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# Chairperson's Message

# Welcome to AgriVoltaics2022!

In 2020, the AgriVoltaics conference was "launched" and the small community, working to develop innovative solutions to combine agricultural production and PV energy, met for the first time. It was great and surprising to see that this community was actually not so small; it was spread over all five continents, and united by the belief that agrivoltaics are perfectly suited to a sustainable energy transition. We all know that there is no one solution to suit all, and that we have a long road ahead to further understand and improve agrivoltaic systems. And it is in this time, when sustainable solution are urgently needed, that our community must collaborate to accelerate the availability of sound agrivoltaic systems. Exchange of information and experiences was at the core of AgriVoltaics2021, where the importance of "connecting" agrivoltaics worldwide was highlighted, and despite it being held online it was a great success!

The growth of agrivoltaics is exponential, as indicated by the ever-increasing number of scientific publications on the topic, by the number of new agrivoltaic systems installed and last but not least by the interest that large energy players and governments have paid to agrivoltaics. In Italy, for example, the government has decided to invest over 1 bn € of the recovery fund in agrivoltaic technologies. Our community now has a great opportunity, but also a responsibility to develop and bring forward true agrivoltaic systems where the production of PV electricity is necessarily coupled to agricultural produc-

tion. While we work to optimise AV systems, we must also make sure that the policies supporting their implementation will prevent agrivoltaic projects from being abandoned, and becoming nothing more than ground mounted



PV systems. This should be our concern when "bringing agrivoltaics forward".

AgriVoltaics2022 will be organised in "hybrid mode", though I really hope it will be the first AgriVoltaics conference that you will attend in person. The Province of Piacenza has a great tradition of energy production: the largest Italian nuclear plant operated here from 1981 until 1990, when it was closed following the referendum of 1987; there is a large hydroelectric plant on the Po River; but more importantly, you will be able to visit two of the largest and longest-standing agrovoltaic plants in Europe!

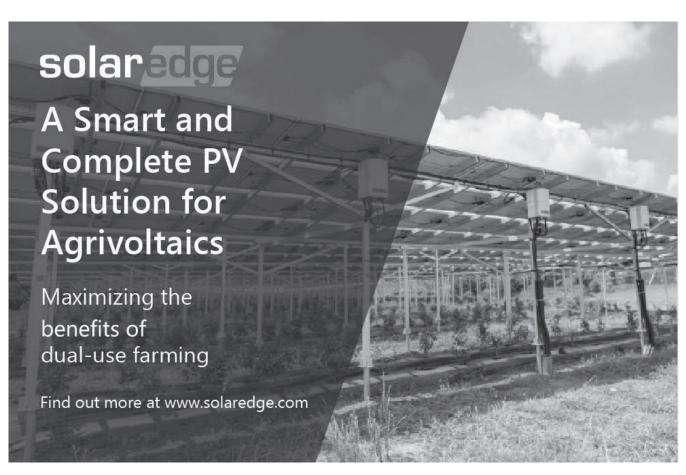
Should you need another reason to join us in Piacenza, then I should mention all the traditional foods and wines the area has to offer!

Looking forward to seeing you here,

Stefano Amaducci Università Cattolica del Sacro Cuore Conference Chair AgriVoltaics2022

Chairperson's Message







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# **Committees**

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Stefano Amaducci, Conference Chair (UNICATT, Italy) Alessandro Agostini (ENEA, Italy)

Greg Barron-Gafford (University of Arizona, USA)

Ori Ben-Herzel (MIGAL, Israel)

Jan Capelle (KU Leuven, Belgium)

Michelle Colauzzi (UNICATT, Italy)

Didier Combes (INRAé, France)

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Anna Heimsath (Fraunhofer ISE, Germany)

David Jung (Fraunhofer Chile, Chile)

Christine Lamanna (ICRAF, Kenya)

Iris Lewandowski (University of Hohenheim, Germany)

Wen Liu (University of Science and Technology of China, China) Asin Luis (Institute of Agrifood Research and Technology, Spain) Soo-Young Oh (Yeungnam University, Korea)
Richard Randle-Boggis (University of Sheffield, UK)
Alessandra Scognamiglio (ENEA, Italy)
Thierry Simoneau (INRAé, France)
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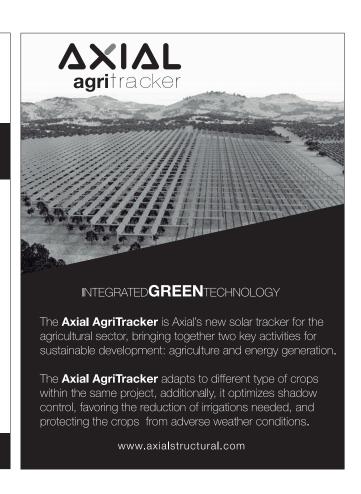






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Committees 7

# Wednesday, June 15, 2022

# 10:15 - Opening Session

10:30 All sessions will take place in the "Auditorium Mazzocchi" (unless otherwise specified in the program).

# **Opening Remarks**

S. Amaducci, Università Cattolica del Sacro Cuore

# 10:30 - Overcoming Barriers to Bring Agrivoltaics Forward 12:00

- 10:30 Perception on Dual Land Use Approaches: Drivers and Barriers to AV Adoption
  - G. Torma<sup>1</sup>, J. Aschemann-Witzel<sup>1</sup>
  - <sup>1</sup> Aarhus University
- 10:50 Agrivoltaics in China: A Study of the Current State of Agrivoltaics Development, Governmental Support Schemes, and Stakeholder Groups' Perspectives and Acceptance Based on Expert Interviews
  - T. Fan<sup>1</sup>, M. Trommsdorff<sup>1</sup>, S. Gölz<sup>1</sup>, J. He<sup>2</sup>
  - <sup>1</sup> Fraunhofer ISE; <sup>2</sup> Research Centre for Energy Transition and Social Development, Tsinghua University
- 11:05 Large-Scale AgriVoltaics Visualisations for Assessing Landscape Impacts and Social Acceptance
  - T. Schauppenlehner<sup>1</sup>, K. Bittner<sup>1</sup>, M. Baumgartinger-Seiringer<sup>1</sup>
  - <sup>1</sup> University of Natural Resources and Life Sciences, Vienna
- 11:20 Determining Use Cases for Agrivoltaics in East Africa
  - **C. Lamanna**<sup>1</sup>, T. Neesham-McTiernan<sup>1</sup>, R. Randle-Boggis<sup>2</sup>, M. Cotton<sup>3</sup>, S. Hartley<sup>2</sup>
  - <sup>1</sup> World Agroforestry (ICRAF); <sup>2</sup> University of Sheffield; <sup>3</sup> Teesside University
- 11:35 COVID-19 and the Political Economy of Agrivoltaic Systems in East Africa
  - J. Onyango<sup>1</sup>, E. Lara<sup>2</sup>, K. Ochieng<sup>3</sup>, G. Kivati<sup>4</sup>
  - <sup>1</sup> African Centre for Technology Studies (ACTS); <sup>2</sup> CREER; <sup>3</sup> Copperbelt University;
  - <sup>4</sup> Sustainable Business Consulting
- 12:00 Lunch Break

14:00

8 Wednesday, June 15



# 14:00 - Industry Talk 14:45

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# 14:45 - Parallel Session 1: Reports From AV Development Worldwide

16:15	Room	"Auditorium	Mazzocchi"
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- 14:45 Agrivoltaics in Japan: A Legal Framework Analysis
  - C. Doedt<sup>1</sup>, M. Tajima<sup>2</sup>, T. Iida<sup>2</sup>

<sup>1</sup> Japan Community Power Association; <sup>2</sup> Institute for Sustainable Energy Policies

- 15:05 Analyzing Policy Framework of Agrivoltaics across the Water Energy and Food (WEF)
  Nexus: Case Study of The Gambia
  - T. Kanyepi<sup>1</sup>, E.G. Tambo<sup>1</sup>, D. Trewally<sup>2</sup>, L. Dibba<sup>2</sup>

<sup>1</sup> Pan Africa University Institute of Water and Energy Sciences including climate change (PAUWES); <sup>2</sup> National Agriculture Research Institute, Gambia

15:20 Mitigating Environmental and Social Impacts of Aquavoltaics in Taiwan: Policy Design and Implementation

