Field Evaluation of Almond Rootstocks

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Evaluation of Alternative Rootstocks for the Westside of the North San Joaquin Valley

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Trial specifics:

- **Planted December 2011**
- **Planted in Westley area near Hwy 33 in Western Stanislaus County**
- **Soil type is Zacharias clay loam (pH 7.6) irrigated with blend of high pH ground water and district water tainted with significant levels of salt from tail water runoff.**
- **Tree performance data, including tree size, yield, leaf nutrient analyses, disease incidence, etc. will be collected for several years, along with soil and water analyses.**

Rootstocks and their Genetic Background

- Lovell peach (P. persica)
- Nemaguard peach (P. persica)
- Empyrean 1 peach hybrid (P. persica x P. davidiana)
- HBOK 50 peach hybrid (Harrow blood x Okinawa)
- Hansen Peach x almond hybrid (P. dulcis x P. persica)
- Brights 5 P x A hybrid (P. dulcis x P. persica)
- BB 06 P x A hybrid (P. dulcis x P. persica)
- Paramount P x A hybrid (P. dulcis x P. persica)
- Flordaguard x Alnem (peach x bitter almond)
- PAC9908-02 (P x A hybrid) x (peach)
- Hansen x Monegro 2 (P x A) x (P x A)
- Viking (hybrid of peach, almond, plum & apricot)
- Atlas (hybrid of peach, almond, plum & apricot)
- Krymsk 86 (plum x peach)
- Rootpac R (almond x plum)

Soil & Water Chemistry	
Soil	Water
pH 7.4 – 7.8	EC: 1.86
EC 2.96 dS/m	Adjusted SAR: 8.80
Na 12.1 meq / l	Chloride: 8.90 meq / l
Cl 14.1 meq / l	Boron: 0.84 mg / l
Boron 0.5 ppm	

Chloride levels are building in salt sensitive rootstocks like Lovell, Krymsk 86, Nemaguard and Atlas. Hull boron levels are also increasing in Lovell, Cadaman, HBOK 50 and Atlas, although still below critical levels.

Rootstock Influence on Leaf Sodium & Chloride and Hull Boron

	Leaf Chloride (%)	Leaf Sodium (%)	Hull Boron (ppm)
Lovell	0.73 a	0.08 ab	180 a
Krymsk 86	0.65 b	0.05 abc	152 bc
Nemaguard	0.43 c	0.06 abc	153 bc
Atlas	0.37 cd	0.07 abc	158 ab
Empyrean 1	0.32 de	0.09 a	133 cd
Cadaman	0.32 de	0.06 abc	170 ab
HBOK 50	0.30 def	0.06 abc	158 ab
PAC9908-01	0.28 defg	0.06 abc	108 e
Viking	0.25 efgh	0.07 abc	109 e
Rootpac R	0.25 efgh	0.08 ab	132 cd
Hansen	0.23 efgh	0.06 abc	126 de
Brights 5	0.22 fgh	0.06 abc	106 e
BB 106	0.20 gh	0.05 c	102 e
Paramount	0.20 gh	0.05 bc	120 de
F x A	0.20 gh	0.07 abc	104 e
HM2	0.18 h	0.07 abc	116 de

Lovell & Krymsk 86 had the highest leaf chloride levels. All of the peach x almond hybrids, Viking and Rootpac R had significantly lower chloride levels. Lovell, Atlas and HBOK 50 had the highest hull boron levels while all of the peach x almond hybrids and Viking had the lowest.

Trunk Circumference of 3rd Leaf Trees	
PAC9908-02	37.7 a
Empyrean 1	36.8 a
F x A	36.3 a
Rootpac R	36.1 a
HM 2	35.8 a
BB 06	35.8 a
Hansen	35.7 a
Brights 5*	33.2 b
Nemaguard	33.1 b
Atlas	32.9 b
Viking	32.8 b
HBOK 50*	32.6 b
Paramount	32.9 bc
Krymsk 86	31.8 bc
Lovell	31.5 bc
Cadaman*	30.2 c
*indicates these were potted trees and started out smaller	

HM2 (Hansen x Monegro) has exhibited very poor anchorage in this trial

Rootpac R has had a moderate amount of suckering, but nothing like Marianna 26-24.

2015 Nonpareil Yield: 4th Leaf