

Growing strawberries in tunnels

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- *Matted row and Annual plastic systems*



- *June-bearing and day-neutral varieties*

June-bearing: Require short day for flower bud initiation

Day-neutral: Flower bud initiation is insensitive to day length

❖ 2015-2016 HT strawberry trial at SWPAC



Day neutral:

Albion

San Andreas

Sweet Ann

June-bearer:

Festival

Chandler

Camarosa

Sweet Charlie

Benicia

Camino Real

Radiance

Crop season:

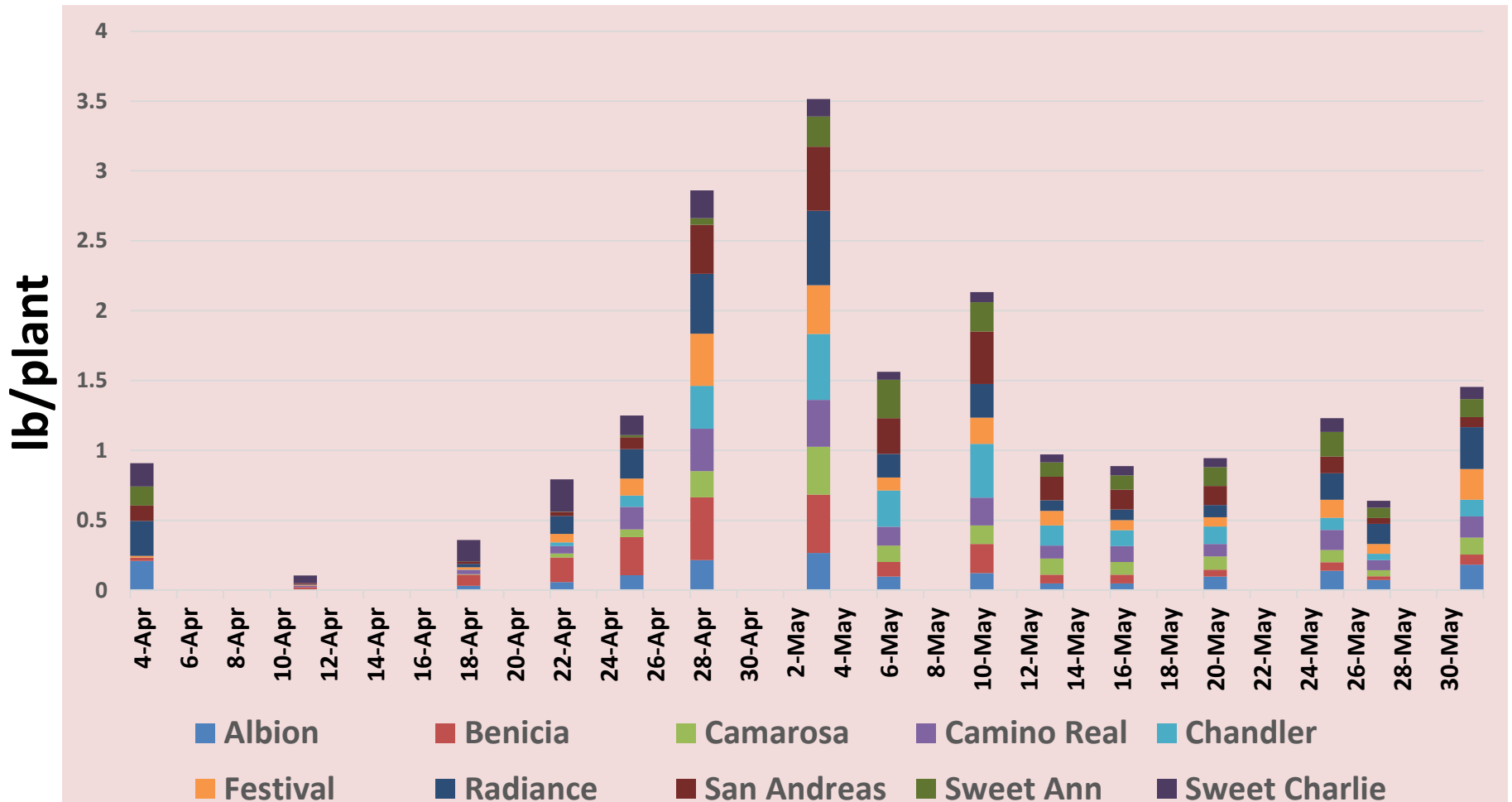
Aug. 27 2015 to May 31, 2016

- *Day-neutral strawberries and two June-bearing varieties had a small fall harvest*

