_nessuna_evidenza_di_rischi_per_la_salute-188912173/)
- Science Alert: <https://www.sciencealert.com/after-two-decades-and-6-000-studies-scientists-find-gmos-in-corn-are-actually-good-for-you?fbclid=IwAR19CDE2h29re7IHsvW9d09mWiL3N1Qtccq6EdQindv7Tgfmr5ly2pyykZE>
- Terra e vita: <https://terraevita.edagricole.it/biotecnologie/mais-ogm-piu-resa-meno-tossine-studio-italiano/>
- Mais OGM: facciamo il punto (19<sup>th</sup> of May 2018, Food and Science Festival, mantova, Italy) (<https://www.youtube.com/watch?v=qFXZBRS0DWg&t=733s>)
- Food and Science: [https://www.santannapisa.it/it/news/foodscience-festival-venerdi-18-e-sabato-19-maggio-mantova-tre-eventi-con-il-rettore-del?fbclid=IwAR1h43GVgW8\\_ijq65kt3dC1f5GwZnslauRFVZM1KZehPzm0ND3RsJf04HKc](https://www.santannapisa.it/it/news/foodscience-festival-venerdi-18-e-sabato-19-maggio-mantova-tre-eventi-con-il-rettore-del?fbclid=IwAR1h43GVgW8_ijq65kt3dC1f5GwZnslauRFVZM1KZehPzm0ND3RsJf04HKc)
- SSSA Web Site: <https://www.santannapisa.it/it/news/ogm-il-mais-transgenico-ha-rese-superiori-e-non-comporta-maggiori-rischi-la-salute-umana>
- Multimedia SSSA: <https://www.santannapisa.it/it/multimedia/radio-1-mais-ogm-da-ricerca-di-scuola-santanna-e-universita-di-pisa-non-emergono-maggiori>
- Il sole 24 ore: <http://www.sanita24.ilsole24ore.com/art/medicina-e-ricerca/2018-02-15/mais-ogm-promosso-sant-anna-pisa-piu-produttivo-e-senza-rischi-123810.php?uuid=AEf8Xg0D>
- Rai News: <http://www.rainews.it/dl/rainews/TGR/media/tos-studio-universita-pisa-ogm-d4583b03-105a-4022-8729-61f5bc90e810.html>
- Il foglio: <https://www.ilfoglio.it/scienza/2018/02/15/news/ogm-mais-salute-ambiente-nessun-rischio-ricerca-sant-anna-pisa-179092/>
- La repubblica: [https://www.repubblica.it/ambiente/2018/02/15/news/mais\\_ogm\\_nessuna\\_evidenza\\_di\\_rischi\\_per\\_la\\_salute-188912173/](https://www.repubblica.it/ambiente/2018/02/15/news/mais_ogm_nessuna_evidenza_di_rischi_per_la_salute-188912173/)
- Il messaggero: [https://www.ilmessaggero.it/primopiano/cronaca/mais\\_ogm\\_studio\\_universita\\_pisa\\_nessuna\\_evidenza\\_rischi\\_salute-3550360.html](https://www.ilmessaggero.it/primopiano/cronaca/mais_ogm_studio_universita_pisa_nessuna_evidenza_rischi_salute-3550360.html)
- TGcom 24: [https://www.tgcom24.mediaset.it/green/studio-italiano-nessun-rischio-per-la-salute-dal-mais-ogm\\_3123451-201802a.shtml](https://www.tgcom24.mediaset.it/green/studio-italiano-nessun-rischio-per-la-salute-dal-mais-ogm_3123451-201802a.shtml)
- TgLa7: [http://tg.la7.it/scienza-e-tecnologia/mais-ogm-nessuna-evidenza-di-rischi-per-la-salute-15-02-2018-124667?fbclid=IwAR2\\_aQef5gx1HGxS0woKTvk5FZgAupP8YJUu7TIQ8v1pmHfmN70vuxill9s](http://tg.la7.it/scienza-e-tecnologia/mais-ogm-nessuna-evidenza-di-rischi-per-la-salute-15-02-2018-124667?fbclid=IwAR2_aQef5gx1HGxS0woKTvk5FZgAupP8YJUu7TIQ8v1pmHfmN70vuxill9s)
- Agronotizie: <https://agronotizie.imagelinenetwork.com/agricoltura-economia-politica/2018/03/05/biotech-fra-scienza-normative-e-disinformazione/57722>
- Controradio: <https://www.controradio.it/mais-ogm-non-rischioso-la-salute/>
- CIAnews: <https://www.cia.it/news/notizie/puntare-su-cisgenetica-dibattito-su-ogm-superato/>

### 13. Current relations to industries

I am currently collaborating for bioinoculant development and testing with some spin-off and enterprises: Greenhas Italia (<https://www.greenhasitalia.com/it/>) for the development of biostimulants; the DND (<http://dndbiotech.it/progetto.html>) for the development of bioamendments and fungal and bacterial inoculants; Eurofins Agrosiences (<https://www.eurofins.com/agrosienceservices>) for the test in field of biostimulants; Eurofins genomics (<https://eurofinsgenomics.eu>) for the development of molecular tools for the characterization of soil biodiversity; the BTM-Biological Tools for Mediterranean Agriculture (Manduria, Italy); the Symplanta-Symbiosis and plant-Microbe Association Research Laboratory (Dr Arthur Schussler, Munchen, Germany); and the enterprises CCS (Dr Giusto Giovannetti Aosta, Italy), Agricola2000 (Dr Alessandro Biondi Pitigliano, Italy) and Idea Verde (Dr Luigi Petralli Santa Croce sull'Arno, Italy). With DND we are currently applying for a project by the Tuscany Regione for a two year fellowship for a postdoc researcher; with Eurofins Agrosiences we have set up a collaboration for testing the water stress in horticulture supporting a year postdoctoral fellowship and the field research; with Greenhas Italia were planning the activation of a research fellow for one year for developing a consortium of microbes to be tested in field crops; with Symplanta I have a scientific collaboration about

identification of AMF with spore-morphology based methodology, as well as with DNA based methodology. I am also evaluating inoculum viability and efficiency. With BTM and Agricola2000 I am currently developing composts utilizing olive residues mixed with microbes for a sustainable nutrient management of field crops and olive orchards. I recently started to collaborate with Dr. Giusto Giovannetti, leader of CCS (Aosta, Italy) for the development of biological inoculants for large use in symbiotic agriculture. With the CCS, we are now testing for nutraceutical purposes many isolates belonging to different genera of arbuscular mycorrhizal fungi on *Solanum lycopersicum* (tomato), different genotypes of maize, and wild plant species (*Soncus oleraceus*, *Atriplex rosso*, *Glebionis segetum*, *Urtica dioica*, *Oxalis acetosella*, *Bellis perennis*). Finally, with Idea Verde I am developing and implementing biofertilizer formulates.

Within the collaborations supported by the Italian Society of Medical Fungi, I am now tightening collaboration with the Valpharma International Spa (Rimini, Italy) for the development of cultivation of fungi beneficial to human health. To this aim I have participated by skype and made presentations in two meetings one in Novafeltria, Emilia Romagna (Italy) (10 March 2019) and one in Rimini, Italy (22 March 2019). Finally, I am collaborating with Eurofins Italia (Dr. Luca Anfosso and Dr Mario Coni) for the development of illumina tools for the characterization of microbial diversity.

#### 14. Institutional activities and services

I am **elected member** of the **BOARD OF ETHICS** at the Scuola Superiore Sant'Anna (SSSA) (<https://www.santannapisa.it/en/university/board-ethics>).

I am **Responsible for the SSSA of the Operational Agreement (“Convenzione”)** of the SSAA-CNR 2020-2025 framework convention between the Institute of Chemistry of Organometallic Compounds of the CNR and the Institute of Life Sciences (SSSA).

I was engaged in activities and services of the Institution as detailed below:  
July 2021: **Orientation day** at the Scuola Superiore Sant'Anna.

April 2021: **Member of a selection boards for a** post-graduate at the Institute of Life Sciences of SSSA in Pisa for research needs in the field of Agricultural Sciences - Scientific disciplinary sector AGR/02 post-graduate “Hydrological modelling”.

March 2021: **Member of a selection boards** for a post-graduate at the Institute of Life Sciences of SSSA in Pisa for research needs in the field of Agricultural Sciences - Scientific disciplinary sector AGR/02 post-graduate “Hydrological modeling and monitoring of pesticides for the management of surface and underground water resources in agro-ecosystems”.

2020 **Member of five selection boards** for a post-graduate/postdoc scholarships at the Institute of Life Sciences of SSSA in Pisa for research needs in the field of Agricultural Sciences - Scientific disciplinary sector AGR/02 post-graduate “Analysis of microbial diversity of soil under different agronomic management”, post-graduate, “Hydrological modelling and innovation in the management of the water resource”, post-graduate “Study of the physiology of olive production in relation to agronomic management practices”, post-doc “Evaluation of the efficacy of biopesticides, biostimulants and biofertilizers in agriculture; COCOCO for the “Evaluation of reports in biopesticides, biostimulants and biofertilizers in agriculture”.

2020:

**Orientation day** at the Agricultural Technical Institute of Grosseto (23 January 2020).

2019:

**Partecipazione at the Meeting on the research lines of the SSSA.** I gave a presentation to undergraduated and master students of the SSSA within a day organized at the BioLabs (15 November 2019).



2019:

**Member of the selection board** for a post-graduate scholarship at the Institute of Life Sciences of SSSA in Pisa for research needs in the field of Agricultural Sciences - Scientific disciplinary sector AGR/02 "Evaluation of the efficacy of biopesticides, biostimulants and biofertilizers in agriculture".

2011-2012-2014-2015-2016-2017-2018-2019-2020:

**Partecipation in the Orientation days** organized at the SSSA in Pisa as well as in Volterra.

2017-today:

**Security officer** ("preposto sicurezza") at the Land Lab, Istitute of Life Sciences, SSSA, Italy.

2018-today:

**First aid officer** ("addetto primo soccorso") at the Istitute of Life Sciences, SSSA, Italy.

2015:

**Member of the selection board** for a position of Assistant researcher on Agronomical biofortification of old genotypes of bread wheat and definition of the nutraceutical profile at the Institute of Life Sciences, SSSA, Italy.

