CHAPTER TWO
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Introduction
Since Thoothukudi had the soil suited for cotton cultivation, cotton industry thrived well and cotton became an important product of trade. Most of the raw cotton needed by the textile mills in Thoothukudi was produced locally. As per the reports of the government of Madras, Thoothukudi had 5% of total cotton area of India and it alone accounted for 7% of the country’s total cotton production.\textsuperscript{104} Generally, the soil of Thoothukudi was divided into four kinds. \textit{Karislal} or \textit{black cotton soil} was considered good for cotton cultivation.\textsuperscript{105} Thoothukudi had such \textit{karisal} land and hence cotton was cultivated on a large scale. The second type of land was called \textit{sheval} or \textit{red soil} which was also used for cotton cultivation in Thoothukudi.\textsuperscript{106} The third type of soil was \textit{veppel} it was a mixture of black and sandy soil. The fourth type of soil was \textit{Pottel}. It was a stiff clayed soil. It was not used much for cotton cultivation in Thoothukudi.\textsuperscript{107}

Two factors of inferiority in Tirunelveli cottons were stable and yield, and many experiments have been attempted with the express object of increasing the value of these. The most obvious and speediest solution of the difficulty, namely, the introduction of higher class American or Egyptian, was suggested at first, but long experience has shown that, except in some particularly favourable areas, no advantage whatever was gained from efforts in this direction. These experiments pointed out that successful result would ultimately be arrived at by the exceedingly

\textsuperscript{104} Memoirs of Department of Agriculture in Madras, Government of Madras, 1954, p. 481.
\textsuperscript{106} A.J. Stuart., Manual of the Tirunelveli District, Madras, 1879, p. 75.
slow but certain methods of selection. Theoretically no practical difficulties were anticipated in the establishment of farms to produce seeds of improved varieties in moderately large quantities, but the maintenance of these varieties when they perhaps covered large areas in Thoothukudi, was a subject which has not yet been sufficiently discussed in all its bearings.¹⁰⁸

Taking into consideration, the want of capital and the average small holding of Thoothukudi farmer, any method of cultivation which would entail expenditure on artificial or farmyard manures was out of the question. The general consensus of opinion of the expert cotton-growers, who conducted experiments in the Cotton Department, appeared to be that, no improvement was to be expected from any alteration in the native methods of cultivating cotton in Thoothukudi areas, as the implements already used were extremely well adapted to the purpose. The defects complained of, as has already been shown, were due to faulty processes during and after harvesting the produce.¹⁰⁹

The experiments, however, in these early years were directed with the purpose of introducing the finer exotic varieties into Thoothukudi. This object was only attained by the establishment of the Bourbon cotton, and Cambodia cotton into Tirunelveli.¹¹⁰ The sum of experience gained amounted to the fact that experiments with foreign cottons were often successful when conducted as costly garden trials,

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¹¹⁰ G.O. No. 64, Board of Revenue, Dated, 27th Feb, 1899.
while on transfer to the fields it was found the plants would grow so moderately as not to afford a reasonable profit to the cultivator.\textsuperscript{111} Further, the foreign cottons with naked seeds were felled an easier prey to harmful insects than the native varieties which, with one exception, had their seeds guarded by a dense covering of short hairs.\textsuperscript{112}

The total result of the experiments may be summed up in the words of the report issued on those at Thoothukudi. “Some kinds of exotic cotton, such as the Cambodia cotton and Bourbon cotton, yielded occasionally a small crop when cultivated as garden plants with great care and expense, but they never escaped partial damage from the effect of the seasons. When the same kinds were cultivated on a large scale, even with the greater skill, labour and care of the experimental establishment, the crop invariably failed. The possibility of raising garden samples of any kind of cotton, anywhere, by unlimited care and expenditure, was scarcely doubted, but the feasibility of doing so upon terms within the reach of the ryot and within the actual market value of the article, had not been demonstrated at Thoothukudi. It was proved that, double the care and attention and more than double the expense of the native cultivation, a larger yield and better and cleaner quality might be obtained from the indigenous cotton than the ryots can produce, but not sufficiently so to repay the additional outlay.\textsuperscript{113}

This might be considered the final word on the subject until the Agricultural Departments in Madras Presidency again took it under consideration.

