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DEPARTMENT OF PLANT SCIENCES

Field Evaluation of Almond Varieties

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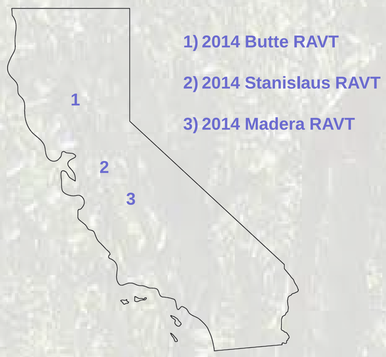


1) 2014 Butte RAVT
2) 2014 Stanislaus RAVT
3) 2014 Madera RAVT

2004 McFarland Trial

Data collection at the 2004 McFarland Trial was discontinued after the 2015 season.

2014 Regional Almond Variety Trials

The next generation almond variety trials were planted in the winter of 2014 in Butte (Chico State University), Stanislaus (Salida School District Site), and Madera (Chowchilla grower site) counties. The varieties and selections planted are listed in Table 4. The first 30 items are common to all 3 sites and a few different items added at individual sites are listed at the bottom of Table 4. Trees at the Butte, Stanislaus and Madera trial were planted on Krymsk 86, Nemaguard and Hansen 536 rootstocks respectively (with the exceptions listed at the bottom of Table 4). Trees were planted at a spacing of 18' x 22' at the Butte site (110 trees/acre), 16' x 21' at the Stanislaus site (130 trees/acre) and 12' x 21' at the Madera site (173 trees/acre). These densities are significantly higher than the previous generation RAVTs where planting densities for the Butte, San Joaquin and Kern trials were 64, 75 and 86 trees per acre respectively. Data collection including bloom, hullsplit, midday canopy light interception, yield and quality was started at these sites in 2016.

Table 1. Varieties and selections planted at the next generation regional almond variety trials. Items 1-30 are planted at all 3 sites while additional material planted at individual sites is listed at the end. Trees at the Butte, Stanislaus and Madera sites were planted on Krymsk 86, Nemaguard and Hansen 536 rootstock respectively (exceptions are noted at bottom of table).

	Variety	Source
1	Eddie	Bright's
2	Capitola	Burchell
3	Supareil	Burchell
4	Self-fruitful P16.013	Burchell
5	Self-fruitful P13.019	Burchell
6	Booth	Burchell
7	Sterling	Burchell
8	Bennett	Duarte
9	Nonpareil	Fowler
10	Durango	Fowler
11	Jenette	Fowler
12	Aldrich	Fowler
13	Marcona	Spain
14	Winters	UCD
15	Sweetheart	UCD
16	Kester (2-19e)*	UCD
17	UCD3-40	UCD
18	UCD18-20	UCD
19	UCD1-16	UCD
20	UCD8-160	UCD
21	UCD8-27	UCD
22	UCD1-271	UCD
23	UCD1-232	UCD
24	UCD7-159	UCD
25	UCD8-201	UCD
26	Y121-42-99	USDA
27	Y117-86-03	USDA
28	Y116-161-99**	USDA
29	Y117-91-03	USDA
30	Folsom	Wilson
31	Wood Colony on Krymsk 86 (Butte only)	
31	Lone Star on Hansen 536 (Chowchilla only	

*Kester (2-19e) was planted at all three sites on the usual rootstock f
In addition at the Butte and Stanislaus sites it was also planted in t
replicated trial on Hansen 536 rootstock
** Y116-161-99 planted only in two reps outside of main trial at Butte


