

**STATUTORY DECLARATION IN LIEU OF AFFIDAVIT
(pursuant to Articles 46 and 47 of Presidential Decree No. 445/2000)**

The undersigned Miriam Distefano, born in Catania (CT) on 25/03/1991, tax code DSTMRM91C65C351B residing in Nicolosi (CT), via Firenze, no. 38, being fully aware, pursuant to Article 76 of Presidential Decree No. 445/2000, that false declarations, the creation or use of false documents are punishable under the Criminal Code and relevant special laws,

DECLARES

to be a Level III Researcher at the Institute of BioEconomy (Catania branch) of the National Research Council of Italy (CNR) and to hold the academic and professional qualifications listed below:

1. ACADEMIC BACKGROUND

➤ **December 20, 2021** – Awarded a Ph.D. in *Agricultural, Food and Environmental Science* (International program, 33rd cycle) from the Department of Agriculture, Food and Environment (Di3A), University of Catania, defending a thesis entitled: "*Studies on qualitative profile of greenhouse tomatoes in relation to technical factors*" (Scientific-disciplinary sector AGR/04 – Horticulture and Floriculture).
Supervisors: Prof. Cherubino Leonardi, Dr. Rosario Mauro;
Program Coordinator: Prof. Cherubino Leonardi.

Within the framework of the doctoral thesis, the following activities were carried out:

- Design, implementation, and data analysis of experimental trials aimed at developing protocols to study yield and quality responses resulting from the use of biostimulants in controlled environments and innovative fertilizers;
- Campaigns for the characterization of the chemical composition of plant matrices using chromatographic techniques (HPLC-DAD-ESI-MSn, HPLC-DAD, HPLC-FLD);
- Campaigns for the characterization of the chemical composition of plant matrices using spectrometric and spectrophotometric techniques (ICP-MS, clinical chemistry analyzer, bench-top UV/VIS reader);
- Characterization campaigns of the ecophysiological behavior of vegetable crops in open field (eggplant) and controlled environment (tomato) using various field and bench-top instruments (IRGA, fluorimeter, SPAD chlorophyll meter, instruments and software for determining leaf area index).

➤ **July 22, 2015** – Obtained a Master's degree (M.Sc.) in *Agricultural Science and Technology* (LM-69) with highest honors (110/110 cum laude) from the Department of Agriculture, Food and Environment (Di3A), University of Catania, defending an experimental thesis entitled: "*Variation in tomato quality traits in relation to plant protection with photoselective films.*"
Supervisor: Prof. Cherubino Leonardi.

2. POST-GRADUATE TRAINING AND INTERNATIONAL RESEARCH EXPERIENCES

- **July 20, 2022** – Delivered an invited lecture entitled "*How to make it: report of an experience from the idea through the 'field' to publication. Effects of a biostimulant treatment on lipophilic antioxidants of Italian greenhouse cherry tomato*" at Hochschule Geisenheim University (Geisenheim, Germany), as part of a seminar series for Master's degree students (total duration: 3 hours).

- **February 14 – December 23, 2020** – Research stay as a Visiting Researcher at Hochschule Geisenheim University – Department of Food and Beverages (Germany). During this stay, as documented by a certificate signed by the Department Director and the research group led by Prof. Ralf Schweiggert, and under the supervision of Dr. Christof Björn Steingaß, the following activities were performed:
 - Characterization campaigns of the chemical composition of tomato and carrot plant matrices using chromatographic techniques (HPLC-DAD-ESI-MSn, HPLC-DAD, HPLC-FLD);
 - Characterization campaigns of the chemical composition of tomato and carrot plant matrices using spectrometric and spectrophotometric techniques (ICP-MS, clinical chemistry analyzer, bench-top UV/VIS reader).

- **October 7 – December 7, 2019** – Internship at the University of Messina, Department of Veterinary Sciences. As documented by a certificate signed by the laboratory head and the research group led by Prof. Antonella Verzera, the following activities were conducted:
 - Characterization campaigns of the qualitative composition of tomato samples, with particular reference to the volatile fraction via SPME-GC-MS/MS.

