# Historical Notes on the Date palm (*Phoenix dactylifera*) and its Congeners in Hawai'i

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At present, dates are a global fruit crop, with major commercial production in North Africa and the Middle East, as well as in certain countries of South Asia, Sub-Saharan Africa, the Americas, and in Australia.

Dates represent one of the oldest domesticated fruit trees, reaching back more than 5,000 years in present-day Iran and Iraq (Mesopotamia). As world production expanded, dates were planted experimentally in a large number of locations, but many sites were unsuited to normal fruit maturation, although tree growth was possible. In unsuitable locations, rainfall and high humidity adversely affect fruit ripening leading to spoilage. However, once dates are established at sites where temperature conditions are favorable, they are often cultivated as home garden fruit trees or as ornamentals because of their attractive appearance. Abandoned date palm plantings having water resources from rainfall or groundwater easily reproduce spontaneously by seed and offshoots and become naturalized.

The Hawaiian archipelago was one location where the date was introduced, but never became a commercial fruit crop. Now, date palms can be found in small numbers throughout the Islands, derived from the seed brought in by colonists, missionaries, and others. In the mid-1800s, date fruit production was believed possible in Hawai'i and elsewhere, because the exact climate requirements for fruit production were not then known in detail. The optimistic view in Hawai'i was perpetuated by zealous promoters of agricultural development in the Islands.

Nagata (1985), who studied early plant introductions in Hawai'i, divided events into two historical periods. The first covered the Polynesian phase, from the arrival of the first settlers to the uninhabited Islands about one thousand years ago, up to 1777. The second, an early European phase bracketed by Captain Cook's arrival in what he called the Sandwich Islands in 1778, to the entrance of the United States Exploring Expedition of 1840. Subsequently, the Islands adopted their current toponym of Hawai'i. Nagata found no recorded introduction of date palms or other species of *Phoenix* up to 1840. The late European phase—1840 to the present day— remains to be investigated in detail but faces major difficulties because many plant introductions conducted by individuals or organizations were not subject to any regulations; hence, they went largely unrecorded. The first Hawaiian law pertaining to plant introductions was not enacted until 1888 (Look 1962).

The objective of this study is to present the available information surrounding the date palm introduction to Hawai'i, as a contribution to the state of knowledge of the worldwide dispersal of the date palm from its homeland to other countries and within the United States. Earlier studies along these lines include Johnson 2010; Johnson and MacKnight 2019a, b, 2021, 2022; Johnson et al. 2016; and Rivera et al. 2013.