\textsuperscript{111} G.O. No. 10245, Board of Revenue, Dated, 31\textsuperscript{st} Dec, 1897.
\textsuperscript{112} G.A. Gammie., \textit{op.cit}, pp. 186 - 190.
\textsuperscript{113} Report of the \textit{Royal Commission on agriculture in India}, Vol: 7\textsuperscript{Th}, Government India, 1928, pp. 278 – 280.
They had profited by the lesson that little has been gained by the introduction of foreign cottons which had to be subjected to a long course of acclimatization. The pursuance of a rigid system of selection on a scientific basis and the more intelligent appreciation of the laws which govern the production of crosses and hybrids had probably lead to definite results, at first on the seed farms and afterwards on the field. New varieties had been introduced into Thoothukudi suitable in every way to their individual requirements of climate and general environment. The Agricultural Department could furnish the necessary scientific guidance, but nothing could be done on a field scale without the assistance of the farmer and trader.\textsuperscript{114} Black cotton soil in Thoothukudi was pre-eminently the best for cotton, Red soil was scarcely ever used for this crop. The superiority of the black soil was probably due to its depth and adhesiveness, which rendered it very retentive of moisture.\textsuperscript{115}

\textbf{Cotton Cultivation Tracts}

Of all the Indian provinces, Madras was the foremost in cotton production and was also the second largest cotton producer, the largest producer being Bombay. Of the cotton producing areas of Madras Presidency, Thoothukudi took the second place. Cotton, being essentially a tropical crop thriving best under hot and humid climates, certain parts of Thoothukudi specialized in cotton cultivation


such as Kovilpatti Tracts, Sivakasi Tracts, Ettaiyapuram Tracts, Vilathikulam Tracts, Sankarankovil Tracts, Sattur Tracts, Virudhunagar Tracts, Nalattinputthur Tracts, Srivaikundam Tracts, Ambasamudram Tracts, Tenkasi Tracts, Rajapalayam Tracts, Srivilliputhur Tracts, etc.116

**Mode of Cotton Cultivation**

Till the end of the nineteenth century, very little attention was showed by the Company on the condition of cotton cultivation in Thoothukudi. With the establishment of cotton industries in England, the Company had much interest in the improvement of cotton cultivation in Thoothukudi. The Company invited many European experts and attempted to introduce improved methods of cotton cultivation.117 The mode of cultivation of cotton was simple. In the northwest cotton Tracts of Thoothukudi, like Kovilpatti, Sattur, Virudhunagar, Srivilliputhur etc, the cultivation of cotton was adapted to the peculiarities of the seasons. Drought was an obstacle. As the region was left without rain for long periods, heavy rains within short periods destroyed the fine crop just bursting the pod. Therefore, it became an object to regulate the sowing, that the flowering came after the heavy rain had ceased, and the pods ripen during the bright clear weather that always followed so that the plants received wet weather while growing and dry sunny weather while maturing.118 The land was well ploughed and made free from weeds. Uneven lands were leveled up. Then the land was kept ready for sowing. If the rain fell between the months of

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117 A.J. Stuart., *op.cit*, p. 78.

August and October, the seed was sown. Then the plant was sufficiently advanced to derive the fullest benefit from the monsoon rains. If there was sufficient rain, a second crop was raised.\textsuperscript{119} The seeds were never sown deeper than two inches. The space between two rows was between 3.5’ and 4’.\textsuperscript{120} This spacing was essential for allowing the plants to grow better and give larger yield.