Y. Chir

Industrial Technology Research Institute

- 15:35 PlusIQ Agro-Photovoltaics: Legal Barriers and Conditions for an Effective Implementation of APV in the Austrian Context
  - G. Damjanovic<sup>1</sup>, D. Wagner<sup>1</sup>

Presented by D. Wagner<sup>1</sup>

<sup>1</sup> Research Unit of Law at the Technische Universität Wien

- 15:50 Assessment of Economic Synergies of Agrivoltaics in the Distributed Generation Segment in Chile
  - F. Schönberger<sup>1</sup>, D. Jung<sup>1</sup>, W. Montes<sup>1</sup>
  - <sup>1</sup> Fraunhofer Chile Research Center for Solar Energy Technologies

# 14:45 - Parallel Session 1: Crop Yield Under Agrivoltaic Conditions

- 16:15 Room "Sala Piana"
- 14:45 Crop Response to Agrivoltaics in Soft Fruit Production
  - **H. Helsen**<sup>1</sup>, B. Maestrini<sup>2</sup>, E. Meijers<sup>1</sup>, M. Hermelink<sup>2</sup>, W. De Vries<sup>3</sup>, P. Balk<sup>1</sup>, F. De Ruijter<sup>2</sup>

    <sup>1</sup> Wageningen University & Research, Field Crops; <sup>2</sup> Wageningen University & Research, Agrosystems Research; <sup>3</sup> GroenLeven

Wednesday, June 15

15:05	Pear Harvest in an Agrivoltaic Cropping System: Results from 2021 and Future Perspectives
	<b>T. Reher</b> <sup>1</sup> , B. Willockx <sup>1</sup> , J. Bisschop <sup>1</sup> , J. Diels <sup>1</sup> , A. Schenk <sup>2</sup> , B. Nicolaï <sup>1</sup> , J. Cappelle <sup>1</sup> , B. Van de Poel <sup>1</sup>
	<sup>1</sup> KU Leuven; <sup>2</sup> Flanders Centre of Postharvest Technology
15:20	Impact of Shading with Photovoltaic Panels on Fruit Quality. Case Study in Apple Orchard
	<b>P. Juillion</b> <sup>1</sup> , G. Lopez <sup>1</sup> , M. Génard <sup>2</sup> , V. Lesniak <sup>3</sup> , G. Vercambre <sup>2</sup> , D. Fumey <sup>1</sup> <sup>1</sup> Sun'Agri; <sup>2</sup> INRAE; <sup>3</sup> Station expérimentale de la Pugère
15:35	Tomato Yield and Quality in a Dynamic Agrivoltaic Greenhouse
	<b>N. Savalle-Gloire</b> <sup>1</sup> , G. Vercambre <sup>2</sup> , J. Chopard <sup>1</sup> , R. Blanchard-Gros <sup>3</sup> , J. Catala <sup>3</sup> , D. Fumey <sup>1</sup> , H. Gautier <sup>2</sup>
	<sup>1</sup> Sun'Agri; <sup>2</sup> INRAE, UR PSH; <sup>3</sup> INRAE
15:50	Agro Photovoltaic: Feasibility of Synergistic System in the Sugarcane Bioenergy Sector
	M.A. Stefani¹, J. Felema²
	<sup>1</sup> MBA - Luiz de Queirós School of Agronomics - University of São Paulo; <sup>2</sup> MBA - Luiz de Queirós School of Agronomics - University of São Paulo - FUP University of Brasilia
16:15 - 16:30	Short Coffee Break
16:30 -	Parallel Session 2: Mapping and Implementing Agrivoltaics
18:00	Room "Auditorium Mazzocchi"
<b>18:00</b> 16:30	Room "Auditorium Mazzocchi"  A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania
	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania <b>T. Neesham-McTiernan</b> <sup>1</sup> , C. Lamanna <sup>1</sup> , S. Hartley <sup>2</sup> , R. Randle-Boggis <sup>2</sup>
16:30	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania <b>T. Neesham-McTiernan</b> <sup>1</sup> , C. Lamanna <sup>1</sup> , S. Hartley <sup>2</sup> , R. Randle-Boggis <sup>2</sup> <sup>1</sup> World Agroforestry (ICRAF); <sup>2</sup> University of Sheffield
16:30	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania  T. Neesham-McTiernan <sup>1</sup> , C. Lamanna <sup>1</sup> , S. Hartley <sup>2</sup> , R. Randle-Boggis <sup>2</sup> <sup>1</sup> World Agroforestry (ICRAF); <sup>2</sup> University of Sheffield  Prospective Study of Satellite Imagery Potential for Agrivoltaics Monitoring  C. Killisly <sup>1</sup> , E. Drahi <sup>2</sup> , E. Le Borgne <sup>2</sup> , G. Poulain <sup>2</sup>
16:30 16:50	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania <b>T. Neesham-McTiernan</b> <sup>1</sup> , C. Lamanna <sup>1</sup> , S. Hartley <sup>2</sup> , R. Randle-Boggis <sup>2</sup> <sup>1</sup> World Agroforestry (ICRAF); <sup>2</sup> University of Sheffield  Prospective Study of Satellite Imagery Potential for Agrivoltaics Monitoring <b>C. Killisly</b> <sup>1</sup> , E. Drahi <sup>2</sup> , E. Le Borgne <sup>2</sup> , G. Poulain <sup>2</sup> <sup>1</sup> MODIS; <sup>2</sup> TotalEnergies One Tech R&D
16:30 16:50	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania  T. Neesham-McTiernan¹, C. Lamanna¹, S. Hartley², R. Randle-Boggis²  ¹ World Agroforestry (ICRAF); ² University of Sheffield  Prospective Study of Satellite Imagery Potential for Agrivoltaics Monitoring  C. Killisly¹, E. Drahi², E. Le Borgne², G. Poulain²  ¹ MODIS; ² TotalEnergies One Tech R&D  Challenges and Solutions for the Land Supply for Solar Farms in China
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16:30 16:50 17:05	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania  T. Neesham-McTiernan¹, C. Lamanna¹, S. Hartley², R. Randle-Boggis²  ¹ World Agroforestry (ICRAF); ² University of Sheffield  Prospective Study of Satellite Imagery Potential for Agrivoltaics Monitoring  C. Killisly¹, E. Drahi², E. Le Borgne², G. Poulain²  ¹ MODIS; ² TotalEnergies One Tech R&D  Challenges and Solutions for the Land Supply for Solar Farms in China  M. Zhou¹, H. Zhang¹, W. Jia¹, X. Jia², J. He¹  ¹ Research Centre for Energy Transition and Social Development;  ² UNITED NATIONS Convention to Combat Desertification Secretariat  Fostering Implementation of Sustainable Agrivoltaics Systems: Revised Terminology
16:30 16:50 17:05	A Spatial Analysis of the Suitability for Agrivoltaics in Tanzania  T. Neesham-McTiernan¹, C. Lamanna¹, S. Hartley², R. Randle-Boggis²  ¹ World Agroforestry (ICRAF); ² University of Sheffield  Prospective Study of Satellite Imagery Potential for Agrivoltaics Monitoring  C. Killisly¹, E. Drahi², E. Le Borgne², G. Poulain²  ¹ MODIS; ² TotalEnergies One Tech R&D  Challenges and Solutions for the Land Supply for Solar Farms in China  M. Zhou¹, H. Zhang¹, W. Jia¹, X. Jia², J. He¹  ¹ Research Centre for Energy Transition and Social Development;  ² UNITED NATIONS Convention to Combat Desertification Secretariat  Fostering Implementation of Sustainable Agrivoltaics Systems: Revised Terminology and Definitions  A. Scognamiglio¹, C. Toledo¹, N. Colonna¹, P. Picchi², S. Stremke³