2015:

**Partecipation with an oral presentation to the open-day** of the Istitute of Life Sciences, SSSA, Italy. Title of the presentation: Plant-soil interactions in sustainbale agricultural systems. The root of the problem in a changing world.

2013:

**Member of the selection board** for a position of Assistant researcher on Anaerobic Digestion of biomasses at the Institute of Life Sciences, SSSA, Italy.

2013:

**Member of the selection board** for a position of Assistant researcher on Durum wheat: recovery of old genotypes from the Fontarronco collection at the Institute of Life Sciences, SSSA, Italy.

2013:

**Member of the selection board** for a position of Assistant researcher on Dynamics of forage systems and climatic changes in the Maremma (Tuscany) at the Institute of Life Sciences, SSSA, Italy.

2013:

**Member of the selection board** for a position of Assistant researcher on Multicriteria Analysis on the evolution of soil fertility, at the Institute of Life Sciences, SSSA, Italy.

2013:

**Member of the selection board** for a position of Assistant researcher on Sustainability of Periurban agriculture at the Institute of Life Sciences, SSSA, Italy.

## 15. Other activities

2021 June: Scuola Superiore Sant'Anna Orientation, a talk of one hours on "Plant-soil interactions supporting agri-environmental challenges" online talk-webinar

2020 December: Webinar on the results and prospectives of the **Project FERTIBIO** (4 hours)

27<sup>th</sup> November Bright Night **TV talk** (50 Canale and media partnership of RAI cultura and RAI radio 3) on the Nutraceutical Wheat

2019: **Partecipation at the Bright night** with an exhibition of the Institute of Life Sciences. Atrio del pozzo 27<sup>th</sup> September 2019.



2018: **Partecipazione at the Bright night** with a presentation on the bread and pasta made by old genotypes of bread wheat and by buckwheat. Event held at the SSSA, Italy (29<sup>th</sup> September 2018 at the SSSA, Italy).

Granducato: <https://www.telegranducato.it/2018/09/29/la-cena-ristoceutica-della-scuola-santanna-buona-e-fa-bene-alla-salute/?fbclid=IwAR05eH1IzbojKBJtnQRU2TpiSuHEV0vH1ppWk4ovSYIOvDaRRGtlxS-eU>

2018: **Organization of the workshop** for the dissemination of the results of the project “Tuscan Pasta and bakery products for celiacs and gluten intolerants - PRINCE” (31<sup>th</sup> July 2018, Castelfiorentino, Florence Italy).

2018: **Organization of the workshop** for the dissemination of the results of the project “Removal of PHARMaceuticals from treated wastewaters in the Soil-WATER-Plant continuum in the MEDiterranean basin – APHARM” (13<sup>th</sup> June 2018, SSSA, Italy).

2018: **Organization of the workshop** for the dissemination of the results of the project “TuSCANA-Bred wheat in Tuscany: nutritional and nutraceutical properties of varieties registered in the Regional Germoplasm Collection – TuSCANA” (24<sup>th</sup> January 2018 at the SSSA, Italy).

2017: **Organization of the whorshop** for the dissemination of the results of the project “TuSCANA-Bred wheat in Tuscany: nutritional and nutraceutical properties of varieties registered in the Regional Germoplasm Collection – TuSCANA” (22<sup>nd</sup> December 2017 at the CIA, Pisa, Italy).

2017: **Organization of the workshop** for the dissemination of the results of the project “Tuscan Pasta and bakery products for celiacs and gluten intolerants - PRINCE” (6<sup>th</sup> December 2017, Santa Luce Pisa, Italy).

2017: **Organization of the workshop** of Accademia dei Georgofili “Carbon sinks in the geosphere: impact on modern agriculture” (26<sup>th</sup> September 2017 at the SSSA, Italy).

2017: **Member of the Organization Secretary** of the course on **Crop physiology** organized by the Italian Society of Agronomy and the SSSA (23-27<sup>th</sup> January 2017 at SSSA, Italy).

## 16. Project evaluator activity

Peer-review activities for research projects at international level. Evaluator for:

In 2021:

**A PRIMA project** for the Swiss National Science Foundation.

In 2020:

**A PRIMA project** for the Swiss National Science Foundation.

From 2020:

**Evaluator of H2020 Energy Calls 2020 (Id: H2020-LC-SC3-2020-RES-RIA) proposals.** One-year contract.

From 2019:

**Evaluator of H2020 FETOPEN-01-2018-2019-2020 proposals.** One-year contract. I have already evaluated three projects.

From 2019:

**Evaluator of H2020 EIC-FTI 2019 proposals** as part of the EIC-Fast Track to Innovation (FTI) program. One-year contract. I have already evaluated eleven projects.

From 2011 – present:

**Member of the BES Review College** for which I have evaluated **47** projects within the calls Research Grant, Outreach Grants and Ecologists in Africa.

2012:

**Project Evaluator** for the Romanian National Scientific Research Council and its Executive Agency for Higher Education, Research, Development and Innovation. I have evaluated two research projects.

## 17. Roles in scientific societies

April 2020-today:

**Member of the SIMTREA Italian Society of Agriculture Microbiology.** Member for developing the interactions among Scientific Societies.

January-2019-today:

**Member of the Italian Society of Agronomy.**

December 2018-today:

**Building Member, Scientific Advisor and Secretary of the Italian Society of Medical Fungi** (<http://www.sifm.info>).

I am a member of the organizer committee of the first conference, Medical fungi and integrated medicine, that is going to be held in Palermo next year (the 19<sup>th</sup> and 20<sup>th</sup> of June 2020).

August 2018-today:

**Member of the European Society for Agronomy.** In September 2018 I participated at the congress of the European Society of Agronomy in Geneva as a member of the Scientific Committee and moderator of the session on abiotic stress in agronomy.

July 2017-today:

**Member of the International Mycorrhiza Society.** In 2017, I was invited for an oral presentation at the ICOM9 in Prague with a research titled Multi-year AMF field application on cereals and pseudocereals: a focus on micronutrients and secondary metabolites. In 2015, I was invited for an oral presentation on The key role of the inoculation by arbuscular mycorrhizal fungi on field crops in the Mediterranean basin at the ICOM8 at Northern Arizona University (Flagstaff, USA) in the session Strategies to manage mycorrhizas for sustainable agriculture .

From 2011:

**Member of the British Ecological Society** for which I act also as project reviewer (see section 15).

## 18. Editorial activity

I am Associate Editor for Plant Pathogen Interactions in Frontiers in Plant Science and Review Editor for Plant Symbiotic Interactions in Frontiers in Plant Science. I am invited guest editor of two special issues MDPI IF= 2.259, Journal rank Q1 under the category Plant Sciences and Plants.

## 19. Supervision/tutoring of students

**Assigned tutor of internal SSSA, Italy of the undergraduate student**

**Internal correlator of the annual theses of Paolo Maggi** (undergraduate student of the Scuola Superiore sant'Anna) for the years 2020-2021 and 2019-2020

**Assigned tutor of master training at the Institute of Life Sciences, SSSA, Italy**

**Francesco Morelli** Year 2017-2018. Master degree in Environmental Sciences at the Department of Earth Sciences, Unipi, Italy.

**Valentina Federici** Year 2016-2017. Master Degree in Environmental Sciences at the Department of Earth Sciences, Unipi, Italy.

**Alice Cheli** Year 2015-2016. Master Degree in Environmental Sciences at the Department of Earth Sciences, Unipi, Italy.

**Alessio Cardini** Year 2015-2016. Master Degree in Environmental Sciences at the Department of Earth Sciences, Unipi, Italy.

#### **Supervisor of Master Theses (Correlatore)**

**Valentina Marrassini Academic** Year 2018-2019. Ongoing. Thesis title: Inter- and intraspecific variability in infectivity and effectiveness of isolates of arbuscular mycorrhizal fungi propagated from chronosequences of secondary succession of chalk grasslands. Master in Agriculture Biotechnology, Faculty of Agriculture, University of Bologna.

**Francesco Morelli** Academic Year 2016-2017. Thesis title: Removal and degradation of pharmaceuticals and personal care products (PPCPs) by *Arundo donax*. Master degree in Environmental Sciences, Department of Earth Sciences, Unipi, Italy. Grade: 110.

**Valentina Federici** Academic Year 2016-2017. Thesis title: Variability in the response of genotypes of bread wheat to field inoculation by arbuscular mycorrhizal fungi. Master degree in Environmental Sciences, Department of Earth Sciences, Unipi, Italy. Grade: 110 *magna cum laude* = with honours.

**Alice Cheli** Academic Year 2015-2016. Thesis title: Removal and degradation of diclofenac by *Arundo donax* L. and *Streptomyces rochei*. Master degree in Environmental Sciences, Department of Earth Sciences, Unipi, Italy. Grade: 110 *magna cum laude* = with honours.

#### **Assigned tutor of PhD students**

**Valentina Marrassini Academic, 2020-ongoing**, PhD in Agrobiosciences, SSSA, Italy. PhD thesis: Studying Plant Microbiome for Improving Productivity and Resilience of Crops.

**Myriam Arcidiacono, 2019-ongoing**, PhD in Agrobiosciences, SSSA, Italy. PhD thesis: Application of arbuscular mycorrhizal fungi in sustainable agriculture.

**Blessing Mhlanga 2018-ongoing**, Phd in Agrobiosciences, SSSA, Italy. PhD thesis: Soil physical structure, diversity and functionality of microorganisms in conservation agriculture systems under contrasting climatic conditions.

**Alessio Cardini** 2016-2020, Phd in Agrobiosciences, SSSA, Italy. PhD thesis: Interplant communication mediated by arbuscular mycorrhizal networks. He just successfully pre-discussed the thesis.

**Gaia Piazza** 2015-2019, Phd in Agrobiosciences, SSSA, Italy. PhD thesis: Soil carbon and microbial diversity under conservation management practices

**Antonio Coccina** 2014-2018, PhD in Agrobiosciences, SSSA, Italy. PhD thesis: Agronomic biofortification with iron and zinc and inoculation by arbuscular mycorrhizal fungi for the improvement of nutritional and nutraceutical properties of wheat and barley.

#### **Post-doctoral fellowship supervisor**

**Dr Valentina Ciccolini**, 3 months, SSSA, Italy. Post-doctoral fellowship title: Agronomic biofortification and nutraceutical value of old genotypes of wheat inoculated by beneficial microorganisms (on my funds).

