

Celery Production in California

Patricia Lazicki, Daniel Geisseler and William R. Horwath

Historic Background

The first experiments with commercial celery cultivation in California began on newly drained peat lands in Orange County in 1889^[2]. In the 1890s the first commercial shipments of California celery went to New York and Kansas City^[4]. The California celery industry grew quickly, partly because the crop was mostly marketed in winter and early spring, at which time there was no competition from other celery-producing states^[2]. By the early 20th century celery had become one of Orange County's leading industries and was becoming important in other Southern California counties, as well as San Joaquin and Sacramento counties^[2]. Celery was introduced in the Salinas Valley in 1911 by Japanese immigrants. It was also being produced in the Delta and central coast regions^[4]. Eventually, the production center shifted to the central and southern coasts.

Over the past century celery acreage has slowly but steadily increased, from about 5,000

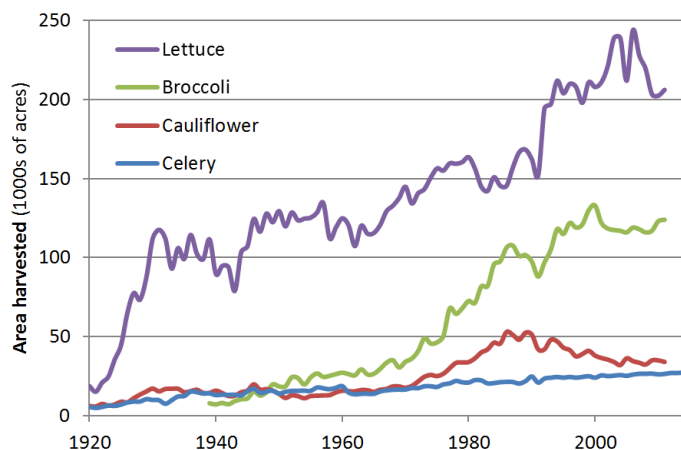


Figure 1: Acres of important vegetables harvested in California since 1920^[6,7].

acres in 1920 to almost 30,000 acres in 2014^[5,6]. Celery is grown in rotation with strawberries and cool-season vegetables^[3]. Unlike lettuce, broccoli and cauliflower, there has never been a fast increase in celery production (Figure 1). Celery acreage is considerably smaller than that of lettuce or broccoli.

Today's Production

California produces 90-95% of the US celery crop. Michigan is the only other state which currently reports acreage^[8], although Texas and Florida have also historically been important producers^[3].

Celery is grown along the southern and central coasts, with some acreage in the southern California desert valleys (Figure 2). Ventura and Monterey are the leading celery producing counties, accounting for almost 80% of California production in 2012. Santa Barbara, San Luis Obispo and Imperial counties also have some acreage^[7].

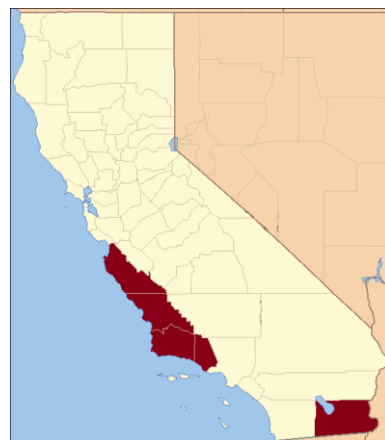


Figure 2: Top celery-producing counties of California in 2012^[6].

Celery is planted and harvested essentially year round in California. Almost all California celery is grown from transplants^[1]. Celery crops are usually established with sprinkler irrigation and subsequently irrigated via surface drip,

Celery Production overhead sprinklers or furrow irrigation^[1]. The great majority of California celery is for the fresh market, although a small acreage is also grown for processing^[7].

Yield

Average celery yields roughly doubled between 1945 and 1960 (Figure 3). Celery is a nutrient-hungry crop, and this period coincides with the large-scale adoption of mineral fertilizers. Since then, yields have increased more gradually. Varietal improvements and more efficient irrigation methods have contributed to yield increases. Since the mid-nineties, yields have remained relatively stable.

