

# **III International Symposium on Soilless Culture and Hydroponics:**

**Innovation and advanced technology for circular horticulture**

**ISHS International Symposium**



**Program**

**09:00-09:30 Welcome Ceremony and Opening Remarks**  
*Moderator: Stefania De Pascale, University of Naples, Italy*  
*Nikolaos Tzortzakis-convener- Welcoming*  
*Panayiotis Zaphiris-CUT Rector- Welcoming*  
*Stefania De Pascale- ISHS-Welcoming and ISHS presentation*  
*Silvana Nicola-co-convener -Welcoming and starting*

**09:30-11:00 Session I: Indoor Farming and Microclimate**  
*Moderator: Silvana Nicola, University of Turin, Italy*

## Invited lecture

**L1 09:30-10:00 The Colourful Life of Plants in Indoor Farming**  
*Leo F.M. Marcelis, Wageningen University, The Netherlands*

## Oral Communications

**O1 10:00-10:15 Effect of supplementary light on growth, yield and fruit quality of two tomato cultivars grown in High-Tech glasshouse**  
*Abdulaziz Alharbi, National Research and Development Center for Sustainable Agriculture, Kingdom of Saudi Arabia*

**O2 10:15-10:30 Microclimate analysis to test the performance of an experimental two-level unit in the hydroponic greenhouse**  
*Helena Vitoshkin, Institute of Agricultural Engineering, Agricultural Research Organization, The Volcani Center, Israel*

**O3 10:30-10:45 Evolution of soilless culture in Chile**  
*Gilda Carrasco, University of Talca, Chile*

**10:45-11:00 Question time/Remarks**

**11:00-11:15 Coffee break**

**11:15-13:00 Session II: Soilless Culture and Substrates**  
*Moderator: Wim Voogt, Wageningen University and Research, The Netherlands*

## Oral Communications

**O4 11:15-11:30 Peat reduced substrates for vegetable seedlings**  
*Nazim Gruda, University of Bonn, Germany*

**O5 11:30-11:45 The effects of irrigation frequency on water and heat regimes in different substrates and their mixtures: tomato as a case study**  
*Asher Bar-Tal, Institute of Soils, Water and Environmental Science, ARO, The Volcani Center, Israel*

**O6 11:45-12:00 Opportunities and challenges of using non-thermal plasma treatments in soilless cultures: experience from greenhouse experiments**  
*Daniele Massa, CREA Research Centre for Vegetable and Ornamental Crops, Italy*

**O7 12:00-12:15 Closed nutrient solution systems in Portuguese tomato greenhouses**  
*Margarida Oliveira, Polytechnic Institute of Santarém, Portugal*

**12:15-12:20 Question time/Remarks**

**12:20-13:00 Round table- Discussion forums (DF)**  
**DF1: Water and Nutrition Management**  
*Moderator: Wim Voogt-The Netherland*  
**DF2: New Technology**  
*Moderator: Silvana Nicola-Italy*

**13:00-14:00 Lunch break**



## Programme- Friday, March 19, 2021

**14:00-15:30 Session III: Biocontrol and Bionutrition in Soilless Culture**  
*Moderator: Antonios Chrysargyris, Cyprus University of Technology, Cyprus*

*Invited lecture*

**L2 14:00-14:30 Biological Control of Root Pathogens in Soilless Cultures**  
*Monica Höfte, Ghent University, Belgium*

*Flash poster presentation*

**14:30-15:30 Flash poster presentation (No 1-21)**

**15:30-15:45 Coffee break**

**15:45-17:10 Session III: Biocontrol and Bionutrition in Soilless Culture**  
 (continue)  
*Moderator: Haissam Jijakli, University of Liege, Belgium*

*Oral Communications*

**O8 15:45-16:00 Treatment of biofilm formation in irrigation lines in zero liquid discharge cultivation systems**

*Jim Van Ruijven, Wageningen University and Research, The Netherlands*

**O9 16:00-16:15 Survival and transfer of Salmonella Enteritidis in lettuce cultivated in hydroponics as affected by different pH of nutrient solution**

