

## Brewing a New American Tea Industry

By: Susan M. Walcott

[Walcott, S. M.](#) (July 01, 2012). Brewing a new American tea industry. *Geographical Review*, 102, 3, 350-363. <http://dx.doi.org/10.1111/j.1931-0846.2012.00156.x>

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### **Abstract:**

The article discusses the tea industry and market in the U.S. It comments on a transformation in agriculture that emphasizes health and environmental sustainability. The author describes early attempts to grow tea in the Southeastern U.S. during the late eighteenth and nineteenth centuries. She also reflects on modern tea-growing locations, including Chapel Hill, North Carolina, Salem, Oregon, and Hawai'i, and modern tea companies, including Lipton Tea and Bigelow Tea Company. Demographic characteristics of U.S. tea consumers are also considered.

**Keywords:** tea trade, United States agriculture, tea, Hawaiian Agriculture, Hawaii, environmental sustainability, geography

### **Article:**

The things that people cannot do without every day are firewood, rice, oil, salt, soybean sauce, vinegar and tea. -- Sung Dynasty edict, quoted in Freeman, 1977

Since its mythical discovery by Emperor Shen Nung as he sat meditating under the *Camellia sinensis* tree in 2737 B.C.E., tea currently ranks as the second most commonly consumed beverage after water (Van der Wal 2008). Tea's biological heartland lies in the upland region spanning Assam (India), Yunnan (China), and Myanmar (Burma). The first shipment of tea to Great Britain arrived in 1657 from Assam, but consumers considered it inferior to the Chinese varietal (Rose 2010). The problem lay with growers' lack of knowledge concerning processing steps, rather than the quality of the plant itself, for India now furnishes most of the black tea consumed globally. Employment of Chinese laborers familiar with that critical artisanal part of the industry eventually occurred despite the penalty of death for divulging state secrets (Pratt 1999). Names for "tea" reflect the dialect of Chinese spoken in the location of export: cha (Indian and Russian chai) comes from northern China; te from southern China went to England and Western Europe. Tea's popularity spurred England to gain territory in India and China and lose colonies in America, where attempts to cultivate and market the plant are now undergoing a resurgence.

The objective of this research is to explain the rejuvenation of the American tea industry as part of agriculture's transformation into a competitive, multifunctional market orientation and to place it within an enlarged transition theory (Bailey and Wilson 2009). Generally, transition theory applied to agriculture links changes in production methods to shifts in market demand for environmentally sustainable, health-promoting, ethically sensitive methods, and policy proscriptives that promote these considerations. Interconnected elements include shared consumer-producer interest in high-quality, fresh, local products ("neolocal-ism"), geographically identified products reflecting unique terroir characteristics of their place of origin, a normative concern with promoting personal health and environmental sustainability, and pluriactivities, such as agritourism and craft items, that provide additional income to offset the small scale of production (McCarthy 2005; Wilson 2007). An example in contemporary agriculture includes the emerging "alternative food" movement, which advocates a change from high chemical usage to meet corporate demands for high-volume, standardized yields to supporting small-producer operations that respond to market and new certification demands for healthier food processes and outcomes (Holloway and Kneafsey 2004; Raftery 2011). This trend fits neatly with the image of tea and production methods tailored to a high-quality, local commodity produced with care (Goodman 2003).

