

2020 International Meeting Controlled Environment Technology and Use
 organized by NCERA-101 in collaboration with UK-CEUG and ACEWG
 March 15-18th, 2020
 Tucson Marriott University Park Hotel, Tucson, Arizona

SUNDAY, 15th March 2020	
14:00 – 17:00	Registration at <i>Tucson Marriott University Hotel Foyer</i>
17:30 – 20:00	Welcome Reception at Arizona State Museum, the University of Arizona Campus A special Ceremony: Tohono O'odham Blessing by Jesse Navarro, Tohono O'odham Community Member
MONDAY, 16th March 2020 (Marriott University Park Hotel)	
08:30 – 08:45	Opening and Welcome
Session 1: Sabino-Pima Room	Advances in LED Lighting: Current Research, Technologies and Applications I Chair: Gary Stutte, SyNRGE LLC.
08:45 – 09:15	Keynote Speaker: Leo Marcelis, Wageningen University, The Netherlands <i>The colorful physiology of plants in controlled environments</i>
09:15 – 09:45	Marc Van Iersel, University of Georgia <i>Optimizing light use efficiency in controlled environments: from physiology to engineering</i>
09:45 – 10:15	Hanna Rüdell, Heliospectra <i>Using light for crop production – from science to commercial application</i>
10:15 – 10:45	Coffee Break (Madera Room) and Poster Presentations (Sabino-Pima Room)
Session 2: Sabino-Pima Room	Advances in LED Lighting: Current Research, Technologies and Applications II Chair: Ricardo Hernandez, North Carolina State University
10:45 – 11:15	Erik Runkle, Michigan State University <i>Sole-source lighting of leafy greens and ornamental seedlings</i>
11:15 – 11:45	Bruce Bugbee, Utah State University <i>The McCree curve revisited: Evidence for photosynthetic photons below 400 and above 700 nm</i>
11:45 – 12:15	Mark Lefsrud, McGill University <i>The novel factors that drive photosynthesis based on a refined analysis of the PAR curve</i>
12:15 – 12:45	Panel 1: Indoor Agriculture Economic Viability, Moderator: Neil Yorio, BIOS Lighting Chris Higgins (Hort Americas), Patrick Friesen (Biochambers), Robert Sorba (Convicon)
12:45 – 13:45	Lunch (Canyons Room)
Session 3: Sabino-Pima Room	Controlled Environments: State of the Art, Controls and Automation in Indoor Agriculture Chair: Arend-Jan (A.J.) Both, Rutgers University
13:45 – 14:15	Efren Fitz-Rodriguez, Chapingo Autonomous University, Mexico <i>Smart Controlled Environments: from greenhouses to indoor farming</i>
14:15 – 14:45	Jan Westra, Priva <i>With great power comes great responsibility: in indoor more relying on control, more opportunities to do it wrong</i>
14:45 – 15:15	Nadia Sabeh, Dr. Greenhouse <i>HVAC: Energy Efficiency, Sustainability, and the Cost of Climate Control</i>
15:15 – 15:45	Peter Ling, The Ohio State University <i>Emerging sensing techniques for controlled environment plant production</i>
15:45 – 16:15	Student Lightning Talks, Moderator: Brian Krug, Corteva Agriscience
16:15 – 16:30	Coffee Break (Madera Room) and Poster Presentations (Sabino-Pima Room)
16:30 – 18:00	NCERA 101 Business Meeting
18:30	Gala and Award Dinner (Sabino-Pima Room, Tucson Marriott University Park Hotel) Guest Speaker: Diane Lambert, Senior Science Operations Planning Engineer for NASA OSIRIS Rex Asteroid Sample Return Mission, Lunar and Planetary Laboratory, University of Arizona Presentation title: <i>OSIRIS Rex: To Bennu and Back</i>

TUESDAY, 17th March 2020 (Marriott University Park Hotel)	
Session 4: Sabino-Pima Room	Energy, Economics and Sustainability in Controlled Environments Chair: Genhua Niu, Texas A&M University
08:45 – 09:15	Keynote Speaker: Nate Storey, Plenty <i>The economics of indoor ag: a rapidly evolving landscape</i>
09:15 – 09:45	Neil Mattson, Cornell University <i>The economic & environmental footprint of urban CEA for leaf lettuce in Chicago and New York</i>
09:45 – 10:15	Jenn Frymark, Gotham Greens <i>Standardized reporting and benchmarking: Metrics to evaluate yields, economic viability and sustainability of food production in controlled environments</i>
10:15 – 10:45	Coffee Break (Madera Room) and Poster Presentations (Sabino-Pima Room)
Session 5: Sabino-Pima Room	Controlled Environments: Novel Applications Chair: Celina Gomez, University of Florida
10:45 – 11:15	Ray Wheeler, NASA-Kennedy Space Center <i>Controlled Environment Chambers for Plants in Space</i>
11:15 – 11:45	Graeme Smith, Graeme Smith Consulting-Australia <i>Future gazing for modern controlled production systems</i>
11:45 – 12:15	Julian Franklin, Rothamsted Research, United Kingdom <i>Controlled Environments for Containment</i>
12:15 – 12:45	Panel 2: Indoor Agriculture Sustainability, Moderator: Jim Pantaleo (Indoor AgCon) Gioia Massa (NASA-KSC), Ed Harwood (AeroFarms)
12:45 – 13:45	Lunch (Canyons Room)
Session 6: Sabino-Pima Room	Controlled Environments: Physiology, Breeding, Food Nutrition Chair: Gioia Massa, NASA-Kennedy Space Center
13:45 – 14:15	Royal Heins, Professor Emeritus, Michigan State University <i>Cultural and flowering physiology of Hemp</i>
14:15 – 14:45	James Faust, Clemson University <i>Pinpointing the PPF threshold for photoperiod perception in plants</i>
14:45 – 15:15	Richard Poiré-Lassus, Australian Plant Phenomics Facility/Australian National University <i>Advanced controlled environments and phenotyping techniques to overcome the challenges of Australian Plants.</i>
15:15 – 15:45	Alexis Moschopoulos, Grobotic Systems, United Kingdom <i>Smart crop monitoring and an open source plant growth protocol for plant science research</i>
15:45 – 16:30	Coffee Break (Madera Room) and Poster Presentations (Sabino-Pima Room)
16:30 – 17:00	Panel 3: Production Quality in Indoor Agriculture, Moderator: Sarah Federman, Plenty Inc. Andie Marsh (Fluence by OSRAM), Dominic Chen (Snap Inc./SananBio), Tharindu Weeraratne (Autogrow)
WEDNESDAY, 18th March 2020	
08:30 – 10:30	Bayer Marana Greenhouse Facility Tour (9475 N. Sanders Rd, Tucson, AZ 85743)
11:30 – 12:30	Lunch at Controlled Environment Agriculture Center (1951 E. Roger Rd., Tucson, AZ 85719)
12:30 – 15:00	Controlled Environment Agriculture Center Facility Tour



Murat Kacira, Gene Giacomelli, Joel Cuello
The Local Organizing Committee
Controlled Environment Agriculture Center
The University of Arizona