*Panayiota Xylia, Cyprus University of Technology, Cyprus*

**O10 16:15-16:30 Potential accumulation of cleaning products in closed soilless culture systems**

*Erik Van Os, Wageningen University and Research, The Netherlands*

**O11 16:30-16:45 Organic Hydroponics: A US Reality Challenging the Traditional Concept of 'Organic' and 'Soilless' Cultivation**

*Francesco Di Gioia, The Pennsylvania State University, United States of America*

**O12 16:45-17:00 Organic sources of nutrient supply for tomatoes and asian herbaceous vegetables in soilless culture systems**

*Michael Böhme, Humboldt-Universität zu Berlin, Germany*

**17:00-17:10 Question time/Remarks**



## Programme- Saturday, March 20, 2021

**09:00-09:15**    **Opening Remarks**  
*Nikolaos Tzortzakis-Silvana Nicola*

**09:15-11:00**    **Session IV: Nutrient Solution Management & Salinity**  
*Moderator: Stefania De Pascale, University of Naples, Italy*

*Invited lecture*

**L3    09:15-09:45    Optimizing Plant Nutrition in Open and Closed Hydroponic Systems**  
*Dimitrios Savvas, Agricultural University of Athens, Greece*

*Oral Communications*

**O13    09:45-10:00    Tailor-made hydroponic recipes for the production of high quality medicinal and aromatic plants**

*Antonios Chrysargyris, Cyprus University of Technology, Cyprus*

**O14    10:00-10:15    Effect of different nitrogen fertilization levels on plant growth performance, yield and 6-gingerol content of ginger (*Zingiber officinale* Roscoe) cultivated in soilless culture system**

*Yaseer Suhaimi Mohd, Malaysian Agricultural Research and Development Institute, Malaysia*

**O15    10:15-10:30    Development of a robust nitrate sensor for online measurements**

*Geert Franken, Wageningen University and Research, The Netherlands*

**O16    10:30-10:45    Influence of different ammonium and nitrate ratio on yield and quality of rocket**

*Antonio Ferrante, University of Milan, Italy*

**10:45-11:00**    Question time/Remarks

**11:00-11:15**    Coffee break

**11:15-13:00    Session IV: Nutrient Solution Management & Salinity (continue)**  
*Moderator: Daniele Massa, CREA Research Centre for Vegetable and Ornamental Crops, Italy*

*Oral Communications*

**O17    11:15-11:30    Performance of hydroponic Pak choi (*Brassica rapa* subsp. *chinensis*) under elevated sodium conditions**

*Andrej Svyantek, North Dakota State University, United States of America*

**O18    11:30-11:45    Dealing with Na accumulation in soilless grown crops with recirculation of drainage**

*Wim Voogt, Wageningen University and Research, The Netherlands*

**O19    11:45-12:00    Evaluation of lettuce (*Lactuca sativa*) production under hydroponic system; organic liquid versus mineral nutrient solution**

*Zienab Ahmed, United Arab Emirates University, United Arab Emirates*

**12:00-12:10**    Question time/Remarks

**12:10-12:20**    Meet the sponsors

- *SQM (Koen D'Haeyer)*
- *Urbinati s.r.l. (Alessandro Mazzacano)*

**12:20-13:00    Round table- Discussion forums (DF)**

**DF3: Organic Hydroponics: Research need and Future Perspectives**

*Moderator: Francesco Di Goia- United States of America*

**DF4: Aquaponics**

*Moderator: Ranka Junge- Switzerland*

**13:00-14:00**    Lunch break



## Programme- Saturday, March 20, 2021

### 14:00-15:30 Session V: Aquaponics and Urban Farming

Moderator: *Andrea Ertani, University of Turin, Italy*

#### Invited lecture

**L4 14:00-14:30 Urban Agriculture: An Emerging Sector Stimulating Research and Innovation on Soilless Culture Including Hydroponics and Aquaponics**

