

# Southern California Research Update



**Kirk D. Larson**

**University of California, South Coast Field Station - Irvine**

## **CSC Acreage Report**

**Relatively low chill in HE nurseries (esp. early)  
with **HOT** establishment conditions in early Oct.**

**Benicia: yield performance in So. California;  
Benicia plant issues**

**Performance of U.C. advanced selections**

**Genetic screening for tolerance/susceptibility to  
soilborne pathogens**

**New products: Avian Control (not registered in CA)  
Diffusion**

# **CSC Revised Strawberry Acreage Report 2012**

## **2012 California Strawberry Acreage**

60.7% UC cultivars

39.3% Proprietary cultivars

Compared to 2011:

Proprietary acreage decreased by 518 acres

Volume is up 14 million crates



**Nursery dig  
at night**

**Cold temps  
No wind  
Less stress on plants**



# **Temperature, Respiration and Plant Carbohydrate Status**

**For every 10° C (18° F) increase in temperature,  
plant respiration rate doubles or triples**

**Soil (and plant) temperatures under clear  
mulch can easily reach 120+° F, especially with  
use of clear polyethylene mulch**

**High temps in So. Calif. in late Sept. - early Oct.  
can result in excessive respiration and depletion  
of CHO reserves that weaken transplants**

## Macdoel chill accumulation as of Sept. 28 in five consecutive years

<u>Year</u>	<u>Accumulated hrs for discrete temp ranges</u>				
	<u>0-32</u>	<u>33- 45</u>	<u>46-60</u>	<u>61-80</u>	<u>81-100</u>
<b>2012</b>	2	174	191	232	66
<b>2011</b>	9	156	211	204	83
<b>2010</b>	22	202	228	189	23
<b>2009</b>	8	153	207	216	80
<b>2008</b>	30	196	172	209	55

---

**C. acutatum**  
or  
**heat stress?**



# Early HE selections dug 9-28





# Late HE selections dug 10-16



## LE selections dug 10-11 (leaves-on)



# LE selections dug 10-11 (leaves on)



# Benicia

Short-day cultivar released in 2010

Adapted to early planting

Moderately vigorous plant, open growth habit

Similar production curve as Ventana but with  
lower cull rate and better fruit quality

Very good flavor



Benicia

# Benicia (4.39-1)



# Yield Performance for Benicia, Ventana & Camarosa Irvine, 2011-12

Item	Mulch	Total Yld (C/A)	Mkt Yld (C/A)	Fruit		
				Size (g)	App (1-5)	Firm (1-5)
Benicia	Clear	12140	10193	34.9	3.5	3.6
	Black	11466	9728	35.5	3.6	3.6
Ventana	Clear	10957	8825	33.7	3.1	3.4
Camarosa	Clear	12159	8710	27.9	2.2	3.1

C/A = crates per acre (10.3 lbs/crate)

## **Benicia Plant Issues 2011-2012**

Variable plant vigor in fields throughout Calif.

Typically, good vigor and yield to early May

Variable plant collapse, with root & crown rot  
in late season

Despite attenuated harvest season, many  
growers obtained very high yields



**Benicia**

**Oxnard**

**June 1, 2012**



# Benicia plant crown collapse – May



**Benicia  
late-season  
crown collapse**

**Heavy fruit load  
appears to  
contribute to plant  
collapse and root  
senescence  
(CHO depletion)**

**Potential to produce  
6000-10000 C/A  
by mid-May**



# Yield Performance for Cultivars & Advanced SD Selections Irvine, 2011-12

Item	Total Yld (C/A)	Mkt Yld (C/A)	Size (g)	Fruit	
				App (1-5)	Firm (1-5)
8.5-601	11849	10841	34.3	4.0	3.6
8.9-605	11581	10012	38.8	3.8	3.8
8.13-605	11513	10090	37.2	3.6	3.8
8.17-607	13067	11277	38.2	3.8	3.8
8.20-602	9975	8458	36.2	3.7	3.8
8.132-608	11975	10815	36.1	3.6	3.6
8.137-601	10878	10364	41.4	3.8	3.9
9.56-604	10878	8925	33.2	3.9	3.9
Ventana	10957	8825	33.7	3.1	3.4
Benicia	12140	10193	34.9	3.5	3.6

C/A = crates per acre (10.3 lbs/crate)