- **September 13, 2019** – Participated in the training seminar "*Biostimulants in horticultural, fruit, and viticulture production chains*", held at Università Cattolica del Sacro Cuore, Piacenza.

- **June 10–14, 2019** – Attended the course in applied statistics for agronomic research entitled "*Analysis of spatial data: applications to agronomic research*", organized by the Italian Society of Agronomy (SIA), held at the Department of Biosciences and Agro-Food and Environmental Technologies, University of Teramo.

- **January 21–25, 2019** – Attended the course in applied statistics for agronomic research entitled "*Statistical methodology for agricultural sciences – General and generalized linear models*", organized by the Italian Society of Agronomy (SIA), held at the headquarters of the Council for Agricultural Research and Economics (CREA) – Agriculture and Environment, Rome.

- **November 29, 2018** – Attended the course entitled "*Ion Chromatography and Sample Preparation*", organized by Metrohm and held at the Provincial Association of Chemists and Physicists of Ragusa.

- **February 12, 2016** – Obtained the professional qualification as *Agronomist and Forester* in the academic year 2015/2016 (registration number: 128000261).

3. PROFESSIONAL EXPERIENCES WITH PUBLIC RESEARCH INSTITUTIONS

- **June 1, 2023 – Present:** Fixed-term Level III Researcher at the National Research Council (CNR) – Institute of BioEconomy, within the project *Sicilian Micronano Tech Research and Innovation Center – SAMOTHRACE*.

- **March 18, 2022 – August 17, 2022:** Research fellow at the University of Catania, Department of Agriculture, Food and Environment (Di3A), under the project "*Varietal and agronomic innovation for a sustainable and successful Sicilian asparagus sector – ASPASS*", funded by the RDP Sicily 2014–2020, Submeasure 16.1, as documented by the certificate signed by the project, lab and research group leader, Prof. Cherubino Leonardi.
- **June 1, 2021 – February 28, 2023:** Responsible for conducting experimental trials in the framework of the PON project "*Shelf-life, quality and safety of ready-to-eat horticultural products – POFACS*", activity 2.9 "*Selection of tomato and carrot genotypes for snack production*" and activity 5.6 "*Production of sprouted seedlings of horticultural species*". Activities performed, as documented by a certificate signed by Prof. Cherubino Leonardi, included:
 - Agronomic research in controlled and open-field environments for yield and quality assessment in ready-to-eat vegetables
 - Characterization campaigns of the chemical composition of plant matrices using chromatographic instruments (HPLC-DAD)
 - Chemical composition assessment using spectrophotometric methods (UV/VIS bench reader)
 - Design and execution of growth chamber experiments for the production of sprouted seedlings under different temperature and light conditions, and qualitative characterization via spectrophotometric methods
- **September 1, 2019 – July 31, 2020:** Responsible for experimental trials within the agreement titled "*Monitoring the ionic composition of the leachate and possible reformulation of the nutrient solution in soilless cherry tomato cultivation*", between the University of Catania (Di3A) and Società Agricola Isolagrande s.r.l. Activities included:
 - Chemical characterization campaigns (ion chromatography) of nutrient and leachate solutions in a soilless tomato cultivation system
- **September 1, 2020 – July 31, 2021:** Responsible for experimental trials under the agreement "*Development of an experimental device and varietal screening of tomato rootstocks*", between the University of Catania (Di3A) and the seed company TSI Italia s.r.l. Activities included:
 - Agronomic research in a controlled environment for the selection of interspecific tomato rootstocks based on yield and quality parameters (total soluble solids, titratable acidity, chromatic coordinates, total carotenoid concentration, antioxidant capacity via DPPH and FRAP assays)
- **September 1, 2021 – July 31, 2022:** Same responsibilities and activities as above, within the renewed agreement for the 2021–2022 cycle.
- **June 1, 2022 – February 28, 2023:** Responsible for experimental trials under the agreement "*Development of an experimental device and cultivation trials of tomato and watermelon in greenhouses with different covering materials*", between the University of Catania (Di3A) and Agriplast spa. Activities included:
 - Agronomic research in a controlled environment to study yield and quality response to different covering materials, based on parameters such as total soluble solids, titratable acidity, chromatic coordinates, firmness, dry matter percentage, biomass quantification, and LAI
- **July 15, 2020 – February 28, 2023:** Responsible for experimental trials under the agreement "*Development of an Intelligent Fertigation System for Biofortified Agricultural Products*", between the University of Catania (Di3A) and Irritec spa. Activities included:

