Marwa Talaat Kamel Refaat El-Mahdy
Associate Professor
Department of Pomology
Faculty of Agriculture
Assiut University
Assiut, 71526
Egypt
Phone: +201012720545
Fax: +20882331384
E-mail: marwa.refaat@agr.aun.edu.eg

Education

Degree	Institution	Subject	Dates
Ph.D.	Assiut University, Egypt	Pomology (Plant Biotechnology)	2015
M.Sc.	Assiut University, Egypt	Pomology (Plant Biotechnology)	2009
B.Sc.	Assiut University, Egypt	Horticulture	2004

Position

Dates	Title	Organization
2023-Present	Director of Molecular Biology and Plant Tissue Culture Unit	Molecular Biology Research & Studies Institute, Assiut University, Egypt.
2022-Present	Career Development Specialist	Career Development Center, Assiut University.
2022-Present	Associate Professor	Pomology Dept., Faculty of Agriculture, Assiut University, Egypt.
2016-2022	Assistant Professor	Pomology Dept., Faculty of Agriculture, Assiut University, Assiut, Egypt.
2018-2021	Postdoctoral Researcher	Horticulture& Landscape architecture Dept., Purdue University, IN, USA.
2009-2016	Assistant Lecturer	Pomology Dept., Faculty of Agriculture, Assiut University, Assiut, Egypt.
2012-2014	Research Scholar	Horticulture& Landscape Architecture Dept., Purdue University, IN, USA.
2004-2009	Demonstrator	Pomology Dept., Faculty of Agriculture, Assiut University, Assiut, Egypt.

Theses

2009-2015*:* Ph.D. degree titled: "Producing Genetically Modified Grapevines forTolerance to High Temperature"

2005-2009*:* M.Sc. degree titled: "In Vitro Propagation of some Pomegranate Cultivars"

Research Interest

My research program focuses on plant cell, tissue, and organ culture development for horticultural tree improvement and production through tissue culture and molecular biology techniques. My research is working toward the germplasm improvement to increase resistance and tolerance to multiple biotic and abiotic stresses. Research work targets to enhance our understanding of the various cellular mechanisms that regulate responses of horticulture crops, including physiological, biochemical, and molecular bases to salt, drought, cold, heavy metals, and insect stresses. Also, in our lab, we develop protocols for micropropagation, *in vitro* selection, somaticembryogenesis, and genetic engineering for various crops. Subsequent acclimatization of plant material to the greenhouse and field environments is an important goal in our lab. Our goal contributes to the development of superior fruit crop varieties more tolerant to stressful conditions with high-quality attributes. Current species of interest are pomegranate, grape, banana, citrus, passion fruit, tomatoes, hemp, pineapple, mulberry, fig, and dragon fruit.

Activities

Currently enrolled in “Bioinformatics and Computational Biology (BCB) Diploma” introduced by EG-CompBio Empowering Computational Biology and Bioinformatics and sponsored by DAAD.

Travel Grant Awards

- **2018-2021:** Postdoctoral Scholarship Funded by STDF.
  Prof. Avtar Handa lab, Department of Horticulture and Landscape Architecture, Purdue University, IN, USA. The research title: "Improving Drought Tolerance of Tomato byusing CRISPR Technology"

- **2012-2014:** Joint Supervision Scholarship
  Funded from the Higher Education Ministry of the Egyptian Government to conduct research for two years for Ph.D. degree.
  Prof. Avtar Handa lab, Department of Horticulture and Landscape Architecture, Purdue University, IN, USA. The research title: "Producing Genetically Modified Grapevinesfor Tolerance to High Temperature"

Teaching :

- **Undergraduate:**
- 1304- Vegetative Production of fruit crops.
- 1301- Principles of Horticulture.
- **Postgraduate:**
- 6022-Principles of plant tissue culture.
- 6023-Breeding and Improvement of Fruit trees.
- 6024- Fruit Production.

- 6002- Discussion in Pomology.
- Plant tissue culture (Molecular Biology Research & Studies Institute students).