**Dr Maria Cristina Echeverria** 2 months, SSSA, Italy: Post-doctoral fellowship title: Biological tools for increasing the quality of coffea: morphological characterization of arbuscular mycorrhizal fungi in soil grown with coffea trees and setting-up of an *ex situ* collection. Inter-exchange supported by Ecuador.

#### **Post-graduate fellowship supervisor**

**Dr Gaia Piazza**, 6 months, SSSA, Italy, Analysis of the microbial diversity of soils under different agronomical managements (on my funds).

**Sanja Miroslava Ortega Andrade**, 2 months, SSSA, Italy: cooperation project between the Universidad Técnica del Norte (UTN), Ibarra, Ecuador and SSSA, Italy. Project supported by Ecuador on Characterization of arbuscular mycorrhizal fungi in the roots and soil of coffea along a gradient of altitude in Ecuador. Inter-exchange supported by Ecuador.

#### **Other students that I have tutored without formal assignment**

**Valentina Ciccolini**, 2011, Master student, SSSA, Pisa, Italy. Master thesis: "Preliminary study: a phytodepuration area for the treatment of surface water in the Massaciuccoli basin"; 2012, Phd in Agrobiosciences, SSSA, Pisa, Italy. PhD thesis: "Soil quality in reclaimed Mediterranean peatlands: Impact of land use on soil biodiversity, functionality and greenhouse gas emissions".

**Elisa Corneli**, 2012, Master Student, Department of Agriculture, Food and Environment, University of Pisa, Italy. Master thesis: *Arundo donax* L. for biogas production.

**Chiara Vallebona** 2010, PhD in Agrobiosciences, SSSA, Pisa, Italy. PhD thesis: "Climate change and soil erosion".

**Chandra Kamatchi Ramasamy**, 2008-2011, PhD in Agrobiodiversity, SSSA, Pisa, Italy. PhD thesis: "Arbuscular mycorrhizal fungi in low external input agroecosystems".

**Giovanni Cafà**, 2008, Master Student, Faculty of Agriculture, University of Pisa. Master thesis: Molecular monitoring of arbuscular mycorrhizal fungi in roots of *Medicago sativa*".

## 20. Role within funded Research Projects

I have participated to many research projects, playing an active role as participant, scientific leader and co-leader as well as principal investigator. The total number of funded projects is 30. From 2006 until now, I was funded by many agencies funded my researches: Health Italian Ministry, EU (Interreg Marittimo, EAFRD 2014-2020, LIFE, Horizon H2020, FP7, EUMIUR), Integrative fund for research (FISR), Natural Environmental Research Council (NERC), Italian Ministry of Foreign Affairs, Tuscany Region, Consorzio Bonifica Versilia-Massaciuccoli, Migliarino San Rossore Massaciuccoli Regional Park Authority.

In addition, I have recently won a project EU-EAFRD 2014-2020 (Liguria Region) titled Development and application of innovative microbial consortia for cereals to increase nutrient use efficiency and cope with biotic and abiotic stresses and as principal investigator (99 999 € whole project and 52 147 € SSSA). I wrote a project for the Biotechnology and Biological Sciences Research Council (BBSRC Grant proposal) for studying the link between climatic changes (i.e., temperatures) and plant/rhizosphere microorganism performances. The BBSRC grant proposal pass the first step and we are going to be evaluated by an oral interview. I also submitted as principal investigator two Projects within the Rural Development Program 2014-2020 Regione Sardegna (Project title Improvement of soil fertility and biofortification of cereals through the use of biostimulants and selenium to support products useful for the treatment of steatosis MASTER 619 291 € whole project and 179 893 € SSSA; Project title Agriculture and Food under the Sun of Sardinia AC2S 500 000 € whole project and € 29 964 SSSA) I have submitted in January 2021 a PRIN Project titled Nano-HydroxyApatite from waste material as carrier/source of N and P in Sustainable Agriculture as PI of the Cluster (WP) 2 (€ 1,2 mil whole project and € 210,532.27 for the SSSA) (University of Udine, University of Padova, University of Parma, and CNR Nanotec). I have also submitted as participant together with the group of Prof Luca Sebastiani in February 2021 a project (MIPAAF Organic Agriculture) titled "Resilient and sustainable management of high-density organic olive groves - Acronym: OLI-BIO-ROAD" (€ 250,000 whole project; € 99,812 for SSSA). I submitted as PI in April 2021 a project in collaboration with India named NANOFERT (MAECI bilateral projects) and submitted as responsible a project named MICROBIOS "Development of microbial consortia with biostimulating action for increasing the resistance to water stress of agricultural crops and improving the quality of production" with funding supports of the DND Biotech and Eurofins Genomics through a call of the Tuscany Region which is going to support half of a two-year postdoc fellowship. I am now preparing the pre-call for the EJP soil call (17 June 2021).

For details, see tables below.

In addition, from 2011 and 2021, I submitted 18 projects that were not funded.

### List of active projects (in bold the project where I am principal investigator)

Project	Funding agency	Year	Duration (months)	Role	Funds	
					Whole project	SSSA
<b>CORNELIA - Development and application of microbial consortia to increase the efficiency of nutrient utilization and the defense capacity of wheat against biotic and abiotic stress</b>	<b>EAFRD 2014-2020</b>	<b>2020-2022</b>	<b>21 (18+3) active</b>	<b>Principala Investigator</b>	<b>99 999</b>	<b>52 147</b>
Assignment for scientific evaluation for dossiers realting to the registration, re-registration and reveal of autorizathions for biopesticides following the EU Legislation	Health Italian Ministry	2021-2023	24 active	Member of the agronomic group at SSSA	280 000	280 000
<b>T.R.I.G.-Eau</b> Transfrontalierity, resilience, innovation and governance for the prevention of hydrological risk	Interreg Marittimo-IT FR-Maritime EU Italy France	2018-2020	36 active	Member of the agronomic group at SSSA	2 091 370	98 300
Assignment for scientific evaluation for dossiers realting to the registration, re-registration and reveal of autorizathions for biopesticides following the EU Legislation	Health Italian Ministry	2018 and 2019	12 + 12 active	Member of the agronomic group at SSSA	260 000	260 000
Study and analysis in the Biocidal Products Committee ad hoc working group Microorganisms	Health Italian Ministry	2018	12 active	Member of the agronomic group at SSSA	15 000	15 000
<b>REWAT</b> -Sustainable WATer management in the lower Cornia valley through demand REduction, aquifer REcharge and river Restoration	EU-LIFE14	2015-2019	48 active	Member of the agronomic group at SSSA	2 278 609	498 349
<b>piNFOID</b> -Valorization of nutraceutical properties of pasta, bread and bakery products for the diet of patients affected by Crohn disease	EAFRD 2014-2020	2018	24 active	Member of the agronomic group at SSSA	169 030	72 000
<b>AGROIRCOLIVE</b> -Enhacement of the olive chain of Tuscany by the production of high quality olive oil land the valorization of the byproducts	EAFRD 2014-2020	2018	24 active	Member of the agronomic group at SSSA	168 912	89 567
<b>FERTIBIO</b> -Development of the production process of biological fertilizers and theirapplication for food and feed crops in Tuscany agriculture	EAFRD 2014-2020	2018	36 active	Member of the agronomic group at SSSA	368 971	123 780
<b>Characterization of AMF by morphological and molecular tools in roots/soil of <i>Coffea arabica</i> grown along a gradient of altitude</b>	<b>Universidad Técnica del Nort (UTN), Ecuador</b>	<b>2018</b>	<b>12</b>	<b>Principal Investigator</b>	<b>2 196</b>	<b>2 196</b>
<b>SMAQua</b> -Smart ICT tools for efficient use of water	EU-MIUR	2018	12	Member of the agronomic group at SSSA	54 000	54 000

**List of completed projects in the period 2006-2018 (in bold the project where I was principal investigator)**

Project	Funding agency	Year	Duration (months)	Role	Funds	
					Whole project	SSSA
<b>PHARM-SWAP MED</b> - Removal of PHARMaceuticals from treated wastewaters in the Soil-Water-Plant continuum in the MEDiterranean basin	Italian Ministry of Foreign Affairs - Bilateral Project Italy-Israel	2015-2018	30	Member of the agronomic group at SSSA	199 597	97 956
<b>GRAnt</b> -New techniques of cultivation for Old wheat genotypes - GRAnt	EU-European Agricultural Fund for Rural Development (EAFRD) 2014-2020	2016-2018	24	Member of the agronomic group at SSSA	499 787	44 955
<b>PRINCE</b> -Tuscan Pasta and bakery products for celiacs and gluten intolerants	EU-EAFRD 2014-2020	2016-2018	24	Member of the agronomic group at SSSA	449 896	125 341
<b>FERTIBIO</b> -Biological fertilizers for Tuscany agriculture: development of the production process of innovative formulates based on microorganisms and biomaterials	<b>EU-EAFRD 2014-2020</b>	<b>2017-2018</b>	<b>8</b>	<b>Principal Investigator</b>	<b>48 791</b>	<b>29 208</b>
<b>TuSCANA</b> -Bred wheat in Tuscany: nutritional and nutraceutical properties of varieties registered in the Regional Germoplasm Collection - TuSCANA, Tuscany Region	EU-EAFRD 2014-2020	2017-2018	6	Member of the agronomic group at SSSA	20 000	20 000
<b>FATEPRESCO</b> -Valorization of the epigenetic properties of ancient genotypes of Tuscan wheat bio-fortified with iron and zinc in the prevention of chronic heart failure	Tuscany Region	2015-2017	36	Member of the agronomic group at SSSA	200 000	91 000
<b>FREEWAT</b> -Free and open source software tools for WATer resource management	EU-H2020 2014-2020	2015-2017	24	Member of the agronomic group at SSSA	1 411 163	242 875
<b>SID-GRID</b> -Evolution of open source Sid & Grid system for processing vector and raster geographic data for the porting in the Qgis and Spatialite environments used by the Tuscany Region	Tuscany Region	2014-2016	24	Member of the agronomic group at SSSA	39 900	39 900
<b>MARSOL</b> -Demonstrating Managed Aquifer Recharge as a Solution to Water Scarcity and Drought	EU-7th Framework Programme for Research (FP7)	2013-2016	36	Member of the agronomic group at SSSA	5 200 000	46 404
<b>IPNOA</b> -Improved flux prototypes for N <sub>2</sub> O emission from agriculture	EU-LIFE11	2012-2017	48	Member of the agronomic group at SSSA	2 048 612	334 800

