



P o m o l o g y N o t e s



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TIMING OF PRUNE HARVEST IS CRUCIAL TO GROWER'S BOTTOM LINE

Proper prune harvest timing is essential for production of high quality fruit at the highest possible return per acre. While harvest timing is influenced by some things that can't be changed or helped once harvest starts (dryer space and/or harvester availability, equipment breakdowns, rain, etc.) the basic biology of prunes doesn't change. The best harvest timing decision for a particular block is a compromise between biology and the practical situation in that block and/or farm. The following is a brief review of prune ripening.

- ✓ **Fruit pressure, not soluble solids (sugar), measures fruit maturity.** Prune fruit mature at 3-4 pounds pressure, and they are over-ripe (poor quality) at pressures below 1 pound. [At least one packer I know considers fruit at 1.5 pounds or less to be "garbage".]
- ✓ **Prune fruit are physiologically mature at 3 - 4 pounds pressure.** That is, they don't gain dry weight after fruit pressure drops below 3 pounds – even if % soluble solid (sugars) continue to increase. The increase in fruit soluble solids concentration at pressures under 3-4 pounds is due to fruit dehydration, not new sugar being added from leaves. (Under 4 pounds fruit pressure, Mother Nature is helping pay the bill for prune harvesting, hauling, and drying. (See Table 1).
- ✓ **Prune fruit gain dry weight (and soluble solids) up to 3-4 pounds fruit pressure.** Harvesting prunes at fruit pressures above 4 pounds means lower total yield per acre and higher dry away compared with the same fruit harvested at less than 4 pounds.
- ✓ **Fruit drop will increase as fruit become fully mature (below 4 pounds pressure).** Fruit drop is estimated to be about 10% per week as pressure decreases below 4 pounds.
- ✓ **Cool, wet weather increases the rate of fruit drop. Warm weather reduces the rate of premature fruit drop.**

Take Home Message:

- In a perfect world, all prunes would be harvested at 3-4 pounds pressure and 30% soluble solids.
- In a world of roughly \$800/ton prunes, growers gain more from delaying harvest until prunes are 4 pounds or less (improving dry away, but accepting some drop) than from harvesting early (yield and dry away losses) when fruit is more than 4 pounds pressure. This assumes that harvest can be completed before fruit becomes over-mature.

Wilbur Reil, UCCE Farm Advisor in Yolo and Solano Counties, has written an excellent description of prune fruit maturity that shows the financial benefits of late vs. early harvests. Copies of his paper are available from our office in Yuba City.

ESTIMATING PRUNE ORCHARD FRUIT MATURITY

- Take a random 25-fruit sample. One good way to do this is to sample one fruit from alternating sides of 25 trees in block. Don't sample from inside the canopy or the ends of shoots.
- Sample fruit at roughly the same time of day and keep sample cool until measurement.
- Slice a thin piece of skin and flesh from one cheek of the fruit. It is important that this be a thin slice, as flesh deep in the fruit softens first.
- Measure pressure of each fruit by pressing the pressure gauge (5/16" tip) squarely against the cut surface of each fruit until the flesh collapses. Read and record pressure for each piece of fruit. Calculate the average of 25 fruit to determine average pressure value for the entire block. When making harvest-timing decisions, consider not only the average pressures, but how many fruit are immature or over-mature. Examples of Maturity Evaluation Charts are available by contacting me at 822-7515.
- Measuring soluble solid levels is tricky, as the juice can dehydrate and product erroneous readings. The most method involves squeezing a number of drops of juice from the fruit **AFTER PRESSURE READING HAVE BEEN MADE** into a container, mixing the sample together and then using that mixture to determine soluble solids with the refractometer. Fruit maturity is decided by FRUIT PRESSURE, NOT SOLUBLE SOLID LEVELS.

ESTIMATING DRIED PRUNE FRUIT SIZE AT HARVEST

Dried prune fruit size can be estimated at harvest from fresh fruit count per pound and soluble solids concentration.

Table 2. Relationship between Fresh Fruit Size (at Harvest), Percent Soluble Solids (at Harvest), and the Final Dried Fruit Size (at 18% Moisture Content).

Fruit Count/fresh #	-----Dried Fruit Count per Pound-----		
	20% soluble solids	24% soluble solids	28% soluble solids
13	46	41	38
18	58	53	49
23	70	65	60
28	83	77	71
33	96	89	82
38	109	101	93

PREDICTING LACY SCAB DAMAGE IN PRUNES.

It was a wet bloom period this spring, and lacy scab damage is extensive in some prune blocks. However, UC research suggests that, based on current USDA grading standards, scab damage alone may not result in a "substandard" fruit grade for a specific lot. This is because many of the scab damaged portions of the fruit skin are hidden in the wrinkles formed during drying. With support from the California Prune Board and Sunsweet Growers, Richard Buchner, UC Farm Advisor in Tehama County, and Bill Olson, UCCE Farm Advisor in Butte County, have developed a grading system for fresh prunes to predict "scoreable" dried fruit scab damage for that fruit. A "how-to" protocol for this system is available from our office in Yuba City. Please call me (Franz) for further information.

ALMOND HARVEST PRACTICES/IDEAS TO CONSIDER

- Almond nuts increase in weight until 100% hull split, but no size increase occurs after hull split.
- 100% hull split is reached when unsplit nuts in the shaded interior of the canopy can be split along the suture when squeezed from the tip and stem end.
- Nut removal should be at a maximum if 100% hull split has occurred. Nut removal will be more difficult if trees are especially vigorous.
- Almonds dry faster on the orchard floor than on the tree.
- Early almond harvest also avoids egg laying by navel orangeworms.
- Be careful of ant damage on early harvest nuts. The longer nuts remain on the orchard floor, the higher the risk of ant damage.
- Ant baits (Clinch, Esteem, etc.) are effective and relatively inexpensive, but should be applied 4-7 weeks before harvest for best effect.
- Some growers with no navel orangeworm problem (no eggs on their traps), delay harvest to minimize the time that nuts sit on the ground and exposed to ants.
- Harvest is an excellent time to assess almond orchard boron status. Sample hulls from different varieties, and send to analytical labs for boron (only) analysis. This test is very inexpensive and more accurate than leaf analysis for checking tree boron situation. Boron is cheap, and where needed, can significantly improve nut set and grower returns.
- Recent research has shown that almond yield next year is very sensitive to water stress and early leaf drop this year. If possible (without getting irrigation water on nuts) irrigate orchard between harvest of different varieties. Some growers with micro-jet irrigation sweep prematurely-dropped nuts out of the way of irrigation water and irrigate.

Figure 1. Estimated Return to Grower (\$/acre) After Harvest and Drying Costs*
Across a Range of Dry Away (Fresh wt/dry wt) and Yield per acre.

-----Prune Crop Yield (dry tons per acre)-----							
Dry Away	1	1.5	2	2.5	3	3.5	4
2.2	503	755	1006	1258	1509	1761	2012
2.4	476	714	952	1190	1428	1666	1904
2.6	449	674	898	1123	1347	1572	1796
2.8	422	633	844	1055	1266	1477	1688
3.0	395	593	790	988	1185	1383	1580
3.2	368	552	736	920	1104	1288	1472
3.4	341	512	682	853	1023	1194	1364
3.6	314	471	628	785	942	1099	1256
3.8	287	431	574	718	861	1005	1148
4.0	260	390	520	650	780	910	1040

*Assuming \$135/fresh ton for harvesting, hauling, and drying of fruit and \$800/dry ton average price.