Extracurricular activities

Positions

- Director of Community Service and Environment Development Affair, Subcommittee of Strategic Planning Committee, Faculty of Agriculture, Assiut University (July 2024-Present).
- Member in Strategic Planning Committee, Faculty of Agriculture Assiut University (May 2024-Present).
- Member in Central Laboratories, Faculty of Agriculture Assiut University (Jan 2024- Present).
- Coordinator of Foreign Student Affairs Committee at Assiut University, Representative of Faculty of Agriculture (November 2023-Present).

Scientific activities

- Coordinator and trainer in the training workshop "Fundamentals of Plant Tissue Culture, Somaclonal Variations, Induction and Application", organized by Molecular Biology and Plant Tissue Culture Unit, Molecular Biology Research & Studies Institute, Assiut University, 15-17 April 2025.
- Coordinator and trainer in the training workshop "Basics of Plant Tissue Culture", organized by Molecular Biology and Plant Tissue Culture Unit, Molecular Biology Research & Studies Institute, Assiut University, 5-7 Mach 2024.
- Trainer in the training workshop "Plant Tissue Culture, Basics and Applications", organized by Central Laboratories, Faculty of Agriculture, Assiut University, 5-7 Mach 2022.

Student activities

Career Development Specialist:

- Conducted 30 career development workshops, training 500 students.
- Provided 60 individual advising appointments for career advising.
- Developed training materials for various career development topics.

Certificates

- Facilitating Career Development Training, The American University in Cairo, 12th November 2024.
- Certified Professional Trainer, American Chamber of Commerce in Egypt, 24 October 2023.

Attended Conferences/ Training programs/ Workshops

- National Conference "VitroSOI 2024, promoted by the SOI Working Group "Micropropagation and in vitro technologies", Viterbo, Italy, 2024.
- U.S. - Egypt S&T Joint Fund Symposium, Cairo, online event, 2022.
- National Conference "VitroSOI 2022, promoted by the SOI Working Group "Micropropagation and in vitro technologies", Bari, Italy, 2022.
- The scientific workshop: Jojoba The Green Gold, Faculty of Agriculture, Assiut University, Assiut, Egypt, 2022.
- HLA Research and Design Retreat Symposium, Purdue University, IN, USA, 2018.
- The scientific workshop: Real -time PCR& DNA sequencing: Techniques & Applications(Level 2), The molecular Biology Research Unit of Assiut University Assiut, Egypt, 2017.

- The Seventh Scientific Conference of Young Researchers Faculty of Agriculture, Assiut University, Assiut, Egypt, 2016.
- Workshop about lab work safety, USDA, Purdue University, IN, USA,2013.
- The Sixth Scientific Conference of Young Researchers Faculty of Agriculture,Assiut university, Assiut, Egypt, 2012.
- The Fifth Scientific Conference of Young Researchers Faculty of Agriculture,Assiut university, Assiut, Egypt, 2011.
- The First International Conference on Biotechnology Applications in Agriculture Facultyof Agriculture, Benha University, Moshtohor and Hurghada, Egypt, 2011.
- Training program in tissue culture and gene transformation techniques, Genetic engineering and molecular biology research center, The molecular Biology Research Unit of Assiut University, Assiut, Egypt, 2007.
- Basic Principles and Laboratory Techniques on DNA Cloning. Organized by HEEPF, Genetic engineering and molecular biologycenter, Assiut University,Assiut, Egypt, 2006.
- Utilization of genetic modified food, Genetic engineering and molecular biology researchcenter, Assiut University, Assiut, Egypt, 2005.

Postgraduate supervision:

Graduated students

- 2023, M.Sc. by Islam Abdel Azez, Department of Pomology, Faculty ofAgriculture, Assiut University, Assiut.
- 2021, M.Sc. by Mohamed Abdallah Mohamed Taha, Department of Pomology, Faculty of Agriculture, Assiut University, Assiut.
- 2019, Ph.D. by Azza Samy, Department of Pomology, Faculty ofAgriculture, Assiut University, Assiut.