Project	Funding agency	Year	Duration (months)	Role	Funds	
					Whole project	SSSA
<b>FORCASEOMAREMMA</b> Updated fodder crops systems for typical milk-cheese productions of the "Maremma, Tuscany	EU-EAFRD 2007-2013	2013-2014	24	Member of the agronomic group at SSSA	279 860	84 860
<b>QUANTICA</b> -Bread chain development and health improvement: ancient wheat varieties for new breads	EU-EAFRD 2007-2013	2012-2014	24	Member of the soil group at SSSA	332 598	93 160
<b>FORMANOVA</b> - Fodder crops and innovative animal feed for production of pecorino cheese with nutraceutical properties	EU-EAFRD 2007-2013	2011-2012	24	Member of the soil group at SSSA	524 277	75 277
<b>ARETO</b> -Agronomical use monitoring of olive mill waste water and pomace	Tuscany Region	2012-2013	12	Member of the agronomic group at SSSA	15 000	15 000
<b>ALBERESE</b> -Nutraceutical value of old varieties of Triticum aestivum	Tuscany Region	2013	12	Member of the soil group at SSSA	16 000	16 000
<b>Restomedpeatland</b> -Restoration of a Mediterranean Drained Peatland	Consorzio Bonifica Versilia - Massaciuccoli	2011-2014	36	Member of the soil group at SSSA	100 000	100 000
<b>SOILSINK</b> -Climatic change and agricultural and forest Systems -	FISR	2006-2019	36	Member of the Pisa University group	2 649 500	n.d.
<b>UKPopNet</b> -UK Population Biology Network project	NERC, UK	2003-2006	36	Member of the York University group	n.d.	n.d.

**List of submitted projects in the period 2011-2018 not admitted to funding (in bold the project where I was principal investigator)**

Project	Funding agency	Year	Duration (months)	Role	No. Partners	Coordinator	Budget whole project	Budget for SSSA
<b>Digital Platform for 3D Radio-Genomics Modelling of Disease and Cancer Dynamics and Gut Endoluminal 4D Study of Physio-Pathological Connections between Microbiota and the GUT-LIVER-Brain</b>	<b>SC1-BHC-06-2020</b>	<b>2020</b>	<b>48</b>	<b>Working Package leader</b>	<b>14</b>	<b>Scuola Superiore sant'Anna, Italy</b>	<b>15 million of €</b>	<b>4 million of which 814 206 € for my WG</b>
<b>WASEL-Fertilizers based on sewage derived char</b>	<b>RUR-08-2020</b>	<b>2020</b>	<b>36</b>	<b>Principal Investigator</b>	<b>18</b>	<b>WirelessInfo, Czech Republic</b>	<b>3 000 000</b>	<b>400 000</b>
<b>DIGIMED-Creating capacity building in digitalizing water management</b>	EU-ENI CBC 2014-2020	2018	36	Member of the agronomic group SSSA	8	Rudy Rossetto, SSSA, Italy	2 686 524	355 300
<b>ASCETIC-Symbiotic and Conservative Agriculture for the valorization of the organic cereal food and feed</b>	<b>EAFRD 2014-2020</b>	<b>2018</b>	<b>24</b>	<b>Principal Investigator</b>	<b>5</b>	<b>FOR.AGRI.SI</b>	<b>173 000</b>	<b>62 000</b>
<b>ANCESTRAL-Outstanding Local Products as a way to preserve Agri-food Business and Jobs in Rural Areas</b>	<b>EU-H2020</b>	<b>2018</b>	<b>48</b>	<b>Principal Investigator</b>	<b>13</b>	<b>Polytechnic Viana do Castelo</b>	<b>14 million</b>	<b>650 000</b>
<b>GOLDSOIL-Consortium of beneficial microorganisms for crop production</b>	EU-H2020 SME Instrument	2017	24	Member of the soil group SSSA	3	BIOZETA SRL	807 000	100 000
<b>ICARO-ICT and Agro-Ecosystem Services for Mediterranean Farmers and water users</b>	EU-ERA-MED 2017	2017	30	Member of the soil group SSSA	9	Rudy Rossetto	902 000	169 000
<b>PeNN- Tuscany pasta with high nutritional and nutraceutical value</b>	EU-EAFRD 2014-2020	2016	6	Member of the soil group SSSA	7	O.P. Granai Di Toscana	48 134	30 217
<b>BIORICE-Water-saving irrigation systems for sustainable rice-based systems</b>	EU-ARIMNet2 Call 2015-16	2016	36	Member of the soil group SSSA	11	Laura Ercoli	570 707	84 219
<b>PASTEf-Development of a Tuscany pasta enriched with tef</b>	Heath Agency-Tuscany Region	2016	24	Member of the agronomic group SSSA	5	Enrico Bonari	160 240	160 240
<b>WIN2WIN-Reduction of eutrophic processes by ecosystem services</b>	EU-H2020	2016	48	Member of the agronomic group SSSA	11	ITG, Spain	3 300 000	370 000
<b>TEMPWET-TOOLKIT-Monitoring and restoring tools to manage sustainably agriculture in wetlands</b>	EU-ERA-NET Water Works	2015	36	Member of the agronomic group SSSA	4	University of Jean, Spain	n.d.	252 500
<b>DECimAL-Diversifying crops and fertilization for European agriculture</b>	EU-H2020	2015	48	Member of the Soil Unit at SSSA	26	Laura Ercoli	6 840 000	822 591
<b>GreenMed-Decision-Making Tools for GHGs emissions monitoring</b>	EU-LIFE15	2015	48	Member of the agronomic group SSSA	-	Maria Doula	n.d.	560 276
<b>SERENE-Sustainable rice-based cropping systems in the Mediterranean area</b>	EU-ARIMNet2 Call 2014-15	2015	36	Member of the agronomic group at SSSA	8	Laura Ercoli	1 234 781	281 692
<b>Evaluation of the effectiveness of AMF in promoting production and quality of wheat</b>	<b>Bilateral Project USA-</b>	<b>2015</b>	<b>24</b>	<b>Principal Investigator</b>	<b>22</b>	<b>Elisa Pellegrino</b>	<b>156 000</b>	<b>156 000</b>



Project	Funding agency	Year	Duration (months)	Role	No. Partners	Coordinator	Budget whole project	Budget for SSSA
<b>hAPPyfarm</b> as a decision support in the planning of interventions in agriculture	MIPAF	2015	12	Member of the agronomic group at SSSA	SSSA	Laura Ercoli	92 482	92 482
<b>TOSCODUR</b> -Valorization of the nutraceutical properties of local genotypes of durum wheat.	PRAF 2012-2015) Tuscany Region	2013	24	Member of the agronomic group at SSSA	5	Enrico Bonari	194 020	194 020
<b>AMF in roots of Restionaceae in Africa</b>	<b>BES</b>	<b>2011</b>	<b>12</b>	<b>Principal Investigator</b>	<b>12</b>	<b>Elisa Pellegrino</b>	<b>2 500</b>	<b>2 500</b>

## 21. Track record and details

I have authored **100** national and international scientific papers, book chapters and editorships. The list is reported below. In the Scopus database the total number of my publications from 2006 is **33** (May, 5<sup>th</sup> 2021) and one reprint, the citation number is **1064**, the *h*-index is **17**, and the number of co-authors is **58**. I report, as example, the Article metrics for the recent meta-analysis on GMO published in Scientific Reports (Elisa Pellegrino et al., 2018) (Fig. 1). This paper received 55k Accesses, 33 Web Citations, and 1658 Altmetric.

### Impact of genetically engineered maize on agronomic, environmental and toxicological traits: a meta-analysis of 21 years of field data

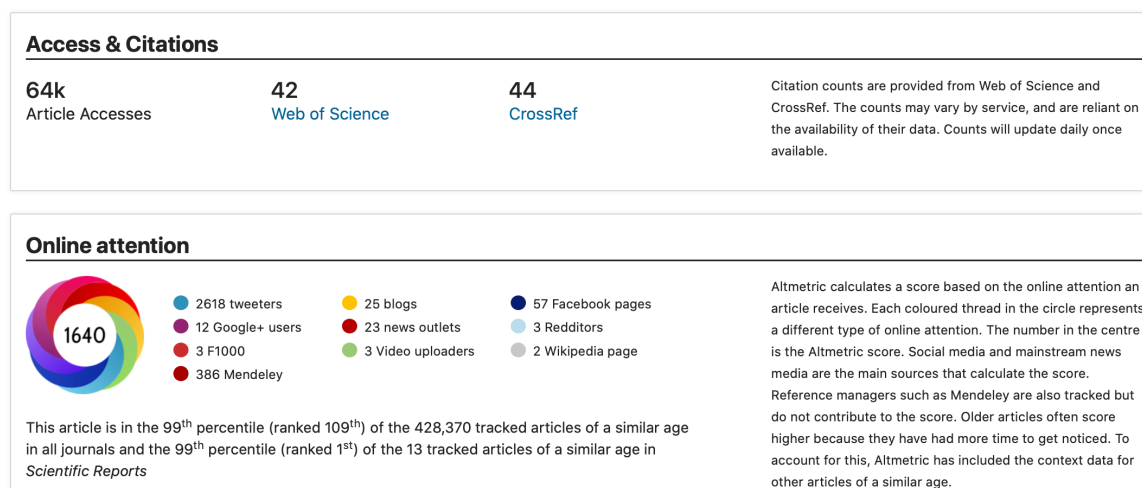


Fig. 1. Article metrics for the recent meta-analysis on GMO published

## 22. Invited workshop and conference presentations and organization of conferences

### Main invited lectures

I was invited as a speaker to many international and Italian conferences and workshops and I have also participated to many international and Italian conferences as speaker and with posters. I was also in the Scientific Committee of some conferences and workshops. For details see the **List below**.

### International conferences as invited speaker (n=12)

In 2020, invited speaker for giving an oral presentation at the **45<sup>th</sup> New Phytologist Symposium** titled Ecological and evolutionary consequences of plant-fungal invasions University of Campinas, Brazil, 20.23 June 2020 (postponed).

