

Covering Environments—The CEAC Monthly Seminars

Resource Use Efficient CEA Systems Through Smart Sensing & Monitoring, and Climate Control Technologies

March 31, 2017 @ 4:45-5:15 pm

Controlled Environment Agriculture Center, 1951 E Roger Rd

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CALIS, The University of Arizona

We have heard of climate change and global warming, and how these changes are going to have devastating effects on our ability to grow sufficient food crops. Moreover, it has been asserted that the only thing humans can do, to mitigate these deleterious changes, is to slow down or eliminate the factors that contribute to these changes. In order to help feeding increasing world population while protecting environment, improving people's health, and economic growth, there will also be need for smarter, innovative, adaptive, and resource efficient controlled environment agricultural (CEA) systems. The CEA systems are more resource-use efficient when environmental control system use biological system responses as feedback measured in real-time for grower/operator decision making and process controls. Innovative and adaptive CEA technology should go beyond increasing crop yields while providing safe, local and fresh food for communities. The challenge is to succeed in locations where energy resources are strained and limited. Integrating alternative energy applications to CEA food production systems are needed. Computer simulations for aerodynamics analysis of CEA systems offer cost-effective engineering approach to simulate energy exchange processes that are complex, expensive or impossible to study using experimental techniques. They can virtually and realistically determine the effects of hardware design and environmental control operational strategies within the crop canopies of CEA systems to provide design recommendations for system manufacturers, growers and operators for resource efficient systems.

As Kacira explains, the focus of his research team, at ABE and CEAC, is to engineer autonomous plant growth and health sensing & monitoring systems, climate control technologies, and alternative energy applications to create resource use efficient controlled environment agriculture systems.

In his presentation, Dr. Murat Kacira will discuss ongoing projects designed to make food production in controlled environments optimal and sustainable.