Current Students supervisor

- Sondos Mostafa (2024-Present).
- Aya Yehia (2024-Present).
- Asmaa Ahmed (2022-Present).
- Mohamed Taha (2022-Present).
- Heba Mohamed (2022-Present).
- Amira Ahmed (2022-Present).
- Esraa Naser (2021-Present).
- Hossam Hasan (2017-Present).

Publications
Journal Articles

El-Mahdy, M. T., Abdel-Wahab, D. A., & Elazab, D. S. (**2025**). Fourier-transform infrared spectroscopy detects changes in macromolecules of banana (Musa spp.) in vitro under cadmium toxicity, modulated by iron and zinc application. Acta Physiologiae Plantarum, 47(4), 1–16, **Q2**

Hamed, H. A., Abeed, A. H., Geioushy, R. A., Fouad, O. A., & **El-Mahdy, M. T**. (**2025**). Innovative auxin-micronutrient based nanocomposites (IAA-Fe2O3NPs and IAA-Mn2O3NPs) shield strawberry plants from lead toxicity. Plant Physiology and Biochemistry, 219, 109429, **Q1**

El-Mahdy, M. T., Ali, M., Pisam, W. M., & Abeed, A. H. (**2024**). Physiological and Molecular Analysis of Pitaya (Hylocereus polyrhizus) Reveal Up-regulation of Secondary Metabolites, Nitric oxide, Antioxidant Defense System, and Expression of Responsive Genes under Low-temperature Stress by the pre-treatment of Hydrogen Peroxide. Plant Physiology and Biochemistry, 108840, **Q1**

Elazab, D. S., **El-Mahdy, M.**, Youssef, M., Eissa, M. A., Amro, A., & Lambardi, M. (**2023**). Assessment of Salicylic Acid as a Pretreatment on Alleviating Cadmium Toxicity on In Vitro Banana Shoots. Journal of Plant Growth Regulation, 42(9), 5700–5712, **Q1**

Abeed, A. H., Al-Huqail, A. A., Albalawi, S., Alghamdi, S. A., Ali, B., Alghanem, S. M., ... & **El-Mahdy, M. T.** (**2023**). Calcium nanoparticles mitigate severe salt stress in Solanum lycopersicon by instigating the antioxidant defense system and renovating the protein profile. South African Journal of Botany, 161, 36–52, **Q2**

Abeed, A. H., Tammam, S. A., & **El-Mahdy, M. T.** (**2022**). Hydrogen peroxide pretreatment assisted phytoremediation of sodium dodecyl sulfate by Juncus acutus L. BMC Plant Biology, 22(1), 591, **Q1**

Elkady, E. M., **Elmahdy, M. T.**, Elakkad, M. M., & Mostafa, R. A. (**2022**). Effect of Spraying with Amino Acids, Yeast, and Some Plant Extracts on Fruiting of Sewi Date Palm. Assiut Journal of Agricultural Sciences, 53(4), 79–91.

El-Mahdy, M.T., Youssef, M. & Elazab, D.S. (**2022**). In vitro screening for salinity tolerance in pomegranate (Punica granatum L.) by morphological and molecular characterization. Acta Physiologiae Plantarum 44, 27, **Q2**

Elazab, D. S., Ahmed, M. A. I., **El-Mahdy, M. T.**, & Amro, A. (**2021**). Citrus leafminer management: jasmonic acid versus efficient pesticides. Journal of Plant Growth Regulation, 40, 824–830, **Q1**

El-Mahdy, M.T., Abdel-Wahab, D.A. &Youssef, M. (**2021**). In vitro morpho- physiological performance and DNA stability of banana under cadmium and drought stresses. In Vitro Cellular & Developmental Biology - Plant, 57, 460–469, **Q2**

Elazab, D. S., Abdel-Wahab, D. A., & **El-Mahdy, M.T.** (**2021**). Iron and zinc supplies mitigate cadmium toxicity in micropropagated banana (Musa spp.). Plant Cell, Tissue and Organ Culture (PCTOC), 145, 367–377, **Q2**

Ibrahim, R. A., **EL- Mahdy, M. T.**, Taha, M. A. M. & Shaaban, M.M. (**2021**). Improving the quantitative and qualitative of Manfalouty pomegranate cultivar. SVU- International Journal of Agricultural Sciences, 3, 31–52.

