

Wheat Production in California

Daniel Geisseler and William R. Horwath

Production Area

Wheat was brought to California from Mexico and was first grown by padres during the mission period and later by settlers. Until the second half of the 19th century, wheat was produced on a relatively small scale in California^[3]. This changed with the Gold Rush and the associated increased demand for food. Production increased quickly and by 1888, wheat was harvested on 3 million acres, mainly located in the Central Valley^[3]. With a production of 42 million bushels, California ranked second in the nation^[5]. Most wheat was produced on large, extensive ranches, some of which approached 1 million acres in size^[4].

After reaching a peak in the late 1880s, wheat production decreased as quickly as it had increased (Figure 1)^[7]. Soil exhaustion leading to declining yields and low farm prices were the main reasons for the end of the wheat boom. To some extent, wheat was replaced by barley, which was better suited to dry conditions. The increasing acreage of irrigated land and better transportation to the markets in the Eastern U.S. made the production of fruits, nuts, and

vegetables a lucrative alternative, which in some cases replaced wheat directly, in other cases prevented a recovery of wheat production^[1, 4].

By 1913, the wheat area had shrunk to 380,000 acres^[7]. Throughout the 20th century, the wheat acreage fluctuated widely, ranging from a minimum of 270,000 acres in 1966 to a maximum of 1,345,000 acres in 1981 (Figure 1). In recent years, the wheat acreage has stabilized somewhat, averaging some 450,000 acres since the year 2000^[7].

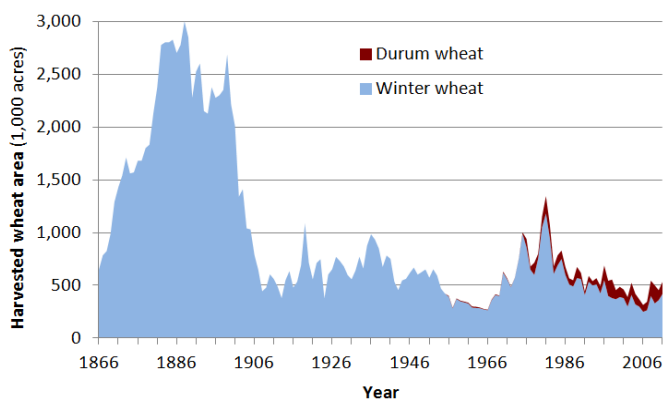


Figure 1: Wheat acreage in California since 1866^[7].

Wheat Classes

The two main classes of wheat grown in California are hard red winter wheat and durum wheat.

The hard red varieties are classed as winter wheat due to the timing of its market entry. However, with the exception of some production in the Intermountain Region, the cultivars planted have spring growth habit, which means

that they do not require vernalization^[2, 3]. Winter wheat is grown across California with the main production areas being located in the San Joaquin Valley, where Fresno, Kern, King and Tulare Counties dominate production. Yolo County in the Sacramento Valley completes the list of the five counties with the largest area harvested (Figure 2)^[6].

Durum wheat is a high-protein spring wheat primarily used to make pasta^[3]. The production area of durum wheat has shifted from Siskiyou and Modoc Counties in northern California to Imperial County, where now more than half of the production area is located (Figure 2)^[3, 6]. Growing durum wheat in southern California has the advantage that growers can base their decisions to plant on fall durum prices in the Dakotas, which is the main production region for durum wheat^[3].

The importance of durum wheat has increased since the 1970s. With an average area of some 100,000 acres during the last decade, durum wheat is now produced on 20 to 25% of the wheat area in California^[7].



Figure 2: Location of the five leading hard red winter wheat (brown) and durum wheat (orange) producing counties in California^[6].

Wheat Yield

Beginning in the 1940s, winter wheat yield has increased considerably from roughly 0.5 tons/acre to 2.5 tons/acre in the 1980 (Figure 3)^[7]. Several factors contributed to the strong yield increase. An important reason was the introduction of high yielding, semi-dwarf varieties^[3]. These varieties were much more resistant to lodging, permitting irrigation and increased fertilization. Before the introduction of semi-dwarf varieties, the bulk of California wheat production was dry farmed. Today, more than three fourths of the state's wheat acreage is irrigated^[3].

Since the 1980s, the average yield has fluctuated between 1.7 and 2.6 tons/acre, with no clear trend (Figure 3). With an average of 2.5 tons/acre in the three-year period from 2010 to 2012, California's wheat yield is among the highest in the nation.

During the same period, the national average was just over 1.4 tons/acre, or 47 bu/acre^[6].

Durum wheat yield is generally higher than winter wheat yield, with an average of 3 tons/acre since the year 2000 (Figure 3)^[7].

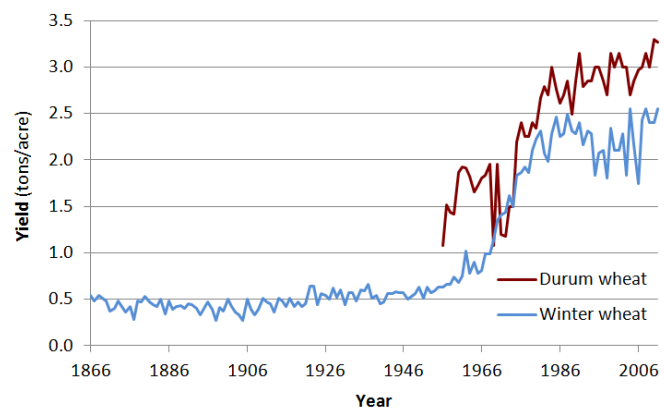


Figure 3: Wheat yield in California since 1866^[7].

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Daniel Geisseler is a post-doctoral scientist 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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