10 Wednesday, June 15



# 16:30 -Parallel Session 2: Crop Physiology Under Agrivoltaics 18:00 Room "Sala Piana" 16:30 Agrivoltaics as a Cure for Midday Depression: Shade from PV Provides Respite for Food Crops in Drylands **G. Barron-Gafford**<sup>1</sup>, K. Lepley<sup>1</sup>, A. Salazar<sup>1</sup>, I. Barnett-Moreno<sup>1</sup>, C. Ortega<sup>1</sup>, M. Rogers<sup>1</sup>, P. Murphy<sup>1</sup> <sup>1</sup> University of Arizona 16:50 Transient, Recurrent Shading Effect on Grapevine Photosynthetic Capacity in Agrivoltaic Systems **B. Tiffon-Terrade** Sun'Aari/INRAE 17:05 A Case Study of Soybean (Glycine max L.) under Agrivoltaic System and Modelling Simulation E. Potenza<sup>1</sup>, M. Colauzzi<sup>1</sup>, S. Amaducci<sup>1</sup> <sup>1</sup> Università Cattolica del Sacro Cuore 17:20 Effect of the Shade Generated by Simulated Solar Panels on the Physiology and Productivity of Vitis vinifera L. cv. Malbec. M.B. Gomez Tournier<sup>1</sup>, J.A. Prieto<sup>1</sup>, M.L. Fanzone<sup>1</sup>, S.E. Sari<sup>1</sup>, B.H. Segovia<sup>1</sup> <sup>1</sup> INTA 17:35 Effect of Shading in an Agri-PV System on Structure and Growth of Ornamental Plants C. Jedmowski<sup>1</sup>, S. Kherde<sup>1</sup>, A. Pahwa<sup>1</sup>, V. Schlechtrimen<sup>1</sup>, M. Meier-Grüll<sup>1</sup>, O. Muller<sup>1</sup> <sup>1</sup> Forschungszentrum Jülich GmbH/Institute of Bio- and Geosciences: Plant Sciences (IBG-2) Modelling the Agrivoltaics Environment 1 18:00 -19:00 18:00 Agrivoltaic Field with Spectral Splitting Collectors: Performance Modeling and Lab-Scale Experimental Results H. Vitoshkin ARO, Volcani Center 18:15 Assessment of an Agrivoltaic System in Wheat Field Using Bifacial Modules, Installed in Agadir, Morocco R. Benbba<sup>1</sup>, M. Akhsassi<sup>2</sup>, O. Ait Si Ahmed<sup>3</sup>, A. Wifaya<sup>4</sup>, H. El Mouden<sup>5</sup>, A. Outzourhit<sup>5</sup> <sup>1</sup> Materials Energy and Environment Laboratory, Cadi Ayyad University; <sup>2</sup> Materials and Renewable Energy Laboratory UIZ, Materials Energy and Environment Laboratory UCA; <sup>3</sup> Faculty of Applied Sciences – Ait Melloul, Ibn Zohr University; <sup>4</sup> Regional Center for Agricultural Research; 5 Materials Energy and Environment Laboratory 18:30 Plum Response to Partial Shading by Simulated Agro-Voltaic Panels M. Meron<sup>1</sup>, U. Marchaim<sup>1</sup>, J. Tsipris<sup>1</sup>, N. Shaked<sup>1</sup>, V. Levin-Orlov<sup>1</sup>

Wednesday, June 15

<sup>1</sup> MIGAL Galilee Research Institute

18:45 Monitoring Agrivoltaic Crop Performance and Phenology with a Low-Cost Camera System

**K. Lepley**<sup>1</sup>, G. Barron-Gafford<sup>1</sup>, A. Salazar<sup>1</sup>, P. Murphy<sup>1</sup>

1 University of Arizona

# Thursday, June 16, 2022

# 08:30 - Online Poster Session 1

- O9:30 Please log in to the online platform SCOOCS to visit the virtual poster booths. A - Agrivoltaics Systems | B - The Management of Agriculture Production Under Photovoltaic Panels | C - Technical Aspects | D - Environmental, Legal and Socio-Economic Aspects
- A-01 Experimental Investigation of an Agri-Voltaic System Performances in Arid Climate: Agadir, Morocco
  - M. Akhsassi<sup>1</sup>, O. Ait Si Ahmed<sup>2</sup>, A. Zaaboul<sup>2</sup>, A. Wifaya<sup>3</sup>, R. Bouharroud<sup>3</sup>, F. Elame<sup>3</sup>,

A. Amarraque<sup>3</sup>, R. Benbba<sup>4</sup>, M. Raoufi<sup>4</sup>, A. Bennouna<sup>4</sup>, A. Outzourhit<sup>4</sup>

- <sup>1</sup> Materials and Renewable Energy Laboratory UIZ + Materials Energy and Environment Laboratory UCA; <sup>2</sup> Faculty of Applied Sciences Ait Melloul, Ibn Zohr University;
- <sup>3</sup> Regional Center for Agricultural Research; <sup>4</sup> Materials Energy and Environment Laboratory, Cadi Ayyad University
- A-02 Selection of Optimal Module Array Density for Agrivoltaic Systems
  - H. Alam<sup>1</sup>, N. Butt<sup>1</sup>
  - <sup>1</sup> Lahore University of Management Sciences (LUMS)
- A-03 A Research of Cultivation of Green Onion under the Agrovoltaic with 660nm LED Supplemental Lighting
  - K. Bo Myung<sup>1</sup>, O. Wook<sup>2</sup>, S. Sang Gon<sup>2</sup>, O. Soo Young<sup>1</sup>
  - <sup>1</sup> School of Chemical Engineering, Yeungnam University;
  - <sup>2</sup> Department of Horticulture & Life Science, Yeungnam University
- A-07 Spectral Advantage of Vertical Bifacial Agrivoltaics Systems
  - R. Ammapet Vijayan

Amrita School of Engineering, Chennai Campus

- A-08 Effect of Module Transparency and Cell Layout on the Performance of an Orchard Agrivoltaic System
  - E. Bousi<sup>1</sup>, L. Gfüllner<sup>1</sup>, M. Hopf<sup>1</sup>, M. Trommsdorff<sup>1</sup>, M. Berwind<sup>1</sup>
  - <sup>1</sup> Fraunhofer ISE
- A-09 3D Irradiance and Energy Yield Simulation for Agrivoltaics in Greenhouses with Bifacial Photovoltaic (PV) Modules
  - I. El Boujdaini<sup>1</sup>, R. Bruhwyler<sup>2</sup>, J. Robledo<sup>1</sup>, B. Sarr<sup>1</sup>, J. Leloux<sup>1</sup>, F. Lebeau<sup>2</sup>
  - <sup>1</sup> LuciSun; <sup>2</sup> DEAL, BioDynE, Université de Liège
- A-10 Yield Optimization through Control Strategies in Tracked Agrivoltaic Systems
  - L. Gfüllner<sup>1</sup>, O. Muller<sup>2</sup>, M. Meier-Grüll<sup>2</sup>, C. Jedmowski<sup>2</sup>, M. Berwind<sup>1</sup>
  - <sup>1</sup> Fraunhofer ISE; <sup>2</sup> Forschungszentrum Jülich GmbH, Institut für Pflanzenwissenschaften IBG-2



A-12	Study of the Impact of Crop Development Duration Variability on Agrivoltaic Electrical Production
	<b>S. Héraud</b> <sup>1</sup> , A. Mallet <sup>2</sup> , A. Martinez <sup>2</sup> <sup>1</sup> Agrisoleo; <sup>2</sup> Amda Energie
A-20	Measuring Solar Cells Performance and Crop Growth with a Low-cost Solar Simulator: SUNBOX
	E. López-Fraguas Universidad Carlos III de Madrid
B-04	Physiological and Yield Response of Tomato (Solanum lycopersicum, L.) and Potato (Solanum tuberosum, L.) under Agrivoltaico® System
	<b>E. Potenza</b> <sup>1</sup> , M. Colauzzi <sup>1</sup> , G. Ghidesi <sup>2</sup> , A. Reboldi <sup>2</sup> , S. Amaducci <sup>1</sup> <sup>1</sup> Università Cattolica del Sacro Cuore; <sup>2</sup> REM TEC srl
B-05	Modeling Maize Vegetative Growth and Production Under Dynamic Agrivoltaics Systems: Response to Shade and Deficit Irrigation
	I. Ramos-Fuentes Sun' Agri
B-08	Agrivoltaics as a Tool for Protective Belts between Soil Blocks  J. Bím
	Czech Technical University in Prague, Electrotechnical Faculty
C-02	Multifunctionality of Semi-Transparent Organic Solar Cells for Agrivoltaics Applications
	J.P. Madalaimuthu <sup>1</sup> , A. Anand <sup>1</sup> , M. Islam <sup>1</sup> , U.S. Schubert <sup>1</sup> , H. Hoppe <sup>1</sup> <sup>1</sup> Center for Energy and Environmental Chemistry Jena
C-04	Low-cost Long-span Agri-PV Prototype for Large-scale Application
	M. Balz¹, M. Frank¹, M. Bohn¹¹ sbp sonne GmbH
C-05	TSE Agrivoltaic Canopy
	M. Belingard <sup>1</sup> , X. Guillot <sup>1</sup> , P. Massarotti <sup>1</sup> <sup>1</sup> TSE
C-06	Optimised Tracker Algorithm Enables an Agri-PV Plant with Organic Strip Farming and Solar Electricity Generation
	<b>T. Burgers</b> <sup>1</sup> , E. Tonnaer <sup>2</sup> , C. Kooij <sup>2</sup> , B. Van Aken <sup>1</sup> 1 TNO - Energy Transition; 2 Vattenfall
C-09	New Tracking / Backtracking Strategy for Agrivoltaic Plants with N-S Horizontal Solar Trackers and Tree Crop in Hedge
	<b>L.M. Fernández de Ahumada</b> <sup>1</sup> , R. Lopez Luque <sup>1</sup> , J. Ramírez-Faz <sup>1</sup> , J. Gomez Uceda <sup>1</sup> , F.J. Casares de la Torre <sup>1</sup> <sup>1</sup> University of Cordoba