All tea comes from the same plant (*Camellia sinensis* [L.] O. Kuntze), but the degree of oxidation the leaves experience early in the preparation process differentiates them into three main types. Black (also "red" or "English") tea leaves dry ("wither") for eighteen hours over a perforated surface to promote air circulation. The leaves then undergo shredding ("maceration") to draw out the juices. Exposure next oxidizes the leaves, resulting in a coppery tone. Oolong tea leaves oxidize for a shorter time than do black tea leaves, resulting in fermentation of only half of the tannin. Green tea leaves experience steaming before drying and grinding in order to prevent them from turning a darker color, resulting in an "unoxidized" product. Of the three main varieties of tea bushes -- *Camellia sinensis* var. *sinensis* (small or large leaf; China), var. *assamica* (long, slender leaf; India), and var. *irrawadiensis* or *parvifolia* (Cambodia) -- only the first two are cultivated for consumption (Eden 1976; Pratt 2010). Hundreds of subvarietals exist to match particular terroir factors of climate and soil, as well as combinations and admixtures for varieties of taste. The best growing conditions for the tea bush exist where temperatures are seldom lower than 24° F or higher than 79° F, with 80 percent humidity, in Hardiness Zones 7-9 with rainfall around 80 inches annually and abundant mist. The soil should be a well-drained, sandy loam, slightly acidic (4.5-5 pH), with a sunny southern exposure (ARS 2003, Shehata and others 2004). Neither tisanes such as "rooibos" (South African redbush) nor a brew from the yaupon holly (*Ilex vomitoria*, or "the black drink," used by southeastern Native Americans for ceremonial purposes) are from *Camellia sinensis* plants (Hudson 1979).

## **HISTORICAL ROOTS OF AMERICAN TEA**

Political as well as economic motivations influenced the earliest attempts to cultivate tea in the United States. A common account includes some economic espionage, with tea cuttings as part

of a camellia shipment to the French botanist Andre Michaux in 1799 for his plantation in Middleton, South Carolina, approximately 15 miles outside Charleston (Mitchell 1907). Michaux's efforts at cultivation lapsed, however, along with France's interest in a potential U.S.-sourced crop. The next major effort occurred in 1848 on Dr. Junius Smith's Greenville, South Carolina, Golden Grove Plantation estate, 20 miles from Wadmalaw Island, ending with his murder five years later. This effort used imported cuttings and seeds from India, shipped via London. Efforts at tea-seed procurement and domestic propagation continued under the secretary of the navy in 1851 and the commissioner of patents in 1857 (Klose 1950). Britain's famous botanist-explorer Robert Fortune sent seeds from China in 1858, as requested by the U.S. Department of Agriculture, which resulted in experimental saplings being grown throughout the southeastern United States. Success of the Americanization process relied on Yankee ingenuity plus steam power to overcome less-expensive Asian labor costs for processing tea; the plants thrived, but the industry did not despite continued post-Civil War attempts (Rose 2010). Japanese immigrants to California sought to grow tea from their own native stock in the early 1870s, but the climate in the foothills of the Sierra Nevada proved uncongenial (Klose 1950). The Department of Agriculture carried on distributing tea plants and subsidies for their cultivation throughout the southeastern United States in the 1870s. The major challenge remained the uncompetitive cost of labor, particularly given the paucity of transportation for southern agricultural products to major markets in the North, a legacy from and contributing cause of the Civil War due to problems of distribution outside the region (Mitchell 1907).

In 1880 the commissioner of the U.S. Department of Agriculture, William G. Le Duc, advocated backyard tea cultivation in the South to promote self-sufficient households. By 1881 John Jackson, a Scottish tea planter, experimented with the use of machinery to cultivate tea, transferred stock used thirty years earlier by a Dr. Jones to grow tea in Liberty County, Georgia, to a new location in Summer-ville, South Carolina. The coastal plains of South Carolina comprise thick beds of sand, clay, marl, calcium carbonate, and a fine, sandy loam. The average growing season is 266 days, with an average annual rainfall of 49.1 inches -- sufficient sun, but insufficiently distributed rain for prime tea conditions (Adams and Trinkley 1991). Seeds of plants from Japan and India supplemented the Chinese stock that Robert Fortune had contributed earlier. This experiment ended in 1887, discouraged by dry climatic conditions.