Variety	Flower date	Fall Yield lb./plant
Albion	Sep 20	0.17
San Andreas	Sep 24	0.08
Sweet Ann	Oct 2	0.10
Sweet Charlie	Oct 13	0.09
Radiance	Oct 16	0.09



- *Spring harvest started in mid-April and lasted to the end of May*
- *Yield ranged from 1.42 to 2.86 lb/plant*



❖ Growing strawberries in high tunnels

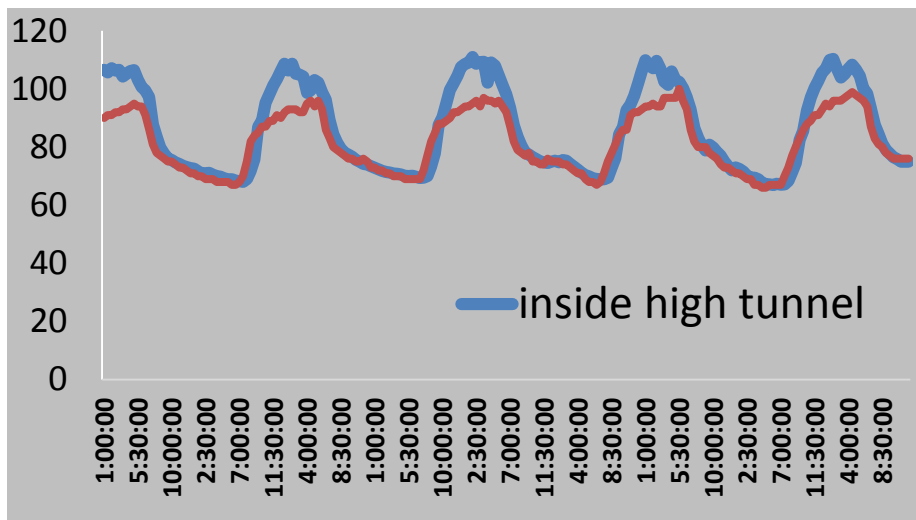
□ Planting



<https://strawberries.ces.ncsu.edu/strawberries-plasticulture-considerations-plant-material/>



- Even though plugs are more expensive, they are easier to manage and establish much faster

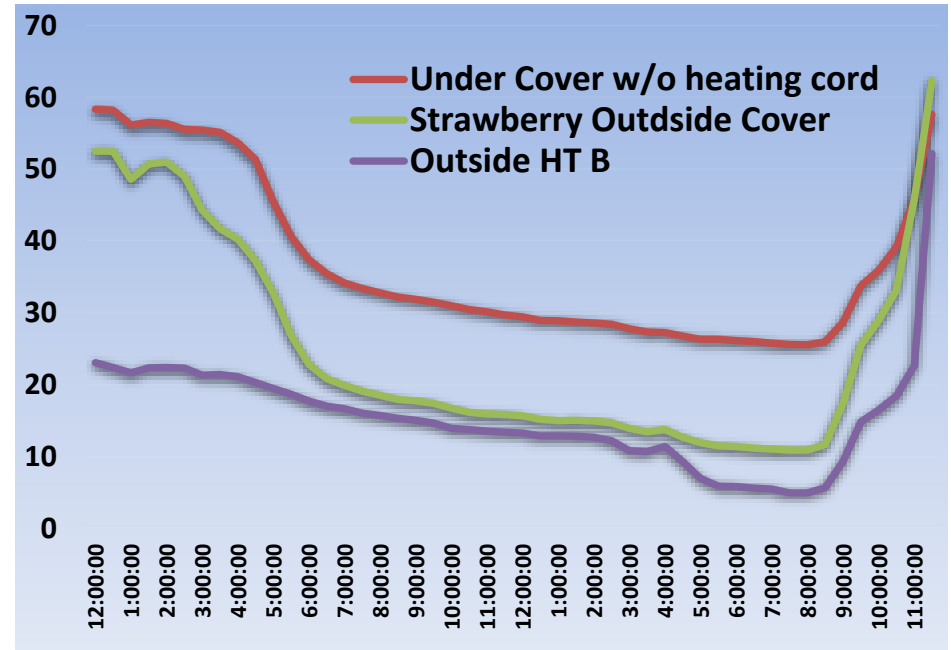


Variety	Percentages of dead plants
Albion	1.5
Benicia	21.2
Camarosa	10.6
Camino Real	0
Chandler	4.5
Festival	0
Radiance	4.5
San Andreas	1.5
Sweet Ann	15.1
Sweet Charlie	0

