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### “Controlled Environment Agriculture (CEA) Realities of Growing Plants Indoors”

The University of Arizona Controlled Environment Agriculture Center (CEAC) will be hosting a new Short Course on the **Realities of Growing Plants Indoors**, July 20<sup>th</sup> - 23<sup>rd</sup>, 2014 in Tucson, Arizona. The focus of the educational part of the program will be recognizing the environmental challenges to overcome and the challenges for good design to provide the environment that is required. Emphasis will be on the specific plant growth needs, and how they can be provided (or be limited) within indoor production systems of Urban Agriculture. In addition, the investment industry will be prompted to participate and with exposure to the basics of crop production, they can interact with entrepreneurs, growers and topic experts, to enhance business decisions and experience the excitement of this new technology-based food production industry.

The interest in producing plants for food crops has grown from the traditional agriculture of rural commercial farms to the desire for production within controlled environments in greenhouses and closed systems in urban areas. This has been in part market-driven, allowing the grower to provide high quality and variety to the local markets, and particularly with special attributes, such as 'locally grown', 'pesticide-free', 'organic' or others. Production interests have thus developed for urban agriculture where products could be grown and sold locally at sites where there is access to large populations. Many business development solutions are directly related to production agriculture in controlled environments, or CEA. All have the similar challenges of providing an environment for the plants that will ensure their maturation into salable, quality vegetable products that meet the modern market demands.

Fundamentally, protected agriculture includes a Controlled Environment of the atmosphere around the aerial part of the plant, and Hydroponics, a controlled environment procedure providing water and plant nutrients to the plant root zone. When combined, controlled environment and hydroponics technologies offer improved control of the factors, above all other agricultural production systems, which determine the growth, development and production harvest of the crops.

Participants of the Short Course will be presented the most current and innovative strategies used in successfully growing plants indoors. Educators and researchers of the UA-CEAC will be the primary teachers of the short course. Activities will include classroom presentations and discussion and Q&A on July 21<sup>st</sup> - July 22<sup>nd</sup>, followed by visits to UA-CEAC to see working closed and open controlled environments producing crops on the electrical grid as well as solar photovoltaic powered on July 23<sup>rd</sup>. Networking among the unique expected audience of growers, business analysts, entrepreneurs and educators will be optimized both within the classroom sessions and during daily special break times. The conference resort setting will offer pleasant environments for educational and business development interactions.

Lectures will cover a variety of topics including indoor growing structures, lighting strategy, air moisture-temperature control, CO<sub>2</sub> enrichment strategy, resources demand vs productivity, case studies, and more. Specific controlled environment crop production demonstrations at the UA-CEAC include naturally lighted greenhouse tomato & lettuce, artificially lighted [LED & High Pressure Sodium lamps] closed indoor chambers for lettuce/greens and for tomatoes. In addition design and operation studies of the 10-years of experience of remote operation of the National Science Foundation (NSF) South Pole Food Growth Chamber, and the NASA Lunar Greenhouse Prototype currently in production will be studied and visited.

More information can be found at the CEAC's website at <http://ag.arizona.edu/ceac/public-courses> and by clicking on "Indoor Growing Short Course." If you have questions please contact us by phone at 520-626-9566 or email Aaron Tevik at [atevik@cals.arizona.edu](mailto:atevik@cals.arizona.edu).