Butte RAVT- June 13, 2016


Stanislaus RAVT- June 21, 2016

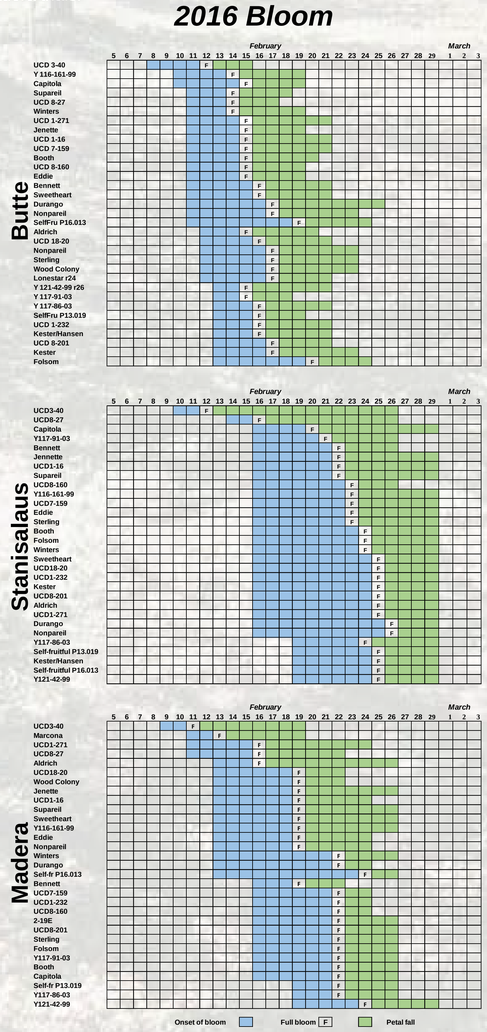

Madera RAVT- July 6, 2016

2016 Results

Butte- Trees at the Butte variety trial continued to grow vigorously, with low mortality. No bees were placed in the orchard in 2016. Bloom in 2016 (Flg. 1) was very fast ("flash bloom"), which lasted only 18 days from the onset of bloom in the earliest variety (UCD 3-40) to 100% petal fall in the latest variety (Durango). Virtually all varieties were in full bloom within three days of each other (February 14-17), with the exception of UCD 3-40, Folsom, and Self Fru P16.013. The main problem in 2016 was rust, which was particularly bad region-wide. Within the trial, the rust outbreak was mostly localized to one section of the orchard rather than affecting certain varieties more than others. Midday PAR interception varied from 20 to 43% (Table 2). The trial was harvested twice: August 15 (Nonpareil, Y117-91-03, Y121-42-99 and Y116-161-99), and September 23 (all other varieties).

Stanislaus- Growth in the Stanislaus County plot was average for almond trees on Nemaguard rootstock in sandy loam soil with PAR interception ranging from 23 to 36% (Table 2). Very few trees displayed obvious symptoms of Verticillium wilt disease, in contrast to the 2015 growing season when approximately 11% of trees in the test plot exhibited wilt symptoms. However this year, much of the trial suffered drift injury from an errant, aerial application of glyphosate and glyphosonate to an adjacent field. This herbicide drift occurred during bloom and appeared to have affected nut set / retention throughout much of the field. This may be the reason for the very low yields of many varieties. Trees appeared to recover and no long-term deleterious effects are expected. In addition to the herbicide drift, 219 out of the 1364 Nonpareil trees (16%) in the plot had moderate to severe signs of band canker (*Botryosphaeria* spp.). Relatively few of the test variety trees showed obvious symptoms and there were no apparent differences among the varieties.

Figure 1. Bloom data for the 2016 season for the Butte, Stanislaus and Madera trials.



Madera- The Madera County Regional Variety Trial is hosted in a highly vigorous orchard near Chowchilla, CA. All varieties are planted on Hanson 536 rootstock. Trees are spaced 12'x22' and are irrigated by double line drip. Soils are variable across the field with areas of high alkalinity and poor water infiltration. 2016 was characterized by a fast bloom at the Madera site similar to at the other sites (Fig. 1). All varieties completed bloom by the beginning of March. Hull split was not as succinct. Due to the high vigor of the plots, the hull split period was long for many varieties. This increased the challenges at harvest. PAR interception ranged from 23 to 61% which is very high at the upper end for a 3 year old orchard. The block produced an approximate average of 930 lbs/acre while the highest yielding varieties produced approximately 1400 lbs/acre. Yield weights will be finalized at the completion of crackout. 'Wood Colony' was not harvested due to being one year younger than the other varieties.

