

2006 Strawberry Variety Research – Fresno County

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A field research trial was established in a grower's field in August of 2005 to evaluate seven (7) varieties of strawberries in Fresno, California. The most common variety planted for the past 15 years in the San Joaquin Valley has been Chandler, a University of California short day variety released in 1983. It has been the preferred variety by the processors in the area and is an excellent tasting variety for roadside stands. The County Agricultural Commissioner reported 134 acres of strawberries in Fresno for the year 2006 – 89 acres for the fresh market and 45 acres for a local processor and institutional sales. There has been a gradual decline in strawberry acres from a high in 1992 of 680 acres, 494 acres in 2000, to the current production. Ninety-five percent of the 2006 crop in Fresno was grown by Hmong and Mien refugee farmers (approximately 25 growers). The cooperator for this trial was Tchieng Fong farms on Fowler, north of Olive Ave.

Varieties Tested:

- Chandler
- Camarosa
- Treasure
- Festival
- Andana
- Camino Real
- Aromas

(CG 5 variety planting stock was sent but not included in the analysis because of poor survival)

Report Highlights

- Camino Real yielded over 4,000 pounds/acre more than Chandler
- Camino Real berries were large - 27 grams, compared to Chandler at 21 grams.

MATERIALS AND METHODS:

Frigo plants were set out on September 14, 2005 in a grower's field. Beds were 12" in height (bottom of furrow to top of bed) and spaced 54" center to center. Plants were spaced 12" within the row, two rows per bed. A black plastic mulch was laid on the beds at planting. Plots were harvested twice weekly beginning April 21 and ending June 16 (14 harvests).

The site was located in East Fresno, California and soil type was an Atwater sandy loam. Plots were 25' in length in a randomized complete block design, with four replications. Yields (total and marketable) were taken for each harvest as well as berry size and soluble solids (BRIX).

RESULTS AND DISCUSSION:

Total and Marketable Yield: No significant differences in total or marketable yields were found for the overall results after the 14 harvests. There were, however, significant differences ($p \leq .05$) between marketable yields at various harvest dates, the more important probably being for earliness in the first 1-2 harvests.

Marketable Yield:

Earliness: There was a significant difference in marketable yields at the first harvest date of April 21 (Table 1) and with each other weekly harvest. Festival out yielded all of the rest with a converted plot yield of 349 lbs/acre compared to Treasure at 178 lbs/acre and Chandler at 70 lbs/acre. Camino Real gave the lowest first yield with 12 lbs/acre (though highest overall). While each weekly harvest was significant, the first one or two are probably the most important to attract roadside stand customers.

Overall: No significant differences. Although it was a very rainy year there was not a lot of difference with Botrytis fruit rot as seen with total and marketable yields and % culls in Table 2 (77-82%). The highest yielding variety at the end of the season of marketable berries in this trial was Camino Real followed by Treasure (70/ 66.5 lbs per plot –27,202 and 25,758 lbs/acre) then Andana. Chandler and Aromas were the lowest yielding varieties – 59.7/60.44 lbs/plot; 23,139/23,426 lbs/acre. As seen in the graph and table below, the highest yields are observed during the 3rd, 4th, and 5th weeks of the season.

Statistically, there was no significant difference in total marketable yields at the 95% confidence level.

