Messa a punto di tecniche di coltivazione in ambiente protetto di specie ornamentali

Definition of improved cultivation protocols for ornamental crops in Controlled Environment Agriculture

Abstract:

The research project focuses on developing cultivation protocols for ornamental crops in Controlled Environment Agriculture (CEA), encompassing greenhouses and vertical farming systems. Collaborating with various ongoing projects, including Sustainable Vertical Farming (VFarm) and FrontAgNexus, the study will primarily take place at the Department of Agricultural Sciences in Bologna, utilizing experimental facilities such as AlmaVFarm, LED and greenhouse experimental labs. Main research activities include assessing the impact of artificial lighting on ornamental crop growth, devising innovative cultivation protocols, and evaluating the associated resource use efficiency and environmental impacts. Anticipated outcomes comprise scientific publications, international conference presentations, student supervision, technical reporting, and dissemination events. The ideal candidate should hold a PhD in agricultural sciences, possess expertise in plant physiology and stress management, and demonstrate proficiency in English.

The research project:

This research project will target the identification of cultivation protocols in Controlled Environment Agriculture (CEA), including greenhouses and vertical farming systems, for specific ornamental crops, in collaboration with ongoing research projects including:

- MUR-PRIN-2020ELWM82, CUP:J33C20002350001 Sustainable Vertical Farming (VFarm);
- PRIMA-2242 Demonstrating the socio-economic and ecological impacts of the Water, Energy, Food, and Ecosystem Nexus approach at the agricultural production and policy levels in the Mediterranean Regions. (FrontAgNexus);
- Horizon -101083790 INtegrated and Circular Technologies for Sustainable city region FOOD systems in Africa (InCitis-Food).

Methodology and tasks:

The research will mostly be carried out in Bologna at the Department of Agricultural Sciences, and more specifically at its experimental facilities (including the experimental vertical farm AlmaVFarm, the LED lab, as well as the experimental greenhouses of the department. Besides, it may also integrate conduction of research at the experimental facilities of the Campus in Imola of the University of Bologna, and in other projects and farms where ornamental crops are under research in collaboration with the University of Bologna.

Main research questions will integrate:

- Effects of artificial lighting on establishment and cultivation of ornamental crops;
- Definition of innovative protocols for indoor cultivation of ornamental crops, both as nursery plant material, as well as throughout their whole cycle;
- Validation of resource use efficiency and environmental impacts associated with ornamental crop production in Controlled Environment Agriculture.

Foreseen output

The research should lead to the implementation of the following output:

- Elaboration of at least 2 scientific articles – to be published in ISI-indexed peer reviewed journals.
- Presentation of project results in at least 2 international academic conferences.
- Supervision of Bachelor, Master and PhD students, during their thesis or internship.
- Contribution to technical and financial reporting of activities linked to the research.
- Realization of dissemination events and workshops linked to the research output.

Requirements

The candidate should possess a PhD in agricultural sciences and technologies or a related field. Preferred competences will include experiences in conducting experiments on plant physiology, abiotic stress managements and response in plants, and acquaintance with most common lab analyses in plant research. Fluency in English is required, while capacity to communicate in Italian is preferrable, given the need to interact with farmers, technical staff and trial visitors.

Further information

Pistillo A.; Pennisi G.; Crepaldi A.; Giorgioni M.E.; Minelli A.; Orsini F.; Gianquinto G., Influence of red:blue ratio in LED lighting for indoor cultivation of edible marigold flowers, in: Acta Horticulturae, International Society for Horticultural Science, «ACTA HORTICULTURAE», 2022, 1337, pp. 249 – 254

Carotti L.; Potente G.; Pennisi G.; Ruiz K.B.; Biondi S.; Crepaldi A.; Orsini F.; Gianquinto G.; Antognoni F., Pulsed led light: Exploring the balance between energy use and nutraceutical properties in indoor-grown lettuce, «AGRONOMY», 2021, 11, Article number: 1106 , pp. 1 – 15

Giorgioni, M.E.; Minelli, A.; Felice, E.; Orsini, F., Device-supported spread of experimental results in a rose trial garden, «ACTA HORTICULTURAE», 2020, 1298, pp. 607 – 612

Orsini, Francesco; Pennisi, Giuseppina; Michelon, Nicola; Minelli, Alberto; Bazzocchi, Giovanni; Sanyé-Mengual, Esther; Gianquinto, Giorgio, Features and Functions of Multifunctional Urban Agriculture in the Global North: A Review, «FRONTIERS IN SUSTAINABLE FOOD SYSTEMS», 2020, 4, Article number: 562513 , pp. 1 - 27

Link to ongoing research projects connected with the research:

- https://incitis-food.eu/
- https://frontagnexus.eu/
- https://site.unibo.it/vfarm/it
- www.unibo.it/vertifarm2024
- https://site.unibo.it/rescue-ab/en