- *Avoid late summer high T*
- *Maintain bed moisture*

Management

Temperature



Fall: applied at nights when $T < 32$ °F

Winter: taken off during days when $T > 70$ °F

Spring: applied at nights when $T < 50$ °F

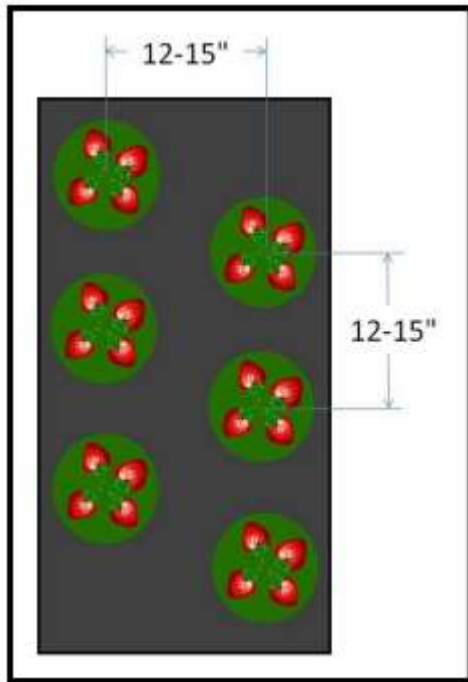
- **Temperature**

Recorded temperatures (F) under row covers in the 2015/2016 trial

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Low	49	33	31	33	26	31	35	37	43
High	111	92	82	77	77	93	89	98	108
Avg	75	61	53	49	46	49	57	63	68

Management

Spacing



Source: USU 2010-01pr

- Runners were pruned weekly in the fall
- Control plant size in winter



- Pollination: by wind

- *Fertility management*

- ✓ Preplant

- 60 lb/a Nitrogen

- 60 lb/a phosphate (soil test)

- 120 lb/a potash (soil test)

- (Source: southwest regional strawberry plasticulture production guide)

- ✓ Fertigation start in Feb. based on plant tissue test
(two-week interval)