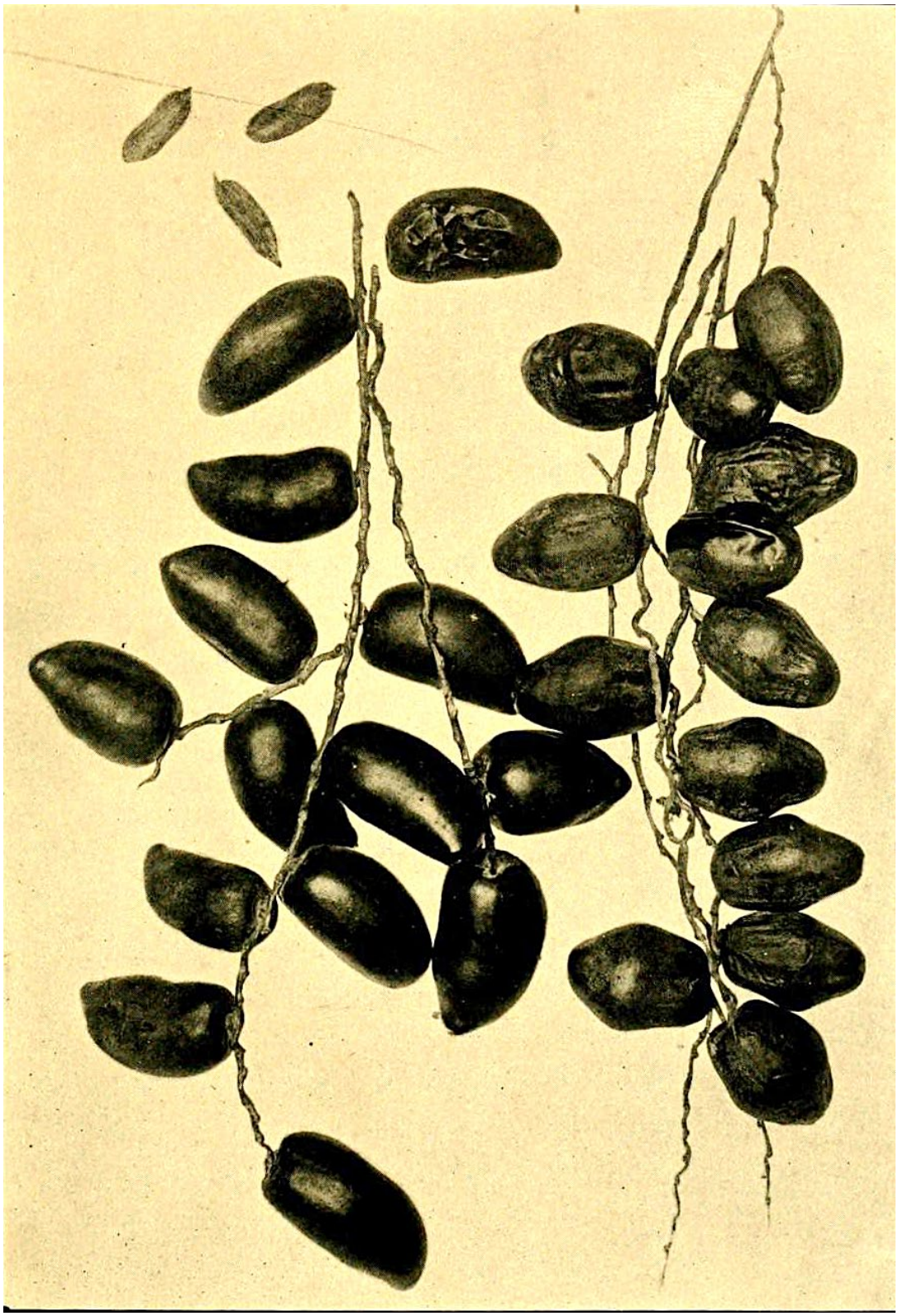
## Hawai'i Botanical Studies and Living Collections

The prominent physician and botanist William Hillebrand (1888), who lived in the Islands from 1850 to 1871, authored the first flora of the Hawaiian Islands. In this flora it is noted that a large number of exotic ornamental palms were cultivated in Hawai'i, the most prominent being the royal palm and the date palm. Hillebrand's residence in Honolulu featured an extensive plant collection; it is now the site of Foster Botanical Garden of the Honolulu Botanical Gardens system (Meier 2005).

A book on Hawaiian grown fruits by G. O. Wilder (1911) provides an entry on date palms; an accompanying plate (**Fig. 1**) illustrates what are described as red and yellow date varieties. These are said to have originated from two of the best date palms in Honolulu, each grown from seed salvaged from dates bought at a local grocery store. It should be noted that fruit pigmentation during ripening and at maturity is variable in dates, and by itself is not a reliable descriptor of variety.

Scientific studies of the Islands' plants mention the date palm as an early introduction (Bryan 1915) or simply acknowledge it as an exotic plant without further discussion. Joseph Rock the Austrian born self-taught botanist and polymath lived in Hawai'i from 1907 to 1920. His botanical interests included palms, and he coauthored the first systematic treatment of the native *Pritchardia* palms (Beccari and Rock 1921). He also published a book on Hawaiian ornamental trees, which included the date palm (Rock 1917). Rock was the first to point out the occurrence of spontaneous *Phoenix* hybrids between the date and its congeners, making it effectively impossible to determine the identity of ornamental species using standard descriptors. A photograph of mature date palms at the original site of the Moanalua Gardens in Honolulu is shown in **Figure 2**.