The hoeing was essential for the growth of cotton plants. The first hoeing was done within the period of the appearance of the third proper leaf, excluding the two seed leaves.\textsuperscript{121} The land should be loosened round the routs so as to facilitate their growth and spread. Within a month or two when the flowers begin to open, the second hoeing would be done to clean the land. Another ploughing in intervals between the two hoeing was found necessary for loosening and airing the soil.\textsuperscript{122} Though a few plants used to be injured during this ploughing, they rapidly recovered. In order to improve cotton cultivation, scientific methods were followed in Thoothukudi areas. To achieve increase in production, the following factors were given due importance better varieties of crops, better control of pests and diseases, better control of water supply for crops, prevention of soil erosion, better use of manures and fertilizers, better implements, better system of cropping and better rotations.\textsuperscript{123} But there were certain handicaps such as lack of education, lack of

\textsuperscript{119} David Ludden., \textit{Peasant History in South India}, Madras, 1989, p. 130.
\textsuperscript{120} J. Talboys Wheeler., \textit{op.cit}, p. 255.
\textsuperscript{121} Item.,
\textsuperscript{122} Proceeding of the Board of Agriculture in India, 13\textsuperscript{th} edition, Government of India, 1906, p. 59.
subordinate industries and lack of leadership in villages. Efforts were taken to rectify these defects in order to improve cotton production.\footnote{Sir John Ressell, Repots on the work of the Imperial council Agricultural Research in applying Science to Crop production in India, Smile, 1937, p. 46.} 

Among the indigenous cotton, northern, western, Karunganni, Pulichai, Coconadas, Nadam, and Tinneis were cultivated in the Tirunelveli 1900 onward. Northern cotton consisted of two types which were called g.herbarcum and g.indicum.\footnote{Report of the Indian Cotton Committee, vol. II, Agriculture, Calcutta, 1920, p. 133.} Based on the difference in lint, northern cotton was divided into two kinds viz. red northern and white northern.\footnote{H.R. Pate., Gazetteer of Tirunelveli District, Government of Madras, 1916, p. 161; Report of the Indian Cotton Committee, \textit{op.cit}, p. 134.} The western cotton was divided into two types – Mungari and Hingari.\footnote{H.R. Pate., \textit{op.cit}, pp. 161, 137.} ‘Tinnies’,\footnote{Tinnies was a short form of Tinnevelly cotton which was cultivated in Tirunelveli District of the Madras Presidency in the 19th Century.} was a local name given to Karunganni and Uppam which were cultivated in Tirunelveli.\footnote{G.O. No. 2365, Development Dept, Dated, 3rd May, 1949, Madras, p. 1.} There were also crossing cottons like Bourbon and Cambodia.\footnote{Annual Report for the Administration of Madras Presidency during the years 1935 – 1936, Madras, 1936, p. 82.} On the whole, there were about one hundred and thirty seven varieties of cotton.\footnote{Everyman’s Encyclopedia, Vol. IV, 5th edition, London, p. 115.} Among them, only a few were cultivated in the Thoothukudi. The Agriculture Department took special interest and in 1906 it opened Kovilpatti farm in order to improve this variety.\footnote{Report of the Subordinate officer of the Department of Agriculture, during, 1939-1940, Madras, 1940, p. 32.} Karunganni was a local variety of cotton in Thoothukudi. Agriculture Department preferred pure Karunganni seed because it was the most important variety best suited for black soil.

In 1906 the Madras government received three thousand rupees from the British
Cotton Growing Association and spent the amount for purchasing Karunganni cotton. The cotton thus purchased was dinned and lint baled and sent to the British Cotton Growing Association for valuation and seeds kept for distribution. A mixed variety of karunganni and uppam was cultivated in Tirunelveli area. It was called “Tinnevelly cotton”.133

Cotton Varieties and Common Diseases

The cotton plants of the world have been broadly classified into two groups namely American and Asiatic. The American cotton has twenty six chromosome pairs whereas it was double in number in Asiatic cotton. Among the foreign cotton, American cotton was popular in India, particularly in the Madras Presidency. American cotton was again divided into two types. They were South American Cotton and North American cotton. The North American Cotton included short stapled varieties of New Orleans (Mexican), West Indian (Bourbon), Uplands and Bowed and long stapled variety of Sea Island cotton. The South American Cotton included both long and short stapled cottons.134 In India, Cotton was generally divided into two kinds namely Indian and foreign for practical purposes. Indian cotton included both short and long stapled varieties.