In 1888 the plant biologist Charles U. Shepard took up the challenge at a former rice plantation near Summerville called "Pinehurst," with support, including machinery, from the U.S. Department of Agriculture. His novel attempt to offset the low cost of labor in Asia and the transportation-connection disadvantage of the South relied on offering free schooling in the morning to children of emancipated slaves, followed by their uncompensated afternoon labor in the tea fields. Shepard's efforts lasted until his death in 1915. The plantation stock subsequently wind cross-pollinated into 320 different varieties. Consumer-friendly tea innovations marked the early twentieth century: Muslin tea bags invented by Thomas Sullivan in 1903 for tidier and standardized portions; and iced tea first concocted in 1904 on a hot day at the Saint Louis

World's Fair. Texas tea flourished west of Galveston at Mackay in 1903 and at Pierce in 1906, but hurricane-induced flooding in 1909 led to abandonment of the fields. George Mitchell introduced tea pruning and picking machinery in 1911, but government reports on tea cultivation ceased in 1912 (Klose 1950).

## **CONTEMPORARY U.S. TEA-GROWING AREAS**

John Fraser Hart updated the American agricultural revolution with a tripartite regional typology. Tea growing occurs along the "specialized crop ... rimland" continental border (2003,262) (Figure 1). The variety of locations, methods, and purposes that American tea entrepreneurs illustrates the multifunctionality of contemporary agriculture predicted by transition theory as farmers shift from a livelihood based firmly on a large-quantity, physical commodity to one that utilizes a variety of income-producing activities (McCarthy 2005). Endeavors launched since the turn of the twenty-first century correspond to the rise of a new market demographic pushing the production of healthy products that fit the portrayal of tea.

Invariably, tea-growing locations in the United States feature other tangible and intangible products that fall under multifunctional transition strategies: tea cups and clothes with the brand name of the local tea product; a tourism experience, such as tea tasting, along with viewing the factory and/or field; other foods prepared or eaten with tea (jelly, cakes, canned convenience drinks); implements for preparing tea; and cookbooks with recipes that use tea. The addition of non-agricultural activities in rural spaces, such as on-location tourism (Figure 2), illustrates the multifunctionality characteristic of transitional fluidity. Multifunctionality includes, for example, both preservation and commoditization of the rural landscape by adding income-producing amenities and services that are environmentally friendly (McCarthy 2005; Wilson 2007). The prevalence of agritourism on U.S. tea plantations proclaims the open, friendly, artistic nature of tea-related activities. This is the outcome of a more entrepreneurially individual political economy, one that promotes cultivation of specialty crops and creative uses. Successful transitions involving multifunctionality indicate agility: the ability of a system to survive by adapting to changed circumstances through diversification.

In the case of agriculture and the tea industry, this means being market responsive with the addition of commercial outlets: tourism, tea blends, tea-bag shapes, and ready-to-drink alternatives to leaf tea, such as powdered tea in envelopes and liquid flavor combinations in glass containers. Pricing and quality levels integrate with an appeal to consumer concerns regarding promotion of personal and environmental health and convenience. Three major U.S. tea festivals indicate the recent interest in and geographical spread of a domestic tea fan base: the Rocky Mountain Tea Festival, sponsored by a teahouse in Boulder, Colorado, since 1999; the New York City Coffee and Tea Festival, held in conjunction with the Specialty Tea Institute since 2005; and the Northwest Tea Festival, held since 2007 in Seattle. An important aspect of this shift involves ecological modernization: the prioritization and incorporation of environmentally sustainable practices as a key constituent of a new order. Agricultural practices promote

mechanization to replace gendered, physically difficult labor, reject or minimize chemical usage in cultivation, and cultivate health-promoting crops to substitute for less-healthy products. These moves correspond to policy-changing paradigm shifts featured in transition theory -- from promoting more food to promoting healthier, high-quality agricultural products.

COUNTRY	METRIC TONS, MAY 2010	VALUE, 2001		VALUE, 2011	
		(MILLION \$)	(%)	(MILLION \$)	(%)
Canada	N.A.	52.5	22	106.2	19
Argentina	5,255	33.8	16.5	102.5	18
China	2,190	21.4	9	71.4	12
India	1,682	23.1	10	65.2	11
Indonesia	1,010				
Vietnam	945				
Total	17,401	236.2		569.2	
Black tea	14,097				
Green tea	3,304				

Sources: Tea Association 2011; ERS 2012; International Tea Committee, tea trade statistics & research.