- Experimental agronomic research for developing protocols and instruments for fertilization of biofortified crops
- Chemical characterization of nutrient solutions and various plant matrices using ion chromatography
- Spectrophotometric analyses (UV/VIS bench reader) of different plant matrices
- **October 1, 2020 – January 31, 2023:** Experimental responsibilities under the project "*Development of an Intelligent Fertigation System for Biofortified Agricultural Products – SFIDA*", funded by the Ministry of Economic Development (Agrifood Program – Abiomed). Activities included:
 - Agronomic research in open fields (potato, carrot) and controlled environments (tomato, lettuce) for developing fertilization protocols for biofortified crops
- **October 7, 2020 – February 28, 2023:** Experimental responsibilities under the PON project "*Improvement of Mediterranean agri-food productions under water resource scarcity – WATER4AGRIFOOD*".
- **July 1, 2020 – February 28, 2023:** Experimental responsibilities under the project "*Role of dietary antioxidants and biofortification of vegetable crops for human health*" (ABIOCOR), University of Catania. Activities included:
 - Characterization of the chemical composition of different crops using chromatographic instruments (HPLC-DAD) and spectrophotometric methods (UV/VIS bench reader)

Within the aforementioned activities, the undersigned was also responsible for the design of experimental layouts, data collection, data processing, and statistical analysis, and contributed to the drafting of the related scientific publications. The undersigned also personally conducted field and laboratory experiments concerning:

- Yield and its components in various greenhouse and open-field vegetable crops (tomato, lettuce, eggplant, carrot, potato, watermelon, asparagus)
- Photosynthesis evaluation using a photosynthesis/transpiration analyzer (IRGA – Infra Red Gas Analyzer)
- Chlorophyll fluorescence variables (F₀, F_v, F_m, F_v/F_m) via fluorimeter
- Relative chlorophyll content in leaves using a portable Chlorophyll Meter (SPAD)
- Leaf Area Index (LAI) assessment via laboratory instrumentation and dedicated software
- Main commercial quality analyses of horticultural products (soluble solids, titratable acidity, firmness, CIE Lab* color coordinates)
- Determination of micro- and macronutrients in nutrient solutions and plant samples via ion chromatography
- Nitrogen content in plant tissues (fruits, leaves, stems) via Kjeldahl distillation method
- Profiling and quantification of carotenoids and polyphenols in tomato and carrot using HPLC-DAD (sample homogenization, matrix-specific extraction, chromatographic condition optimization, compound identification via standards and absorption spectra)
- Ascorbic acid (AA) determination in tomato and carrot via HPLC-DAD
- Antioxidant capacity assessment via DPPH assay and UV-VIS spectrophotometry
- Total polyphenol content (TPC) determination via Folin-Ciocalteu method and UV-VIS spectrophotometry
- Antioxidant capacity via FRAP assay and UV-VIS spectrophotometry
- Total carotenoid content via spectrophotometric analysis
- Stress evaluation in plant tissues via electrolyte leakage measurement

- Germination assays for various crops under different temperature and light conditions

4. PROFESSIONAL EXPERIENCES WITH PRIVATE COMPANIES

- **October 2016 – June 2017:** Project-based contract at *Enza Zaden Italia Research S.r.l. a Socio Unico*, Research Center in Santa Croce Camerina (RG). Activities included biometric data collection (qualitative and quantitative) in the field on experimental trials with interspecific tomato rootstocks in a protected environment; practical technical assistance (tomato); data processing; statistical analysis. Support to the Breeder.
- **January 2016 – June 2016:** *Rao Erbe Laboratory*, Via Alessandro Volta, Valverde, Catania (CT). Part-time contract – Extraction of phytoactive substances, essential oils, and phytocomplexes from major medicinal plants for phytotherapeutic products. Responsible for quality management of raw materials and certification of origin of raw materials.
- **April 2013 – September 2013:** *Studio 7PIU'7*, Tindara Crisafulli. Internship – Design of public and private green spaces using AutoCAD (125 hours).

