



<http://groups.ucanr.org/UCNFA>

**Greenhouse Management Workshop:
 Controlling Temperature and Relative Humidity**
 Center for Applied Horticultural Research
 2280 Tamara Lane, San Marcos CA 92084
September 2, 2010 7:30 am - 4:30 pm

This one-day program presented by Dr. Heiner Lieth of the UC Davis Plant Sciences Department, focuses on best management practices for controlling temperature and relative humidity in greenhouses. The target audience is any person who has had some introduction to greenhouses and growing plants in greenhouses. Greenhouse environment optimization is always the first step, and indeed the foundation of a functioning Integrated Pest Management program. IPM programs can only work in uniform environments with known, precisely controlled temperature and relative humidity conditions. As such PCAs may find this course useful.

Greenhouse temperature and relative humidity are important variables that need to be controlled, each in concert with each other while at the same time creating uniform conditions to facilitate uniform crop production. This uniformity is key to proper pest and disease management. While each crop has specific ideal ranges of temperatures, light and relative humidity, this workshop is not crop-specific; instead the focus will be to discuss the best management practices needed for any greenhouse crop.

Moderator: Jim Bethke, UCCE San Diego County

Continuing Education Units Applied for: C DPR, CCA

Agenda:

7:30 - 8:00 am	Registration, orientation, introductions
8:00 - 8:45 am	Greenhouse structures throughout the world; how the various global markets dictate the types of greenhouses; what is the ideal level of technology in California and why is this different from the Netherlands, South America and Asia.
8:45 - 9:45 am	Introduction to Temperature management: Types of controllers and sensors; level of accuracy and precision of control technology (what can you afford; what should you have as a minimum level; how do you decide?). Convection tubes vs HAF. How to optimize uniformity. Objectives for heating (Why are growers in warm climates at a disadvantage if they don't have heating systems). What you need to know about trapping heat at the end of the day.
9:45 - 10:00 am	Break
10:00 - 11:00 am	Heating greenhouses: types of systems and how they work (forced hot air, hot water, steam, radiant, bench-top heating, below-bench heating,.... Heating Systems control and optimization; various important facet DIF, temperature integration, ...
11:00 am - 12:30 pm	Cooling Systems: types of systems and how they work (passive vs forced air); Costs associated with cooling. Achieving uniformity (what level can you afford?) What is realistic for warm climates such as Southern California.
12:30 - 1:00 pm	Lunch sponsored by Target Specialty Products
1:00 - 2:30 pm	Computer-controlled temperature and relative humidity control. How does relative humidity control work? What are our options? Why do many growers not use it? Implications of poor humidity control or ignoring it. Integrated approach to year-round optimization. How to implement DIF (as well as similar schemes) and why.
2:30 - 2:45 pm	Revisit: Uniformity - why this is the most important factor to control, especially with regard to pest and disease management.
2:45 - 3:00 pm	Break
3:00 - 3:30 pm	Recap and Q&A
3:30 - 4:30 pm	Tour Altman Greenhouses
4:30 pm	Adjourn



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Please register me for the following educational program:

Greenhouse Management Workshop.....\$95.00 X ____ (number of people) = \$_____

Name		Company
Daytime Phone	Fax	Address
Email address		City State Zip

Payment by Check: Mail this form and your registration fees, made payable to **UC Regents**, to UCNFA, C/O Linda Dodge
Plant Sciences Dept. Mailstop 6
University of California
One Shields Ave.
Davis CA 95616



Credit card payment: Register online at <http://ucanr.org/sites/UCNFA/>

Credit card payment: Mail this completed form to the UCNFA address above or fax in your registration to 530-752-8419

Payment by Credit Card: ___ VISA ___ Master Card ___ Amex ___ Discover

Card # _____ 3-digit verification # _____ Exp. date _____

Cardholder Name _____ Signature _____

Registration Fees: Prices listed are per person. A confirmation will be emailed or faxed to registrants whose registration is received up to 5 days prior to the seminar. **Late Registration:** Late and at-door registration will be accepted only if space is available and meals cannot be guaranteed. **Refund Policy:** Refund requests must be received in writing (fax & email is acceptable). **For more information please contact the UCNFA office at 530-752-8419 (phone/fax) (email: lldodge@ucdavis.edu)**

UCNFA events are ADA compliant