**TABLE 1 -- ORIGINS OF TEA IMPORTED INTO THE UNITED STATES**

METRIC TONS, MAY 2010 VALUE, 2001 VALUE, 2011 COUNTRY (MILLION \$) (%) (MILLION \$) (%) Canada N.A. 52.5 22 106.2 19 Argentina 5,255 33.8 16.5 102.5 18 China 2,190 21.4 9 71.4 12 India 1,682 23.1 10 65.2 11 Indonesia 1,010 Vietnam 945 Total 17,401 236.2 569.2 Black tea 14,097 Green tea 3,304 Sources: Tea Association 2011; ERS 2012; International Tea Committee, tea trade statistics & research.

South Carolina's Wadmalaw Island, 20 miles south of Charleston, is the site of a 127-acre former Lipton tea experiment station started in 1963 due to concern about possible interruption of trade with China during that country's convulsive Cultural Revolution (Walcott 1999; Webster 2000; Vendeland 2010). Lipton ultimately moved its efforts from the United States to Argentina, building on work begun earlier in the twentieth century by German migrants to that country (Stewart 1960). Argentina supplies the largest proportion of black tea imported to the United States, but its value is low, reflecting the fact that, of the 80 percent of black-tea imports that is black, 85 percent is served as iced tea made from tea bags (Tea Association 2011). Other differences in country-of-origin amounts and value likewise reflect the quality of their respective crops and U.S. demand (Table I).

Many current tea-producing locations in the United States stem from Lipton's search for sites in the 1960s. South Carolina manager Mack Fleming and William Hall, a tea taster with ties to the United Kingdom and Argentina, bought the business from Lipton in 1987. Their company, the Charleston Tea Plantation (CTP), produced "American Classic Tea" by utilizing their invention of a mechanical harvester adapted from cotton- and tobacco-picking machines. Now three field-workers replace the efforts of 500 hand pickers (see Figure 2).

The Bigelow Tea Company purchased the CTP in 2003. The connection to Bigelow came from its "Constant Comment" brand, based on a recipe from the founder's Carolina grandmother that

launched the company (Walcott 1999). Bigelow supplied capital for major investments: machinery and an irrigation system from Argentina; bagging tea at Bigelow's main facility in Connecticut; an agritourism-friendly factory and field tours; a gift shop; and market-oriented flavored teas such as Earl Grey and peach. The CTP uses no insecticides or fungicides and a light fertilizer application. Plants are harvested every fifteen to eighteen days from May to October, for a total yield of around 12,000 pounds annually. The tea-box cover projects a visual image that resonates with social concerns noted in the "cultural turn" of agricultural geography: tea plants in regular machine-trimmed rows, and no developing-world female harvesters in sight (Hollander 2003). Propagation by cloning annually adds approximately 3 acres, each of which comprises 4,900 plants. Recently, the CTP signed a contract to supply the national Whole Foods chain, which represents a significant challenge and opportunity for expansion.

Also in the Southeast, Alabama's Fairhope Tea Plantation, on the east side of Mobile Bay, produces primarily oolong tea. Lipton started an experimental crop of tea at Auburn's Gulf Coast Research and Extension Center, which it later abandoned, along with its Texas experiments, in the face of hurricane conditions. Fairhope's enterprising owner Donald Barrett plucked several plants from the conglomerate's pile of rejects, cultivated his own cuttings, and then induced busloads of tourists from Florida to swing by his plantation for High (iced) Tea (Figure 3). Home-grown techniques include utilizing a handheld hedge trimmer to harvest the bushes and a microwave oven for drying (Barrett 2010).

Camellia Forest, a family-operated nursery on the outskirts of Chapel Hill, North Carolina, grows several hundred younger plants representing a wide variety of cultivars. The experimental setting tests the northern winter-hardy U.S. limits of tea (Figure 4). The owners operate an active mail-order business supplying plants across the continent. Hand-harvested and roasted leaves fill orders for a small local market interested in the fresh local crop (Parks 2010).