Multiplication and Distribution of Cotton Seed

In addition to the introduction of several varieties of cotton, efforts were made for crossing cottons with a view to increase productivity. In 1905, Fyson, Professor of Biology, Presidency College, Madras, conducted experiments in crossing

134 David Ludden., op.cit, p. 130.
cotton. He was supplied with different varieties of seed and with the necessary funds. As a result of his efforts three strains of Cambodia cotton crossing made between Company 2 and South American cotton were introduced and they yielded promising results.

**Cotton Pests and Diseases**

Like any other crop in India cotton, cultivation suffered setbacks owing to pests and diseases of several kinds. The most harmful pests affecting cotton were the boll weevil, pink bollworm, bollworm, cotton leaf worm, cotton aphid, grass hoppers, trips and transmished plant bugs.\(^{135}\) Pathogenic fungi, bacteria and virus also attacked cotton. The damage caused by nematodes and other physiological disturbances usually called diseases resulted in heavy losses. In 1892 the government brought out a publication giving details about twenty types of diseases.\(^{136}\) Wilt was one of the major diseases of cotton. In India the disease was first reported from Nagpur by Evans in 1908. It was found in the Madras Presidency also. It affected the plants in all the stages of growth. The first symptom was yellowing of young seedlings and browning of the cotyledons and formation of a brown ring on the petiole. It was very difficult to control wilt once the soil was infested with the fungus. The seed – borne phase could be eradicated by chemical means but that had only limited value. Application of potash (in increasing doses) also helped to put down the disease.\(^{137}\) Root rot was one of the severest diseases of cotton found in many parts of

\(^{135}\)David Ludden., *op.cit*, p. 130.


\(^{137}\)G. Rangaswami., *op.cit*, 1984, p. 411 – 413.
Madras Presidency including Thoothukudi. It was caused by phizoctonia species. The symptom was a sudden and complete wilting of the plants. This disease used to spread in the field in concentric circles. It was found both in indigenous and foreign cottons. Mixed cropping to include shady plants with cotton to reduce the soil temperature also helped in checking the intensity of the disease.

**Cotton Cultivation and Improvements From 1888 – 1900**

In 1886 the Director of Revenue Settlement and Agriculture introduced new methods of ploughing system and also *Swami Ayyangar* who was the Agricultural officer of Tirunelveli himself demonstrated the new ploughing methods in Tirunelveli district. Further the Boards appointed new agricultural officers and Inspector for research farms in Thoothukudi to analysis the collections and distributions of cotton seeds. Then, they conducted cotton seed drill, and cotton staple testing, with Thoothukudi areas. At the same time Agricultural Department required reports of cotton cultivation in Tirunelveli in particular fasli (cultivated area) from Collector of Tirunelveli. Due to the above progress there were good improvements of cotton in Thoothukudi areas. During the period 1888 to 1900, in Tirunelveli district, cotton cultivation differed from each year, however the medium of cultivation was yielding. At the same time, due to the gradual progress, cotton

