

New Possibilities for Rootstock Selections in the 21st Century

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What do roots do:

- Anchor trees to the soil
- Absorb water and provide mineral elements to the tree
- Store carbohydrates and synthesize materials
- Determine scion growth and performance
- Tolerance to soil types and conditions
- Resistance to soil borne diseases
- Must be graft compatible

Root structure is a branching system

- Main Roots
- Lateral Roots
- Root hairs
 - Main uptake structures
 - Need aeration
 - Low oxygen and high carbon dioxide reduce or stop root growth
 - Low soil moisture will stop root growth
 - Low soil temperature will stop root growth

What are the rootstock choices

- Myrobalan
- Myrobalan 29C
- Marianna 2624
- “M” Series – M40
- Peach – Lovell, Nemaguard and Halford
- Almond
- Apricot
- 2011 Planting

2011 Planting

- Deseret Farms in Butte County (replicated) 4/28/11 and 2/10/12
- Miki Orchards Yuba County (replicated) 6/3/11 replanted
- Wolfskill location (non-replicated) 1/19/11

French Prune as the scion

Conventional culture – long pruning for tree training

Experimental Design

- R C B design
- 15 rootstocks with 5 replicates
- 75 plots x 6 trees/plot = 450 trees (replicated)
- 18 rootstocks at Wolfskill: 3-10 trees/plot = 99 trees

Replicated Rootstocks

- Myro seedling
- Myro 29C
- Marianna 2624
- Lovell peach
- M40
- M30
- M58
- HBOK 50 (Duarte)
- Empyrean 2
- Citation
- Krymsk 86
- Krymsk 1
- Rootpac – R (Yuba only)
- Viking (Dave Wilson) 2012
- Atlas (Dave Wilson) 2012

Wolfskill Rootstocks

- Empyrean 1
- Empyrean 3
- WRM 2 (Doyle, myro type)
- Fortuna
- Speaker
- Puente
- Krymsk 2
- Krymsk 99
- Ishtara
- Imperial California
- Controller 9
- HBOK 10
- HBOK 27
- HBOK 32
- Own rooted
- Marianna 2624
- Lovell
- Myro 29C







		XC area cm ² Average
1	HBOK 50	10.96
2	Citation	16.20
3	Empyrean #2	17.78
4	M 58	17.85
5	Krymsk #86	17.90
6	Marianna 2624	18.87
7	Krymsk #1	18.87
8	Myrobalan	18.92
9	M 40	20.72
10	Viking	23.16
11	Lovell	23.32
12	Atlas	26.01
13	M 30	26.27
14	Myro 29C	32.40
15	Rootpack R	-

**Figure 1. Trunk cross sectional area (cm²) measured 11/22/13
Butte County location.**

	Rootstock	XC area cm ² Average	SE
1	Krymsk 1	13.67	0.46
2	M58	14.00	0.54
3	Citation	15.55	0.72
4	Lovell	17.34	0.49
5	M40	17.74	0.52
6	Myro Seedling	18.07	0.64
7	Viking	18.17	0.43
8	M2624	18.97	0.51
9	Atlas	19.17	0.44
10	M30	19.46	1.10
11	M29C	19.68	0.72
12	Krymsk 86	20.01	0.66
13	Rootpac-R	20.56	0.60
14	HBOK50	21.58	1.51

Trunk cross sectional area (cm²) measured 12/13 Yuba County location.

What about Krymsk 86??

- Too soon to tell, work in progress
- Origin – Krymsk Experimental Breeding Station, Krasnodar Region, Russia
- Parentage – *Prunus cerasifera* x *Prunus persica*
plum/peach hybrid
- Compatibility – looks ok so far
- Vigor – looks ok so far
- Anchorage – probably good
- Suckering – probably low

Soil Pathogens

- Nematode – probably susceptible
- Bacterial canker – unknown
- Oak root fungus – unknown
- Phytophthora – unknown
- Crown Gall – probably susceptible



Krymsk #86

In Summary

- 30 new rootstocks under evaluation
- Three test sites (Butte, Yuba and Wolkskill)
- After only 2 year growth looks good
- 2 years experience with Krymsk 86

In conclusion...

The prune industry will have many rootstock selections in the 21st century which will provide the basis for new and very productive prune production