Other American sites where ongoing tea production is expanding include the islands of Hawai'i. Tea cultivation began there in 1887 and lasted until 1892, when sugar production increased (den Braber, Sato, and Lee 2010). By the 1960s Lipton had looked into replacing sugarcane with tea bushes but correctly calculated that coffee would prove less expensive and simpler to cultivate in Hawai'i than would tea. Hawai'i's premium coffee features Kona as an established geographical indicator name, a model that resurgent contemporary tea producers seek to emulate by establishing an association with high quality (and price).

The "Big Island" of Hawai'i supports fields that correspond to several major altitude zones for tea cultivation. An estimated 80 acres function as a part of joint experiments between the state's College of Tropical Agriculture and Human Resources at the University of Hawai'i-Manoa (CTAHR) and the Agribusiness Development Corporation (Zee and others 2003). Of the fields in Mealani (elevation 2,800 feet above sea level; average annual rainfall 70 inches) and Volcano (elevation 4,000 feet, average annual rainfall 140 inches), the latter, on the slopes of Mauna Kea, produces particularly successful crops compared with those on former sugar plantations (Shehata

and others 2004) (Figure 5). Retired CTAHR entrepreneur Francis Zee revived interest in Hawai'ian tea production as a college student when he noticed the easily grown plants, obtained material from a Taiwanese connection, and eventually received suitcases of seedlings from a Chinese source. Later he added machinery from Japan and Taiwan as well as adapted a microwave-type dryer (Zee 2011). His students lead the burgeoning private industry.

Big Island and Volcano Tea Garden, on the island of Hawai'i, are among several entrepreneurial enterprises that produce handpicked specialty teas that retail for up to \$50 per pound for white, green, black, and oolong. Eva Lee, a tea grower and industry organizer who is active with major Hawai'ian networked growers, raises tea on 2 acres in Volcano that include a showroom/workshop featuring her husband's famous pottery. She also conducts field tours on behalf of the Tea Society, a group of growers on various islands who promote the state of Hawai'i's tea industry (Lee 2011). Members obtain seedlings from experiment station fields and from each other, sharing advice on propagation and production methods along with several agricultural extension agents. Tea masters from Taiwan, Japan, and China visit to advise Hawai'i's growers (Riley 2011). An anticipated shipment of equipment for plucking, plant trimming, roasting, and rolling holds promise for increasing Hawai'ian tea production to new levels. Nearby Volcano Winery's infusion of black tea into its wine has proved so popular that the winery now cultivates its own tea bushes, too young yet to substitute for local, more expensive, but higher-quality products. Growers are also considering introducing Hawai'i-grown blueberry and lychee flavors to locally produced tea for a range of choices.

On the U.S. West Coast, tea formerly grew in an area close to the Kearney, California, site of the University of California-Davis agricultural experiment station that Lipton used but later abandoned. Although Lipton's agricultural experts had located numerous microclimates along the West Coast that seemed conducive for tea growing, a variety of local problems, including the strong winds that blow salty air inland, eliminated many sites from consideration. Minto Island Growers in Salem, Oregon, raise various tea cultivars in a project dating back to 1988 with John Vendeland -- a former Lipton Tea consultant in Hawai'i -- and owner Rob Miller on his family mint farm. Miller also oversees experimental plots in drier eastern Oregon. Washington's Skagit Valley, a berry-growing area in the northwestern corner of the state, supports 5 acres that the owner uses to produce oolong, white, and black tea. Harvesting methods combine handpicking and handheld Taiwanese machines.

## **CHARACTERISTICS OF THE U.S. TEA MARKET**

Consumption in the United States shifted strongly from green tea to black tea after World War I. Black tea, however, regained dominance with the introduction of Nestea instant tea at the end of World War II and maintained it until the health effects of green tea emerged in the 1980s, causing a continuing but still slight rise in demand. North Americans currently consume one-fifth of world tea production, slightly less than one-fifth of that in green tea (Peiris 2010). The 1980s also saw the beginning of interest in higher-cost and higher-value specialty teas. Exotic tea

blends of black and green tea popular since the turn of the twenty-first century include Indian chai, prepared with sugar, milk, and spices, and Taiwanese "bubble tea," with tapioca-based particles. Large coffee chains such as Starbucks and Caribou Coffee have offered bag-brewed tea since 1999, when Starbucks purchased the Tazo Tea company. Acknowledging tea's increasing popularity, Starbucks plans to debut its first all-tea store in its headquarters city of Seattle in October 2012 (Blessing 2012).