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140 Proceeding No. 270, Board Revenue, Dated, 2nd Feb, 1886; General Records No. 426, Revenue Dept, Dated 2nd Feb, 1886; G.O. No. 242, Agriculture Dept, Dated, 28th Jan, 1886.
141 Proceeding No. 2985, Board of Revenue, Dated, 20th April, 1886; General Records No. 937, Revenue Dept, Dated, 20th April, 1886; G.O. No. 1011, Agricultural Dept, Dated, 5th April, 1886.
142 Proceeding No. 2986, Board of Revenue, Dated, 20th April, 1886; General Records No. 1770, Revenue Dept, Dated, 20th April, 1886; G.O. No. 709-A, Agricultural Dept, Dated, 5th April, 1886.
143 Proceeding No. 1033, Board of Revenue, Dated, 6th May, 1886; Proceeding No. 4808, Board of Revenue, Dated, 26th May, 1886; General Records No. 2258, Revenue Dept, 26th May, 1886; G.O. No. 3348, Revenue Dept, Dated, 8th June, 1886.
The cultivation result was good in the years 1897 to 1900. Survey of the progress was conducted by Agricultural Department of Madras presidency.

The following table gives the progressive cotton cultivation in Thoothukudi from 1888 to 1909:

<table>
<thead>
<tr>
<th>Cotton Cultivations Years</th>
<th>Total Acres of Cotton Cultivations</th>
<th>Total Acres of Cotton Cultivations Average Increase or Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1888 – 1889</td>
<td>226,008</td>
<td>226,008</td>
</tr>
<tr>
<td>2. 1889 – 1890</td>
<td>237,708</td>
<td>+ 11700</td>
</tr>
<tr>
<td>3. 1890 – 1891</td>
<td>227,378</td>
<td>- 10330</td>
</tr>
<tr>
<td>4. 1891 – 1892</td>
<td>213,225</td>
<td>- 14153</td>
</tr>
<tr>
<td>5. 1892 – 1893</td>
<td>180,710</td>
<td>- 32515</td>
</tr>
<tr>
<td>6. 1893 – 1894</td>
<td>243,400</td>
<td>+ 62690</td>
</tr>
<tr>
<td>7. 1894 – 1895</td>
<td>230,394</td>
<td>- 13006</td>
</tr>
<tr>
<td>8. 1895 – 1896</td>
<td>233,202</td>
<td>+ 2808</td>
</tr>
<tr>
<td>9. 1896 – 1897</td>
<td>201,781</td>
<td>+ 31421</td>
</tr>
<tr>
<td>10. 1897 – 1898</td>
<td>201,781</td>
<td>= 201,781</td>
</tr>
<tr>
<td>11. 1898 – 1899</td>
<td>201,781</td>
<td>= 201,781</td>
</tr>
<tr>
<td>12. 1899 - 1900</td>
<td>201,781</td>
<td>= 201,781</td>
</tr>
</tbody>
</table>

Sources: Report on the Administration of the Madras Presidency, during the years 1888 – 89, Madras, 1889, p. xcv; Proceedings, No. 64, Revenue Department, Dated, 27th Feb, 1899; during the years 1889 – 1890, p. xciv; Revenue Proceedings, No. 64, 27th Feb 1899; during the years 1890 – 1891, p. xciv; during the years 1891 – 1892, p. xc; during the years 1892 – 1893, p. xc; during the years 1893 – 1894, p. 194; during the years 1894 – 1895, p. ixxxvi; during the years 1895– 1896, p. 183; during the years 1896 – 1897, p. 83; during the years 1897 – 1898, p. ixxxv; during the years 1898 – 1899, p. ixxxv; during the years 1899 – 1900, p. ixxxv.

During 1888 – 1889, some experiments were implemented by boards, to cotton cultivation. The government offered special prizes for improved ploughs. In Thoothukudi, there was a local manufacturing unit of small light ploughs. Specimens of these ploughs were obtained during this period and were found on trial to do fair work. In 1890, Tirunelveli cotton was in large demand and a high price for this commodity was fetched in the World Cotton Market. Due to the demand of Tirunelveli cotton, the government took a step to improve cotton on more quantity.

