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Tea

(*Camellia sinensis*)
a New Crop
for Hawai'i



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The History of Tea in Hawai'i

For most of the 120 years since the tea plant was introduced to Hawai'i, its prospects as a new crop were considered to be limited. The premise of the early plantings was based on growing and marketing tea at the level of a global commodity, but Hawai'i's conditions did not adequately fit that business profile. In recent years, however, tea as a specialty product that is unique to the islands, presented in the context of our agricultural-tourism and regional-cuisine market, has gained appeal. Research and extension efforts by the UH-Mānoa College of Tropical Agriculture and Human Resources (CTAHR), in partnership with the USDA Agricultural Research Service's Pacific Basin Agricultural Research Center (PBARC), are now creating opportunities for smallholder farmers in Hawai'i to grow, process, and market high-quality teas.

Camellia sinensis was first brought to Hawai'i in 1887. The Hawaiian Coffee and Tea Co. established a five-acre plantation in Kona in 1892, but eventually it was abandoned due to economic reasons. Interest revived in the 1960s when researchers planted several tea selections. A small planting was established at the UH-CTAHR Waiakea Research Station by CTAHR horticulturist Philip Ito. These plants appeared to be a mixed seedling population of Assam hybrids (big-leaf type), and the original planting still thrives. In 1978-80,



This Assam hybrid seedling tea population grows in a volcanic soil in a tropical rainforest environment (500 feet elevation) at the Waiakea Research Station.

CTAHR horticulturist Yoneo Sagawa imported four tea cultivars from Kyoto University and established them at the UH Lyon Arboretum on O'ahu.

With the demise of sugar in the islands, Alexander & Baldwin, C. Brewer, and Amfac investigated the potential of tea as a commodity and conducted test plantings on Kaua'i, O'ahu, Maui, and the Big Island. A&B even formed a partnership with the Thomas J. Lipton Company and did field trials between 1985 and 1994. They concluded that the high cost of production here and low world market prices made this crop unprofitable for Hawai'i.

In 1993, John Cross planted an acre of tea on his farm in Hakalau on the Hāmākua Coast. He planted two Assam hybrids selected from an earlier C. Brewer trial planting of 180 clones, and his field is still under cultivation. He maintains the fields with a Japan-made hedge trimmer and processes tea with a cut-tear-curl (CTC) machine purchased from A&B when they terminated their Kaua'i project. Cross was impressed with the potential of tea and envisioned a cottage industry of small Hawai'i tea farms. He believes that the area's high rainfall interspersed with sunny periods, high soil aluminum content, and acidic soils provide perfect conditions for growing tea.



Tea growing in a subtropical environment at an elevation of 2800 feet in Kamuela.

Tea—Hawai‘i’s New Beverage

In 1997, PBARC horticulturist Francis Zee developed a novel small-scale processing technique using tea harvested from the Assam seedlings at Waiakea. He began to renew interest in tea culture with the development of the “Hilo Brew,” a partially oxidized tea processed by using a microwave oven in the steaming and rolling procedures.

In 1998 Zee initiated a cooperative project with CTAHR to screen for adaptable Taiwanese and Japanese tea plants. Seeds from selected mother plants were imported from the Taiwan Agricultural Research Institute, and cuttings of ‘Yabukita’, ‘Yutaka Midori’, and ‘Bohea’ tea cultivars were collected from Lyon Arboretum. Plantings were established between 1999 and 2001 in three eco-climates at elevations ranging from 500 to 4000 feet. CTAHR extension agent Dwight Sato acquired six additional Japanese varieties for evaluation. Initially, 19 accessions and over 1000 seedlings were assessed for yield, disease resistance, and taste characteristics, for the evaluation of which small batches were processed using a microwave oven and a simple dehydrator unit.

As a result of these initial activities, in 2004 a Value-Added Tea project was created to support joint CTAHR and PBARC efforts through the collaboration

of Zee, Sato, and Milton Yamasaki (UH-CTAHR Mealani Research Station). Funds acquired from USDA, the County of Hawai‘i Department of Research and Development, and the State of Hawai‘i produced several major accomplishments. Modern tea field maintenance equipment was imported from Japan and is being used to manage a 1.5-acre tea production field. Semi-portable processing equipment was imported from Taiwan, and installation of a model tea-processing unit was initiated at Mealani to process the freshly harvested leaves. Revised horticultural techniques and modified processing methods have been developed and found to be adaptable for Hawai‘i-grown tea. Several of the tea-processing recipes were devised in collaboration with visiting tea scientists and tea industry representatives.

Concurrently with the tea growing and processing developments, CTAHR has been actively promoting awareness of tea as a new niche crop for Hawai‘i through educational classes, extension publications, and assistance to a growers’ group, the Hawai‘i Tea Society (a nonprofit organization founded in 2002), which maintains a tea plant distribution program, conducts a growers’ tea competition event, and offers educational programs. Growers are tending small farm plantings and processing high-quality tea by

hand methods; they are building up stock plantings for further propagation and have been very active as an organized group. Local, national, and international tea experts from leading tea-producing and market regions have experienced Hawai‘i-grown tea. They are highly impressed with the unique floral note and fruity flavor of Hawai‘i-grown tea, and they see potential to position our specialty tea in a niche-market setting.

The Hawai‘i teas are envisioned to be characterized as 100 percent Hawai‘i-grown estate or regional whole-leaf teas, grown without pesticides or organically, semi-oxidized, hand-harvested, and hand-processed. A range of diverse and creative tea products will more than likely be derived from the extension of the Pacific fusion concept. Recently, some new tea products have been offered in the local agricultural tourism market as “limited editions.” Tea and its culture are viewed as having great potential and are expected to evolve along with the creative agricultural lifestyle and unique cuisine of Hawai‘i.

With field plantings and processing equipment installed, the Value-Added Tea project has demonstrated that tea grows well in Hawaii and makes a beverage of exceptionally high quality. Potential exists for further CTAHR research activities addressing

grower needs. This effort has increased awareness and recognition of the cooperative role that CTAHR, PBARC, and commodity organizations such as the Hawai‘i Tea Society can play in doing research, extending information, and providing Hawai‘i with new agricultural specialty-product opportunities.



A pruning machine straddles a row for precision trimming and bush formation at Mealani.



Harvesting tea shoots by hand at the Mealani Research Station production field.



Tea is gathered into a muslin cloth and then hand-rolled to get the leaf moisture to exude.



Three types of tea: green, oolong, and black.



Fresh tea leaves in an early processing stage at the Mealani Tea Processing Facility.