- C-10 A Metamodel for Fast Ground Shadow Computations Using Deep Learning
  - L. Kurumundayil<sup>1</sup>, L.J. Gfuellner<sup>1</sup>, M. Berwind<sup>1</sup>, M. Demant<sup>1</sup>
  - <sup>1</sup> Fraunhofer ISE
- C-13 Whether Variation in Shade of Solar PV Module May Be An Important Criterion for Designing Agrivoltaic System?
  - P. Santra<sup>1</sup>, H.M. Meena<sup>1</sup>
  - <sup>1</sup> ICAR-Central Arid Zone Research Institute
- C-14 Shading Effect of Transparent Photovoltaic Panels on Crops underneath Agrivoltaic Systems
  - **N. Seyedpour Esmaeilzad**<sup>1</sup>, I. Gürsel Dino<sup>2</sup>, Y. Ersoy Yıldırım<sup>3</sup>, R. Turan<sup>1</sup>, T. Özden<sup>1</sup> ODTÜ-GÜNAM; <sup>2</sup> Middle East Technical University; <sup>3</sup> Ankara University
- C-15 Phoenix Contact Power Control Unit, Meets All Requirements of Agri-PV
  - B. Beier<sup>1</sup>, B. Dittmann<sup>2</sup>, M. Gast<sup>1</sup>
  - <sup>1</sup> PHOENIX CONTACT Electronics GmbH; <sup>2</sup> PHOENIX CONTACT Deutschland GmbH
- C-16 Solar Pumping System and Water-Saving Irrigation Systems: A Case Study of Solar Water Conservancy for Desertification Control in Mu Us Desert
  - C. Lin<sup>1</sup>, H. Shi<sup>2</sup>, Y. Xiao<sup>1</sup>, H. Zhang<sup>1</sup>, J. Xiaoxia<sup>3</sup>, J. He<sup>1</sup>
  - <sup>1</sup> Research Centre for Energy Transition and Social Development, Tsinghua University;
  - <sup>2</sup> Shenzhen Solartech Renewable Energy Co., Ltd.; <sup>3</sup> UNITED NATIONS Convention to Combat Desertification Secretariat
- D-01 Analyzing Potential and Economic Effects of Agrophotovoltaic with the Key Influencing Factors
  - A. Chalgynbayeva

University of Debrecen

- D-02 Large Scale Agrivoltaics: Solar Grazing on a Utility Scale Solar Facility in Western New York
  - **L. Hain**<sup>1</sup>, J. Shiflett<sup>2</sup>, L. Fox<sup>3</sup>, M.K. MacKenzie<sup>4</sup>, N. Manapol<sup>5</sup>, R. McCann<sup>6</sup>, K. Campbell<sup>7</sup>, S. Grasbv<sup>8</sup>
  - <sup>1</sup> Lightsource bp & American Solar Grazing Association; <sup>2</sup> Juniper Economic Consulting;
  - <sup>3</sup> Agrivoltaic Solutions & AMERICAN SOLAR GRAZING ASSOCIATION; <sup>4</sup> Sweet Grass Consulting;
  - <sup>5</sup> Letchworth Gateway Villages; <sup>6</sup> Compass Energy Consulting; <sup>7</sup> EDF Renewables;
  - <sup>8</sup> Town Of Mount Morris
- D-05 Towards a More Sustainable Viticulture: Integration of Solar Photovoltaic Projects in Vineyards of Argentina, Chile, and South Africa
  - **L.R. Palazzo**<sup>1</sup>, G.L. Acosta<sup>2</sup>, P. Gil Montenegro<sup>3</sup>, A.R. Mulidzi<sup>4</sup>, N. Pizzolón<sup>5</sup>, D.D. Zamorano Meriño<sup>6</sup>, C. Poblete-Echeverría<sup>7</sup>, C. Pastenes Villareal<sup>6</sup>, T. Venter<sup>7</sup>
  - <sup>1</sup> Facultad de Diseño, Universidad Nacional de Cuyo; <sup>2</sup> Estación Experimental Agropecuaria Mendoza, Instituto Nacional de Tecnología Agropecuara - INTA; <sup>3</sup> Departamento de Fruticultura y Enología, Pontificia Universidad Católica de Chile; <sup>4</sup> Agriculture Research Council;
  - <sup>5</sup> Corporación Vitivinícola Argentina; <sup>6</sup> Facultad de Ciencias Agronómicas, Universidad de Chile;
  - <sup>7</sup> Department of Viticulture and Oenology, Faculty of AgriSciences, Stellenbosch University
- D-09 Comparative Analysis of Two Agrivoltaic Systems for Nighttime Irrigation of Plain Vegetable Plots
  - G.P. Moreda<sup>1</sup>, M.A. Muñoz-García<sup>1</sup>, M.C. Alonso-García<sup>2</sup>
  - <sup>1</sup> Universidad Politecnica de Madrid; <sup>2</sup> CIEMAT



D-10	Agrivoltaics Solutions in the Context of Circular Agriculture and Landscape  Experience: A Systematic Review
	I. Sirnik <sup>1</sup> , J. Sluijsmans <sup>1</sup> , D. Oudes <sup>1</sup> , S. Stremke <sup>1</sup> <sup>1</sup> WUR
D-11	Political Economy of Co-production of Food and Energy: Case of Agrivoltaics in India
	N. Durga International Water Management Institute (IWMI)
D-12	Legal Framework of AgriVoltaics and Analysis in Israel
	<b>R. From-Arica</b> <sup>1</sup> , M. Mandelmilch <sup>1</sup> <sup>1</sup> The Planning Authority, Ministry of Agriculture and Rural Development, The State of Israel
D-16	Understanding the Dynamic Forces Driving Agrivoltaic Innovation in the U.S.: Perspectives from the Solar Industry
	<b>A. Pascaris</b> <sup>1</sup> , A. Gerlak <sup>2</sup> , G. Barron-Gafford <sup>2</sup> <sup>1</sup> AgriSolar Consulting, LLC; <sup>2</sup> University of Arizona
D-17	Consumer Preferences of Produce Grown in Traditional and Agrivoltaic Systems Based on Flavor, Texture, Color
	M. Rogers <sup>1</sup> , K. Lepley <sup>1</sup> , G. Barron-Gafford <sup>1</sup> 1 University of Arizona
D-18	Agricultural Solar Tariff Generation Units (ASTGUs): Agrivoltaics in the Massachusetts USA SMART Program
	G. Palano  MDAR
D-19	The AgriSolar Clearinghouse: An Information-sharing and Networking Hub for All Things Agrivoltaic
	S. Peterson National Center for Appropriate Technology
D-22	AgriPV Systems: Potential Opportunities for Aotearoa–New Zealand
	<b>A. Brent</b> <sup>1</sup> , D. Burmester <sup>1</sup> , D. Mackenzie <sup>1</sup> <sup>1</sup> Victoria University of Wellington
D-23	Soil Inorganic Nitrogen Content in Solar Arrays
	E. Drumm <sup>1</sup> , C. Higgins <sup>2</sup> , F. Chaplen <sup>1</sup> <sup>1</sup> Oregon State University; <sup>2</sup> Ecological Engineering
D-24	PlusIQ - Agri Photovoltaics: Integration as a Path to the Plus-Energy-Quarters
	<b>U. Herbig</b> <sup>1</sup> , K. Berger <sup>2</sup> , G. Damjanovic <sup>1</sup> , J. Eitzinger <sup>4</sup> , T. Neubauer <sup>1</sup> , U. Pont <sup>1</sup> , T. Schauppenlehner <sup>4</sup> , V. Shala-Mayrhofer <sup>3</sup> , A.M. Tjoa <sup>1</sup> , D. Wagner <sup>1</sup> , P. Weihs <sup>4</sup> , S. Zamini <sup>2</sup> <sup>1</sup> TU Wien; <sup>2</sup> AIT - Austrian Insitute for Technology; <sup>3</sup> Austrian Chamber of Agriculture; <sup>4</sup> University of Natural Resources and Life Sciences, Vienna