The current market for tea consists of a new demographic. Trends in specialty tea show growth in a younger, more affluent and educated, health-conscious, socially responsible market, appealing to twenty-two-to thirty-five-year-old students and professional Internet visitors. Studies demonstrate that the story of tea drives interest and Internet sales to a youth and savvy consumer-targeted market that depresses prices and increases fresh tea availability by enabling a powerfully direct consumer-producer link (Cramer 2010). Previous research revealed that the largest consumer category consisted of childless households with incomes in the lower-middle and highest income brackets. People in the northwestern United States spend the most on tea, with consumption in rural areas exceeding that in urban areas on average.

Selling points employed to reach this demographic niche feature health factors that continue to undergo testing but tend to show a decrease in the risk of cancer, cardiovascular disease, dental cavities, osteoporosis, and diabetes. Other tests indicate tea's efficacy for reducing weight and lowering bad cholesterol levels. The particular appeal of high-priced specialty tea may be the rarity of U.S. tea, with its terroir distinctions that are used to sell wine and coffee for similar reasons, promoting consciousness of geographical identity (Neilson 2007). As a marketing strategy, "Buy American" may have a national appeal. Industry innovations that add to the market appeal of tea include varieties that cater to a busy lifestyle, such as instant, iced, cold brew, shaped tea bags, concentrates (powder and liquid), and ready-to-drink bottled versions of tea, as well as vending machines that dispense tea products and the use of tea as a food and in cosmetics. Various uses appeal to different demographics and price points, with the current U.S. tea boomlet driven primarily by the low-cost market but including a relatively higher increase in specialty tea (Dodds 2010).

Recent agricultural trends favored by the target demographic that apply to tea include tea's health benefits as an organic product with low to no pesticides. Mechanization promotes worker safety and reduces gender-exploitative field-work. Tea delivers a positive sustainable-environmental impact with its use as an anti-erosion, pro-carbon plant (Bell 2004; Liao and Zhang 2008). Researchers at the U.S. Department of Agriculture actively explore health claims, primarily those that involve green tea, with positive but not-yet-definitive correlations (ARS 2003). Tea plants shield themselves from the sun's photosynthetic stressors by producing polyphenols, boosting antioxidants -- as in fruits and vegetables -- and increasing cancer -- fighting properties. Studies under way test insulin properties, promotion of weight loss by increasing metabolic and oxidation rates, and claims that tea lowers total and LDL cholesterol and therefore heart-attack risk. Tea rates high in flavonoids, especially green tea (highest in catechin, a simple flavonoid);



while black tea contains more complex flavonoids such as thearubigins and theaflavins. Green tea furnishes fourteen times more catechins than does an apple of the same weight (ARS 2003).

Along with tea's reputation as healthy for the consumer, trends in specialty-crop production, processing, and marketing seek health benefits for producers as well. In an industrial development similar to that of deverticalization in manufacturing, specialty-crop production in tea led to dispersed, small and medium-sized enterprises that innovatively seek to directly address a promising new domestic market niche from a variety of regional locations and distinctive microclimates in the United States.

Challenges for the industry include the amount of land and yield, which need to expand greatly in order for cultivation of tea to be commercially viable. According to industry consultant Vendeland (2010), economies of scale require 400-500 acres under cultivation to supply enough to offset production costs. The market for a specifically U.S.-grown product also needs to grow. Difficulties include the cost of obtaining land, a steep learning curve, volatile world tea prices, and the high labor cost for handpicking and processing, which account for 60 percent of the cost of the product (Chang and Yabuki 2003).