In a summary of flowering plants in the archipelago, Harold St. John (1973), field botanist and systematic specialist, recognized as present in the Islands eight species of *Phoenix*: *P. canariensis*, *P. dactylifera*, *P. humilis*, *P. pusilla*, *P. reclinata*, *P. roebelenii*, *P. rupicola*, and *P. sylvestris* although many of these could have been misidentified because of the lack of a modern taxonomic treatment of the genus and the presence of hybrids. The history of these introductions other than the date palm is undocumented. The most recent flora of Hawai'i (Wagner et al. 1990) does not evaluate *Phoenix* palms but does refer to the existence of natural *P. dactylifera* × *P. sylvestris*



**1.** Date fruit grown in Hawai'i from seedling palms, red and yellow variety. Source: G. P. Wilder, *Fruits of the Hawaiian Islands*, 1911. Public domain.

**2.** Date palms in Moanalua Gardens, Honolulu. Source: J. F. Rock, *The Ornamental Trees of Hawai'i*, 1917. Public domain.

hybrids, echoing Rock's (1917) earlier comments, and urges that the subject needs further study to assess the true identity of the hybrid palms and to determine if they have become naturalized.

The Hawai'i Tropical Botanical Garden, on the island of Hawai'i, has three specimens labelled *Phoenix* sp., likely examples of hybrids with *P. dactylifera*; as well as single specimens of *P. reclinata* and *P. roebelenii* (HTBG database). Imada (2012), in a checklist of naturalized plants in Hawai'i, includes *Phoenix* sp. as confirmed to be naturalized on Maui and probably naturalized on O'ahu and Moloka'i. Specimens of date palms are reportedly also growing in the Foster Botanical Garden and Koko Crater Botanical Garden on O'ahu and the National Tropical Botanic Garden, Kaua'i (Imada et al. 2005). The Pacific Island Ecosystem Risk Database (PIER 2024) provides a broader geographic context for the date palm in the Pacific Basin. Dates reportedly grow on some 15 island groups in Polynesia, Micronesia, and Melanesia, and also the Galapagos. As in Hawai'i, none of the locations produce dates commercially; there is no mention of possible *Phoenix* hybrids.

Baker (2005) noted that nearly all date palms in the Islands are likely a hybrid of *Phoenix dactylifera* and possibly *P. sylvestris*. Hodel (2012), in his monograph of the Hawaiian *Pritchardia*, discussed and illustrated exotic, naturalized, and/or invasive palms in the Islands. He noted that *P. sylvestris* had naturalized on O'ahu and Kaua'i, often forming dense, impenetrable thickets, especially on the northern and eastern coasts of O'ahu (**Figs. 3–4**). It is possible that the naturalized *P. sylvestris* could be a hybrid with *P. dactylifera* but because they are of solitary habit, they are likely mostly *P. sylvestris* if, indeed, they are even a hybrid.

It is practice in Hawai'i to recognize exceptional trees. A listing for O'ahu includes about 26 handsome *Phoenix canariensis* palms planted along Wright Avenue, Wheeler Army Airfield, between Lilienthal Road and Warhawk Field Road (City and County of Honolulu 2024; Google Earth).

**1850s' Records**

The first reference to date palm in Hawai'i appears in an article promoting the growth of exotic fruits, including figs, guavas, bananas, tamarinds, and dates (Polynesian 1850). A year later, Luther Severance, U. S. Commissioner to Hawai'i (1850–1853), speaking at a meeting of the Royal Hawaiian Agricultural Society, suggested as a site for cultivating dates the treeless lowlands of sandy soils between East and West Maui (RHAS 1851). Next, the Society's Committee on Horticulture made the general recommendation that dates, and other fruit and nut crops, could be cultivated in the Islands (RHAS 1852). Dates were the subject of another news account of delicious fruits from a tree in the Honolulu home garden of Stephen W. Reynolds, a long-time businessperson who hailed from Massachusetts (Polynesian 1852).

