Effects of Rootstocks on Marginal, High Boron Soil

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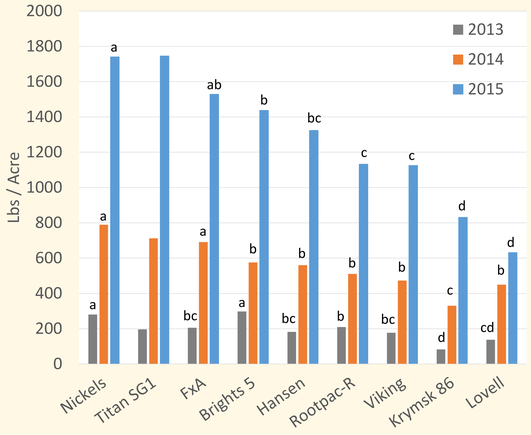
Background: As the industry expands, growers are increasingly planting on marginal soil using lower quality irrigation water.

Objectives: To evaluate eight different rootstocks on poorly drained clay soil irrigated with high boron water.

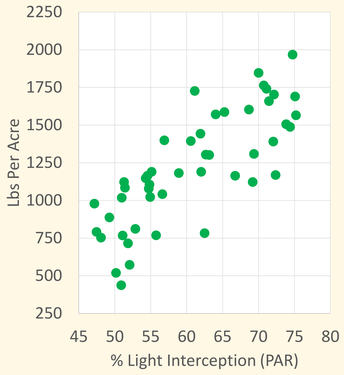
Methods: Marvin silty clay loam, Water: <1 - 3.1 mg/l B, Soil: 1.3-2.2 mg/l B.
cv. Nonpareil, Nursery grafted, Planted Feb, 2011 (Titan Apr 2011 not replicated), Spacing: 22' x 18'

Rootstock	Origin	Bloom Vigor (1-5)	Canopy Light Interception (% PAR)	Avrg Yield (kernel lbs/acre)
Nickels	Peach-Alm	3.9a	72a	1741a
Titan SG1	Peach-Alm	3.9	62	1746
FxA	Peach-Bitter Alm	4.0a	72a	1529ab
Brights 5	Peach-Alm	3.7ab	62b	1438b
Hansen 536	Peach-Alm	3.3ab	69a	1324bc
Rootpac-R	Myro Plum-Alm	3.1bc	56c	1133c
Viking	Pch-Alm-Myro-Apr	3bc	53cd	1125c
Krymsk 86	Myro Plum-Peach	2.4c	49d	831d
Lovell	Peach	1.5d	54cd	632d

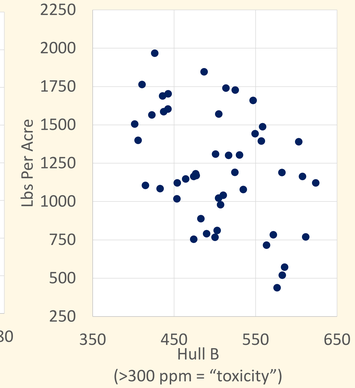
*Per-acre yield based on average of 5 trees over 6 replications, scaled for the 110 trees per acre spacing. Titan SG1 Not replicates so statistical comparison made.



Larger trees → Higher yield ($p < 0.001$).
PAR alone predicts 60% of variability.



Hull B explains 14% of the yield that PAR does not ($p < 0.01$)*.



* R^2 contribution averaged over orderings among regressors. **R** relaimpo, lmg

Summary:

- **Yield** related to **Canopy Size**, **Bloom Vigor**, **Hull Boron**. Points to two potential rootstock effects:
  - Vigorous rootstocks → Larger Trees
  - Boron tolerant rootstocks decrease B to scion → Decrease B at growing points (flowers, nuts) where it can do damage.
- So far, looks like Lovell combines worst: Low vigor + high B. Maybe also Krymsk 86. More years of data needed to know.