Opportunities include mechanical harvesting, which reduces the cost of labor but at the expense of quality. Quality is lessened for a variety of reasons, such as mechanical injury to leaves and nonselective plucking, which harvests an unpredictable amount of material in addition to the desirable "bud-plus-two" top leaves. Negative effects allegedly decline in continually sheared fields due to increased evenness of the top level, producing a product suitable for a nonconnoisseur mass market (Ravichandran and Parthiban 1998).

Networks that share information shorten the learning process and illustrate the social aspects of transition to new methods. Hawai'i has a "satellite program" to provide clonal material to and distribute costs and profits among producers (Goodwin 2009). The entrepreneurial Sakuma Brothers Farms of Skagit Valley, Washington, also provides several of these inducements to encourage other local farmers to join it and potentially profit from local economies of scale. Value-added alternative uses of tea include its addition to cosmetics, promotion in nutritional supplements, as an energy drink, in concentrates, and as an ingredient in chocolate, gum, cooking recipes, soaps, toothpaste, and alcoholic beverages. Market-price variation for land can cause conversion to cropland -- woodland to vineyard, for example -- to occur as certain crops become more feasible to grow. Impacts of crop conversion could be particularly important in the West, which has less marginal land under cultivation than does the heavily irrigated Midwest (Hart 2001, 2003). Information is needed concerning potential producers and consumers, production costs, export barriers and logistics, sharing of information about production and about related goods and services for value-added enhancement of economic feasibility (Shehata and others 2004). As one aspiring tea-producing entrepreneur declared, "The main thing is we establish a new industry, and there's more things to grow" (Hao 2005).

## **THE AMERICAN BREW**

In the United States the renewed popularity of tea as a beverage for consumption and a crop for cultivation fits the transition theory model of a product implicated in an interlinked web of social, political, ethical, demographic, and economic changes. Tea rides the tide of a new set of ecocentric production practices in response to a new market, one focused not just on food but also on quality that promotes healthy individuals and a healthy environment. Low labor costs involving primarily female field laborers or highly mechanized methods, combined with chemical applications, characterized the previous agricultural paradigm, which was dominated by top-down corporate control. The previous carbon economy is evolving into a more intensive form of cultivation and care, whose human face mirrors shifts in societal values leading to public-policy changes. Small, individual producers tend to come to tea cultivation out of personal interests that reflect a lifestyle choice and appeal to a market also interested in tea as a lifestyle statement.

Tea grown in the United States, whether handpicked in Hawai'i, the West Coast, or the Southeast or totally by machine in South Carolina, appeals to a market looking for fresh, new products that reflect the ethic of personal health and environmental sustainability rather than the economics of high-profit-driven methods. New approaches to assessing the viability of an American crop that flourished here for centuries and played an important part in our agricultural history are worth consideration, as regional entrepreneurs continue to explore its possibilities in arable locations from the Southeast, to the Northwest, to the Hawai'ian Islands.

\* I acknowledge all the enthusiastic American tea-growing pioneers who took time to share their leaves and efforts: Donnie Barrett, Eva Lee, Christine Parks, Norwood Pratt, Mike Riley, Dwight Sato, John Vendeland, and Dr. Francis Zee.

### **FIGURES 1-5 ARE OMITTED FROM THIS FORMATTED DOCUMENT**

FIG. 1 -- Major locations of commercial tea cultivation in the United States, 2010.

Fig. 2 -- Tourists enjoying a picnic as they watch a Green Machine tea harvester are an example of agritourism multi-functionality at the Charleston Tea Plantation, on Wadmalaw Island, South Carolina.

FIG. 3 -- Iced-tea tourism at Fairhope Plantation, Alabama, 2006.

FIG. 4 -- At Camellia Forest in Chapel Hill, North Carolina, tea leaves are harvested by hand from winter-hardy plants grown as pine-forest understory.

FIG. 5 -- Hawai'ian tea, an aspiring tropical-crop hope at Mealani Experiment Station, Waimea, Hawai'i.

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