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145 Proceeding No. 64, Revenue Dept, Dated, 27th Feb, 1899.
In 1889, Agricultural Experiments was set on foot during the year to determine why the outturn of cotton in Tirunelveli was so much lower than that in America. The results of the inquiry showed that the industry was an exceedingly profitable one, that the yield was very satisfactory, the quality of the cotton superior, and that there had been no falling off in the outturn of late years, but rather the contrary. It seems, however, that sufficient attention was not paid to the selection of seed and that improvements might be made in the direction of sowing and weeding.\textsuperscript{146}

In 1895 Agricultural Experiments, into the cultivation of cotton was continued by the Sub Assistant Director in some districts including Tirunelveli Districts.\textsuperscript{147} In 1899 to 1900, the cotton cultivation was gradually improved, and it was experimented by Agriculture Department in Madras Presidency. At the same time, the Agricultural Department had introduced new methods of scientific experiment, and testing, throughout the states of Madras Presidency including Tirunelveli Districts, that is why the improvement of cotton cultivation determined the further cotton improvement works in and around Thoothukudi.\textsuperscript{148}

Because of the above progress, the Madras government planned to establish Agricultural Research Station for experimenting cotton at Kovilpatti in 1900. In order to construct the

\textsuperscript{146} Report on the Administration of the Madras Presidency, during the years. 1889 – 90, Madras, 1890, p. 73; Proceeding No. 64, Revenue Dept, Dated, 27\textsuperscript{th} Feb, 1899.

\textsuperscript{147} Report on the Administration of the Madras Presidency, during the years.1894 – 95, Madras, 1895, p. 60.

\textsuperscript{148} Report on the Administration of the Madras Presidency, during the years 1899 – 1900, Madras, 1900, p. Ixxxv.
experimental farm in Kovilpatti, the government sanctioned Rs. 200 as permanent advance amount to Agricultural Department in Madras Presidency.\footnote{G.O. No. 1231, Revenue Dept, Dated, 14th Dec, 1900.}

**Kovilpatti Agricultural Research Station**

Agricultural Research station at Kovilpatti was the first and apex research station started in the year 1901 in the erstwhile Madras Presidency during the British period.\footnote{R. Sinnakani, ed, *Gazetteers of India, Tamil Nadu State, Thoothukudi District*, Chennai, 2007, p. 430.} According to *Couchman*, Director of Agriculture, Madras, “The Tinnevelly black soil ryot is an excellent cultivator”\footnote{Agricultural Journal of India, Department of Agriculture, Government of India, 1909. P. 130}. The government of Madras allotted funds for the improvement of cotton cultivation insisting upon that, part of the funds had been used for popularizing the practice of seed drill cultivation,\footnote{G.O. No. 1412, Financial Dept, Dated, 14th Jun, 1901; G.O. No. 2687 Misc, Financial Dept, Dated 5th Jun, 1901; G.O. No. 535, Financial Dept, Dated, 24th June, 1901.} in station situated in the northern side of Kovilpatti town on the Chennai – Kanyakumari national highways. The geographical set up was between 8º48’ and 9º20’ north latitude and 77º4’ and 78º25’ east longitude at 90 MSL.\footnote{Catalog of the Agricultural Research Station at Kovilpatti, Government of Tamil Nadu, Kovilpatti, 2009, pp. 1 - 5.}

The farm comprised two blocks of land of average quality, one of red and one of black soil. The red soil block, 25 acres in extent, situated less than a mile from the Kovilpatti railway station contained the farm buildings and office and quarters for the staff. One and-a-half miles away on the road to Sattur had the black soil tract, in this area, after a great extension made in 1906, amounting to 115 acres.
Most important of all, however, had been the efforts directed towards improving the cotton crop by means of seed selection and better methods of cultivation.\textsuperscript{154}