TABLE 1. Harvests

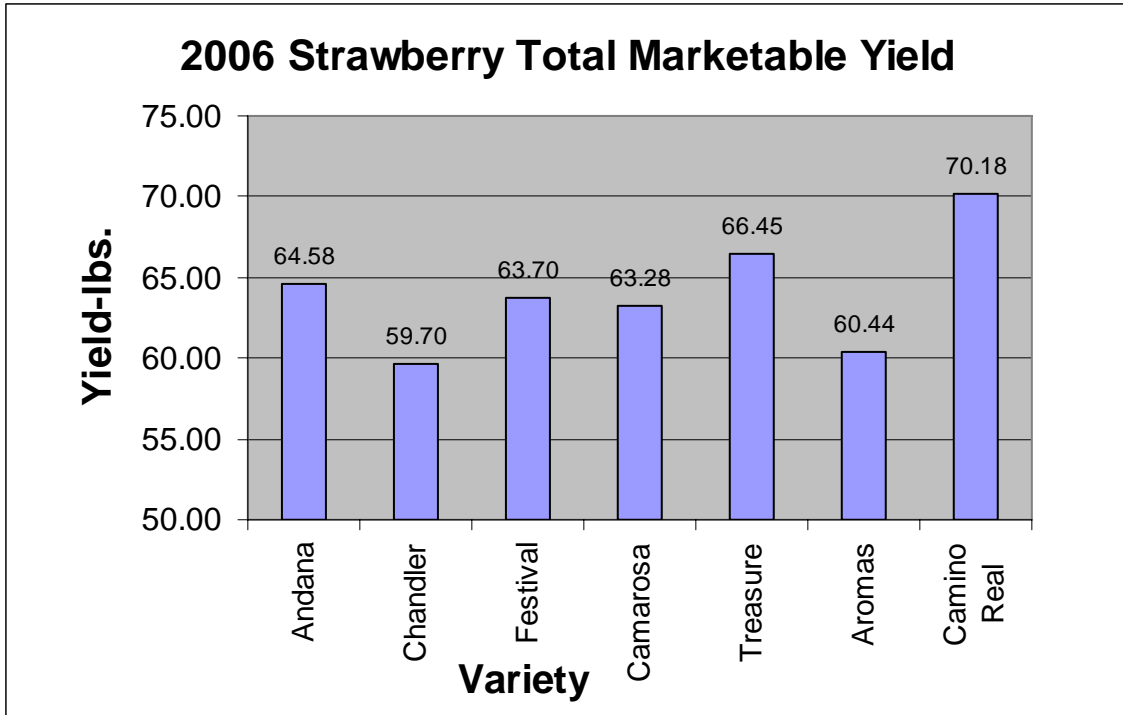
Weekly averages

	21-Apr		28-Apr	5-May	12-May	19-May	26-May	2-Jun	9-Jun	17-Jun
1 Andana	0.04	C	0.66	8.00	16.98	13.69	6.65	10.10	5.49	2.98
2 Chandler	0.18	C	4.70	10.60	16.50	9.95	7.00	6.80	2.33	1.65
3 Festival	0.90	A	6.21	11.11	10.68	9.68	9.48	6.38	4.43	4.85
4 Camarosa	0.10	C	2.80	7.60	16.50	10.08	9.38	8.48	4.38	3.98
5 Treasure	0.46	B	2.89	8.30	16.10	10.85	8.13	8.60	5.28	5.85
6 Aromas	0.08	C	2.51	10.02	17.08	12.74	6.23	6.66	3.27	1.85
7 Cam Real	0.03	C	2.49	12.95	13.08	16.05	7.75	7.73	5.21	4.90
LSD (.05%) =	0.258				3.80	2.90	1.80	2.20	1.50	1.4
C.V. (%) =	68.41				16.50	16.40	15.90	18.80	23.03	25.60

TABLE 2.
Season Overall
Yield

Mkt Averages (lbs)	Lbs/acre	% marketable
Andana	64.58	25,031 79
Chandler	59.70	23,139 78
Festival	63.70	24,690 78
Camarosa	63.28	24,527 81
Treasure	66.45	25,756 80
Aromas	60.44	23,426 77
Camino Real	70.18	27,202 82

not significant



Berry size varied between the different varieties. The standard variety grown in Fresno is Chandler which averaged 21 grams/berry, among the smallest in the trial with Festival at 20 grams. The largest berry in this trial was Camino Real at 27 grams, followed by Aromas at 24 grams.

Berry size	berry averages (grams)
Andana	21
Chandler	21
Festival	20
Camarosa	23
Treasure	22
Aromas	24
Camino Real	27

Brix (Soluble solids) varied between varieties with Chandler and Camarosa being the overall sweetest (8.7, 8.5); and Aromas and Camino Real being the least sweet (6.9, 7.2).

