

Prune and Plum Production in California

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Background

Two species of plums are grown in California: European (*Prunus domestica*) and Japanese (*Prunus salicina*). Prunes are European plums with a high sugar content that allows them to dry without fermenting around the pit and are almost all marketed dried, as prunes or dried plums. However, there is a small but growing trend for some prunes to be sold fresh as a specialty fruit^[2, 3]. The second species, Japanese plum, accounts for most of the fruit sold as “plums” for the fresh market.

Prunes

Prunes and European plums were both grown in the mission gardens by the Spanish padres, but these varieties were lost.

Following disappointment in the Gold Rush, French horticulturalist and would-be miner Louis Pellier opened a nursery in San Jose. In 1956 Pellier's brother Pierre travelled back to France, returning to California with scions of the *petit pruneau d'Agen* which was then the world's leading commercial dried fruit^[2]. This variety proved well-suited to California soils and climate, and commercial production of this "French" prune was established by 1859 and rose rapidly, fueled in part by the completion of the transcontinental railroad in 1869. At their peak in the early 1930s prunes were harvested on 174,000 acres statewide, most of them in Santa Clara, Sonoma and Napa counties (Figure 1)^[2, 8]. During the following 30 years, prune production declined considerably to less than half its peak acreage mostly due to oversupply caused by a lack of coordination between prune growers and low industry quality standards^[1]. Plantings increased again in the

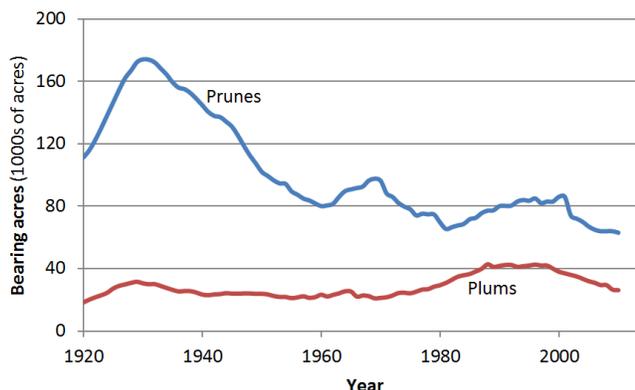


Figure 1: Prune and plum production in California since 1920^[8].

1960s, as the higher yields and a more uniform fruit maturity obtainable in the Sacramento and San Joaquin valleys led to new orchard establishments, and declined as the increasing urbanization of the Santa Clara Valley led to the loss of old ones^[2]. An increase in plantings in the 1990s again led to overproduction, and in 2002 and 2003 the USDA funded a voluntary tree pull program^[5]. Currently, the bearing acreage slightly exceeds 60,000 acres.

Plums

The first Japanese plum variety, "Kelsey," was brought from Japan in 1870. This and other Japanese plum introductions were improved by Luther Burbank, and most current plum varieties are now derived from these original varieties^[4]. Early plum production was centered in the Santa Clara Valley, but shifted to the San Joaquin Valley in the 1960s with improvements in irrigation^[4]. Plum acreage has remained fairly stable through its history in California, averaging some 30,000 bearing acres^[8].

Yield

Yields of plums have increased more over the years than those of prunes (Figure 2). Early plum yield increases are due in part to improvements in pruning and pollination strategies ^[6], and subsequently to the closer spacing allowed by the use of herbicides ^[4]. Increases in prune yields after the 1950s may be partly due to the industry's move from the coastal counties to the higher-yielding Central Valley, and also to improved management ^[2].

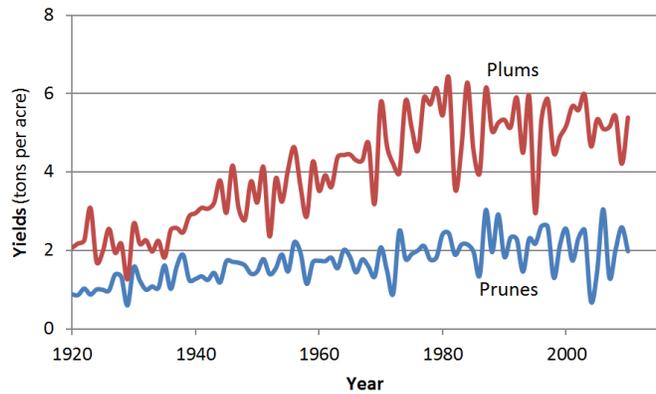


Figure 2: Prune and plum yields in California since 1920 ^[8].