10:30	
10:30 - 12:00	Modelling the Agrivoltaics Environment 2
10:30	Validation of High Spatial Resolution of Photosynthetically Active Radiation Distribution under Agrivoltaic Systems
	P.E. Campana <sup>1</sup> , J. Staaf Scragg <sup>2</sup> <sup>1</sup> Mälardalen University; <sup>2</sup> Uppsala University
10:50	Agrivoltaics with Vertical Bifacial Photovoltaic (PV) Modules: Irradiance and Energy Yield Modelling with Lusim
	I. El Boujdaini <sup>1</sup> , J. Robledo <sup>1</sup> , R. Bruhwyler <sup>2</sup> , B. Sarr <sup>1</sup> , J. Leloux <sup>1</sup> , F. Lebeau <sup>2</sup> <sup>1</sup> LuciSun; <sup>2</sup> DEAL, BioDynE, Université de Liège
11:05	Impact of Dew Point Temperature on the Reliability of Solar Radiation Estimates under an Agrivoltaic System using Radiance
	<b>K.S. Kim</b> <sup>1</sup> , Y. Kim <sup>1</sup> , J. Jeong <sup>2</sup> , C.K. Lee <sup>2</sup> , J. Kim <sup>2</sup> <sup>1</sup> Seoul National University; <sup>2</sup> Rural Development Administration
11:20	Assessing Windbreak Effect of Vertical Agrivoltaics on the Reduction of Evapotranspiration in Different Climates
	R. Bruhwyler <sup>1</sup> , P. Brunet <sup>2</sup> , G. Dabadie <sup>2</sup> , A. Thiery <sup>2</sup> , J. Chapon <sup>3</sup> , E. Drahi <sup>3</sup> , A. Boukouya <sup>3</sup> , B. Delahaye <sup>3</sup> , C. Jennet <sup>3</sup> , P. Souquet <sup>3</sup> , F. Lebeau <sup>1</sup> 1 Liège University; <sup>2</sup> Naldeo Technologies Industries; <sup>3</sup> TotalEnergies OneTech
11:35	Operations and Maintenance Cost Modelling at U.S. Agrivoltaics Sites
	J. McCall <sup>1</sup> , R. Burton <sup>1</sup> , J. Macknick <sup>1</sup> <sup>1</sup> National Renewable Energy Laboratory
12:00 - 14:00	Lunch Break
14:00 - 15:30	Studies on PV Panel Technologies
14:00	Agrivoltaics: A Review of PV Technologies and Modeling Methods <b>D. Muñoz</b> CEA-INES
14:15	Evaluating the Performance of Flexible, Semi-transparent Large-area Organic Photovoltaic Arrays Deployed on a Greenhouse
	<b>R. Waller</b> <sup>1</sup> , M. Kacira <sup>2</sup> <sup>1</sup> King Abdullah University of Science and Technology; <sup>2</sup> University of Arizona

09:30 -

Coffee Break



- 14:30 Insolagrin: A Solution for Dynamic Agrivoltaics
  - D. Petri<sup>1</sup>, J. Levrat<sup>1</sup>, D. Chudy<sup>1</sup>, M. Despeisse<sup>1</sup>, C. Ballif<sup>1</sup>, M. Duchemin<sup>2</sup>, G. Nardin<sup>2</sup>, D. Ziegler<sup>2</sup>, L. Anglade<sup>2</sup>, M. Ackermann<sup>2</sup>, M. Baumann<sup>3</sup>, B. Christ<sup>3</sup>, A. Ancay<sup>3</sup>, C. Carlen<sup>3</sup>
  - <sup>1</sup> CSEM SA; <sup>2</sup> Insolight SA; <sup>3</sup> Agroscope Forschungszentrum Conthey
- 14:45 Effect of Semi-Transparent OPV Modules Installed inside Greenhouses on Microclimate and Crops

## R. Grimberg

Ben-Gurion University of the Negev, The Volcani center

- 15:00 Global Investigation of Different Transparent PV Materials for Maximizing Agrivoltaics.
  - A. Villar Fernández<sup>1</sup>, E. Fernández Fernández<sup>1</sup>, F. Almonacid Cruz<sup>1</sup>
  - <sup>1</sup> University of Jaén, AdvPVTech Group
- 15:15 Improving Crop Yield in an Agrivoltaic Farm through the Implementation of Large-scale Beam Splitter Integrated Photovoltaics
  - E. Ravishankar<sup>1</sup>, H. Vitoshkin<sup>2</sup>, A. Kribus<sup>3</sup>, G. Mittelman<sup>4</sup>
  - <sup>1</sup> North Carolina State University; <sup>2</sup> Agricultural Research Organization;
  - <sup>3</sup> Tel Aviv University of Israel; <sup>4</sup> Tel-Aviv Academic college of engineering

### Agrivoltaics as Sustainable Solution to Provide Ecosystem 15:30 -

### **Services** 17:00

- 15:30 Agrivoltaics in East Africa: Field Results Show Improved Food, Energy and Water Security
  - R. Randle-Boggis<sup>1</sup>, C. Lamanna<sup>2</sup>, J. Maro<sup>3</sup>, C. Mutindi<sup>4</sup>, S. Hartley<sup>1</sup>
  - <sup>1</sup> University of Sheffield; <sup>2</sup> World Agroforestry (ICRAF); <sup>3</sup> Sustainable Agriculture Tanzania; <sup>4</sup> Latia Agribusiness Solutions
- 15:50 Agrivoltaic in a Semi-aride Climate: Co-existence of Agricultural Activities in Utilityscale Plants of EGP for Multiple and Sustainable Land Use

### M. Genovese

Enel Green Power

- A Rooftop Agrivoltaic System: Pollinator Plant Establishment 16:05
  - T. Hickey<sup>1</sup>, J. Bousselot<sup>2</sup>
  - <sup>1</sup> Colorado State University / AgriSolar Consulting; <sup>2</sup> Colorado State University
- 16:20 Pollinator Habitat Plant Diversity Surveys at Minnesota Solar Sites
  - J. McCall<sup>1</sup>, B. Beatty<sup>2</sup>, J. Janski<sup>3</sup>, E. Winkler<sup>1</sup>, J. Macknick<sup>1</sup>
  - <sup>1</sup> National Renewable Energy Laboratory; <sup>2</sup> SolCon, Ltd.; 3 MNL, Inc.
- 16:35 Comparative Environmental Life Cycle Assessment of a Stilted and Vertical Bifacial Agri-Photovoltaic System
  - T. Krexner<sup>1</sup>, A. Bauer<sup>2</sup>, C. Mikovits<sup>3</sup>, J. Schmidt<sup>3</sup>, M. Schönhart<sup>3</sup>, T. Schauppenlehner<sup>4</sup>, E. Schmid<sup>3</sup>, A. Gronauer<sup>2</sup>, F. Medel-Jiménez<sup>2</sup>, I. Kral<sup>2</sup>
  - <sup>1</sup> University of Natural Resources and Life Sciences, Vienna; <sup>2</sup> Institute of Agricultural Engineering, BOKU; <sup>3</sup> Institute for Sustainable Economic Development, BOKU; <sup>4</sup> Institute of Landscape Development, Recreation and Conservation Planning, BOKU
- Gold Sponsor Industry Talk: BayWa r.e.

