

Prune Production Research Updates

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Northern Sacramento Valley Prune Meeting

Orchard Systems Advisor Butte, Tehama, and Glenn Counties

- Covering all commercial tree crops
 - Primarily: walnuts, prunes, almonds and peaches
- SacValleyOrchards.com
- Prune, Walnut and Almond Sac Valley Newsletters

What production research is being accomplished with your assessment \$\$'s?

Caveats

- Only 1 part of California Dried Plum Board (CDPB) work
- 1 year of data presented
- Spark Notes version!

ucanr.edu/sites/driedplum/



2017 CDPB Funded Research

- **7 Projects:** Varietal Improvements, Diseases & Misc.
- \$213,356 production research funding
 - Down from \$347,076 in 2016

A landscape photograph of a vineyard. In the foreground, there is a dirt path leading through rows of young, bare trees. The ground is covered in green grass and low-lying vegetation. The sky is filled with large, dramatic clouds, with sunlight breaking through in some areas. The overall scene is a mix of natural and cultivated elements.

Varietal Improvements

Project Name

Lead Researcher(s), Affiliation

- **Funding:** \$ in 2017, (\$ in 2016)
- **Objectives: 1) 2) 3)...**
- **Outcomes:** x, y & z

Prune cultivar evaluation and development

Dr. Ted DeJong and Sara Castro, UC Davis

- **Funding:** \$123,567 in 2017, (\$121,031 in 2016)
- **Objectives:** **1)** Develop new prune varieties through traditional breeding that have traits desirable to the CA industry **2)** Evaluate advanced selections resulting from the breeding program at UC and grower locations **3)** Cooperate with researchers to incorporate sources of Plum Pox resistance
- **Outcomes:** Reducing cost of dehydration has become a key focus of the program and all advanced selections have a dry away ratio of less than 3.0
- ‘H13S-58’ being evaluated by growers beginning in 2018. Offers wide harvest window, at the same time or after ‘Improved French’. Partially dries on the tree, with average dry away ratio of 2.5 (as low as 2.2)

Field Evaluation of Prune Rootstocks

Luke Milliron UCCE Butte Co. and Richard Buchner UCCE Emeritus

- **Funding:** \$2,229 in 2017, no new funding in 2016
- **Objectives:** 1) Evaluate 15 rootstocks for use in California Prune Production 2) Evaluate tree growth and development
- **Outcomes:** Previously found at both locations (Marysville and Chico)
Good Anchorage: Viking, Myrobalan 29C, Atlas, Krymsk 86, M40 and Lovell
Fewest Suckers: Viking, Citation, Lovell, Atlas, M58 and M40
- 2016/2017 very different bloom conditions in Chico: Citation, Krymsk 86, and M58 reached full bloom +2 days vs. traditional rootstocks
- Cankers & tree loss in Marysville: Marianna 30 (40%), Myrobalan 29C (23%), and Myrobalan seedling (17%)

Field Evaluation of Prune Rootstocks

Outcomes Continued: Cautionary note: a focus on yield from a particular site can miss important tree health information

- e.g. M30 and Myrobalan 29C were high yielding in Chico and yet suffered 40 and 30% tree death, respectively in Marysville (cankers).

- Generally larger trunk size lead to higher yield
 - Smallest trunk size and lowest yields: Krymsk 1 and M58
 - Largest trunk size and highest yield: Viking, Atlas and Myrobalan 29C
- Orchard of the future: Do we want to grow larger trees or a much higher density of smaller trees?