*Haissam Jijakli, University of Liege, Belgium*

#### Flash poster presentation

**14:30-15:30 Flash poster presentation (No 22-43)**

**15:30-15:45 Coffee break**

### 15:45-17:10 Session V: Aquaponics and Urban Farming (continue)

Moderator: *Ranka Junge, Zurich University of Applied Sciences, Switzerland*

#### Oral Communications

**O20 15:45-16:00 Water efficient food production in the north**  
*Siv Lene Skar, NIBIO - Norwegian Institute for Bioeconomy, Norway*

**O21 16:00-16:15 Utilization of run-off nitrate from recirculating aquaculture systems for hydroponic crop cultivation**  
*Oyvind M. Jakobsen, CIRiS, NTNU Social Research, Norway*

**O22 16:15-16:30 Microorganisms in aquaponics: insights on their functions and the kinetics of their communities' evolution over the course of a full lettuce growth cycle**  
*Mathilde Eck, University of Liege, Belgium.*

**O23 16:30-16:45 Microbiome and C supply strategies for the rooting medium of an urban rooftop vegetable farm**  
*Bart Vandecasteele, ILVO, Belgium*

**O24 16:45-17:00 Life Cycle Assessment for the determination of key environmental impact indicators in soilless tomato culture and mitigation potential**  
*Vassilios Litskas, Cyprus University of Technology, Cyprus*

**17:00-17:10 Question time/Remarks**



## Programme- Sunday, March 21, 2021

**09:00-09:15 Opening Remarks**  
Nikolaos Tzortzakis-Silvana Nicola

**09:15-11:00 Session VI: Biofortification and Biostimulants**  
Moderator: Dimitrios Savvas, Agricultural University of Athens, Greece

*Invited lecture*

**L5 09:15-09:45 Chemical Eustress and Biofortification: Targeted Nutrient Solution Management for Enhancing Quality in Hydroponically Grown Vegetables**  
*Stefania De Pascale, University of Naples, Italy*

*Oral Communications*

**O25 09:45-10:00 Biostimulants and their role in improving plant nutrition in hydroponic conditions**

*Andrea Ertani, University of Turin, Italy*

**O26 10:00-10:15 The impact of heated nutrient solution on yield and chemical composition of hydroponically grown 'baby leaf vegetables**

*Athanasios Koukounaras, Aristotle University of Thessaloniki, Greece*

**O27 10:15-10:30 Design of test and imaging tools to evaluate biostimulant effects on plant roots hydroponically grown**

*Rafael Anton-Herrero, Autonomous University of Madrid, Spain*

**O28 10:30-10:45 Nutritional value of five new tomato (*Solanum lycopersicum* L.) cultivars in a commercial glasshouse in the Mediterranean area**

*Onofrio Davide Palmitessa, University of Bari Aldo Moro, Italy*

**10:45-11:00 Question time/Remarks**

**11:00-11:15 Coffee break**

**11:15-12:00 Session VII: New Growing Systems**  
Moderator: Antonio Ferrante, University of Milan, Italy

*Invited lecture*

**L6 11:15-11:45 Floating Growing Systems and New Growing Systems® to Grow Leafy Vegetables and Herbs**  
*Silvana Nicola, University of Turin, Italy*

*Oral Communications*

**O29 11:45-12:00 Assessing the potential of the hydroponic greenhouse cultivation of leek (*Allium porrum*) in gutters**

*Robin Van Havermaet, PCG - Vegetable Research Centre, Belgium*

**12:00-13:30 Session VIII: Industrial and ISHS WG-Meeting and Closing Ceremony**

*Moderators: Nikolaos Tzortzakis, Convener, Silvana Nicola, Co-convener*

**12:00-12:15 Young Minds Awards**

**12:15-13:10 ISHS WG- Business meeting**

*Moderators: Graeme Smith, Chair – ISHS Working Group – Hydroponics & Aquaponics; Erik Van Os- Wageningen University and Research*

**13:10-13:30 Closing ceremony**

*Moderator: Stefania De Pascale, ISHS Division – Protected Cultivation & Soilless Culture*



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