

GREENHOUSE CROP PRODUCTION & ENGINEERING DESIGN SHORT COURSE

MARCH 12-16, 2018

THE UNIVERSITY OF ARIZONA CONTROLLED ENVIRONMENT AGRICULTURE CENTER

MARCH 11TH, EVENING

EXHIBIT AVAILABLE FOR SET-UP [For Sponsors & Exhibitors Only]

4:00 – 8:00pm Doors open to Sponsors & Exhibitors for set-up

MARCH 12, MORNING

ARRIVAL, CHECK-IN & SET-UP

Attendees:

8:00 am – 11:30am Check-in Table Open – Receive badges, workbooks, etc.

Sponsors/Exhibitors:

8:00 – 10:00am Exhibitor Gallery finalize set-up

10:00 am Exhibitor Gallery Opens

FUNDAMENTALS OF HYDROPONICS & CONTROLLED ENVIRONMENT AGRICULTURE (CEA)

8:30 – 9:30 am **Greenhouse Design - Structures, Glazing & Cooling**
Dr. Gene Giacomelli – Professor, Ag & Biosystems Engineering, The University of Arizona

9:30 – 10:30 am **Hydroponics, Medium Composition & Delivery Systems**
Myles Lewis – Owner, Arizona Vegetable Company & Instructor, CEAC Intensive Workshop

10:30 – 11:30 am **Integrated Pest Management (IPM) - Common Insects & Mites**
Dr. Stacy Tollefson – Professor of Practice, Ag & Biosystems Engineering, The University of Arizona

11:30 – 11:55 pm Coffee & Refreshments Provided

MARCH 12, AFTERNOON

ESSENTIALS OF CROP PRODUCTION IN COMMERCIAL SETTINGS

11:55 – 12:00 pm Welcome and Introductions

12:00 – 12:15 pm 5 Minute Presentations from this year's Sponsors

12:15 – 1:00 pm **Critical Factors for Growing Under Cover**
Dr. Merle Jensen – Professor Emeritus, School of Plant Sciences, The University of Arizona

1:00 – 1:45 pm **Managing Plant Nutrition for Crop Production Optimization**
Dr. Stacy Tollefson – Professor of Practice, Ag & Biosystems Engineering, The University of Arizona

1:45 – 2:30 pm **IPM: What to Know When Preparing for Battle**
Karin Tift – Greenhouse Vegetable Consultants

2:45 – 3:15 pm Discussion of Previous Lectures, Q&A

3:15 – 3:30 pm 3, 5 Minute Exhibitor Presentations

3:30 – 4:00 pm Coffee Break, Visit Exhibit

4:00 – 4:45 pm **Substrate Considerations for Optimal CEA Production**
Remi Naaz – IR&D Supervisor, Premier Tech Horticulture

4:45 – 5:30 pm **Developments in Seed Varieties**
Kees Rodenburg – Enza Zaden NA Inc.

5:30 – 5:50 pm Discussion of Previous Lectures

6:00 – 8:00pm Welcome Reception – Fueled by appetizers & cash bar

6:30 pm CEAC Mission Award

7:00 pm Key Note Speaker - TBD



MARCH 13, MORNING

7am Breakfast provided

ENGINEERING CONSIDERATIONS & OPTIMAL SYSTEMS DESIGN AND MANAGEMENT

- 7:55 – 8:00 am Welcome & Announcements
- 8:00 – 8:45 am **Monitoring Your Greenhouse Environment: Simple Tools to Technology Trends**
Dr. Murat Kacira – Professor, Ag & Biosystems Engineering, The University of Arizona
- 8:45 – 9:30 am **Control Systems Design for Decision Support Management**
Dr. David Story – Management Systems Consultant, Ridder HortiMax – North America
- 9:30 – 9:50 am Discussion of Previous Lectures – Q&A
- 9:50 – 10:05 am 3, 5-minute Exhibitor presentations
- 10:05 – 10:30 am Coffee Break, Visit Exhibit
- 10:30 – 11:15 am **Engineering Your Greenhouse Structure for Energy Optimization**
Dr. Gene Giacomelli – Professor, Ag & Biosystems Engineering, The University of Arizona
- 11:15 – 12:00 pm **Water Quality & Considerations for Recycling Nutrient Solutions**
Dr. Rosa Raudales, Assistant Professor & Extension Specialist, The University of Connecticut
- 12:00 – 12:20 pm Discussion of Previous Lectures – Q&A
- 12:20 – 1:20 pm Lunch Provided