# Yield Performance for Cultivars & Advanced SD Selections from Doug Shaw evaluated in Irvine, 2011-12

Item	Total Yld (C/A)	Mkt Yld (C/A)	Size (g)	Fruit	
				App (1-5)	Firm (1-5)
8.55-2	12915	10316	36.4	3.9	3.7
8.124-1	11424	10274	39.0	3.5	3.7
8.137-2	10316	9277	35.0	3.5	3.8
8.182-2	11429	9335	33.4	3.5	4.0
Ventana	10957	8825	33.7	3.1	3.4
Benicia	12140	10193	34.9	3.5	3.6

C/A = crates per acre (10.3 lbs/crate)

# *C. acutatum* genetic screen

Evaluation



Plug  
propagation



Infection



Inoculation



# *C. acutatum* genetic screen

Evaluate ~50 cultivars and advanced selections annually



Moderately tolerant



Highly susceptible

## Disease Resistance Scores\* for Nine U.C. Strawberry Cultivars, 2008-11

<b>Genotype</b>	<b><i>P.</i> <i>cactorum</i></b>	<b><i>V.</i> <i>dahliae</i></b>	<b><i>C.</i> <i>acutatum</i></b>	<b><i>F.</i> <i>oxysporum</i>**</b>	<b><i>M.</i> <i>phaseolina</i>**</b>
<b>Camarosa</b>	<b>3.2</b>	<b>3.3</b>	<b>2.8</b>	<b>2.9</b>	<b>3.2</b>
<b>Ventana</b>	<b>2.5</b>	<b>3.1</b>	<b>3.0</b>	<b>4.6</b>	<b>3.2</b>
<b>Albion</b>	<b>4.5</b>	<b>3.9</b>	<b>3.1</b>	<b>2.3</b>	<b>1.9</b>
<b>Monterey</b>	<b>3.9</b>	<b>4.2</b>	<b>2.9</b>	<b>3.5</b>	<b>2.8</b>
<b>S. Andreas</b>	<b>4.1</b>	<b>4.1</b>	<b>2.8</b>	<b>5.0</b>	<b>1.6</b>
<b>Portola</b>	<b>4.1</b>	<b>3.8</b>	<b>2.2</b>	<b>5.0</b>	<b>1.9</b>
<b>Palomar</b>	<b>3.3</b>	<b>3.9</b>	<b>3.1</b>	<b>3.4</b>	<b>3.2</b>
<b>Benicia</b>	<b>3.7</b>	<b>2.2</b>	<b>2.7</b>	<b>3.0</b>	<b>3.1</b>
<b>Mojave</b>	<b>2.9</b>	<b>4.1</b>	<b>2.9</b>	<b>3.4</b>	<b>3.1</b>

\* Disease resistance scores are on a scale of 1-5, with 1 = highly susceptible, and 5 = highly resistant

\*\* Data for 2010 and 2011 only



# Raised Bed Trough (Rabet) System Sta Maria, 2011-12



Commercial System  
Sta Maria, 2011-12

**Apply white, water-based paint to clear-mulched beds in late summer & early fall**

**Reduces soil temperatures**

**Reduces N losses from CR fertilizers**

**Paint gradually fades away with exposure to sun and water**

# **“Diffusion®”**

**Wilbur-Ellis product**

**Mineral-based particle film**

**Flowable micronized dispersion of calcium carbonate**

**Protects against sunburn & heat stress**

**Can apply to crops that aren't CA-sensitive**

# **“Avian Control” Bird Repellent**

Irritates pain receptors associated with birds' sense of taste and smell

Unpleasant effect is temporary, doesn't harm birds


Active ingredient is methyl anthranilate

Formulated from food-grade ingredients

Applied as spray or fog, provides protection from birds for up to 2 weeks

Repels all birds

Is not labeled for strawberry in California at this time

A sunset over a field with a tree silhouette in the foreground. The sun is low on the horizon, casting a warm glow over the scene. The sky is a mix of orange, red, and purple. The foreground shows a field with some trees and a fence line.

**Tentative Pomology  
Field Day dates in 2013:  
Feb. 26 - Irvine  
April 11 or 18 - S. Maria  
May 7 - Watsonville**

**Kirk Larson**  
**[kdlarson@ucdavis.edu](mailto:kdlarson@ucdavis.edu)**  
**949-857-0136**

**Doug Shaw**  
**[dvshaw@ucdavis.edu](mailto:dvshaw@ucdavis.edu)**





**Thank you!**