Field Evaluation of Prune Rootstocks (Wolfskill)

Katherine Jarvis-Shean UCCE Yolo, Solano & Sacramento Counties

- **Funding:** \$2,600 in 2017, (\$4,295 in 2016)
- **Objectives:** **1)** Evaluate 15 experimental rootstocks plus 3 traditional (M2624, Lovell, Myroblan 29C) **2)** Determine which experimental rootstocks warrant planting out into a larger trial
- **Outcomes:** Some of the smallest and most unhealthy trees being ruled out for further evaluation (Krymsk 2 and Krymsk 99)
- Smallest & lowest yielding: Empyrean 3, HBOK 10, HBOK 27, Imperial California and Speaker 50
- Out yielded traditional rootstocks: Controller 9 and WRM 2
- Yield didn't keep up with trunk size? = Empyrean 1 and Fortuna
- Empyrean 1, HBOK 10, Puente and WRM 2 all showed medium-to-high yields and leaf potassium (K) levels comparable to traditional

Caveats..



Diseases

Epidemiology and management of
blossom, leaf, and fruit diseases of prune
Dr. Jim Adaskaveg, UC Riverside

- **Funding:** Funding of \$20,000 in 2017 and 2016
- **Objective: 1)** Evaluate new products against bacterial canker in twig inoculation studies **2)** Evaluate efficacy of chemical controls against fruit brown rot and rust.
- **Outcomes:** Selected bactericides reduced the resulting canker size of twigs inoculated with bacterial canker during dormancy
- Previous work showed fruit brown rot was successfully controlled by all tested fungicides on non-wound-inoculated fruit at 130 gal/A in combination with 1.5% oil.

Epidemiology and management of blossom, leaf, and fruit diseases of prune

- **Outcomes Continued:** Fruit Brown Rot on wound-inoculated fruit:
Some benefit of the addition of a summer oil (vs. a non-ionic surfactant) with the fungicide treatment of fruit brown rot (7 days PHI)
- In addition to some experimental materials, fungicides with a locally systemic DMI compound reduced brown rot (11 days PHI, with a non-ionic surfactant)
- In a late-season study on management of rust, most fungicides were highly effective

Diagnosis, epidemiology and management of canker diseases in dried plums

Dr. Themis Michailides UC Kearney Ag Center Parlier

- **Funding:** Funding of \$44,304 in 2017, (\$44,396 in 2016)
- **Objective:** Investigating: **1)** Pruning wound susceptibility **2)** inoculum during rainfall **3)** latent infections **4)** pruning wound protectants
- **Outcomes:** Most severe cankers found in early season wound-innoculations
- Most pathogens detected in rainwater during winter & spring
- *Cytospora* spp. may accumulate as shoots age, and latent infections may be fairly orchard specific (i.e. importance of orchard history vs. exchange from other orchards)
- Topsin M (70 WP) reduced pruning wound cankers (all 3 years). Quilt Xcell reduced canker incidence in 2 years, other materials have so far reduced incidence in one year

Investigating incidence and type of wood decay fungi in stone fruit

Bob Johnson PhD candidate Rizzo Lab UC Davis

- **Funding:** \$19,156 in 2017, (\$10,312 in 2016)
- **Objective: 1)** Identify the main fungi associated with heart-rot **2)** determine the infection process of *Phellinus spp.* and **3)** test microorganisms as possible bio-control agents
- **Outcomes:** *Phellinus* decay observed in all orchards older than 7 years (limb breakage in orchards 9 years+)
- Brush piles may not be a source of wood decay inoculum
- ‘Improved French’ may be more severely damaged by *Phellinus tuberculosus* compared to other prune varieties
- According to lab study: *Trichoderma* spp. may serve as an effective control for *P. tuberculosus*



Miscellaneous?

California Dried Plum Research Reports Database

Dr. Carlos Crisosto Fruit and Nut Information Center UC Davis

- **Funding:** \$1,500 in 2017 and 2016.
- **Objectives:** Maintain a database of annual California Dried Plum Research Reports (1961 to the present).
- **Outcomes:** Fruit and Nut Website: fruitsandnuts.ucdavis.edu
- California Dried Plum Board Annual Research Database:
ucanr.edu/sites/driedplum
- Reports organized by “topic category” and “year”

Summary

- CDPB Research Priorities:
Varietal Improvements & Disease Management
- ucanr.edu/sites/driedplum
- Lots of people working hard to find what the **prune orchard of the future** should look like

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