**3.** Wild date palms, *Phoenix sylvestris* (or a hybrid) naturalized at Hale'iwa, North Shore, O'ahu. © 2007, D. R. Hodel.

**4.** Wild date palms, *Phoenix sylvestris* (or a hybrid) naturalized at Hale'iwa, North Shore, O'ahu, where they can form impenetrable thickets. © 2007, D. R. Hodel.

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More detailed date palm information comes from F. G. Wundenberg, an early German immigrant, who reported on his farming experiences at Hanalei, on Kauai's north shore. Among several fruit tree crops, date palms grew well, providing they were kept clean and sheltered from wind. Wundenberg had two small date palms, still too young to bear fruit (RHAS 1853). In an address to the RHAS meeting in 1853, David L. Gregg, U. S. Commissioner to Hawai'i (1853–1858), related that a fruit farm owned by Captain A. Adams featured a dozen different flourishing trees, including date palms. The property was situated in the present-day Kalihi Valley neighborhood of Honolulu (RHAS 1854). An account of the Society's July 1856 agricultural fair noted the exhibit of high-quality dates and pomegranates (RHAS 1856).

In constructing a chronology of early Hawaiian date cultivation, uncorroborated evidence may be pertinent under certain circumstances. For example, in the mid-1850s, date palms were reportedly planted by Edward Bailey, missionary, educator, and artist, on the grounds of his residence and school at Wailuku, Maui. A 1991 photograph of date palms at the site **(Fig. 5)** confirms two date palms, one of them 50 feet tall and said to have been planted by Bailey. This account appears in a general interest book about exceptional Hawaiian trees written by the late

**5.** Date palms at Edward Bailey house, Wailuku, Maui. © Douglas Peebles. Used with permission.

Paul Weissich (1991), an eminent Hawaiian horticulturist. In his book, the date palm is one of the featured species. No source is given for this statement. In 1901, Bailey rendered an oil painting of his property which shows a tall palm that could be a date (Decker 2011). No date palms survive at the site.

## Introduction Hypothesis

Based on the above information, dates must have been introduced and first grown in Hawai'i in the mid-1840s. This hypothesis fits the presence of fresh dates in O'ahu in 1852 and 1856, and immature date palms in Kaua'i and O'ahu in 1853 and 1854, respectively. This timeline assumes that date palms planted from seed need five to seven years to mature and bear fruit. The source of date seed carried to Hawai'i likely came from California, the main trading partner of the Islands at the time. In this period, shipments of date and other seeds from San Francisco were confirmed (Polynesian 1857). Dates were first introduced to present California from seed by Spanish missionaries in 1769, and the palms were under casual cultivation there in the 1800s (Hodel and Johnson 2007).

### 1860–1900 Records

Few references exist about dates in Hawai'i over the last four decades of the 19$^{th}$ century. Disappointing outcomes in the 1850s likely dampened enthusiasm for the date as a commercial fruit crop. Nevertheless, dates were popular for landscaping. Among the promoters of ornamental use was William Hillebrand, who spearheaded the founding of the Queen's Hospital in 1859. He also took on the task of landscaping the hospital grounds and had date palms (**Fig. 6**) planted along the driveway entrance to the facility (Greer 1969; Kimura 2010; Pacific Commercial Advertiser 1864).

A decade later, a newspaper account posed the question as to why more dates were not planted in the Islands. The statement is made that a date palm growing near the anonymous writer's residence on School Street in Honolulu was bearing 22 fruit bunches, each producing about a peck of sweet and delicious fruits when ripe, and that a date palm plantation would be a profitable venture (Hawai'i Gazette 1873). Twenty years later, a newspaper notice announced the availability of 250 date seedlings from the Hawai'i government nursery in Honolulu (Hawaiian Star, September 20, 1893). Archibald Cleghorn, a wealthy businessperson from Scotland, is prominent in Hawaiian history as the father of Princess Ka'iulani (1875–1899), the last heir apparent to the Hawaiian throne. Cleghorn was an avid gardener and planted an avenue of date palms at his Ainahau estate in Waikiki, Honolulu, as shown in a photograph from about 1896 (**Fig. 7**). The Princess Ka'iulani Hotel now occupies the site, but no date palms grace the grounds.