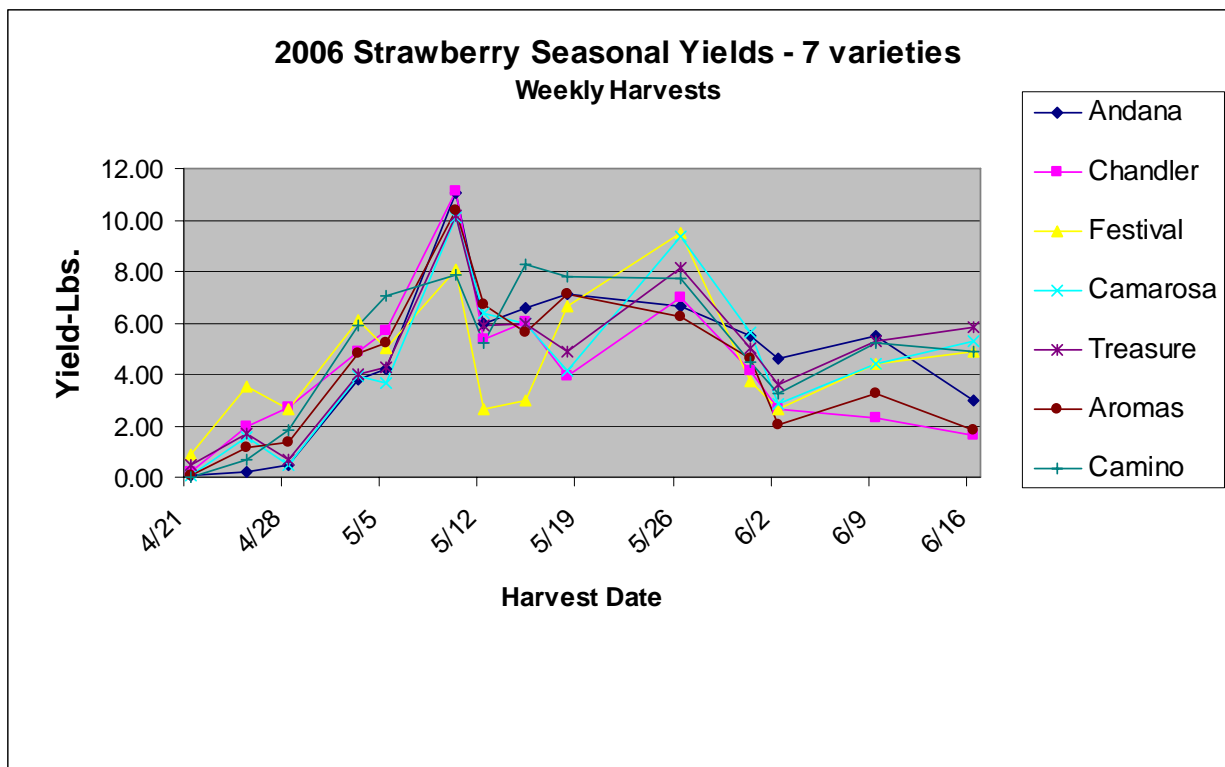
Brix Readings	averages
Andana	7.8
Chandler	8.7
Festival	7.9
Camarosa	8.5
Treasure	8.5
Aromas	6.9
Camino Real	7.2

Conclusions:

While there was no significant difference in marketable yields statistically, the trends are important to look at and may be significant when looked at from an economic standpoint, especially for retail roadside sales. Chandler is most noted for its flavor and Brix but is not known for being a high yielder. Camino Real yielded over 4,000 more pounds per acre than Chandler in this particular trial. Camarosa almost always yields 10% more than Chandler and was consistent with this comparison here again. One point to note from this trial is Camino Real did not start out giving high yields in the early harvests, but did catch up by the third week.

The berry sizes varied from 20 grams to 27 grams, with Camino Real being the largest and Festival, Andana, and Chandler being among the smallest berries. Sweetness evaluations (Brix) revealed, as expected that Chandler was the highest, followed closely by Camarosa and Treasure. Aromas was almost 2 units lower in Brix than Chandler.

From a cosmetic standpoint, it was noted in the middle of the harvest season that some Camino Real fruits appeared somewhat lumpy and not symmetrically uniform. But this variety also had one of the smallest cavities. Treasure and Aromas had quite large center cavities. Also, throughout the season Aromas made quite a few doubles, which often caused splits and were a favorite hiding place for earwigs, not desirable from a consumer standpoint.



Aromas variety with doubles and splits (and earwigs)

