

**TEA CULTURE: THE
EXPERIMENT IN
SOUTH CAROLINA:
REPORT NO. 61**

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Tea Culture: The Experiment in South Carolina: Report No. 61 by Charles U. Shepard

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CHARLES U. SHEPARD

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EXPERIMENT IN
SOUTH CAROLINA:
REPORT NO. 61**

U. S. DEPARTMENT OF AGRICULTURE.

Report No. 61.

TEA CULTURE:
1897
THE EXPERIMENT IN SOUTH CAROLINA.

BY

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TEA CULTURE: THE EXPERIMENT IN SOUTH CAROLINA.¹

INTRODUCTION.

The problem of raising tea in the southern part of the United States has been discussed for many years. As early as 1848 Dr. Junius Smith made a successful planting at Greenville, S. C., but the work was not continued and interest in tea culture abated. In 1881 Congress made an appropriation for an experiment in tea culture, but when Mr. William Saunders, Horticulturist and Superintendent of Gardens and Grounds of the Department of Agriculture, made an examination of the work done under it he found that owing to the illness of the expert, Mr. John Jackson, and other causes the money had been injudiciously expended and reported that there was little prospect of anything of value being accomplished. Thereupon by recommendation of Hon. George B. Loring, Commissioner of Agriculture, the experiment was closed.

In 1892 the subject was taken up again in the Annual Report in a report by the writer upon the operations on the Pinehurst estate at Summerville, S. C. In 1897 a second report upon the work there was made by Mr. Saunders. The statement now published continues the presentation of the results obtained on the Pinehurst plantation.

It seems probable from the facts so far gathered that the cultivation of tea can be made profitable in the warmer portions of the United States in two ways. One is by establishing a plantation on the scale of the experiment at Summerville, with capital sufficient to carry the work to a point where the product can be offered on equal terms with teas holding an established place in the markets of the United States. The other is to grow tea for home use in the farm garden. In either case tea growing can be undertaken safely only where the temperature rarely goes lower than 25° F. and never below zero, and where a liberal supply of water can be depended upon. There is probably no place in the United States where the rainfall is sufficient for the best results with the tea plant, and irrigation should where possible be provided for in growing tea.

The experimentation at Summerville, on the growth and manufacture of tea, began about ten years ago. At the commencement it was wisely on a small scale, but has been gradually increased until now over 50

¹This paper brings up to-date the reports on the growing of tea by Dr. Charles U. Shepard at his farm "Pinehurst," Summerville, S. C. Previous statements of the progress made will be found in the Annual Report of this Department for 1892, and in Circular No. 1, Division of Gardens and Grounds, this Department.

acres have been planted in tea. When the plants arrive at full bearing, the yield should be at least 10,000 pounds of high-grade tea; and this should suffice for the object in view, viz, to determine whether commercial tea may be profitably grown under the local conditions of soil, climate, and labor.

It was desirable to conduct the experiments with as many varieties of seed and under as different conditions of soil and location as possible. To this end, by the kind assistance of the Department of Agriculture and by purchase from foreign and domestic producers, a considerable variety of seed, representing many of the choicest sorts of tea, was obtained. Gardens were established on flat and on rolling land, in drained swamps and ponds, and on sandy, clayey, loamy, and rich bottom soils.

The problem of providing labor for plucking tea leaf has been solved so far as a steady and skillful band of nimble-fingered children goes; but its price is inordinately high as compared with the Orient. It was indispensable to secure a reliable corps of pickers. To meet this condition there was built a comfortable schoolhouse and a competent teacher engaged. (Pl. VII, fig. 2.) The colored families of the neighborhood were then invited to send their children to the school free of charge. They would be taught the ordinary branches, and also would be taught to pick tea, and so earn money to buy food and clothing. The offer was accepted, and now there is a good list of pupils to draw from as pickers are required.

It was from the outset expected that many of these attempts would prove either partially or wholly unsuccessful. But being thoroughly convinced of the value of all experimental work honestly carried out and faithfully reported, the writer has not regretted the labor and expense incurred in these operations, especially as all but one (an attempt to introduce teas of too tender growth) have given at least some return and are steadily growing in yield.

GOOD SHOWING OF DRAGON'S POOL TEA.

