

Peach and Nectarine Production in California

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Background

Types of peaches and nectarines

Peaches and nectarines are similar genetically and horticulturally, but for commercial purposes are regarded as two different fruits ^[1]. The nectarine is essentially a fuzzless peach. Peaches are divided into two broad classes: clingstone (or cling), in which the stone is difficult to detach, and freestone, in which the stone easily comes loose from the flesh. Most modern nectarine varieties are also freestone. In general, cling peaches are used for processing while freestone peaches are more suitable for eating fresh, although some are also processed ^[2,7]. Freestone peaches tend to have a firmer, less juicy texture than clingstone peaches, making them better suited for freezing or drying than for canning ^[2]. Nectarines are almost all sold fresh ^[7]. Processing and fresh market varieties are often grown in different areas and are bred and managed for different desired qualities ^[6]. In fresh market varieties these qualities include crisp texture, 'melting' flesh, attractive appearance and early or late harvesting dates. Good canning texture and internal color, nonvolatile flavor components and ability to be mechanically harvested are important for processing varieties ^[3,6].

History of peaches and nectarines in California

Peach trees were first introduced to California in the 1700s by Spanish padres. Early California settlers also brought varieties from the East Coast ^[2]. The Gold Rush spurred high demand and high prices, leading to overplanting in the 1850s and a bust in the 1860s as few of the peaches were processed and the lack of transportation limited the market ^[6]. The completion of the

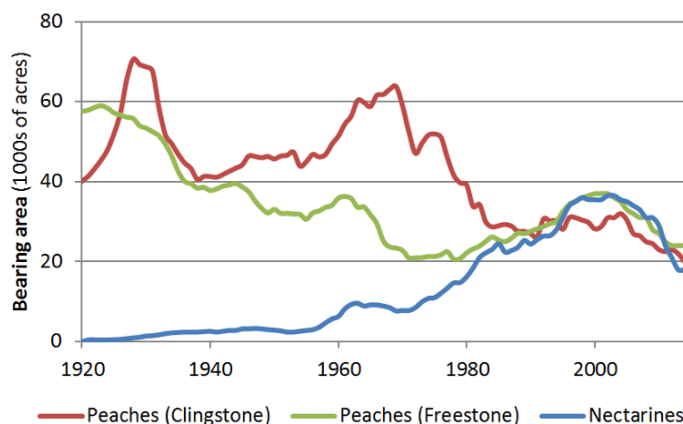


Figure 1: Peach and nectarine production in California since 1920 ^[8].

Transcontinental Railroad in 1969 marked the beginning of the modern peach industry. Although before 1870 most production was for the fresh market, by 1895 the canning industry had become more important, spurred by the development of better canning varieties ^[6]. Bearing acreage more than tripled between 1890 and 1920, especially of cling peaches ^[6].

Overplanting in the 1920s and the Great Depression contributed to a steep decline in

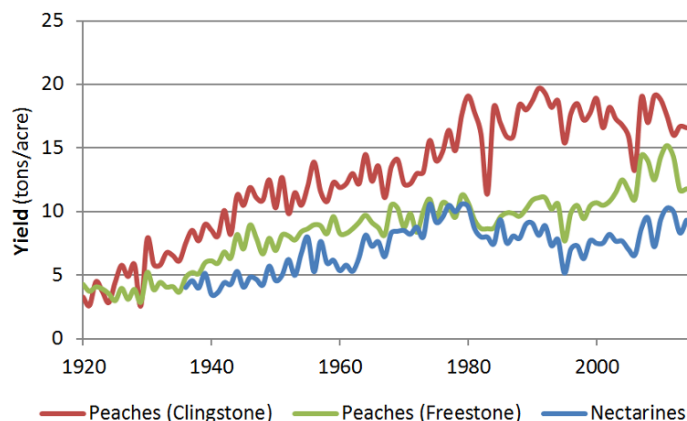


Figure 2: Peach and nectarine yields in California since 1920 ^[8].

peach production between 1927 and 1941 ^[6]. In addition, in the early 1900s the peach industry began to move from the foothills and coastal valleys into the Sacramento and San Joaquin valleys. However, much of the new acreage on the sandy soils of the southern San Joaquin Valley was negatively affected by nematodes and zinc deficiency, to both of which peach is very susceptible. Three quarters of the trees in Fresno County alone were removed between 1920 and 1940 ^[6]. The development of better rootstocks in the 1940s and 1950s has since allowed successful orchards on those soils. Cling peach production increased again from the 1940s through 1970s. Decreases in peach acreage since the 1970s may be attributable to reduced US peach consumption, particularly of

canned peaches, and increasing competition from cheaper canned peaches from other countries ^[2].