El-Mahdy, M. T., & Elazab, D.S. (**2020**). Impact of zinc oxide nanoparticles on pomegranate growth under in vitro conditions. Russian Journal of Plant Physiology, 67, 162–167, **Q3**

Mohamed, A. K. A., El-Salhy, A. M., Mostafa, R. A. A., **El-Mahdy, M. T.**, & Hussein, A. S. (**2019**). Effect of Exogenous Abscisic Acid (ABA), Gibberellic Acid (GA3) and Cluster Thinning on Yield of some Grape Cultivars. Journal of Plant Production, 10, 101–105.

El-Mahdy, M. T., & Youssef, M. (**2019**). Genetic homogeneity and high shoot proliferation in banana (Musa acuminataColla) by altering medium thiamine level and sugar type. In Vitro Cellular & Developmental

Biology-Plant, 55, 668–677, **Q2**

El-Mahdy, M. T., Radi, A. A., & Shaaban, M. M. (**2019**). Impacts of exposure of banana to silver nanoparticles and sliver ions in vitro. Middle East J Appl Sci, 9(3), 727–740.

El-Mahdy, M. T., Youssef, M., & Eissa, M. A. (**2018**). Impact of in vitro cold stress on two banana genotypes based on physio-biochemical Evaluation. South African Journal of Botany, 119, 219–225, **Q2**

Mostafa, F. M. A., Shaaban, M. M., Elazab, D. S., & **Kamel, M. T**. (**2015**). In vitro propagationof four grape cultivars. Assiut Journal of Agricultural Sciences, 46, 1110–0486.

El-Agamy, S. Z., Mostafa, R. A., Shaaban, M. M., & **El-Mahdy, M. T**. (**2010**). In vitro salt anddrought tolerance of Manfalouty and Nab El-Gamal pomegranate cultivars. Australian Journal of Basic and Applied Sciences, 4, 1076–1082.

El-Agamy, S. Z., Mostafa, R. A., Shaaban, M. M., & **El-Mahdy, M. T**. (**2009**). In vitro propagation of Manfalouty and Nab El-gamal pomegranate cultivars. Res J Agric BiolSci, 5, 1169–1175.

Book Chapters

Jha, Y., Macwan, A., **El-Mahdy, M. T.**, Dawood, M. F., & Mohamed, H. I. (2025). Proteinaceous Elicitors: Keys to Unlocking Plant Defense Mechanisms. In Elicitors for Sustainable Crop Production (pp. 275-296). Springer, Singapore.

El-Mahdy, M. T., Hamed, H. A., Mohamed, H. I., & Dawood, M. F. (2025). Rhizomicrobiome as potential agents used against polyaromatic hydrocarbons contaminated soils for plants. In Rhizomicrobiome in Sustainable Agriculture and Environment(pp. 449-471). Academic Press.

Jha, Y., Mohamed, H. I., **El-Mahdy, M. T.**, & Dawood, M. F. (2024). Jasmonic Acid: Application for Growth Improvement and Protection against Biotic Stress. In Plant Growth Regulators to Manage Biotic and Abiotic Stress in Agroecosystems (pp. 150-172). CRC Press.

Dawood, M. F., Mohamed, H. I., Jha, Y., & **El-Mahdy, M. T.** (2024). Karrikin Regulation of Biosynthesis, Hormonal Crosstalk, and Its Role In Biotic and Abiotic Stress Adaptation. In Plant Growth Regulators to Manage Biotic and Abiotic Stress in Agroecosystems (pp. 278-309). CRC Press.