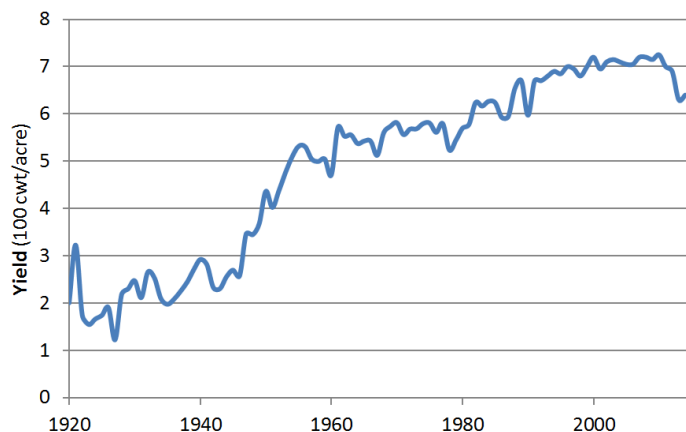


Figure 3: Average California celery yields since 1920^[6].

Fertilization

Celery receives one of the heaviest nitrogen applications of any California crop^[4]. According to surveys collected every four years since 1992, the average annual N rate ranged between 371 lbs N/acre in 1992 and 152 lbs N/acre in 2014^[8]. Celery N fertilizer use has tended to decrease in recent years; however, in many areas rates exceeding 400 lbs N/acre are still common^[3]. California celery growers apply N an average of 4 to 7 times per year. Since 2010, the average amount applied in a single application has been around 40 lbs N/acre. Almost all celery growers reported applying N^[7].

In 1992, celery growers applied an average of annual application rate of 237 lbs phosphate (P_2O_5) per acre. In 2014 the average annual application was 107 lbs P_2O_5 /acre. Growers reported making 2 to 3 applications per year. There has been a trend for a decrease in rates in recent years. Between 60% and 100% of celery acreage received P fertilizer^[7].

In 1992, the average annual K application rate was 253 lbs potash (K_2O)/acre, while in 2014 it was 90 lbs K_2O /acre. Growers applied K on average 2-7 times per year. Between 80% to 100% of acreage received K fertilizer^[7].

References

1. Daugovish, O., Smith, R., Cahn, M., Koike, S., Smith, H., Aguiar, J., Quiros, C., Cantwell, M., Takele, E., 2008. Celery production in California. UC Division of Agriculture and Natural Resources, Publication 7220. Available online at:
<http://anrcatalog.ucdavis.edu/pdf/7220.pdf>
2. Hazeltine, H.S., 1915. Growing vegetables for distant shipment in Southern California. California Magazine 1(1), 534-539. Available online at:
<https://books.google.com/books?id=nMUVAQAIAAJ>
3. Holden, D., 2015. Nitrogen reduction project, Oxnard, California, Final Report. California Celery Research Advisory Board Fall-Winter 2014-2015.
4. Moore, G.W., 1921. History of the celery industry. In: Armor, S., (Ed.) History of Orange County, California. Historic Record Company, Los Angeles, CA. Available online at: <https://archive.org/details/cu31924028881965>
5. Rosenstock, T.S., Liptzin, D., Six, J., Tomich, T.P., 2013. Nitrogen fertilizer use in California: Assessing the data, trends and a way forward. California Agriculture 67, 68-79. Available online at:
<http://californiaagriculture.ucanr.edu/landingpage.cfm?article=ca.E.v067n01p68&fulltext=yes>
6. USDA NASS. Historical Data. Available online at http://www.nass.usda.gov/Statistics_by_State/California/Historical_Data/index.php#Vegetable_and_Melon_Crops (Accessed January, 2016)
7. USDA NASS. Quickstats. Available online at: <http://quickstats.nass.usda.gov/> (Accessed January, 2016)

Patricia Lazicki is an Assistant Specialist in the Department of Land, Air and Water Resources at the University of California, Davis. Daniel Geisseler is Assistant Cooperative Extension Specialist in Nutrient Management in the Department of Land, Air and Water Resources at the University of California, Davis.

William R. Horwath is professor of Soils and Biogeochemistry in the Department of Land, Air and Water Resources and the James G. Boswell Endowed Chair in Soil Science at the University of California, Davis.

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