16:50

17:00 - Coffee Break

17:30

# 17:30 - Technical Tour

20:00

# 20:00 Conference Dinner



The conference dinner is sponsored by BayWa r.e. Thank you!

# Friday, June 17, 2022

# 08:30 - Online Poster Session 2

O9:30 Please log in to the online platform SCOOCS to visit the virtual poster booths. A - Agrivoltaics Systems | B - The Management of Agriculture Production Under Photovoltaic Panels | C - Technical Aspects | D - Environmental, Legal and Socio-Economic Aspects

A-04 The Potential of the Agrophotovoltaic (APV) Technologies in Hungary

# A. Chalgynbayeva

University of Debrecen

A-05 Sunbiose Project: Agri PV Pilots in the Netherlands

W. Eerenstein<sup>1</sup>, H. Elissen<sup>2</sup>

<sup>1</sup> Renergize Consultancy; <sup>2</sup> Wageningen University & Research

A-06 New Agrivoltaic Research System in North Rhine Westphalia Including PV Trackers and Integrated Rainwater Harvesting

**M. Meier-Grüll**<sup>1</sup>, O. Muller<sup>1</sup>, C. Jedmowski<sup>1</sup>, L. Raumann<sup>1</sup>, B. Pieters<sup>1</sup>, A. Gerber<sup>1</sup>, M. Trommsdorff<sup>2</sup>, M. Berwind<sup>2</sup>

<sup>1</sup> Forschungszentrum Jülich GmbH; <sup>2</sup> Fraunhofer ISE

A-13 Solar Sharing: Optimization of Agrivoltaics Solar Plant Sizing Using Numerical Simulations of Irradiance

A. Mallet<sup>1</sup>, S. Héraud<sup>2</sup>, A. Martinez<sup>1</sup>

<sup>1</sup> Amda Energie; <sup>2</sup> Agrisoleo

A-14 Combined Simulation of Electricity and Crop Outputs of Agrivoltaic Systems

**C. Mikovits**<sup>1</sup>, T. Krexner<sup>2</sup>, I. Kral<sup>2</sup>, A. Bauer<sup>2</sup>, T. Schauppenlehner<sup>3</sup>, M. Schönhart<sup>1</sup>, E. Schmid<sup>1</sup>, J. Schmidt<sup>1</sup>

<sup>1</sup> Institute for Sustainable Economic Development / University of Natural Resources and Life Sciences; <sup>2</sup> Institute of Agricultural Engineering / University of Natural Resources and Life Sciences; <sup>3</sup> Institute of Landscape Development, Recreation and Conservation Planning / BOKU Wien

A-15 Agrivoltaic Ray Tracing Analysis for Various PV Module Types and Orientations

**L. Raumann**<sup>1</sup>, M. Almalla<sup>2</sup>, B. Pieters<sup>1</sup>, A. Gerber<sup>1</sup>, O. Muller<sup>1</sup>, M. Meier<sup>1</sup>, C. Jedmowski<sup>1</sup>, M. Trommsdorff<sup>3</sup>, M. Berwind<sup>3</sup>

<sup>&</sup>lt;sup>1</sup> Forschungszentrum Jülich GmbH; <sup>2</sup> Cologne University of Applied Sciences; <sup>3</sup> Fraunhofer ISE



	Power Generation in Northern Chile
	<b>A. Scholl</b> <sup>1</sup> , J. Taboada <sup>2</sup> , S. Schneider <sup>3</sup> , D. Silva <sup>1</sup> <sup>1</sup> Universidad Católica de Chile; <sup>2</sup> Universidad de Chile; <sup>3</sup> Kempten University of Applied Sciences
A-17	Comparison between Tracking and Fixed Agrovoltaico® System
	L. Svanera  REM TEC srl
A-18	Shading Factor Modelling for Different Agrivoltaic System Typologies
	<b>S. Zainali</b> <sup>1</sup> , S. Ma Lu <sup>1</sup> , P. Elia Campana <sup>1</sup> , B. Stridh <sup>1</sup> , A. Avelin <sup>1</sup> , S. Amaducci <sup>2</sup> , M. Colauzzi <sup>2</sup> <sup>1</sup> Mälardalen University; <sup>2</sup> Università Cattolica del Sacro Cuore
A-19	Centralized Solar PV Parks for Poverty Alleviation in China: Policy Development, Operating Approaches, and Effects
	J. He
	Research Centre for Energy Transition and Social Development, Tsinghua University,
B-01	Tomato Physiological Response under Simulated Agrivoltaic System
	<b>E. Potenza</b> <sup>1</sup> , M. Colauzzi <sup>1</sup> , M. Di Blasi <sup>2</sup> , M. Genovese <sup>2</sup> , L. Merlo <sup>2</sup> , S. Amaducci <sup>1</sup> <sup>1</sup> Università Cattolica del Sacro Cuore; <sup>2</sup> Enel Green Power
B-02	Evaluating Sugar Beet Performance in Vertical Bifacial and Single Axis Tracked Agrivoltaic Systems.
	<b>T. Reher</b> <sup>1</sup> , B. Willockx <sup>1</sup> , J. Bisschop <sup>1</sup> , J. Diels <sup>1</sup> , J. Cappelle <sup>1</sup> , B. Van de Poel <sup>1</sup> <sup>1</sup> KU Leuven
B-03	Photovoltaic Panels Do Not Alter Substantially the Spectral Composition, Particularly the Red/Far-red Ratio, of the Transmitted Radiation
	<b>A. Rosati</b> <sup>1</sup> , K. Proctor <sup>2</sup> , A. Dazaea <sup>2</sup> , M. Graham <sup>2</sup> , S. Ates <sup>2</sup> , H. Kirschten <sup>2</sup> , C. Higgins <sup>2</sup> <sup>1</sup> CREA; <sup>2</sup> Oregon State University
B-06	Studies on Crop Cultivation under Agrivoltaic System
	P.M. Chauhan <sup>1</sup> , M.S. Dulawat <sup>1</sup> <sup>1</sup> Junagadh Agricultural University
B-07	Analysis of the Crop Selection in Response to Different Densities of Photovoltaics Integrated with Greenhouses in China
	Y. Xiao <sup>1</sup> , J. He <sup>1</sup> , X. Jia <sup>2</sup> , Y. Ding <sup>3</sup> , H. Zhang <sup>1</sup> <sup>1</sup> Research Centre for Energy Transition and Social Development, Tsinghua University; <sup>2</sup> UNITED NATIONS Convention to Combat Desertification Secretariat; <sup>3</sup> Shaanxi Jidian Energy Co., Ltd, China
B-10	Possible Uses for Rainwater in Agrivoltaic Systems: Overview, Research and Development Potential
	J. Rößner Fraunhofer ISE

Agrivoltaics as a Technology for Agricultural Resilience, Sustainability and Distributed

A-16

B-11 Seasonal Herbage and Lamb Production from Grass, Herbal Ley and Legume Pastures Established within Solar Arrays

A. Andrew<sup>1</sup>, M. Bionaz<sup>1</sup>, M. Smallman<sup>1</sup>, D. Hasan<sup>1</sup>, M. Graham<sup>1</sup>, A. Rosati<sup>2</sup>, S. Ates<sup>1</sup>

<sup>1</sup> Oregon State University; <sup>2</sup> Council for Agricultural Research and Economics (CREA), Research Centre for Olive, Fruit and Citrus

B-12 Ovinoé: An Innovative Agrivoltaic Solution to Sustain and Guarantee the Performance of Sheep FarmsCase of a Demonstrator

I. Decombeix<sup>1</sup>, A. Dupuis<sup>1</sup>

<sup>1</sup> Enoé

C-03 Optimization of Organic Solar Cells for AgroPV

**J.P. Madalaimuthu**<sup>1</sup>, C. Ugokwe<sup>1</sup>, R. Meitzner<sup>2</sup>, A. Anand<sup>1</sup>, M. Islam<sup>1</sup>, Z. Xu<sup>1</sup>, U.S. Schubert<sup>1</sup>, H. Hoppe<sup>1</sup>

<sup>1</sup> Center for Energy and Environmental Chemistry Jena; <sup>2</sup> Friedrich-Schiller-Universität Jena