5. ADDITIONAL SCIENTIFIC COLLABORATIONS

As part of her research activities, since 2018 the undersigned has collaborated with personnel from the following research institutions:

- *University of Catania* (Catania, Italy), Department of Agriculture, Food and Environment (Di3A) – research groups led by Prof. Biagio Fallico and Prof. Giuseppe Muratore
- *University of Palermo* (Palermo, Italy), Department of Agricultural, Food and Forest Sciences – research group led by Prof. Fabio Danna
- *Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement – INRAE* (Avignon, France) – research group led by Prof. Nadia Bertin
- *Department of Plant Production, Universitat Politècnica de València – UPV* (Spain) – research group led by Prof. Alberto San Bautista Primo
- Various CNR Institutes, including IBE (other locations), IMM, ISMN, ICB, IPCB, and IBBR.

6. OTHER ACTIVITIES

- Reviewer Editor for *Frontiers in Plant Science* (Crop and Product Physiology section)
 - Guest Editor of the Special Issue “*The Effects of Fertilizers on Fruit Production*” for the journal *Horticulturae* (MDPI)
 - Member of the Organizing Committee of the *XIII SOI Scientific Days 2021 – “The Goals of the 2030 Agenda for the Italian Horticultural Sector”*, held at the Department of Agriculture, Food and Environment, University of Catania, June 22–23, 2021
 - Reviewer for the journal *Plants* (MDPI)
 - Reviewer for the journal *Agriculture* (MDPI)
 - Reviewer for the journal *Horticulturae* (MDPI)
 - Reviewer for the journal *Journal of Soil Science and Plant Nutrition* (Springer Nature)
- The undersigned declares to have a full professional proficiency in written and spoken English, as evidenced by scientific publications in English and the successful completion, on

06/16/2017, of the authorized online course “English for Science, Technology, Engineering, and Mathematics” by the University of Pennsylvania (Coursera, verify at coursera.org/verify/CFQ9ZGU3WXAD).

7. LIST OF PUBLICATIONS

Articles in journals indexed in WoS–Scopus

1. Mauro, R. P., Rizzo, V., Leonardi, C., Mazzaglia, A., Muratore, G., Distefano, M., Sabatino, L., & Giuffrida, F. (2020). Influence of harvest stage and rootstock genotype on compositional and sensory profile of the elongated tomato cv. "Sir Elyan". *Agriculture*, 10(82), 17.

<https://doi.org/https://doi.org/10.3390/agriculture10030082>

2. Mauro, R. P., Agnello, M., Distefano, M., Sabatino, L., San Bautista Primo, A., Leonardi, C., & Giuffrida, F. (2020). Chlorophyll fluorescence, photosynthesis and growth of tomato plants as affected by long-term oxygen root zone deprivation and grafting. *Agronomy*, 10, 137.

<https://doi.org/10.3390/agronomy10010137>

3. Distefano, M., Arena, E., Mauro, R. P., Brighina, S., Leonardi, C., Fallico, B., & Giuffrida, F. (2020). Effects of genotype, storage temperature and time on quality and compositional traits of cherry tomato. *Foods*, 9(12).

<https://doi.org/10.3390/foods9121729>

4. Mauro, R. P., Stazi, S. R., Distefano, M., Giuffrida, F., Marabottini, R., Sabatino, L., Allevato, E., Cannata, C., Basile, F., & Leonardi, C. (2022). Yield and compositional profile of eggplant fruits as affected by phosphorus supply, genotype and grafting. *Horticulturae*, 8, 304.

<https://doi.org/10.3390/horticulturae8040304>

5. Basile, F., Mauro, R. P., Buturi, C. V., Distefano, M., Cannata, C., Adorna, F., & Giuffrida, F. (2022). Quality traits and mineral profile of carrot ‘Dordogne’ as affected by foliar applications of silicon. *Acta Horticulturae*, 1353, 219–226.