Today's production

The Sacramento Valley has been the dominant prune-growing area in California since the 1960s, producing more than 80% of the state's crop (Figure 3). There is also some acreage in the San Joaquin Valley ^[8]. Although many other varieties have been introduced, almost all today's commercial prune varieties are "Improved French" type, derived from the original "d'Agen" or "French" prune brought by Louis Pellier and improved by Luther Burbank ^[2]. French types have the advantage of being both well adapted to mechanical harvesting and easy to dry and process. The production of fresh prunes is a small but growing trend in California ^[2, 3]. A new variety, Tulare Giant, is the dominant variety in the prune fresh market industry, where large fruits are particularly important ^[3].

Plums have a lower chilling requirement than do prunes and about 90% are grown in the southern San Joaquin Valley, with the highest production in Fresno, Kern and Tulare counties ^[4] (Figure 3). About 100 varieties are grown; 'Santa Rosa' was the industry standard until the mid-1980s.



Figure 3: Major prune and plum growing regions in California ^[4, 7].

California produces 96% of the prunes grown in the US and over 70% of the plums ^[7]. Around half of California's prunes are consumed domestically and half exported. Historically, California has supplied on average 70% of the world's prunes; however, tree pulls in the early 2000s and new competition from Chile and Argentina has reduced that number to about 40% ^[5].

Fertilization

Based on a survey conducted by the USDA in 2009, California prune growers applied on average 112 lbs of N per acre per year, 41 lbs of P₂O₅ and 88 lbs of K₂O. N fertilizer was reportedly used on 66% of bearing acres, while P was used on only 12% and K and 49%. Plum

growers applied on average 65 lbs N per acre, 52 lbs P₂O₅ and 47 lbs K₂O. N was applied to 66% of the bearing acres, while P was applied to 27% and K to 37% ^[7].

References

1. California Dried Plum Board, 2015. California dried plums: history. Available online at <http://www.californiadriedplums.org/about-prunes-and-dried-plums/history>
2. Connell, J., 2012. The prune industry in California. In Buchner, R.P. (Ed.). Prune Production Manual. University of California, Division of Agriculture and Natural Resources, Publication 3507. pp. 3-8.
3. Day, K.R., Buchner, R.P., 2012. Growing prunes for the fresh market. In Buchner, R.P. (Ed.). Prune Production Manual. University of California, Division of Agriculture and Natural Resources, Publication 3507. pp. 279-282.
4. Day, K.R., Johnson, R.S., DeJong, T.M., 2013. The history of plum growing for the fresh market in California. *Acta Horticulturae* 985, 27-32.
5. Peterson, R.L., 2012. Marketing. In Buchner, R.P. (Ed.). Prune Production Manual. University of California, Division of Agriculture and Natural Resources, Publication 3507. pp. 9-13.
6. Tufts, W.P., Allen, F.W., Brooks, R.M., Condit, I.J., Cruess, W.V., Davey, A.E., Davis, L.D., Erdman, H.E., Hansen, C.J., Hendrickson, A.H., Hodgson, R.W., Philp, G.L., Shear, S.W., Winkler, A.J., 1946. The rich pattern of California crops. In: Hutchison, C.B. (Ed.). *California Agriculture*. University of California Press, Berkeley and Los Angeles. pp. 113-238.
7. USDA NASS. Quickstats. Available online at: <http://quickstats.nass.usda.gov/> (Accessed January, 2015)
8. USDA NASS. Historical Data. Available online at http://www.nass.usda.gov/Statistics_by_State/California/Historical_Data/#Fruit_and_Nut_Crops (Accessed January, 2015) http://www.wineinstitute.org/files/CA_Wine_Stat_Profile_2012.pdf

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