**6.** Date palms along driveway of the Queen's Hospital, circa 1885. © The Queen's Health Systems. Used with permission.

**7.** Avenue of date palms at Archibald Cleghorn estate. Waikiki, Honolulu, 1896. Source: Strohmeyer and Wyman stereograph. Underwood & Underwood, New York. Public domain.

As the 19th century ended, two external events appear to have influenced reconsideration of date growing in Hawai'i. First, the U. S. Department of Agriculture began an ambitious program in 1890 to create a commercial date industry in California and Arizona, using imported offshoots of imported elite varieties, and through the distribution of seed from trees which bore quality fruit (Hodel and Johnson 2007). Second, in 1898 Hawai'i was annexed by the United States following war with Spain.

**1900–1930 Records**

Date palm science took a leap forward in the 20th century with a comprehensive study by the USDA's Walter Swingle (1904) of the environmental growing conditions in North Africa and the Middle East, along with climate analysis in the United States, to determine areas best suited to the crop; evidence clearly showed that commercial date growing was most successful where climatic conditions during the months of fruit ripening were hot, relative humidity was consistently low, and rainfall light or nonexistent. The most promising area turned out to be in the Sonoran Desert in southernmost California and Arizona. Nevertheless, date plantings continued to be promoted and attempted in other locations where conditions were suboptimal, such as Texas (Johnson and MacKnight 2022).

An early 1900s reference to dates in Hawai'i was a news account informing landowners about the desirability and profitability of date cultivation in the hot, dry areas of the Islands. The need for artificial pollination to achieve good yields was stressed; reference is also made to the successful example of date culture in Arizona. The anonymous writer recounts that in the early 1870s he harvested offshoots from dates in Captain Adams's Garden in Honolulu and planted them in Kapi'olani Park where they produced inferior seedless fruit for lack of a pollen source (Pacific Commercial Advertiser 1904).

A few years later, A. B. Leckenby, a Kahana Valley, Maui landowner, published a letter to boost enthusiasm for dates, lamenting that the dates under cultivation were unproductive for want of proper care, especially artificial pollination to enhance fruit set. The following day in the same newspaper, a detailed response appeared from Colonel L. G. Blackman, a resident of Kahala, just east of downtown Honolulu. Blackman wholeheartedly agreed that date culture should be improved in the Islands, incorporating the latest practices and cited examples from North Africa. The use of imported offshoots and desirable date palm seedlings was emphasized to establish productive date orchards (Pacific Commercial Advertiser 1908).

A general review by E. V. Wilcox (1909), head of the Hawai'i Agricultural Experiment Station, presented a long list of potential crops for the Islands, including date palm. Landscaping with palms also drew attention. An article about suitable ornamental palms for Honolulu includes the date palm as a desirable option (Pope 1910). Hawaiian forester R. S. Hosmer (1913), writing about ideal street trees for Honolulu, commented that the Indian date palm (*Phoenix sylvestris*) was commonly grown and well adapted for that purpose, but also says that the true date palm is an excellent ornamental in parks, requiring minimal care.

Historic photographs may be alternative information sources in researching plant introduction. An example is a stereographic image dated 1903 from an unidentified Hawai'i location showing a fruiting date palm (**Fig. 8**).

**8.** Date palm with ripening fruit, Hawaiian Islands. 1903. Source: The "Perfec" Stereograph, H. C. White Company, New York. Public domain.

In 1901, the Hawai'i Agricultural Experiment Station (HAES) was founded with the specific mission to identify new crops for the Islands. HAES led scientific investigations of the date palm as a potential crop. Some 200 date seeds from desirable trees in Arizona were collected in early 1911 by E. V. Wilcox were reported to be germinating well and soon to be planted out at the experiment station (HAES 1912; MacKaye 1911). Also, three date offshoots of commercial varieties (unnamed) were received from Arizona for the new industry. The article relates that earlier seed-grown dates were troubled to some degree by scale infection (Evening Bulletin 1912). No publications have been found on date culture in Hawai'i for the following decade.