<https://doi.org/10.17660/ActaHortic.2022.1353.27>

6. Distefano, M., Mauro, R. P., Page, D., Giuffrida, F., Bertin, N., & Leonardi, C. (2022). Aroma volatiles in tomato fruits: the role of genetic, preharvest and postharvest factors. *Agronomy*, 12, 376. <https://doi.org/10.3390/agronomy12020376>

7. Distefano, M., Steingass, C. B., Leonardi, C., Giuffrida, F., Schweiggert, R., & Mauro, R. P. (2022). Effects of a plant-derived biostimulant application on quality and functional traits of greenhouse cherry tomato cultivars. *Food Research International*, 157 (February), 111218.

<https://doi.org/10.1016/j.foodres.2022.111218>

8. Distefano, M., Cincotta, F., Giuffrida, F., Condurso, C., Verzera, A., Leonardi, C., Mauro, R. P. (2023) Preharvest applications of monopotassium phosphate to improve fruit quality and volatilome composition in cold-stored cherry tomatoes. *Horticultural Plant Journal*. (Accepted 25 December 2023. IN PRESS)

9. Palmieri, E., Maita, F., Pellegrino, A., Avola, G., Distefano, M., & Maiolo, L. (2023, November). Revolutionizing Precision Agriculture: Exploring a Novel biodegradable Substrate for Advanced Electronic Sensors. In 2023 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor) (pp. 763-767). IEEE.

<https://doi.org/10.1109/MetroAgriFor58484.2023.10424390>

10. Avola, G., Distefano, M., Torrisi, A., & Riggi, E. (2024). Precision agriculture and patented innovation: State of the art and current trends. *World Patent Information*, 76, 102262.

<https://doi.org/10.1016/j.wpi.2024.102262>

11. Ierna, A., & Distefano, M. (2024). Crop nutrition and soil fertility management in organic potato production systems. *Horticulturae*, 10(8), 886.

<https://doi.org/10.3390/horticulturae10080886>

12. Distefano, M., Cincotta, F., Giuffrida, F., Condurso, C., Verzera, A., Leonardi, C., & Mauro, R. P. (2024). Preharvest applications of monopotassium phosphate to improve fruit quality and volatilome composition in cold-stored cherry tomatoes. *Horticultural Plant Journal*.

<https://doi.org/10.1016/j.hpj.2023.12.016>

13. Mauro, R. P., Distefano, M.*, Steingass, C. B., May, B., Giuffrida, F., Schweiggert, R., & Leonardi, C. (2024). Boosting cherry tomato yield, quality, and mineral profile through the application of a plant-derived biostimulant. *Scientia Horticulturae*, 337, 113597.

<https://doi.org/10.1016/j.scienta.2024.113597>.

14. Distefano, M., F. Cincotta, F. Giuffrida, C. Condurso, L. Sabatino, A. Verzera, C. Leonardi, C. Cannata, B. B. Consentino, R. P. Mauro (2025). Effects of pre-harvest monopotassium phosphate application on tomato fruit quality during cold storage. In: I International Symposium on Protected Cultivation, Nettings and Screens for Mild Climates. (Accepted 09 April 2025. IN PRESS).

Articles in International Journals Not Indexed in WoS-Scopus

Distefano, M.; Avola, G.; Berti, S.; Riggi, E. *Germination Kinetics of *Ferula communis* L. Seeds, a Potentially Multipurpose-Use Wild Species*. *Seeds* 2024, 3, 196–202.

<https://doi.org/10.3390/seeds3020015>

Ph.D. Thesis

Distefano, Miriam, December 20, 2021. *“Studies on qualitative profile of greenhouse tomatoes in relation to technical factors.”* University of Catania – Department of Agriculture, Food and Environment, 247 pages.

Articles in National Journals

Mauro, R. P., Distefano, M., Cannata, C., Basile, F., & Leonardi, C. (2021). *The influence of agronomic factors on the aroma of table tomatoes. Colture Protette*, 7, 46–50.

Mauro, R. P., Distefano, M., Basile, F., & Cannata, C. (2021). *“Cherry”, a study on yield performance following the application of a biostimulant. Agriscilia*, 12(10), 33–36.

The undersigned declares to be informed, pursuant to current legislation, that the personal data provided above will be used solely for the purpose related to this declaration.

Nicolosi, 10/04/2025

Miriam Distefano