C-07 PV Tracking

M. Haas

SICK AG

C-08 Developing Cost Effective Agriphotovoltaic Structural System with Rain Collecting

K. Lee<sup>1</sup>, M. Kim<sup>1</sup>, S. Kim<sup>1</sup>, J. Lim<sup>1</sup>, G. Do<sup>1</sup>, S. Oh<sup>2</sup>, J. Jung<sup>2</sup>

<sup>1</sup> MDS Research Center / MDSolar Co., Ltd; <sup>2</sup> Yeungnam University

C-11 Decomposition Models for Photosynthetically Active Radiation: Agrivoltaic Systems Solar Radiation Assessment

S. Ma Lu<sup>1</sup>, S. Zainali<sup>1</sup>, P.E. Campana<sup>1</sup>, B. Stridh<sup>1</sup>, A. Avelin<sup>1</sup>

<sup>1</sup> Mälardalen University

C-12 An Assessment of Light Availability and Distribution Inside of a Photovoltaic Greenhouse

Ö.E. Özdemir

Fraunhofer ISE

C-17 Through Technological Attempts to Solve the Dilemma of the Aquavoltaics Model and Its Effects in China: Take Tongwei New Energy Yangzhong 30MW Aquavoltaics Power Station as an Example

K. Lyu<sup>1</sup>, Z. Wu<sup>2</sup>, Y. Wang<sup>2</sup>, H. Zhang<sup>1</sup>, X. Jia<sup>3</sup>, J. He<sup>1</sup>

<sup>1</sup> Research Center for Energy Transition and Social Development, Tsinghua University;

<sup>2</sup> Facility Fishery Engineering Research Institute, Tongwei Co.,Ltd.;

<sup>3</sup> UNITED NATIONS Convention to Combat Desertification Secretariat

C-18 Agrivoltaic Research Lessons Learned from the InSPIRE Study in the United States

J. Macknick<sup>1</sup>, J. McCall<sup>1</sup>, H. Hartmann<sup>2</sup>, L. Walsont<sup>2</sup>

<sup>1</sup> National Renewable Energy Laboratory; <sup>2</sup> Argonne National Laboratory

C-19 PV Greenhouses: A Multi-scale and Multi-technology Study

**A. Scognamiglio**<sup>1</sup>, L.V. Mercaldo<sup>1</sup>, M. Ferrara<sup>1</sup>, P. Delli Veneri<sup>1</sup>, C. Toledo<sup>1</sup>, F. Cartenì<sup>2</sup>, M. Zotti<sup>2</sup>, S. Mazzoleni<sup>2</sup>

<sup>1</sup> ENEA; <sup>2</sup> University of Naples Federico II



C-20 Increasing the Photosynthetic Efficiency with Intelligent Light-controlling Photovoltaic Greenhouse

### F. Chen

University of Science and Technology of China

C-21 Internet of Things for Smart Agrivoltaics System: AV-IoT

## M.A. Faizi

Amity University, Noida

D-03 Economic Study of Agrivoltaic Greenhouses in Spain and the Netherlands

**N. Hanrieder**<sup>1</sup>, A. Kujawa<sup>1</sup>, S. Wilbert<sup>1</sup>, F. Wolfertstetter<sup>1</sup>, J. Carballo<sup>2</sup>, N. Osterthun<sup>1</sup>, J. Polo<sup>2</sup>, C. Alonso<sup>2</sup>, R. Pitz-Paal<sup>1</sup>

# Presented by A. Kujawa<sup>1</sup>

<sup>1</sup> German Aerospace Center DLR; <sup>2</sup> Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas CIEMAT

D-04 Regional Economic Cycle through the Use of Agrivoltaics on Abandoned Lands-case of Kyoto Prefecture

## S. Ogata

Kyoto University Graduate School of Energy Science

D-06 Life Cycle Assessment of an Exemplary Agrivoltaic System in Thuringia (Germany)

C. Busch<sup>1</sup>, K. Wydra<sup>1</sup>

# Presented by K. Wydra

<sup>1</sup> Erfurt University of Applied Sciences

D-07 Agrivoltaics as Cultural Landscapes of the 21st Century

P. Picchi<sup>1</sup>, A. Scognamiglio<sup>2</sup>

<sup>1</sup> Academy of Architecture - Amsterdam University of the Arts; <sup>2</sup> ENEA

D-08 Monitoring the Ecological Performance of Pollinator Habitat at Solar Energy Facilities in the United States

**L. Walston**<sup>1</sup>, H. Hartmann<sup>1</sup>, A. Dolezal<sup>2</sup>, T. Barley<sup>2</sup>, A. St. Clair<sup>2</sup>, B. Campbell<sup>3</sup>, I. Caldwell<sup>3</sup>, I. Bhandari<sup>3</sup>, J. McCall<sup>4</sup>, J. Macknick<sup>4</sup>

<sup>1</sup> Argonne National Laboratory; <sup>2</sup> University of Illinois, Urbana-Champaign;

<sup>3</sup> University of Illinois, Chicago; <sup>4</sup> National Renewable Energy Laboratory

D-13 Looking for a Common Definition of Agrivoltaics

## M. Pellegrino

**ENEA** 

D-14 Needs And Objectives of the French Agrivoltaic Sector

### S. Pinet

france-agrivoltaisme

D-15 Acceptance of AgriVoltaics: A Multi-Stakeholder Survey for a German Agricoltaic System in Fruit Farming

S. Gölz<sup>1</sup>, F. Larisch<sup>1</sup>

<sup>1</sup> Fraunhofer ISE

D-20	The Italian Network for Sustainable Agrivoltaics: A Push to the Knowledge Advancement and the Implementation of Sustainable Agrivoltaic Solutions
	<b>A. Scognamiglio</b> <sup>1</sup> , F. Colucci <sup>1</sup> , L. Moretti <sup>1</sup> , L. Braconi <sup>2</sup> , A. Grassi <sup>2</sup> , G. Poggiaroni <sup>2</sup> <sup>1</sup> ENEA; <sup>2</sup> ETA Florence Renewable Energies
D-21	Challenges for Agrivoltaics in the International Context: An Analytical Hierarchy Process Survey
	M. Vorast Fraunhofer ISE
09:30 - 10:30	Coffee Break
10:30 - 12:00	Modelling Crops and Agrivoltaics
10:30	Validation of Agrivoltaics Simulation Tool Based on Orchard AgriPV Measurements <b>B. Willockx</b> <sup>1</sup> , A. Kladas <sup>1</sup> , C. Lavaert <sup>1</sup> , T. Reher <sup>1</sup> , B. Van de Poel <sup>1</sup> , J. Cappelle <sup>1</sup> <sup>1</sup> KU Leuven
10:50	Modelling the Impact of Array Wiring on Electrical Output of Vertical Bifacial Agrivoltaic Installations
	R. Rucker <sup>1</sup> , D. Birnie <sup>1</sup> <sup>1</sup> Rutgers University
11:05	Modelling Canopy Temperature of Crops with Heterogeneous Canopies Grown under Solar Panels
	J. Chopard <sup>1</sup> , G. Lopez <sup>1</sup> , S. Persello <sup>1</sup> Presented by: S. Persello <sup>1</sup> <sup>1</sup> Sun'Agri
11:20	Development of APV Simulation Tool
	<b>F. Gross</b> <sup>1</sup> , M. Balz <sup>1</sup> , S. Gayler <sup>2</sup> , T. Weber <sup>2</sup> <sup>1</sup> sbp sonne gmbh; <sup>2</sup> Institute of Soil Science and Land Evaluation, University of Hohenheim
11:35	Standard Model of Agrivoltaic System Considering Structural Safety and Crop Cultivation Conditions
	<b>S. Lee</b> <sup>1</sup> , J. Lee <sup>1</sup> , Y. Jeong <sup>1</sup> , B. Seo <sup>1</sup> , D. Kim <sup>1</sup> , Y. Seo <sup>1</sup> <sup>1</sup> Seoul National University
12:00 - 14:00	Lunch Break
14:00 - 15:30	Multifunctional Agrivoltaic Systems
14:00	Assessing Photovoltaic Trackers Effects on Poultry Welfare  O. Sipan <sup>1</sup> , B. Pineau <sup>2</sup> , T. Riou <sup>2</sup>
	<sup>1</sup> GROUPE OKWIND; <sup>2</sup> OKWind