The South Fraser tea garden makes a remarkable showing. It contains slightly more than 2 acres of tea bushes, planted at 4 by 4 feet distances. The bushes were raised from seed procured in 1892 through the kindness of the United States Agricultural and State Departments and John Fowler, esq., United States consul at Ningpo, China. It came from a celebrated garden near Hangchow, the capital of the Province of Chekiang, called Loong Tsin, meaning Dragon's Pool. Mr. Fowler wrote that the seed was of the "very best" sort and that the leaf was always made into green tea. Concerning the tea he also stated: "It has no market name, for the reason that it is not sold outside of the place of growth. It can not be bought in this port (Ningpo) nor at Shanghai. It is sun dried, and of course is not colored artificially. It is not exported; it is too dear. It costs 10 cents per ounce—\$1.60 per pound—at Hangchow. Only Chinese can afford to use it; it is too dear for Americans—i. e., those in America."

As shown in the frontispiece, this garden is remarkably thrifty. The vacancies amount to about 4 per cent only, and visitors practically acquainted with Oriental gardens have expressed themselves as surprised by its luxuriant and uniform growth, even to the extent of stating that it equaled anything they had seen in the East. The bushes are thick, of comparatively low growth, and globular form. The leaf is generally rather small and quite tender; it is well adapted for the manufacture of either green or black tea, although the weight of opinion among tea experts is that the latter product is the better of the two. The garden is mostly situated on a knoll, but a portion extends down into low moist land. The ground is clay loam, with a stiff clay subsoil. It has been heavily enriched every spring with a high-grade fertilizer at the rate recently of 600 pounds to the acre. It suffered comparatively little from the February freeze, only small patches requiring pruning back to within a few inches of the ground.

The yield of (dry) tea has been as follows:

	Pounds.
1894	83.8
1895	185.7
1896	215.9
1897	247.5
1898	307.3
1899 to September 15	489.1

There is every prospect that the crop of this year will exceed 500 pounds by the end of the season. It is safe to add that there are few gardens in China which yield a crop of over 200 pounds (dry) tea to the acre. It remains to be seen to what extent the output of this garden may grow.

SUCCESS OF THE ROSE TEA GARDEN.

The constant purpose and hope were to find from all of the data obtained some one way, readily accessible to all, by the employment of one or more sorts of seed and under conditions readily communicable to others, whereby tea may be profitably grown and manufactured in this section. This result seemed to have been demonstrated when the following report of the Rose tea garden was published last fall in the *News and Courier*, Charleston, S. C., September 15, 1898:

The site [of the "Rose Garden"] was an old piney woods pond, with a black, rich (in humus) but sour surface soil, overlying quicksand and, yet lower, clay. The ground was thoroughly subsoil drained, heavily sweetened with burnt marl and deeply plowed. About 1,000 plants of acclimated Assam-hybrid tea were set out at 6 by 6 feet, "quincunx." Whether from the slowness experienced in overcoming the original acidity of the soil or from the comparatively feeble growth of the seedlings during the first few years—in this respect resembling its relative, the *camellia japonica*—little progress was made from 1890, the date of the establishment of the garden, until 1894, although some leaf was plucked from it in 1892.

Again, the system of pruning practiced at the start of the experimentation, whereby clean stems were maintained, had to be abandoned after the loss of many plants and a degree of disappointment which almost caused the cessation of further work in this direction.

At present the garden contains about 800 vigorous bushes, each one composed of many stems, the result of cutting out the original main stem and inducing a luxuriant sucker growth. There are also about 200 younger plants occupying the places where older ones died; they naturally produce less leaf. Altogether, this garden of less than an acre may be fairly regarded as containing the equivalent of 900 plants in good bearing.

INCREASE OF PRODUCT.

The output of green leaf from it has been as follows: Crop of 1892, 56 pounds; crop of 1893, 81 pounds; crop of 1894, 151 pounds; crop of 1895, 333 pounds; crop of 1896, 600 pounds; crop of 1897, 648 pounds; crop of 1898, 1,000 pounds to September 1, with the prospect of reaching almost 1,200 pounds by the end of the season.

It is to be noted that there has been a material increase each year over the preceding, amounting to almost if not quite 100 per cent, with the exception of 1897, when a prolonged autumnal drought materially interfered with the leaf production. It is, of course, impossible to foretell to what limits this expansion may extend before reaching that slight annual variation which marks the maturity of the plant. But it would not be surprising if the outturn were doubled within a year or two. Twelve hundred and sixty pounds of green leaf will afford 300 pounds of standard Pinehurst black tea.

On a basis of 900 plants in the "Rose Garden," the production per bush is 5 ounces of tea. If it were a full acre the yield would approximate 400 pounds. And if the plants had been placed at shorter distances apart, as is the practice in the Orient and now at Pinehurst, the output per acre should be materially larger. The average yearly production per bush in Japan does not exceed 1 ounce; in China it is from 1 to 2 ounces; in India and Ceylon 3 to 5 ounces. In the last-named countries there are estates which annually produce over 1,000 pounds of tea to the acre; but they constitute the rare exceptions. Oriental tea gardens usually contain about 2,000 plants to the acre.