The California nectarine industry was essentially nonexistent until the 1950s but grew steadily in the second half of the century, due mostly to the introduction of better varieties ^[5]. Since 1980, nectarine acreage has been similar to that of freestone peaches. However, acreage has declined steeply in the 21st century, as has that of both peach types. Peach and nectarine production and processing costs are relatively high, particularly labor costs, as thinning, pruning and often harvesting are done by hand ^[1]. There is an increasing trend for them to be replaced by other fruit and nut crops ^[1].

Yield

California peach and nectarine yields have increased considerably since the 1920s, from 3-4 tons per acre at the beginning of the century to modern yields of 15-20 tons per acre for peaches and 10 tons per acre for nectarines

(Figure 2) ^[8]. The increase is due largely to improved management. Cling peaches have higher yields than either freestone peaches or nectarines.

Today's Production

California is the top peach and nectarine producer in the US, in 2014 contributing 95% of the nation's processing peaches, 49% of the fresh peaches and 94% of the nectarines ^[7]. South Carolina is the second largest peach producer, followed by Georgia and New Jersey. Washington is the only other nectarine producer ^[8].

Sutter, Fresno and Stanislaus counties are the top cling peach producers, accounting for 66% of the state's production. Most freestone peach (71%) and nectarine (86%) production is in Fresno and Tulare counties (Figure 3) ^[8].



Figure 3: Major peach and nectarine growing regions in California ^[8].

Fertilization

Based on a survey conducted by the USDA in 2009, California growers applied an annual average of 54 lbs N/acre to peaches and 46 lbs N/acre to nectarines. In the same year, the average phosphate (P₂O₅) application was 25 lbs/acre for both peaches and nectarines, and potassium (K₂O) applications averaged 30 and 37 lbs/acre respectively^[8]. For both peaches

and nectarines, average fertilizer applications have decreased over the past few decades. This may be in part because of the adoption of fertigation, which delivers fertilizer more efficiently than older methods, as well as better understanding about the negative effects of over-fertilization^[4].

References

1. Brown, D.S., Bringham, R.S., Crane, J.C., Hartmann, H. T., Webb, A.D., Beutel, J.A.... Rough, D., 1983. Fruit and Nut Crops. In: Scheuring, A.F., (Ed). A Guidebook to California Agriculture. University of California Press, Berkeley and Los Angeles. pp 135-162.
2. Brunke, H., Chang, M., McKee, G., Morgan, K., Huntrods, D., 2013. Peach Profile. Agricultural Marketing Resource Center. Available online at http://www.agmrc.org/commodities__products/fruits/peach-profile/
3. Gradziel, T.M., McCaa, J.P., 2008. Processing peach cultivar development. In: Layne, D.R., Bassi, D., (Ed.). The Peach: Botany, Production and Uses. CAB International, Oxfordshire, UK. pp. 175-192.
4. Johnson, R.S., 2008. Nutrient and water requirements of peach trees. In: Layne, D.R., Bassi, D., (Ed.). The Peach: Botany, Production and Uses. CAB
5. Johnson, R.S., LaRue, J.H., 1989. Varieties. In: LaRue, J.H., Johnson, R.S. (Eds.). Peaches, Plums and Nectarines: Growing and Handling for the Fresh Market. University of California, Division of Agriculture and Natural Resources, Publication 3331. pp. 4-8.
6. Tufts, W.P., Allen, F.W., Brooks, R.M., Condit, I.J., Cruess, W.V., Davey, A.E., 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, 2015. Noncitrus fruits and nuts, 2014: Preliminary summary, January 2015. Available online at <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1113>
8. USDA NASS. Quickstats. Available online at: <http://quickstats.nass.usda.gov/> (Accessed April, 2015)

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