The indigenous cotton of the Tirunelveli district, though occasionally sown in red and mixed soils, was mainly a black soil crop. Therefore, it was produced chiefly in Kovilpatti Taluk, in the north of Srivaikundam taluk, in the east Sankarankovil and in the occasional pockets of black soil which were founded here and there throughout the district. The two main species known as karunganni (gossypium obtusifolium) and uppam (g.herbaceum), though often, and in fact generally, grown together in the same field, were readily distinguished.\textsuperscript{155} Its rounded short sepals are spherical bolls and harsh, though snowy white, lint mart the uppam variety; whilst the karunganni can be known by its elongated deeply serrated sepals, by its conical bolls and the creamy tinge and comparative fineness of its lint. Karunganni liked the sea-breeze and, except when grown on red or mixed soils, was seldom found more than thirty miles from the coast; further inland the uppam predominates. Both species were included in the general term “\textit{Tinnies}” the name by which the cotton of Tirunelveli, was quoted in the London markets.\textsuperscript{156}

The bolls of the Karunganni crop began to burst by the middle of March; picking commenced at once, and the “season picking” would continue till the middle of May.\textsuperscript{157} About this time, or sooner, the heavy hot-weather rains were

\textsuperscript{154} Land Records and Agricultur, No. 282/a, Dated 30\textsuperscript{th} May, 1901, by C. Benson., Deputy Directors of Agriculture, Government of Madras, 1901.


\textsuperscript{156} H.R. Pate, \textit{op.cit}, pp. 160 – 167.

\textsuperscript{157} Report from the professor and Head, \textit{Agricultural Research Station}, Kovilpatti, May, 1997.
expected; if the rainfall was good, the plants would produce a second flush and would go on yielding cotton till July and sometimes even longer. The harvest of uppam begins two or three weeks later than that of karunganni; its rate of production was far more rapid, and though its net yield was about the same as that of karunganni, it exhausted itself in the early season and seldom gave a second flush.\textsuperscript{158} A normal outturn on ordinary black cotton soil was one-and-a-half to two pothis\textsuperscript{159} of raw cotton, or kappas.\textsuperscript{160}

Recognising the importance of teaching and diffusing the habit of seed selection, and the agricultural department, by means of the Kovilpatti Agricultural Station, had given their special attention to this aspect of cotton cultivation. In 1901 – 1902 the work of the provincial agricultural department consisted mainly in the preliminary cotton cultivation of experimental plots opened during the year, at Kovilpatti.\textsuperscript{161} In 1902 – 1903 the work of the provincial Agricultural department consisted, as in the preceding year, mainly in the cultivation of experimental plots at the farm at Kovilpatti. Among the many minor investigations and experiments, which occupied the attention of the department, might be mentioned the method of reclamation of saline soil. The chief economic investigations of the government botanist were in connection with the diseases of the cotton plants.\textsuperscript{162}

\textsuperscript{158} Item.,

\textsuperscript{159} A Pothis = 248 lbs. thus two Pothis practically equal a candy as 500 lbs.

\textsuperscript{160} H.R. Pate, \textit{op.cit}, pp. 160 – 167.

\textsuperscript{161} Report on the Administration of the Madras Presidency, during the years.1901 – 1902, Madras, 1902, P. Xiii.

\textsuperscript{162} Report on the Administration of the Madras Presidency, during the years 1902 – 1903, Madras, 1903. p. X.
In 1903 – 1904, the chief work of the Agricultural Department at the Kovilpatti farms was the cotton cultivation of experimental plots, under the ordinary method of tillage in order to ascertain the natural fertility and condition of the soil.\(^{163}\) The next important attempt at improvement dates from the year 1904. It was based on an order from the government of India, advised by the then officiating Inspector-General of Agriculture, Sly. In that letter, it was stated that a Cotton-Growing Association had been formed in the United Kingdom for the promotion of cotton cultivation within the limits of the British Empire, and that the importance of improving the Indian supply had been pressed upon the Secretary of State by that association and by the representatives of the textile interest in Lancashire.