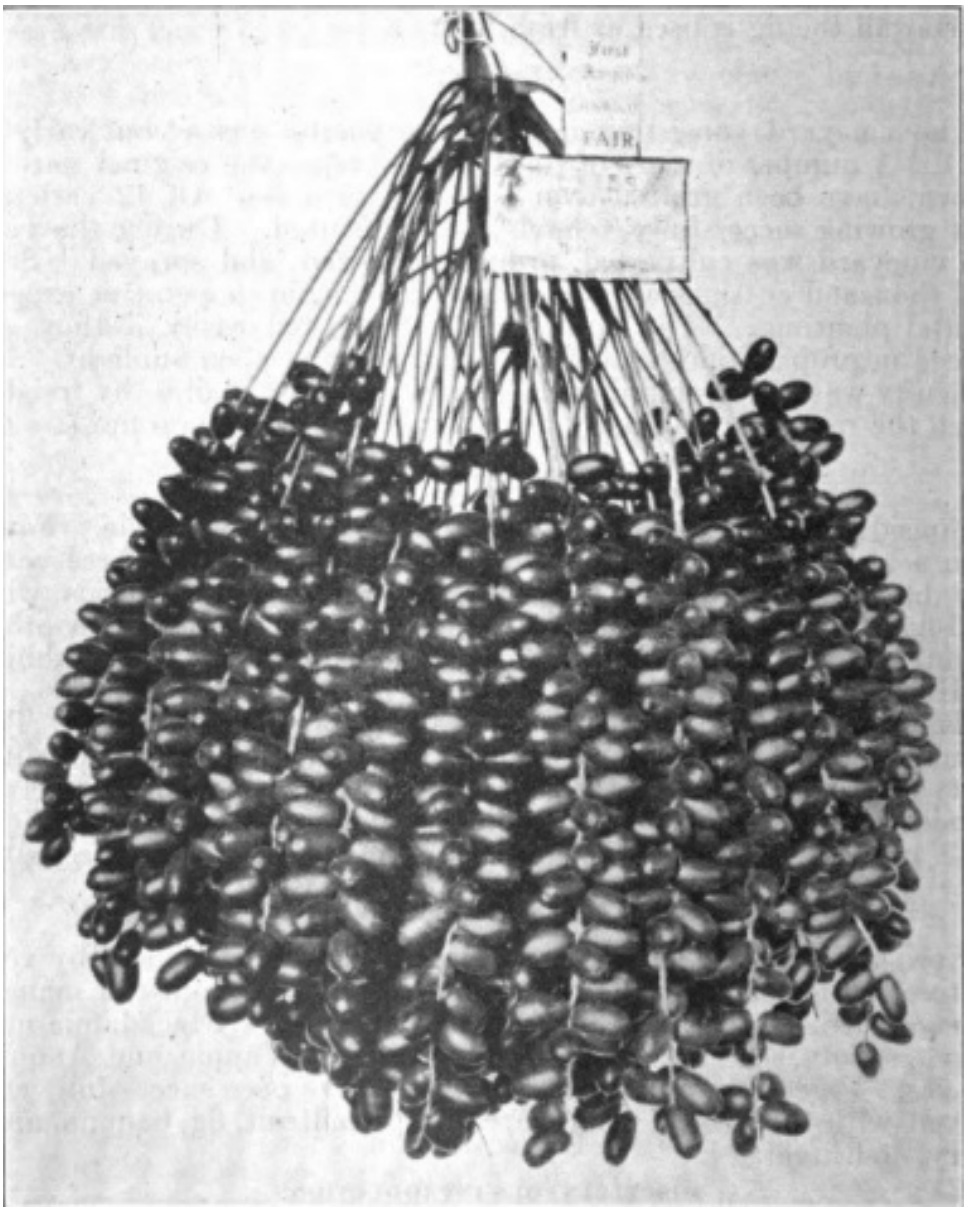
However, it was later revealed that during the interval, fruit trials, including dates, were established in collaboration with private growers and on local schoolgrounds. The introduction of three additional unnamed date varieties was documented. In 1925, a fruit bunch from a palm grown from seeds of Deglet Noor variety dates at the Girls' Industrial School, Honolulu, won first prize at the Territorial Fair (**Fig. 9**) (HAES 1927).