This gratifying productiveness of an experimental garden of almost an acre affords good ground for the belief that commercial tea may be grown in South Carolina in quantity quite comparable with the average yield of the most favorably situated Oriental countries. But the "Rose Garden" is not to be regarded as an exceptional result, nor of difficult imitation. Two larger gardens, also formerly piney-woods ponds, planted with Darjeeling seedlings, promise successful rivalry within a few years, and yet others appear to be awakening to a more vigorous productiveness.

COST OF PRODUCTION.

The cost of a crop of 300 pounds of tea from the "Rose Garden," by reason of its greater productiveness, is much less than that from Pinehurst as a whole, and yet it is evident that very material reductions might be secured were its area even only tenfold enlarged; much more so did it contain 100 acres. The following table shows the actual cost of the several operations in the growth, picking, and curing of the crop of 1898 in the "Rose Garden," as also the estimated and materially reduced expense for the same rate of production on a larger scale:

Items of cost.	Actual	Possible
	cost per pound.	reduced cost per pound.
	Cents.	Cents.
Pruning.....	3	2
Manuring.....	3	2
Cultivation.....	1½	1
Leaf picking.....	14	8
Factory work.....	6	3
Total.....	27½	16

A glance at the above table shows that the chief expense is that of gathering the leaf. Experience has demonstrated that a smart lad or grown girl can pick from a good "flush" 20 pounds of green leaf in ten hours, or, say, enough to make 5 pounds of tea. This should be done for 30 cents, or at 6 cents per pound. The supervision in the field will add 1 cent. With immature plants or poor "flushes" there is necessarily much more labor to be spent, and consequently more time in securing the same amount of leaf. Again, the "fineness" of the plucking materially influences its cost. The picking of a coarser and larger leaf or two from each shoot greatly increases the yield and lessens the cost. But with medium leaf picking, and in southern localities, where labor is cheap, with an outturn of at least 400 pounds of tea to the acre, this expense should not exceed 8 cents per pound.

There remains to be considered the cost of superintendence and the fixed charges for the outlay in the establishment of the garden and its maintenance until self-supporting. As to the former, the cost will largely depend on the size of the crop; on a production of 100,000 pounds per annum it should not exceed 2 cents per pound of tea. The expense of putting the land in suitable condition for a tea garden should not exceed that for any other intensive crop. The cost of raising and setting out the tea seedlings will vary from \$25 to \$50 per acre, according to whether raised from domestic or foreign seeds. In the establishment of a large tea estate the initial expenses are necessarily heavy, but it should be borne in mind that once well done it is practically for all time. The best Japanese tea is said to be gathered from bushes two hundred years old.

QUALITY OF THE TEA.

The leaf plucked from the "Rose Garden," as indeed from the whole estate, is fine, i. e., it very rarely consists of more than the Pekoe tip and two leaves, and then only to the first Souchong. Heretofore, and without the aid of a protective duty it has been possible to sell all of the Pinehurst (black) tea at \$1 per pound retail. It remains to be seen whether the duty will be repealed now that hostilities have ceased, or, if not, what effect it will have on the price of the better grades of tea. But after all deductions—and they are not to be underrated—it must be realized that there is a wide margin of profit between the cost of 1 pound of "Rose Garden" tea if produced on a large scale, say 25 cents, and the wholesale price of an equally good imported tea, say 50 cents. A profit of 10 cents per pound means a profit of \$40 per acre on an annual production of 400 pounds of tea, and higher profits per pound, with increasing yield per acre, will rapidly swell the income.

It is now to be added that without undue endeavor the writer sold his crop of 1898, about 3,000 pounds, as also about 500 pounds of the crop of the previous year (which had been repurchased to maintain prices), altogether about 3,500 pounds, at a profit of about 25 per cent. But this simple statement fails to convey an adequate conception of the achievement. The Pinehurst black tea has a distinctly characteristic flavor, and, like some of the choicer Oriental teas, its liquor has more strength than its color indicates. These qualities render its introduction slow. But it has always proved a difficult matter to change the taste of tea consumers; notably so in the introduction of Ceylon tea into Great Britain, the mother country of its producers. Nevertheless there has been a steadily increasing demand for Pinehurst tea, and a great many people will drink no other.

SEVERE TEST OF TEA GARDEN BY COLD WEATHER.

The past winter has fortunately (for the sake of most conclusively testing the feasibility of the local cultivation of tea) subjected the