

Melon Production in California

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Historic Background

"Melon" is a general name given to the many types of fruit in the muskmelon family. The Reticulatus group (which includes the fruit normally called cantaloupe in the U.S.) has netted skin, while the Inodorus group (honeydews, casaba, and crenshaw melons) has smooth skin^[1]. Cantaloupes and honeydews are the most commonly grown in California. A small acreage of other specialty melons, notably casaba and crenshaw, are also grown^[9].

Melons were domesticated over 4,000 years ago, probably in southwest Asia^[1]. Columbus brought melon seeds with him to the New World, and melons were being cultivated by Indians across North America before the arrival of the Spanish. The Spanish friars included melons in their mission gardens, and melons were grown on a small scale throughout California during the 19th century. The first larger commercial cantaloupe fields were planted in the Imperial Valley in the early 1900s. The industry started to expand beyond the Imperial Valley in 1919^[10]. By the 1950s, about 40% of California production was in the Imperial Valley, and most of the remainder in the San Joaquin Valley^[7]. Development of melons with better shipping qualities and improvements in precooling technologies helped expand the market and allowed melons to be shipped at a riper stage^[10].

Up until the 1980s, the major varieties were 'Topmark' (introduced in 1950s) in the Imperial Valley and 'PMR 45' (introduced in 1936) in the rest of the state^[4]. Hybrid varieties started to gain popularity in the 1980s. New seedless varieties and varieties with a more consistently

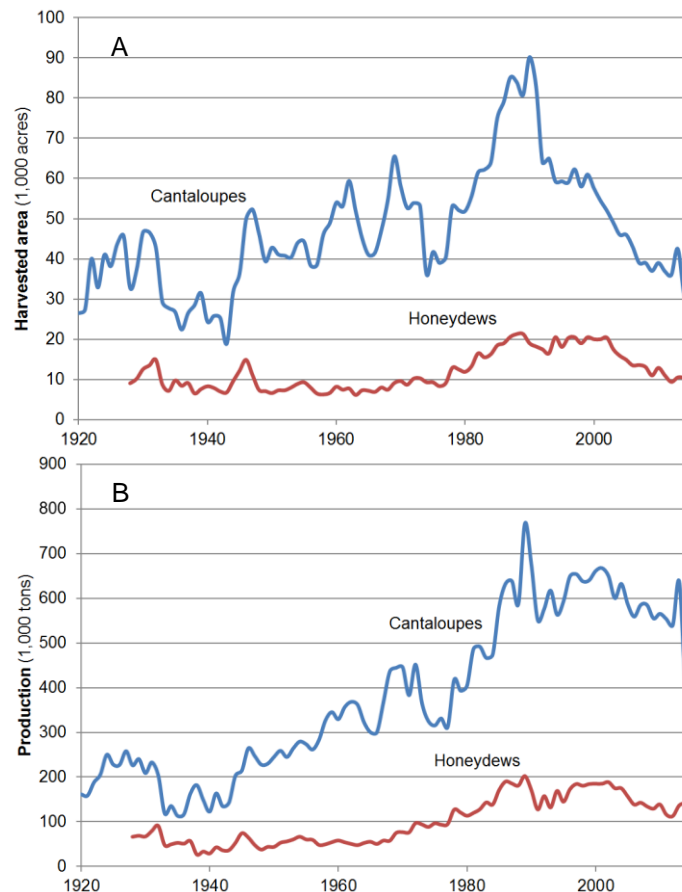


Figure 1: Area (A) and total production (B) of cantaloupe and honeydew melons harvested in California since 1920^[11,12].

sweet flavor helped to increase American demand for melons^[3].

California production of cantaloupes peaked in the early 1990s at 90,000 acres, but has since fallen to less than a third of that (Figure 1a). However, the fall in acreage coincided with increasing yields, and production remained relatively stable until about 2013 (Figure 1b). Contributing factors to the recent steep drop in production include drought and reduced demand following outbreaks of foodborne illnesses in other states^[1,8].

Today's Production

California is the largest melon source in the U.S., accounting for about 60% of cantaloupe and 80% of the honeydew grown in the U.S. in 2015 ^[11]. Arizona is also an important melon producer. California melons are grown mostly in the San Joaquin and Imperial Valleys, although small acreages are reported throughout the state (Figure 2). The southern deserts produce spring crops (planted from December-March for harvest in early summer) and fall crops (planted in late summer and harvested in October-December). Melon planting in the rest of the state ranges from February through July, for harvest from June-October ^[6].

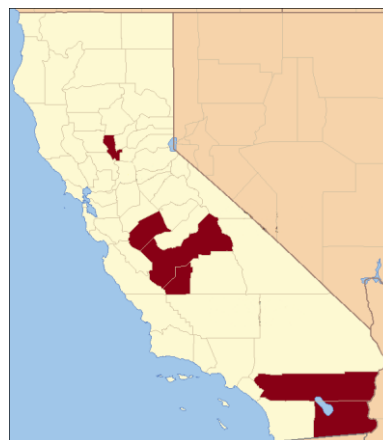


Figure 2: Top melon-producing counties in California according to 2012 USDA census data ^[11].