Updated information on the status of date growing for 1927 stated that acceptable quality fruits were being harvested from seedling trees in various locations in Hawai'i, the seeds obtained from fruits purchased in local markets, presumably from homegrown sources. This information again stirred renewed interest in date culture. Reported as well were new seed importations collected from trees at the USDA Date Station, Indio, California. These comprised Deglet Noor, Maktoom, Manakhir (Menakher), Tazizaoot (Tazizoot), Saidy, Barhi (Barhee), Khalasa, Zehedy (Zahidi), Halaway, and Thoory varieties, along with a Deglet Noor x *Phoenix canariensis* hybrid (HAES 1928).

The following year, a report of the Horticulture Division stated that efforts were continuing to study the feasibility of a date industry in the Islands, citing considerable local interest in the crop. Under cooperative agreements between HAES and private property owners, seedlings from the previous introductions were planted by J. Faye, Kekaha, Kaua'i, and E. P. Fogarty, Wai'anae, O'ahu (HAES 1929). A year later, the promotion of date growing was said to be on-going. Also, it was observed that with irrigation, dates did well in hot, dry areas; the need for irrigation had not been previously alluded to (HAES 1930). When the HAES merged with the University of Hawai'i in 1929, its activities continued as a component of the College of Tropical Agriculture. In the annual report for 1933, the date is listed among more than two dozen fruit and nut crops confirmed to be under development, but no details are furnished on any of them (HAES 1934). Hawaiian educator and horticulturist W. T. Pope (1934) wrote about date palms in a treatise on plant propagation. He said that the comparative ease of growing dates indicated the possibility of a small industry in the Islands. Acknowledging that most date palms in Hawai'i were grown from seed, Pope believed the prospect of improved fruit quality could be achieved by propagation of offshoots from known commercial varieties. In the following years through 1950, HAES reported no further efforts to develop date palm as a crop. Presumably, a sharper focus on the most promising crops, as evidenced by the success in growing papaya, avocado, macadamia, mango and coffee, were reported over that period.

## Conclusion

The introduction of date palms to the state of Hawai'i was undertaken with the assumption that commercial fruit production was possible. In the latter half of the 19$^{th}$ century, no formal trials were conducted, but in the early 20$^{th}$ century studies suggested commercial date production had



**9.** Date bunch of 'Deglet Noor' variety seedling. Girls' Industrial School, Honolulu. Source: Hawai'i Agricultural Experiment Station Report 1928 (published 1929). Public domain.

promise. However, despite general optimism about dates as a crop, the goal was never realized. The death knell of date growing on a commercial venture appears attributable to a combination of three factors. First, the Great Depression of the 1920s and 1930s seems to have forced federal government agricultural development to reduce the number of fruit crops being researched and promoted, and the date palm was not included. Second, the USDA's success in creating a commercial date industry in California, using imported offshoots of elite varieties, eliminated the need to support efforts elsewhere in the country. Third, based on current climatic data, nowhere

**10.** Date palms, girl at the base of the date palm, circa 1880, Kapi'olani Park, Honolulu. Source: Hawai'i State Archives. Public domain.

**11.** Photograph of same date palms in Figure 10 with a girl at the base, 2020. © 2020, by Dana Anne Yee, FASLA. Used with permission.

in the island chain has an ideal climate for ripening date fruits. In Hawai'i, the date palm's introduction may have never led to commercial production, but it did provide a legacy of date palms in the contemporary vegetation landscape. The date palm's past and present is vividly captured in identical landscape photographs from 1880 and 2020 in Queen Kapi'olani Regional Park (**Figs. 10–11**)

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