



# Nickels Soil Lab Projects\_2017

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## Project 1. Organic demonstration

**Objective:** To demonstrate certified organic almond production practices and materials in the Sacramento Valley and compare with conventionally managed trees.

**Methods:** Trees planted in 2006. 75% Nonpareil; 25% Fritz; every 4<sup>th</sup> tree in every row is a Fritz, but off set so each NP is next to 2 Fritz. 124 trees per acre. Buried drip is irrigation delivery. Eight rows conventional, 24 rows organic.

With leaf rust controlled in 7<sup>th</sup> leaf by sulfur applications ahead of rain and for mite control, yields are improved (Table 1), but now challenges include: weeds and N nutrition (see Table 2). Early harvest kept all NOW damage low (<1%) this year, but organic Fritz rejects were up from 2016.

Table 1 Yield comparison over time.

Year	Conventional (lbs./acre)	Organic (lbs./acre)
4 <sup>th</sup> leaf	1076	926
5 <sup>th</sup> leaf	1725	859
6 <sup>th</sup> leaf	2358	894
7 <sup>th</sup> leaf	2438	957
8 <sup>th</sup> leaf	2971	2113
9 <sup>th</sup> leaf	2450	1528
10 <sup>th</sup> leaf	2630	2079
11 <sup>th</sup> leaf	2198	1543
12 <sup>th</sup> leaf	2217	1406

Table 2 Summer (July) leaf N, 2017.

System	2015 Nonpareil yield lbs/Ac	Kernels/oz	July leaf %N
Conventional	2217	23	2.75
Organic	1406	23-24	2.16

## Project 2 Self-fertile vs Nonpareil + pollinizers

**Objective:** To evaluate pollinator choice on NP yield and per acre production value.

**Methods:** Trees planted in 2006, 22'x16', Lovell rootstock, double line drip irrigation. Compare NP and overall yield & value for the following plantings:

- 50% Nonpareil; 25% Aldrich; 25% Winters
- 50% Nonpareil; 25% Winters; 25% Monterey
- 50% Nonpareil; 25% Fritz; 25% Monterey

All treatment rows within 900' distance. No difference in NP production in 2017 or in previous years with different pollinators adjacent. No gross income differences in 2017. Any production differences are due to pollinizer yield and price. Over time, cumulative pollinizer production ranks Monterey > Winters > Fritz > Aldrich, due to consistent Monterey yield and occasional off years for Fritz & Aldrich.

Pollinator grouping	2017 Nonpareil yield (lbs/acre)
Fritz Monterey	2635 a
Winters Aldrich	2766 a
Winters Monterey	2686 a

NP & Pollinator grouping	2017 gross income (\$/acre)*
NP, Fritz & Monterey	6221 a
NP, Winters & Aldrich	6311 a
NP, Winters & Monterey	6632 a

\*based on \$2.75/ for Nonpareil, \$2.26/lb for Winters, \$2.21/lb for Monterey, and \$2.16/lb for Fritz and Aldrich

## Project 3. Minimum Pruning Systems for Almonds

**Objective:** To evaluate tree pruning methods for maximum production while maintaining long-term yield in 16'x22' spaced almonds.

**Methods:** Trees planted in 1997. Nonpareil (50%) with Monterey, Carmel, Sonora and Aldrich pollinizers, all on Lovell peach seedling, 124 trees per acre. Nonpareil yield taken every year since 2000. All trees were pruned in 1<sup>st</sup> dormant season, followed by either: very limited pruning (Unpruned) regular pruning (Standard), dormant hedging in 2<sup>nd</sup> and 3<sup>rd</sup> leaf with narrow vertical hedging in 2013 (Mechanical), or leaving temporary scaffolds to enhance yield which were removed in years 4-8 (Temporary)

**Results:** Consistently good NP yields – 2400 to 3200 lbs/acre for the last 9 years -- with **no yield differences between any treatment\***.

Table 1. Yield by variety and pruning treatment – 2017 harvest of pruning trial planted in 1997 on Lovell seedling peach rootstock and planted 16' x 22' (124 trees/acre). Yields corrected down 10% to account for rock weight in field run data.

	Aldrich	Carmel	Monterey 3 reps	Nonpareil 4 reps
	2017	2017	2017*	2017*
Standard	1542	2661	2269	2743
Temp Scaffold	--	--	2590	2939
Mech hedged	1732	2170	1948	2688
Minimum/unpruned	1548	1834	2720	2863