14:20	One Year of Grassland Vegetation Dynamics in Two Sheep-grazed Agrivoltaic Systems
	<b>C. Picon-Cochard</b> <sup>1</sup> , L. Madej <sup>1</sup> , C. Bouhier de l'Ecluse <sup>2</sup> , C. Cogny <sup>3</sup> , L. Michaud <sup>1</sup> , M. Roncoroni <sup>1</sup> , D. Colosse <sup>1</sup>
	<sup>1</sup> INRAE; <sup>2</sup> Photosol; <sup>3</sup> JPee
14:35	Feedback and Learning after Two Years of Alfalfa Growth under Agri-photovoltaic
	<b>S. Edouard</b> <sup>1</sup> , D. Combes <sup>2</sup> , M. Van Iseghem <sup>3</sup> , M. Ng Wing Tin <sup>4</sup> , S. Benyakhlef <sup>4</sup> , A. Becker <sup>4</sup> , A. Escobar Gutierrez <sup>2</sup>
	<sup>1</sup> INRAE, EDF R&D <sup>2</sup> INRAE; <sup>3</sup> EDF R&D <sup>4</sup> EDF Renouvelables
14:50	Effects of Agrivoltaic Systems Development on Sweet Potato Growth
	<b>A. Ali Abaker Omer</b> <sup>1</sup> , X. Liu <sup>2</sup> , M. Li <sup>1</sup> , X. Zhang <sup>1</sup> , F. Chen <sup>1</sup> <sup>1</sup> University of Science and Technology of China; <sup>2</sup> Jiangsu Normal University
15:05	Evaluation of Agrivoltaic System in Thar Desert of India
	S. Poonia <sup>1</sup> , P. Santra <sup>1</sup>
	<sup>1</sup> ICAR-Central Arid Zone Research Institute
15:30 - 16:00	Coffee Break
16:00 - 17:00	Landscape Integration
16:00	Agrivoltaics and Sustainable Landscape Transformation
	A. Scognamiglio <sup>1</sup> <sup>1</sup> ENEA
16:20	Ecosystem Approach in Agrivoltaic Parks Design
	A. Buscemi¹, X. Mayor¹, J. Bellmunt¹  ¹ B2B Arquitectes S.L.P.
16:40	SUS.AV.I Student Award Winners Project Presentations
	The award is sponsored by REM Tec. Thank you!
17:00 -	Closing Session

Friday, June 17

17:30

# **Side Events**

# **Technical Tour**

Our technical tour will start on Thursday, June 16 at 17:30 and will take you to REM Tec's agrivoltaics plant in Monticelli d'Ongina, Piacenza in Italy's Emilia Romagna region. Space is limited. Pre-registration is required.

**Important:** Please be aware that all visitors of the plant must wear sneakers / sport shoes for safety reasons. Helmets for a potential closer inspection of the panels may be distributed on-site.

# **Conference Dinner**

This year's conference dinner will take place on Thursday, June 16 at 20:00 at the Chiesa Sant'Agostino, a beautifully restored church located in the city of Piacenza.

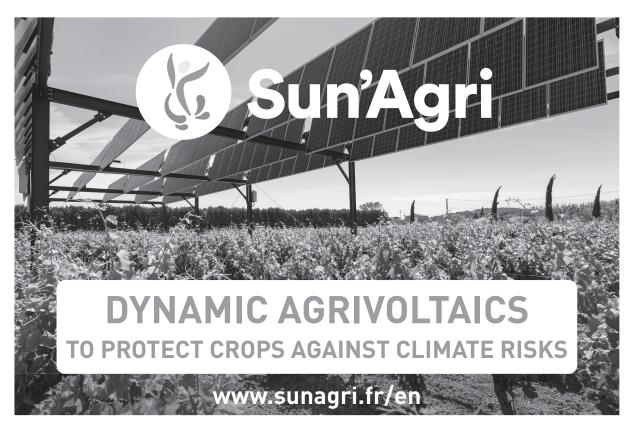
A 16<sup>th</sup> century-building with a neoclassical granite façade built by Camillo Morigi (1785-93), the church offers an impressive interior with 5 naves divided by columns and pillars. On the transept walls there are remains of frescoes by painter Giovanni Battista Trotti (il Malosso). The church has been closed to the Catholic Mass for the last two centuries, and has been brought back to its original splendour only recently to host exhibitions and events.

The dinner will offer several courses with both vegan, vegetarian and meat options. Use this chance to meet friends both old and new and network in a breath-taking ambience! Space is limited. Pre-registration is required. The dinner will start with an aperitivo at 20:00, food will be served at 20:30.

Address: Stradone Farnese, 29121 Piacenza PC, Italy

Thank you to our gold sponsor BayWa r.e. for sponsoring this year's conference dinner!





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# **General Information**

# Registration

Each participant has to register in person at the registration desk to collect a conference bag and a name badge before attending any sessions. Please make sure to wear your badge for admission to all sessions and side events. Participants who have lost their badge should report to the registration desk.

# **Poster Sessions**

At the AgriVoltaics2022, posters will be displayed exclusively online on our digital conference platform SCOOCS. All attendees are asked to login to the platform with the details they received via email and visit the online poster exhibition at the times of the poster sessions scheduled in the program. We generally recommend you dial in from your hotel room / home to avoid noise distractions. Posters will be displayed for throughout the entire conference. Poster presenters are asked to attend their respective online poster session.

# **SUS.AV.I Student Award**

This year, there will be a special award given to the two most promising projects submitted under the SUS.AV.I student challenge organized by UNICATT and the conference organizers. The awardees will be announced in the final technical session on landscape integration and will be able to present their winning projects as part of the conference.

We thank REM Tec for sponsoring the award!



# **Information for Speakers On Site**

All presentations must be handed in at the Media Upload Desk no later than one hour before your session starts. Note that you will not be able to display your presentation directly from your laptop computer or USB flash drive. Our technical support team will welcome you at the Media Upload Desk during all conference days, starting at 8:00. Please meet your session chairs inside the conference room at least 10 minutes prior to the beginning of your oral session to acquaint yourself with the technical equipment. In order to introduce you during the session, please provide the chair with a short CV (2-3 sentences).

# **List of Participants**

Registered participants may download a list of participants in the internal area on the conference website, www.agrivoltaics-conference.org. The login and password sent to you during registration will be required to gain access to the download area.

# **Certificate of Attendance**

A certificate of attendance for participants will only be available on-site at the registration desk and cannot be issued after the conference.

# **Contact Participants**

AgriVoltaics2022 offers a contact opportunity for conference participants in its internal area on the conference website, www.agrivoltaics-conference.org. Simply log in with your password and contact other participants by email. All participants who want to use the contact feature can confirm their admission to receive e-mails from other conference participants. The first contact will occur indirectly via the conference system in the Internal Area. No personal data will be handed out.

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# **Conference Proceedings**

The AgriVoltaics2022 conference proceedings will be published with TIB Open Publishing in an open access conference proceedings series, covering papers with sufficient scientific quality. TIB Open Publishing is a new service of TIB, "Technische Informationsbibliothek" in Hanover in Germany, the world's largest specialist library for technology and natural sciences.

TIB-OP's open-access policy means that authors retain copyright and all content can be reused unrestrictedly according to CC-BY 4.0. The proceedings will or should be indexed in Google Scholar, the Conference Proceedings Citation Index (part of Web of Science), Scopus (Elsevier) and other important scientific databases world-wide.

Publication with TIB-OP provides optimum visibility of the proceedings and papers and will ensure that the authors' publications remain traceable and citable. Published papers will be freely accessible on the TIB-OP website and contain an ISSN number for each volume as well as individual DOI numbers for each paper.

Please upload your paper on the conference website before July 1, 2022

# WiFi

Network: AGV2022 PW: Agrivoltaics2022



# Location

The on-site elements of this year's hybrid conference will take place at the Università Cattolica del Sacro Cuore in Piacenza, Italy. Founded in 1921, the university is spread over five campuses in Milan, Cremona, Brescia, Rome and Piacenza. In the 100 years of its existence, UNICATT has become one of the most important Catholic universities in Europe.

Address: Via Emilia Parmense, 84, 29122 Piacenza

General Information