- N recommendation 0.5-0.75 lb/a/day

■ *Pest management*

Powdery mildew



Torino, Quintec, Rally

Gray mold



Captan, Scala; pruning

■ *Pest management*

Yellow striped armyworms



Agree WG, Brigade

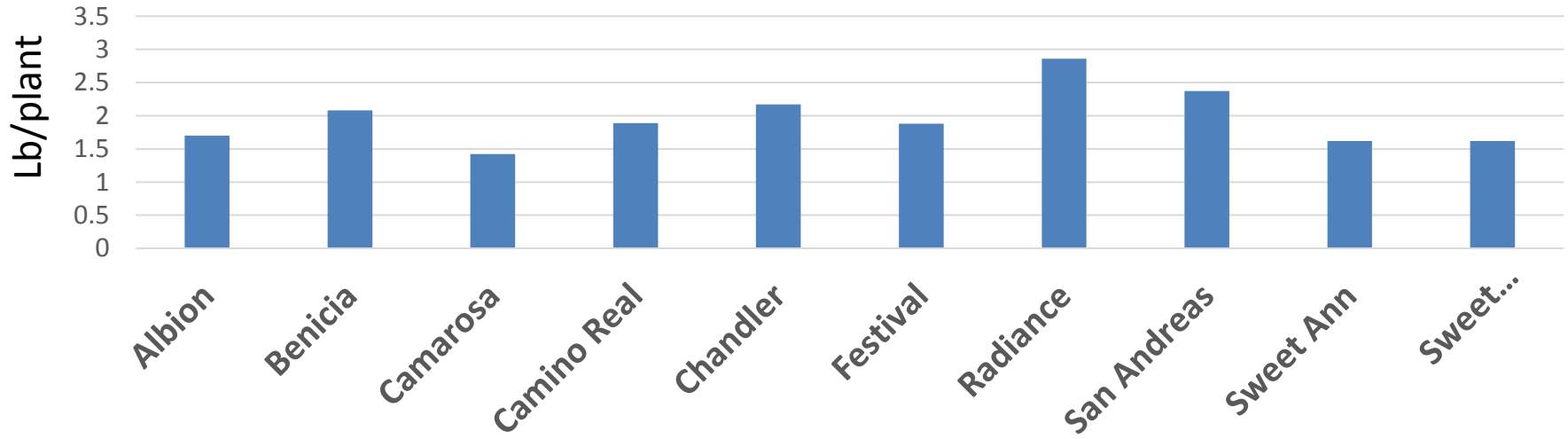
Two-spotted spider mites



Two-spotted spider mites
predatory mites, M-Pede,
Oberon, Acramite; Prunning



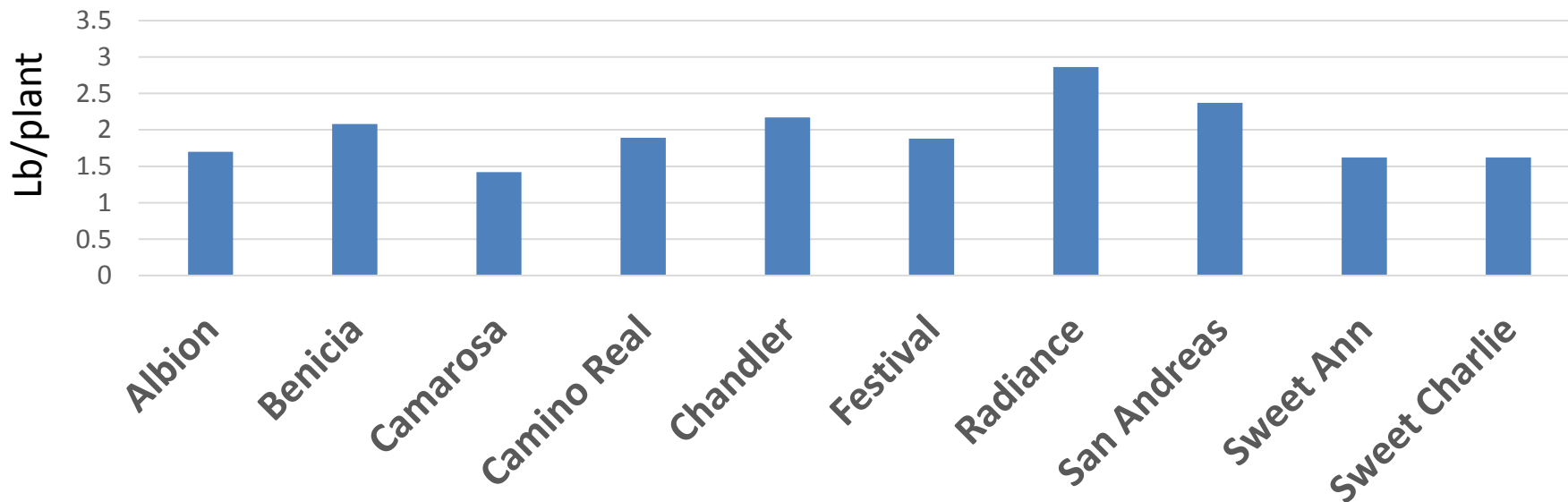
□ Cultivars --- Driven by market goals



- Albion: earliest variety, recommend for fall harvest
- Festival: high fruit quality, produce many runners
- Radiance: longest harvest season, very high yield potential
- San Andreas: high yield day-neutral
- Sweet Charlie: early spring harvest , but low yield potential



□ Cultivars --- Driven by market goals



- Benicia: good for early spring market, relatively tolerant to powdery mildew, plant decline in peak harvest
- *Not recommended*--- Chandler and Camarosa: small and soft berries

□ Economics

Variety	Marketable yield lb/plant	Yield (lb) in High Tunnel (30' × 96') (900 plants)	Revenue \$ (\$3.5/lb)
Albion	1.70 de ¹	1,530	5,355
Benicia	2.08 bc	1,872	6,552
Camarosa	1.42 e	1,278	4,473
Camino Real	1.89 cd	1,701	5,953
Chandler	2.17 bc	1,953	6,835
Festival	1.88 cd	1,692	5,922
Radiance	2.86 a	2,574	9,009
San Andreas	2.37 b	2,133	7,465
Sweet Ann	1.62 de	1,458	5,103
Sweet Charlie	1.62 de	1,458	5,103



- Strawberries as a rotational crop to tomatoes
 - Attract consumers to come and buy other produce
 - Double cropping with tomatoes

- Direct selling value may not be able to compete with tomatoes
- Long crop season
- Strawberries are susceptible to Verticillium wilt, it can also be a disease of tomatoes.



Questions & Comments

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