In 2019, I was invited for giving an oral presentation at the **1949-2019: Celebrating 70 years of Diplomatic Relationships Italy and Israel "Side-By-Side" for Innovation**, Italian and Israeli Foreign Ministries, Rome, November 5, 2019, with a presentation titled PHARMaceuticals from treated wastewaters in the Soil-Water-Plant continuum in the MEDiterranean basin.

In 2019, I was invited for giving an oral presentation at the **International Conference of Mycorrhiza ICOM10 July 2019**, Merida, Mexico with a presentation titled Plants linked by a common arbuscular mycorrhizal fungal hyphal network: zinc transfer and plant and fungal gene expression.

In 2019, I was invited for giving an oral presentation at the **2<sup>nd</sup> International Conference on Food Science & Nutrition 2019**, Valencia, Spain (oral presentation) with a presentation titled Agronomic Biofortification with Iron and Zinc and inoculation by arbuscular mycorrhizal fungi for the improvement of nutritional and nutraceutical properties of wheat.

In 2019, I was invited for giving an oral presentation at the **First International conference on the revitalization of the rural world** 10-12 October 2019 (Casa De Artes, Arco de Valdevez, Portugal) with a presentation titled Celiac disease and non-celiac gluten sensitivity: the success of a Tuscan pasta. [https://skyros-congressos.pt/revitagri2019/?fbclid=IwAR08WzpzHzFJ\\_f4BFoxhWaT7HKOJgjVO9rRQBvVREUI\\_LR-xyacjtvNsl\\_g](https://skyros-congressos.pt/revitagri2019/?fbclid=IwAR08WzpzHzFJ_f4BFoxhWaT7HKOJgjVO9rRQBvVREUI_LR-xyacjtvNsl_g)

In 2019, I was invited for giving an oral presentation at the **Conference on Food Science and Nutrition in Rome** (Italy) with a presentation titled a Pasta made using buckwheat and millet for subjects sensitive to gluten and celiacs: crop productivity, nutraceutical properties and clinical tests.

In 2018, I was invited for giving an oral presentation at the **Workshop on Carbon Sequestration in Horticultural Crops**, 30th October 2018, Scuola Superiore Sant'Anna, Pisa, with a presentation titled Conservation tillage and N fertilization affect soil aggregate distribution, carbon storage and enzymatic activities.

In 2017, I was invited for giving an oral presentation at the **ICOM9 in Prague** with a presentation titled Multi-year AMF field application on cereals and pseudocereals: a focus on micronutrients and secondary metabolites.

In 2015, I was invited for giving two oral presentation at the **ICOM8 at Northern Arizona University** (Flagstaff, USA) in the session Strategies to manage mycorrhizas for sustainable agriculture with a presentation titled The key role of the inoculation by arbuscular mycorrhizal fungi on field crops in the Mediterranean basin and with another one titled Arbuscular mycorrhizal fungal diversity in Mediterranean drained peaty soils is affected by host plant and intensification of agricultural land-use.

In 2012, I was invited at the **Prosodol Life Project "Olive mill Wastes and Environmental Protection"** in **Chania** (Greece) with a presentation titled Impact of olive mill wastewater land spreading on soil chemical and biological properties.

In 2012, I was invited at the **COST ACTION 0905 "Mineral-improved crop production for healthy food and feed"** in **Zurich Switzerland** with a presentation titled The role of microorganisms in iodine biofortification of plants.

#### **Italian conferences and workshops as invited speaker (n=7)**

**Pellegrino E.** 2020. Biodiversità dei funghi medicinali. Società Italiana Funghi Medicinali, I Congresso Nazionale della Società Italiana Funghi Medicinali (SIFM), Giugno 2020, Palermo.

**Pellegrino E.** 2020. Tecniche molecolari di identificazione dei funghi. Convegno: I funghi medicinali: dalla coltivazione all'utilizzo terapeutico. Aula Magna Ex Facoltà di Agraria - Campus Universitario "E. Quagliariello" Università degli Studi "Aldo Moro", 4 Febbraio 2020.

Ercoli, L., **Pellegrino E.** 2019. La biofortificazione in Toscana: aspetti nutrizionali e nutraceutici su vecchi genotipi di frumento e trasferibilità al pane - Biofortification in Tuscany: nutritional and nutraceutical aspects of old wheat genotypes and transferability to bread. Cereali e Salute. Cereali per la dieta mediterranea: innovazioni e prospettive dal campo alla tavola - Cereals and Health. Cereals for the Mediterranean diet: innovations and perspectives from the field to the table, 2 dicembre 2019, Accademia dei Georgofili, Firenze.

**Pellegrino E.** 2019. Tecniche molecolari di identificazione dei funghi finalizzate all'attività industriale. Società Italiana Funghi Medicinali, Micoterapia Made in Italy ed Erbe officinali in Valmarecchia, July 6, 2019, Pennabilli.

**Pellegrino E.,** Ercoli L., Cerretani D., Sofi F. 2018. Pasta toscana senza glutine. Food & Wine 2018. Florence, Italy.

**Pellegrino E.,** Ercoli L., Cerretani D., Sofi F. 2018. Caratteristiche nutraceutiche di prodotti a base di miglio e grano saraceno e potenziali benefici sulla salute di pazienti sensibili al glutine. Workshop on EU Projects at the Tuscany Region. Florence, Italy.

**Pellegrino E.,** Nuti M. 2018. Mais OGM: Facciamo il punto. Mantova Food&Science Festival, 19 Maggio 2018.

In addition: International conferences with an oral presentation (n=9); National conferences with an oral presentation (n=8); International conference with a poster (n=21); National conference with a poster (n=8).

#### **National and International conference organization**

- Member of the Scientific Committee and organizer of the conference on Cereals and Health. Cereals for the Mediterranean diet: innovations and perspectives from the field to the table, 2 dicembre 2019, Accademia dei Georgofili, Florence, December 2, 2019;
- Member of the Scientific Committee organizing the workshop on Conservation of plant germoplasm and valorization of nutritional and nutraceutical properties, Pisa, January 24, 2018;

- Member of the Scientific Committee organizing the workshop of Accademica dei Geografili Carbon sinks in the geosphere: impact on modern agriculture, Pisa, September 2017;
- Member of the Scientific Committee organizing the National Congress of the Italian Society of Agronomy, Pisa, September 2014.

## 23. Referee appointments

### Peer-review activities for scientific journals:

I have carried out revision activities for several international journals, as follows:

African Journal of Agricultural Research; African Journal of Biotechnology; Agriculture, Ecosystems and Environment; Agronomy for Sustainable Development; Applied Microbiology; Applied Soil Ecology; Archives of Agronomy and Soil Science; Canadian Journal of Microbiology; Canadian Journal of Plant Science; Ecological Engineering; Ecological Research; Environmental Engineering and Management Journal; European Journal of Agronomy; Frontiers; Italian Journal of Agronomy; Journal of Fungi; Journal of Hazardous Materials; Land degradation and development; Mycorrhiza; New Phytologist; Plant and Soil; PlosOne; Polish Journal of Environmental Studies; Scientific Reports; Soil Biology and Biochemistry; Soil Biology and Fertility; Sustainability; Symbiosis; The Scientific World Journal, Water, Soil and Pollution

## 24. List of publications (“Elenco delle pubblicazioni scientifiche possedute”)

### Publications in ISI Journals with IF: 33

1. Cardini A.\*, **Pellegrino E.\*<sup>a</sup>**, Declerck S., Calonne-Salmon M., Mazzolai B., Ercoli L. 2021. Direct transfer of zinc between plants is channelled by common mycorrhizal network of arbuscular mycorrhizal fungi and evidenced by changes in expression of zinc transporter genes in fungus and plant. *Environmental Microbiology* <https://doi.org/10.1111/1462-2920.15542> (first published the 29<sup>th</sup> of April 2021). \*these authors contributed equally to this work; <sup>a</sup>corresponding author.
2. Mhlanga B., Ercoli L., **Pellegrino E.**, Onofri A., Thierfelder C. 2021. The crucial role of mulch to enhance the stability and resilience of cropping systems in southern Africa. *Agronomy for Sustainable Development*. <https://doi.org/10.1007/s13593-021-00687-y>.
3. Cardini A.\*, **Pellegrino E.\*<sup>a</sup>**, White P.J., Mazzolai B., Mascherpa M.C., Ercoli L. 2021. Transcriptional regulation of genes involved in zinc uptake, sequestration and redistribution following foliar zinc application to *Medicago sativa*. *Plants* 10, 3: 1-19 (doi: 10.3390/plants10030476). \*these authors contributed equally to this work; <sup>a</sup>corresponding author.
4. Cardini A., **Pellegrino E.<sup>†</sup>**, Del Dottore E., Gamper H. A., Mazzolai B., Ercoli L. 2020. *HyLength*: a semi-automated digital image analysis tool for measuring the length of roots and fungal hyphae of dense mycelia. *Mycorrhiza* 30: 229-242. <sup>†</sup>Corresponding author.
5. **Pellegrino E.<sup>†</sup>**, Piazza G., Arduini I., Ercoli L. 2020. Field inoculation of bread wheat with *Rhizophagus irregularis* under organic farming: variability in growth response and nutritional uptake of eleven old genotypes and a modern variety. *MDPI Agronomy* 10: 333. <sup>†</sup>Corresponding author.
6. Piazza G., **Pellegrino E.**, Moscatelli M. C., Ercoli L. 2020. Long-term conservation tillage and nitrogen fertilization effects on soil aggregate distribution, nutrient stocks and enzymatic activities in bulk soil and occluded microaggregates. *Soil and Tillage Research* 196, 104482.
7. **Pellegrino E.<sup>†</sup>**, Gamper A. H.<sup>†</sup>, Ciccolini V., Ercoli L. 2020. Forage rotations conserve diversity of arbuscular mycorrhizal fungi and soil fertility. *Frontiers in Microbiology* 10:2969. <sup>†</sup>Contributed equally to this work.
8. Piazza G.<sup>†</sup>, Ercoli L., Nuti M., **Pellegrino E.<sup>†</sup>** 2019. Interaction Between Conservation Tillage and Nitrogen Fertilization shapes prokaryotic and fungal diversity at different soil depths: evidence from a 23-year field experiment in the Mediterranean Area. *Frontiers in microbiology* 10: 2047 (IF: 4,259; Q1; Scopus citations: 6; Google Scholar citations: 9). <sup>†</sup>These authors contributed equally to this work.
9. Coccina A, Cavagnaro T. R., **Pellegrino E.**, Ercoli L., McLaughlin M. J., Watts-Williams S. J. 2019. The mycorrhizal pathway of zinc uptake contributes to zinc accumulation in barley and wheat grain. *BMC Plant Biology* 19: 133.
10. **Pellegrino E.**, Bedini S., Nuti M., Ercoli L. 2018. Impact of genetically engineered maize on agro-environmental traits: a meta-analysis of 21 years of field data. *Scientific Reports* 8: 3113-3124.