California melons are almost all direct seeded. Irrigation is used in most parts of the state, and both furrow and drip irrigation are used ^[6].

Yield

Average melon yields have roughly tripled since 1920. Gains in the mid-20th century were likely due to improved cultural methods, since varieties did not change much ^[4]. The yield improvements in the 1990s are attributable to the more widespread adoption of improved varieties, as well as the use of new technologies such as drip irrigation and plastic mulches ^[5].

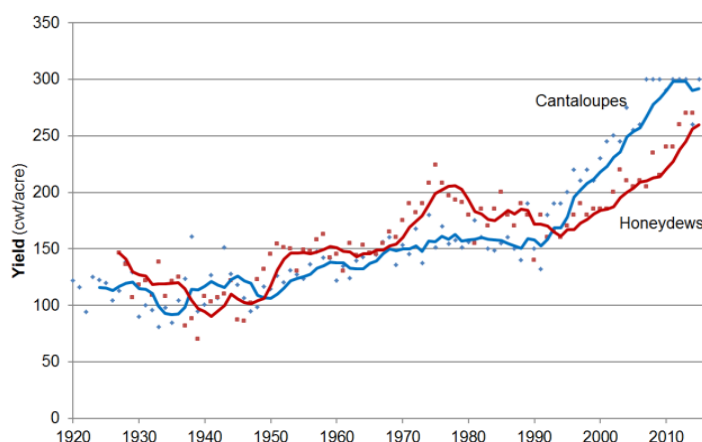


Figure 3: Average California melon yields since 1920. Line represents the 5-year average ^[11,12].

Fertilization

Cantaloupes are somewhat more heavily fertilized than honeydews (Table 1). According to surveys taken every four years, the annual nitrogen application ranged between 90-170 lbs N/acre for cantaloupes and 60-130 lbs N/acre for honeydews since 2006 ^[11]. In 2014, N was applied to cantaloupes on average 4 times per season and to honeydews 3 times per season. Phosphorus and potassium are normally applied

Table 1: Average annual nutrient application to cantaloupe and honeydew melons, 2006-2014 ^[11].

	N	P ₂ O ₅	K ₂ O
	(lbs/acre/year)		
Cantaloupe	120	105	34
Honeydew	83	83	73

once per season, at planting. However, split applications are also practiced ^[6,9,11].

References

1. Adler, S., 2014. Water quantity, quality affect melon crops. AgAlert, 07/16/2014. Available online at: <http://www.agalert.com/story/?id=6958>
2. Barash, C.W., 2005. 2005: Year of the melon. National Garden Bureau. Available online at: http://ngb.org/year_of/index.cfm?YOID=18
3. Boriss, H., Brunke, H., Kreith, M., 2014. Melon Profile. Ag Marketing and Research Center. Available online at: <http://www.agmrc.org/commodities-products/vegetables/melon-profile/>
4. Brendler, R., Johnson, H., Lorenz, O., Mayberry, K., McCalley, N., Scheuerman, R.,...Tyler, K., 1983. Vegetable Crops. In: Scheuring, A.F., (Ed). A Guidebook to California Agriculture. University of California Press, Berkeley and Los Angeles. pp 63-185.
5. Cantliffe, D.J., Shaw, N.L., Stoffella, P.J., 2007. Current trends in cucurbit production in the U.S. Acta Horticulturae 731, 473-478
6. Hartz, T., Cantwell, M., Mickler, J., Mueller, S., Stoddard, S., Turini, T., 2008. Cantaloupe production in California. University of California Vegetable Research and Information Center. <http://anrcatalog.ucanr.edu/pdf/7218.pdf>
7. Foytik, J., 1955. California cantaloupe industry. California Agriculture 9(11), 2-16. Available online at: <http://calag.ucanr.edu/Archive/?article=ca.v009n11p2>
8. Marcum, D., 2012. California cantaloupe farms regroup after listeria outbreak. Los Angeles Times, 01/05/2012. Available online at: <http://articles.latimes.com/2012/jan/05/business/la-fi-cantaloupe-crop-20120106>
9. Mayberry, K.S., Hartz, T.K., Valencia, J., 1997. Mixed melon production in California. University of California Vegetable Research and Information Center. Available online at: <http://anrcatalog.ucanr.edu/pdf/7209.pdf>
10. 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.
11. USDA/NASS. Quickstats. Available online at: <http://quickstats.nass.usda.gov/> (Accessed 01/2017)
12. USDA NASS. Available online at https://www.nass.usda.gov/Statistics_by_State/California/Publications/Historical_Data/ (Accessed 01/2017)

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