Analysis of yield and hullsplit data was not completed in time for this poster.

2017 Plans

Data collection will continue for bloom, hullsplit, midday canopy light interception, yield and quality in 2017. In addition any disease or insect problems that occur will be noted.

Table 2. Midday canopy photosynthetically active radiation (PAR) data collected with the mule light bar Butte, Stanislaus and Madera trials.

Madera	PAR int. (%)		Stanislaus	PAR int. (%)		Butte	PAR int. (%)	
Capitola	61.1	a	Y-117-91-03	35.7	a	Kester/Hansen	43.0	a
Folsom	56.0	ab	Kester/Hansen	35.6	a	Self-fr-P13-019	39.6	ab
Sweetheart	54.4	abc	Self-fr-P13-019	33.6	a	Capitola	37.5	bc
Booth	54.1	abc	Sterling	31.9	ab	UCD-18-20	33.7	cd
Kester/Hansen	53.5	abcd	Folsom	31.7	abc	Y-117-91-03	33.6	cde
Sterling	52.0	abcd	Y-121-42-99	31.7	abc	Kester	33.6	cde
Nonpareil	52.0	abcd	Booth	30.7	abcd	Booth	33.3	cde
Eddie	51.7	abcd	UCD-18-20	30.0	abcd	Folsom	33.2	cde
Supareil	50.9	abcd	UCD-1-232	29.0	abcd	Winters	32.7	cde
UCD-1-271	50.7	abcd	UCD-3-40	28.9	abcd	UCD-1-232	32.0	cdef
Y-116-161-99	49.3	abcd	Eddie	28.9	abcd	Nonpareil	31.2	defg
Y-117-91-03	48.4	abcd	Capitola	28.1	bcd	Supareil	31.2	defg
Aldrich	48.2	abcd	Kester	28.1	bcd	Durango	29.0	defgh
UCD-3-40	47.3	abcd	Nonpareil	27.6	bcd	UCD-3-40	28.7	defgh
Self-fr-P13-019	46.3	abcd	Winters	27.1	bcd	Y-117-86-03	28.3	defgh
Y-121-42-99	46.3	abcd	Sweetheart	26.8	bcd	Sterling	28.0	defgh
Self-fr-P16-013	46.0	abcd	UCD-8-160	26.7	bcd	UCD-1-16	27.8	efgh
UCD-18-20	45.9	abcd	Bennett	26.3	bcd	UCD-8-201	26.7	fgh
Y-117-86-03	45.2	bcd	UCD-8-201	26.2	cd	Sweetheart	26.2	ghi
Durango	45.2	bcd	Y-116-161-99	25.7	cd	UCD-7-159	26.0	ghij
Jenette	44.8	bcd	UCD-1-16	25.5	cd	UCD-8-27	25.9	ghij
UCD-8-201	42.3	bcd	Supareil	25.5	cd	Eddie	25.0	hij
Bennett	42.2	bcd	UCD-1-271	25.3	cd	Jenette	24.3	hij
UCD-7-159	41.9	bcd	Aldrich	24.9	cd	Aldrich	24.2	hij
Winters	41.1	bcd	Y-117-86-03	24.7	cd	Wood Colony	23.4	hij
UCD-1-232	41.0	bcd	Self-fr-P16-013	24.6	cd	UCD-8-160	23.2	hij
UCD-8-27	38.8	cd	Jenette	24.1	d	Y-121-42-99	23.2	hij
UCD-8-160	38.1	d	UCD-8-27	23.7	d	Y-116-161-99	23.1	hij
UCD-1-16	38.1	d	UCD-7-159	23.5	d	Bennett	20.8	ij
Wood Colony	23.4	e	Durango	23.4	d	UCD-1-271	20.7	ij
						Self-fr-P16-013	20.2	j


Butte RAVT pollinizer harvest 08/23/16


Stanislaus RAVT pollinizer harvest 09/17/16


Madera RAVT pollinizer harvest 09/17/16

Acknowledgements

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