11. **Pellegrino, E.**, Bedini, S., Nuti, M., & Ercoli, L. (2018). Author Correction: Impact of genetically engineered maize on agronomic, environmental and toxicological traits: a meta-analysis of 21 years of field data. *Scientific reports*, 8, 6485.
12. Arduini I., **Pellegrino E.**, Ercoli L. 2018. Contribution of main culm and tillers to grain yield of durum wheat: influence of sowing date and plant traits. *Italian Journal of Agronomy* 13: 235-246.
13. Ercoli L., Arduini I., Schuessler A., **Pellegrino E.** 2017. Strong increase of durum wheat iron and zinc content by field-inoculation with arbuscular mycorrhizal fungi at different soil nitrogen availabilities. *Plant and Soil* 19: 153-167.
14. Ciccolini V., **Pellegrino E.**, Coccina A., Fiaschi A. I., Cerretani D., Sgherri C., Quartacci F. M., Ercoli L. 2017. Biofortification with iron and zinc improves nutritional and nutraceutical properties of common wheat flour and bread. *Journal of Agricultural and Food Chemistry* 65: 5443-5452.
15. Ercoli L., Masoni A., Mariotti M., Pampana S., **Pellegrino E.**, Arduini I. 2017. Effect of preceding crop on the agronomic and economic performance of durum wheat in the transition from conventional to reduced tillage. *European Journal of Agronomy* 82: 125-133.
16. Ciccolini V., Ercoli L., Davison J., Vasar M., Opik M., **Pellegrino E.** 2016. Land-use intensity and host plant simultaneously shape the composition of arbuscular mycorrhizal fungal communities in a Mediterranean peatland. *FEMS Microbiology Ecology* 92: 1-13.
17. Ciccolini V., Bonari E., Ercoli L., **Pellegrino E.** 2016. Phylogenetic and multivariate analyses to determine the effect of agricultural land-use intensification and soil physico-chemical properties on N-cycling communities in drained Mediterranean peaty soils. *Biology and Fertility of Soils* 52: 811-824.
18. Ciccolini V., Bonari E. **Pellegrino E.\*** 2015. Land-use intensity and soil properties shape the composition of fungal communities in Mediterranean peaty soils drained for agricultural purposes. *Biology and Fertility of Soils* 51: 719-731. \*Corresponding author.
19. **Pellegrino E.\***, Bosco S., Ciccolini V., Pistocchi C., Sabbatini T., Silvestri N., Bonari E. 2015. Agricultural abandonment in Mediterranean reclaimed peaty soils: Long-term effects on soil chemical properties, arbuscular mycorrhizas and CO<sub>2</sub> flux. *Agriculture, Ecosystems and Environment* 199: 164–175. \*Corresponding author.
20. **Pellegrino E.**, Öpik M., Bonari E., Ercoli L. 2015. Responses of wheat to arbuscular mycorrhizal fungi: A meta-analysis of field studies from 1975 to 2013. *Soil Biology and Biochemistry* 84: 210-217.
21. Vallebona C.\*, **Pellegrino E.\***, Frumento P., Bonari E. 2014. Temporal trends in extreme rainfall intensity and erosivity in the Mediterranean region: a case study in southern Tuscany, Italy. *Climatic Change* 128: 139-151  
\* These authors contributed equally to this work.
22. **Pellegrino E.\***, Bedini S. 2014. Enhancing ecosystem services in sustainable agriculture: Biofertilization and biofortification of chickpea (*Cicer arietinum* L.) by arbuscular mycorrhizal fungi. *Soil Biology and Biochemistry* 68: 429-439. \*Corresponding author.
23. **Pellegrino E.**, Bedini S. 2014. Corrigendum to "Enhancing ecosystem services in sustainable agriculture: Biofertilization and biofortification of chickpea (*Cicer arietinum* L.) by arbuscular mycorrhizal fungi." *Soil Biology and Biochemistry* 75: 314-315.
24. Di Bene C.\*, **Pellegrino E.\*\***, Debolini M. Silvestri N., Bonari E. 2013. Short- and long-term effects of olive mill wastewater land spreading on soil chemical and biological properties. *Soil Biology and Biochemistry* 56: 21-30.\*Corresponding author. \*These authors contributed equally to this work.
25. **Pellegrino E.**, Turrini A., Gamper H. A., Cafà' G., Bonari E., Young J. P. W., Giovannetti M. 2012. Establishment, persistence and effectiveness of arbuscular mycorrhizal fungal inoculants in the field revealed using molecular genetic tracing and measurement of yield components. *New Phytologist* 194: 810-822.
26. **Pellegrino E.**, Bedini S., Avio L., Bonari E., Giovannetti M. 2011. Field inoculation effectiveness of native and exotic arbuscular mycorrhizal fungi in a Mediterranean agricultural soil. *Soil Biology and Biochemistry* 43: 367-376.
27. **Pellegrino E.\***, Di Bene C., Tozzini C., Bonari E. 2011. Impact on soil quality of a 10-year-old short-rotation coppice poplar stand compared with intensive agricultural and uncultivated systems in a Mediterranean area. *Agriculture, Ecosystems and Environment* 140: 245-254. \*Corresponding author.
28. Di Bene C.\*, **Pellegrino E.\***, Tozzini C., Bonari E. 2011. Changes in soil quality following poplar short-rotation forestry under different cutting cycles. *Italian Journal of Agronomy* 6: 28-35. \*These authors contributed equally to this work.
29. **Pellegrino E.**, Kamatchi Ramasamy C., Sbrana C., Bàrberi P., Giovannetti M. 2010. Selection of infective arbuscular mycorrhizal isolates for field inoculation. *Italian Journal of Agronomy* 3: 225-232.
30. Bedini S., **Pellegrino E.**, Avio L., Pellegrini S., Bazzoffi P., Argese E., Giovannetti M. 2009. Changes in soil aggregation and glomalin-related soil protein content as affected by the arbuscular mycorrhizal fungal species *Glomus mosseae* and *Glomus intraradices*. *Soil Biology and Biochemistry* 41: 1491-1496.

31. **Pellegrino, E.**, Avio, L., Costanzo, A., Bonari, E., Giovannetti, M. 2008. Field functional diversity of arbuscular mycorrhizal fungi in a crop rotation of *Trifolium alexandrinum* and *Zea mays*. Italian Journal of Agronomy 3: 225-232.
32. Giovannetti M., Avio L., Fortuna P., **Pellegrino E.**, Sbrana C., Strani P. 2006. At the root of the wood wide web: self recognition and nonself incompatibility in mycorrhizal networks. Plant Signaling & Behavior 1: 1-5.
33. Avio L., **Pellegrino E.**, Bonari E., Giovannetti M. 2006. Functional diversity of arbuscular mycorrhizal fungal isolates in relation to extraradical mycelial networks. New Phytologist 172: 347-357.

#### **Publications in proceedings with international reviewers: 5**

1. Rossetto R., Barbagli A., Bosco S., Carloni I., Ciccolini V., Giannini V., **Pellegrino E.**, Pistocchi C., Sabbatini T., Silvestri N., Baiocchi A., Difonzo A., Giannecchini L., Bonari E. 2014. Large scale phyto-treatment for ecosystem Restoration: the San Niccolò experiment. Flowpah 2014, National meeting on Hydrogeology: 78-79 (**poster**).
2. Ciccolini V., Giannini V., Bosco S., **Pellegrino E.**, Pistocchi C., Sabbatini T., Silvestri N., Baiocchi A., Difonzo A., Giannecchini L., Bonari E. 2013. Restoration Of A Mediterranean Drained Peatland: The Case Study Of The Massaciuccoli Lake Basin (Tuscany, It). Extended Abstract Aware Approaches In Wetland Restoration, 21-25 April 2013 (**poster**).
3. **Pellegrino E.**, Di Bene C., Tozzini C., Bonari E. 2011. New insights into giant reed biofuel crop: soil chemical and microbial traits under Mediterranean conditions. ISAF 2011 – International Symposium on Alcohol Fuels, development and utilization of alcohol fuels to promote sustainability. 10-14 October 2011, Verona, Italy. 4 pp (**oral presentation**).
4. Avio L, **Pellegrino E.**, Bonari E., Giovannetti M. 2008. Natural biofertilizers for organic agriculture: productivity and nutrient uptake of Medicago sativa inoculated with different arbuscular mycorrhizal fungi. 16th IFOAM Organic World Congress, Modena, Italy, 16-20 June, 2008: 203-207 (**oral presentation**).
5. Avio L., Bedini S., **Pellegrino E.**, Giovannetti M. 2008. Soil and inoculum infectivity evaluated during the early stage of mycorrhizal establishment. COST 870, 27-30 May, Danmark: 69 (**poster**).