MARCH 13, AFTERNOON**INNOVATIVE CEA SYTEMS & VALUE-ADDED CROPS**

- 1:20 – 2:05 pm **Forthcoming Crops for CEA Production**
Ian Justus – Sr. Manager Controlled Environment Production, Driscoll's
- 2:05 – 2:50 pm **Approaching Premium Crops for CEA Production: Hydroponic Hops**
Myles Lewis – Owner, Arizona Vegetable Company & Instructor, CEAC Intensive Workshop
- 2:50 – 3:10 pm Discussion of Previous Lectures – Q&A
- 3:10 – 3:25 pm 3, 5-minute Exhibitor presentations
- 3:25 – 3:45 Coffee Break, Visit Exhibit
- 3:45 – 4:30 pm **Co-Producing Mushrooms in CEA for Boosted CO₂**
Dr. Barry Pryor – Professor, School of Plant Sciences, The University of Arizona
- 4:30 – 5:15 pm **Locally Grown Market Opportunity**
Chaz Shelton – Co-Founder, Merchant's Garden
- 5:15 – 5:35 pm Discussion of Previous Lectures – Q&A



MARCH 14, MORNING

7am Breakfast provided

ADVANCEMENTS IN CEA LIGHTING TECHNOLOGY

7:55 – 8:00 am Welcome & Announcements

8:00 – 8:45 am **Sunlight and Supplemental Lighting Applications for CEA**
Dr. Chieri Kubota – Professor, Horticulture & Crop Science, Ohio State University8:45 – 9:30 am **Evaluating LED Technologies for Commercial Operations**
Chris Higgins – CEO, Hort Americas

9:30 – 9:50 am Discussion of Previous Lectures - Q&A

9:50 – 10:05 am 3, 5-minute Exhibitor presentations

10:05 – 10:30 am Break, Visit your Exhibitors

URBAN CEA TECHNOLOGY10:30 – 11:15 am **Airflow and Uniformity Considerations**
Dr. Murat Kacira – Professor, Ag & Biosystems Engineering, The University of Arizona11:15 – 12:00 am **Sole Source Electric Lighting for Controlled Environment Crop Production**
Dr. Chieri Kubota - Professor, Horticulture and Crop Science, The Ohio State University

12:00 – 12:20 pm Discussion of Previous Lectures, Q&A

12:15 – 1:15 pm Lunch Provided

MARCH 14, AFTERNOON**THE EVOLVING CEA MARKET**1:15 – 2:00 pm **Food Safety Principles & Government Regulations**
Stewart Jacobson – Food Safety Projects Coordinator, Arizona Department of Agriculture2:00 – 2:45pm **To Be Determined**
TBD

2:45 – 3:05 pm Discussion of Previous Lectures – Q&A

3:05 – 3:20 pm 3, 5 Minute Presentations Form Exhibitors

3:20 – 3:45 pm Coffee Break, Visit Exhibit

3:45 – 4:15 pm **Economic Considerations to Keep Your Business Relevant**
Dr. Robin Brumfield – Extensions Specialist, Ag, Food & Resource Economics, Rutgers University4:15 – 5:30 pm **Elements for a Successful Urban Ag Start-up**
Jenn Frymark – Chief Greenhouse Officer, Gotham Greens

5:30 – 5:50 pm Discussion of Previous Lecture – Q&A

Dinner – On Your Own



MARCH 15, ALL DAY!

7am Breakfast provided

Hands on workshops at CEAC:

8:00 Depart hotel for CEAC [Bus provided]
8:30 – 10:15 am ROUND 1
10:15 – 12:00 pm ROUND 2
12:00 – 1:00 pm Lunch in the CEAC Classroom & Yard
1:00 – 2:45 pm ROUND 3
2:45 – 4:00 pm Additional Round
4:00 – 5:00pm Visit the Aquaponics Greenhouse [Bus provided]
5:30 Return to Hotel

Options for Hands-on Workshops:

- Building Fertigation Systems
- High Wire Tomato Maintenance
- Lettuce Floating Systems
- Sensors and Controls
- Vertical Farm Tour and Exercises
- Intro to Mushroom Cultivation – Mobile Mushroom Unit
- Single Round Discussions with Panels crafted from experts attending from academia and industry

Additional Round Workshop Options:

- Business Planning Session
 - Hydroponic Tomato Q+A
 - Hydroponic Lettuce Q+A
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MARCH 16

COMMERCIAL GH TOUR

8am – 2pm Touring Commercial Greenhouse of Southern AZ
NatureSweet – Willcox, Arizona
<https://naturesweet.com/>