#### **Publications in National Conferences: 19**

1. **Pellegrino E.** 2020. Tecniche molecolari di identificazione dei funghi. Convegno: I funghi medicinali: dalla coltivazione all'utilizzo terapeutico. Aula Magna Ex Facoltà di Agraria - Campus Universitario "E. Quagliariello" Università degli Studi "Aldo Moro", 4 Febbraio 2020 (**invited presentation**).
2. Ercoli, L., **Pellegrino E.** 2019. La biofortificazione in Toscana: aspetti nutrizionali e nutraceutici su vecchi genotipi di frumento e trasferibilità al pane. Cereali e Salute. Cereali per la dieta mediterranea: innovazioni e prospettive dal campo alla tavola. 2<sup>nd</sup> December 2019, Accademia dei Georgofili, Firenze (**invited presentation**).
3. **Pellegrino E.** 2019. Tecniche molecolari di identificazione dei funghi finalizzate all'attività industriale. Società Italiana Funghi Medicinali, Micoterapia Made in Italy ed Erbe officinali in Valmarecchia, July 6, 2019, Pennabilli (**invited presentation**).
4. **Pellegrino E.**, Piazza G., Moscatelli M.C., Ercoli L. 2019. Interaction between Tillage and Nitrogen Fertilization on Organic Carbon, Enzymes and Arbuscular Mycorrhizal Fungi in Bulk Soil and Aggregates. Atti XLVIII Convegno della Società Italiana di Agronomia, Perugia, 18-20 September 2019 (**oral presentation**).
5. Ercoli L., Piazza G. **Pellegrino E.** 2017. Depositi di carbonio e gestione agronomica. Atti Convegno Depositi di carbonio nella geosfera e impatto sull'agricoltura. 14 September 2017, Georgofili, Scuola Superiore Sant'Anna, Pisa, Italy (**oral presentation**).
6. Ercoli L., Piazza G., Ciccolini V., Bonari E., **Pellegrino E.** 2016. Increase of Iron and Zinc Concentration in Grain of Bread Wheat Field-Inoculated with Arbuscular Mycorrhizal Fungi. Atti XLV Convegno della Società Italiana di Agronomia, Sassari, September 20-22 2016, 156-157 (**poster**).
7. **Pellegrino E.**, Mantino A., Bonari E., Ercoli L. 2016. Field inoculation with mycorrhizas and rhizobia greatly increases grain quality of soybean. Atti XLV Convegno della Società Italiana di Agronomia, Sassari, September 20-22 2016, 178-179 (**poster**).
8. Ciccolini V., Coccina A., **Pellegrino E.**, Ercoli L. 2016. Agronomic biofortification affects iron and zinc concentration and nutraceuticals in wheat flour and bread. Atti XLV Convegno della Società Italiana di Agronomia, Sassari, September 20-22 2016, 120-121 (**oral presentation**).
9. Rossetto R., Bosco S., Carloni I., Ciccolini V., Giannini V., **Pellegrino E.**, Pistocchi C., Sabbatini T., Silvestri N., Baiocchi A, Difonzo A., Giannecchini L., Bonari E. 2014. Large Scale Phyto-Treatment For ecosystem Restoration: The San Niccolò experiment. Flowpath 2014 – National Meeting on Hydrogeology Viterbo, Italy, 18-20 June 2014 (**poster**).



10. Ercoli L., Masoni A., **Pellegrino E.**, Arduini I. 2014. Determinanti genetici ed ambientali della produzione del frumento duro. Atti del XLIII Convegno SIA, Pisa, 2014 (**poster**).
11. Mantino A., Ciccolini V., **Pellegrino E.**, Bonari E. 2014. Impact on soil quality of a land-use gradient in a Mediterranean area. Atti del XLIII Convegno SIA, Pisa, 2014 (**oral presentation**).
12. Ciccolini V., **Pellegrino E.**, Öpik M., Bonari E. 2014. Land use changes in a Mediterranean restored peatland: effects on arbuscular mycorrhizal fungal biodiversity. Atti del XLIII Convegno SIA, Pisa, 2014 (**poster**).
13. Vallebona C., **Pellegrino E.**, Mantino E., Bonari E. 2014. Perennial forage cover as soil conservation measure: a case study in southern Tuscany. Atti del XLIII Convegno SIA, Pisa, 2014 (**oral presentation**).
14. Roncucci N., Nasso N., **Pellegrino E.**, Triana F., Ragaglini G., Bonari E. 2013. Root and soil organic matter distribution in mature stands of *Arundo donax* and *Miscanthus × giganteus*. XXXXII Congress of the Italian Society of Agronomy, September 18-20, Reggio Calabria, Italia (**poster**).
15. Di Bene C., **Pellegrino E.**, Tozzini C., Bonari E. 2010. Confronto tra la qualità del suolo in SRF di pioppo e in suoli non coltivati rispetto a frumento intensivo. XXXIX Congress of the Italian Society of Agronomy, September 20-22, Roma, Italia: 43-44 (**oral presentation**).
16. **Pellegrino E.**, Bonari E., Giovannetti M. 2010. Variabilità funzionale di isolati fungini micorrizici arbuscolari esotici e nativi inoculati in campo su *Medicago sativa*. XXXIX Congress of the Italian Society of Agronomy, 20-22 September, Roma, Italia: 233-234 (**poster**).
17. **Pellegrino E.**, Kamatchi Ramasamy C., Sbrana C., Barberi P., Giovannetti M. 2009. Selezione di funghi micorrizici arbuscolari per l'inoculazione in campo. XXXVIII Congress of the Italian Society of Agronomy, September 21-23, Firenze, Italia: 43-44 (**oral presentation**).
18. **Pellegrino E.**, Bonari E., Giovannetti M. 2009. Inoculazione in campo di *Cicer arietinum* con funghi micorrizici arbuscolari nativi e esotici. XXXVIII Congress of the Italian Society of Agronomy, September 21-23, Firenze, Italia: 41-42 (**oral presentation**).
19. Bedini S., **Pellegrino E.**, Argese E., Giovannetti M. 2004. Miglioramento del suolo e biostabilizzazione dei metalli pesanti mediati da glomalina. 14th Meeting Italian Society of Ecology, October 4-6, Siena, Italia: 1-5 (**poster**).

#### Abstracts in International Conferences: 37

1. **Pellegrino E.**, Piazza G., Ercoli L. 2020. Conservation agriculture and soil biodiversity: a study in the Mediterranean area and Africa. Global Symposium on soil biodiversity, 10-12 March 2020 FAO Rome, Italy (postponed).
2. **Pellegrino E.** 2019. Removal of PHARMaceuticals from treated wastewaters in the Soil-WATER-Plant continuum in the MEDiterranean basin. Relationships Italy and Israel "Side-By-Side" for Innovation % November 2019 (**invited oral presentation** for a selected bilateral project between the Italian and Israelian Foreign Ministeries).
3. **Pellegrino E.**, Ercoli L. 2019. Agronomic Biofortification with Iron and Zinc and inoculation by arbuscular mycorrhizal fungi for the improvement of nutritional and nutraceutical properties of wheat. 2<sup>nd</sup> International Conference on Food Science & Nutrition, 24-25 October 2019, Valencia, Spain (**invited oral presentation**).
4. **Pellegrino E.**, Ercoli L. 2019. Celiac disease and non-celiac gluten sensitivity: the success of a Tuscan pasta. First International conference on the revitalization of the rural world 10-12 October 2019, Casa De Artes, Arco de Valdevez, Portugal (**invited oral presentation**).
5. **Pellegrino E.**, Piazza G., Nuti M., Ercoli L. 2019. Interaction between conservation tillage and nitrogen fertilization strongly shapes microbial diversity at different soil depths: a long-term study in the Mediterranean. SIMTREA, September 2019, Catania (**poster**).
6. Cardini A., **Pellegrino E.**, Gamper H., Calonne-Salmon M., Declerck S., Ercoli L. 2019. Plants linked by a common arbuscular mycorrhizal fungal hyphal network: zinc transfer and plant and fungal gene expression. ICOM 10 July 2019, Merida, Mexico (**invited oral presentation**).
7. **Pellegrino E.**, Ercoli L. 2019. Pasta made using buckwheat and millet for subjects sensitive to gluten and celiacs: crop productivity, nutraceutical properties and clinical tests. Conference on Food Science and Nutrition 25 February 2019 (**invited oral presentation**).
8. Piazza G., **Pellegrino E.**, Ercoli L. 2018. Conservation tillage and N fertilization affect soil aggregate distribution, carbon storage and enzymatic activities. International Workshop on Carbon Sequestration in Horticultural Crops, 30th October 2018, Scuola Superiore Sant'Anna, Pisa (**invited oral presentation**).
9. Piazza G., **Pellegrino E.**, Ciccolini V., Ercoli L. 2017. Tillage intensification affects AMF diversity, SOC and enzymatic activities within soil aggregates at various scales. Proceedings 9th International Conference on Mycorrhiza (ICOM9), Prague, July 30 - August 4 2017 (**poster**).

10. Ercoli L., Piazza G., **Pellegrino E.** 2017. Carbon Deposition and Agronomic Management. Atti Convegno Accademica dei Georgofili "I depositi di carbonio nella geosfera: impatto sulla moderna agricoltura", Pisa, September 26, 2017, 7 pp (**oral presentation**)
11. **Pellegrino E.**, Ciccolini V., Coccina A., Ercoli L. 2017. Multi-year AMF field application on cereals and pseudocereals: a focus on micronutrients and secondary metabolites. 9<sup>th</sup> International Conference On Mycorrhiza (ICOM9). Prague, 31-5 August 2017 (**invited oral presentation**).
12. **Pellegrino E.**, Bonari E., Ercoli L. 2015. The key role of the inoculation by arbuscular mycorrhizal fungi on field crops in the Mediterranean basin. 8th International Conference On Mycorrhiza (ICOM8). Flagstaff, AZ, USA, 3-7 August 2015 (**invited oral presentation**).
13. Valentina C., Öpik M., Bonari E., **Pellegrino E.** 2015. Arbuscular mycorrhizal fungal diversity in Mediterranean drained peaty soils is affected by host plant and intensification of agricultural land-use. 8th International Conference On Mycorrhiza (ICOM8). Flagstaff, AZ, USA, 3-7 August 2015 (**invited oral presentation**).
14. Ciccolini V., Opik M., Bonari E., **Pellegrino E.** 2014. Effects of land-use intensification and host identity on arbuscular mycorrhizal fungal communities in mediterranean peaty soils. The First Global Soil Biodiversity Conference 2014 (**poster**).
15. **Pellegrino E.**, Roncucci N., Bonari E. 2014. Functional traits and community structure of arbuscular mycorrhizal fungi in 10-year old rainfed *Arundo donax* and *Miscanthus x giganteus* energy crops under Mediterranean conditions. The First Global Soil Biodiversity Conference 2014 (**poster**).
16. **Pellegrino E.**, Opik M., Bonari E., Ercoli L. 2014. Do arbuscular mycorrhizal fungi improve productivity and nutrient uptake of field-grown wheat? A numerical analysis of published field trials from 1975 to 2013. The First Global Soil Biodiversity Conference 2014 (**poster**).
17. **Pellegrino E.**, Ciccolini V., Silvestri N., Bonari E. 2013. New insights in Mediterranean peatlands: molecular phylotaxonomic diversity of bacteria, fungi, arbuscular mycorrhizas and microorganisms linked to N cycle as affected by land use change. In: FEMS 2013 5th Congress of European Microbiologists, July 21-25, Liepzig, Germany (**poster**)
18. Ciccolini V., **Pellegrino E.**, Bosco S., Silvestri N., Sabbatini T., Bonari E. 2013. Impact of intensive agriculture on arbuscular mycorrhizal assemblages and CO<sub>2</sub> flux partitioning in a Mediterranean peatland. In: FEMS 2013 5th Congress of European Microbiologists, July 21-25, Liepzig, Germany (**poster**).
19. **Pellegrino E.**, Dragoni F., Ragolini G., Corneli E., Bonari E. 2013. Molecular characterization and methane performances of archaea in anaerobic batch reactors feed with giant reed, a new promising feedstock. In: FEMS 2013 5th Congress of European Microbiologists, July 21-25, Liepzig, Germany (**poster**).
20. Pistocchi C., Bosco S., Ciccolini V., Giannini V., **Pellegrino E.**, Rossetto R., Sabbatini T., Silvestri N., Giannecchini L., Baiocchetti A., Di Fonzo A., Bonari E. 2013. Restoration of a Mediterranean drained peatland: the case study of the Massaciuccoli Lake Basin (Tuscany, Italy). Wetland Systems: Ecology, Functioning and Management, pp: 145-146. Padova, 1-4 settembre 2013 (**poster**).
21. Ciccolini V., Giannini V., Pistocchi C., Bosco S., **Pellegrino E.**, Sabbatini T., Rossetto R., Cantini V., Giannecchini L., Baiocchetti A., Di Fonzo A., Silvestri N., Bonari E. 2013. Restoration Of A Mediterranean Drained Peatland: The Case Study Of The Massaciuccoli Lake Basin (Tuscany, Italy). AWARE: Approaches in Wetland Restoration. Warsaw, Poland, 20-25 April 2013 (**poster**).
22. **Pellegrino E.**, Silvestri N., Di Bene C., Debolini M., Bonari E. 2012. Impact of olive mill wastewater land spreading on soil chemical and biological properties. In: Prosodol Life Project. Olive mill Wastes and Environmental Protection. Chania: Prosodol, Chania, 16-18 October 2012 (**invited oral presentation**).
23. **Pellegrino E.**, Turrini A., Gamper H. A., Cafà' G., Bonari E., Young J. P. W., Giovannetti M. 2012. A novel DNA marker for field molecular genetic tracing of non-native *Funneliformis mosseae* inoculants. 1st Molecular Mycorrhiza Meeting, Molecular Ecology and Evolution. Munich, Germany (**poster**).
24. **Pellegrino E.**, Bonari E.. 2012. The role of microorganisms in iodine biofortification of plants (2012) Zurich, Workshop "Improving the composition of plant foods for better mineral nutrition", 4-5 June 2012, COST ACTION 0905 "Mineral-improved crop production for healthy food and feed" - WG1 – Soil plant-interactions (**invited oral presentation**).
25. **Pellegrino E.**, Silvestri N., Ciccolini V., Bonari E. 2012. Wetland management: microbial composition and structure in a peatland secondary succession. Bari, Italy. Eurosoil 2012 (**oral presentation**).
26. Di Bene C., **Pellegrino E.**, Debolini M., Silvestri N., Galli M., Bonari E. 2011. Multi-parameter approach to assess short- and long-term effect of olive mill wastewater land spreading on soil quality. Soil Interfaces in a Changing World, ISMOM, 26th June – 1st July 2011, Montpellier, France (**poster**).
27. **Pellegrino E.**, Gamper H. A., Bonari E. Giovannetti M., Young J. P. W.. 2011. Composition and structure of arbuscular mycorrhizal fungal communities colonising roots of forage and grain legumes and accompanying



- plants as revealed by T-RFLP and sequence analyses. Ecology of Soil Microorganisms, 27th April – 1th May 2011, Prague, Czech Republic (**poster**).
28. **Pellegrino E.**, Bonari E., Young J. P. W., Giovannetti M. 2009. T-RFLP reliability for detecting composition and structure of arbuscular mycorrhizal communities in roots. Dimension of Ecology: from global change to Molecular Ecology, 14-18 September, Bayreuth, Germany: 114 (**oral presentation**).
  29. **Pellegrino E.**, Turrini A., Bonari E., Young J. P. W., Cafà G., Giovannetti M. 2009. Molecular detection of field inoculated exotic arbuscular mycorrhizal fungi. Dimension of Ecology: from global change to molecular ecology, 14-18 September, Bayreuth, Germany: 117 (**poster**).
  30. **Pellegrino E.**, Avio L., Giovannetti Young J. P. W. 2008. Host preference of arbuscular mycorrhizal fungi originating from low-input soil within a Mediterranean UNESCO biosphere reserve. British Ecological Society, Annual Meeting, 2-5 September, London, UK: 25 (**oral presentation**).
  31. **Pellegrino E.**, Avio L., Costanzo A., Bonari E., Giovannetti M. 2008. Field functional diversity of arbuscular mycorrhizal fungi in a crop rotation of *Trifolium alexandrinum* and *Zea mays*. In: 10th Congress of the European Society for Agronomy. Bologna:10th Congress of the European Society for Agronomy (**poster**)
  32. Avio L., **Pellegrino E.**, Bonari E., Giovannetti M. 2007. Extraradical mycorrhizal networks as related to functional diversity of arbuscular mycorrhizal fungi. FISV 9th Annual Congress, 26-29 September, Riva del Garda, Italy: 1 (**oral presentation**).
  33. Lee J., **Pellegrino E.**, Young J. P. W. 2007. Diversity of arbuscular mycorrhizal fungi in relation to plant diversity in traditional and intensively managed upland grassland. In: COST Meeting 870. Hannover: COST Meeting 870 (**poster**).
  34. Turrini A, Avio L., Bedini S., Sbrana C., Strani P., Cristani C., **Pellegrino E.**, Marsili A., Castelli D., Giovanetti M. 2005. Biodiversity conservation and in situ collection of AM fungi in two mediterranean unisco biosphere reserve. Cost Meeting, Dijon 2005, 1: 96 (**poster**).
  35. Avio L., Cristani C., Sbrana C., Strani P., **Pellegrino E.**, Turrini A., Giovannetti M. 2004. Molecular and functional diversity in geographic isolates of *Glomus mosseae*. Cost 8.38 Meeting, 26-27 February, Vught, Netherland, 1: 23 (**oral presentation**).
  36. **Pellegrino E.**, Avio L., Bonari E., Giovannetti M. 2004. Inter- and intraspecific functional diversity of arbuscular mycorrhizal fungi living in symbiosis with *Trifolium alexandrinum* and *Medicago sativa*. Eurosoil 2004, September 4-12, Freiburg, Germany, 1: 436 (**oral presentation**).
  37. Bedini S., Avio L., **Pellegrino E.**, Argese E., Giovanetti M. 2004. Soil amelioration by arbuscular mycorrhizal fungi: glomalin production by geographically different Isolates of two *Glomus* species. Eurosoil 2004, September 4-12, Freiburg, Germany, 1: 435 (**poster**).

#### **Books and book chapters: 4**

1. Ortega Andrade S. M., Pellegrino E. 2019. Biofertilizers in sustainable agriculture: characterization of arbuscular mycorrhizal fungi within roots of coffee cultivars along a gradient of altitude in Ecuador. BECAS IIIA-MAECI/DGCS 2017-2018. Agroalimentos, Mambiente, Salud, Tutela del Patrimonio pp. 48-49.
2. Echeverria M. C., **Pellegrino E.**, Nuti M. 2018. The Solid Wastes of Coffee Production and of Olive Oil Extraction: Management Perspectives in Rural Areas. Chapter 9 in Solid Waste Management in Rural Areas, Intech, <http://dx.doi.org/10.5772/intechopen.69427>: 165-189.
3. Ercoli L., Ciccolini V., **Pellegrino E.** 2018. Frumenti teneri toscani: caratteri nutrizionali e nutraceutici di varietà iscritte al repertorio regionale. Proprint s.r.l., Ponsacco (PI), 95 pp.
4. **Pellegrino E.**, Ercoli L. 2018. Le Tecniche di biofertilizzazione. In: Grani Antichi Toscani. Nuove Tecniche di coltivazione: 36-48. Grant, Firenze

#### **Articles submitted and in preparation**

1. **Pellegrino E.**, Piazza G., Helgason T., Ercoli L. Eukaryotes in soil aggregates across conservation managements: major roles of protists, fungi and soil biota linkages in soil structuring and C stock. Soil Biology and Biochemistry (under revision).
2. Piazza G., Ercoli L., Helgason T., **Pellegrino E.** Dissenting how prokariotes and fungi are structured and interconnected in soil aggregates across conservation and conventional agricultural managements and which are the main taxa correlated with soil ecosystem services. In preparation for Microbiome.

3. **Pellegrino E.**, Nuti M., Ercoli L. Single arbuscular mycorrhizal (AM) isolate and multiple AM fungal consortia differentially enhance yield and polyunsaturated fatty acid profile of *Medicago sativa*: a two-year field study. In preparation for *Frontier in Plant Science*.
4. Cardini A., **Pellegrino E.**, Rossetto R., Ercoli E. Predicted and measured concentration of pharmaceuticals in the Serchio Basin, Italy. In preparation for *MDPI Water*.
5. **Pellegrino E.**, Schüßler A., Coccina A., Ercoli L. Variability in the response to arbuscular mycorrhizal fungi and biofortification supports the selection of common wheat genotypes for enhancing iron and zinc concentration in grain. In preparation for *Plant and Soil*.
6. Mhlanga B., **Pellegrino E.**, Thierfelder C., Ercoli L. 2021. Linkages between soil cropping practices, nutrient acquisition, arbuscular mycorrhizal fungal root colonization and maize productivity under conservation agriculture systems in Southern Africa. In preparation for *Agriculture Ecosystems and Environment*.