The government of India, while recognising that the problem was largely a commercial one, suggested the following lines on which improvements might be carried out:\(^{164}\) The botanical examination and classification of all existing varieties of cotton both wild and cultivated, The introduction of better varieties and improved methods of cultivation, The provision and distribution of good seed of the varieties ordinarily grown.\(^{165}\)

This system of seed distribution had been highly recommended by the Imperial Cotton Specialist, by the Secretary for the International Federation of Master Cotton Spinning and Manufacturers and others who have looked into it. It was a popular system: it encouraged cooperation between the department and the owners; it brought the department into closer touch with a large body of cultivators. These seed

\(^{163}\) Report on the Administration of the Madras Presidency, during the years 1903 – 1904, Madras, 1904, p. Xii.


\(^{165}\) Agricultural Journal of India, Department of Agriculture, Government of India, 1909. p. 130.
farms were private enterprises, being under the direct management of the owners: governments lend its assistance by supplying gratis advice as to their management and selected seed for each year’s sowing.\textsuperscript{166} The pecuniary outcome of this system of cotton improvement, they believed that, the addition of crores of rupees to the annual receipts for cotton grown in Thoothukudi. By raising the ginning percentage by 3 per cent, even, had been done by growing that selected type of cotton seeds known botanically as \textit{roseum} of which pure seed had been distributed by the agriculture department. They increased the annual production of cotton grown in Thoothukudi by 40 million pounds of lint worth nearly 17 million rupees at existed prices.\textsuperscript{167}

Much had been done, too, they believed by introducing well resistant cotton in Thoothukudi areas, in the cotton tracts, where the indigenous varieties suffer much from this fungoid disease at that period. Cambodia, an exotic variety, was admirably suited for this purpose; it was not only immune to wilt, but was the most promising long stapled cotton which has yet been tried in Thoothukudi. It had the further advantage of thriving better in waterlogged areas than the indigenous cottons, and had been grown successfully in the rice tract of Srivaikundam and Ambasamudiram, where the rainfall was too heavy for the latter. The value of Cambodia cotton, at that period was Rs.180 per Pothi of 345 lbs. as compared with Rs.140 for Pothi. Thoothukudi area under this desirable cotton was extending very fast.\textsuperscript{168}

\textsuperscript{166} Memoirs of the Department Agriculture in India, Vol. VI, \textit{Controller of Indian Agricultural department}, Government of India, 1913, p. 76.
\textsuperscript{168} C.J. Backer., \textit{Indian Economy on Agriculture – Tamil Nadu country side}, Delhi, 1984, p. 75.
The better manuring was another phase of cotton cultivation which offered much scope for improvement in Thoothukudi. The cotton-grower at that time starved his land. The possibility of applying artificial fertilizers or other supplementary supplies of manure had not yet impressed him as being a practical proposition; though the black cotton soil with which he had to deal was most responsive to dressing of nitrogenous manures, such as nitrate of soda or sulphate of ammonia. It had been proved that when these were applied as a top-dressing to land which had been previously lightly manured with cattle dung, the increased outturns were far more than over the cost of the manure. It had also been proved that, as manure for cotton, cattle urine conserved by the dry earth system recommended by the department was equal in manurial value per animal to the dry excreta, so that the increase in outturn obtained from the use of dung alone, could be about doubled if this method of conserving the urine were employed. But these were only a few of the possible ways by which the productiveness of the cotton tract could be largely increased in Thoothukudi. It was impossible to foretell with precision what the pecuniary outcome of all these investigations had been. If they succeeded in modifying practice even to a small extent; they can succeed in introducing new factors each of which will raise the value of the produce per acre by one or two per cent. The gain on the aggregate had represented enormous sums when considered in relation to the large area involved.

In 1904 – 1905 the work carried on at the Kovilpatti farms consisted chiefly in the conduct of experiments to determine the comparative value of the

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various methods of collecting and utilizing cattle manure and the extent to which deep tillage could be employed to counteract the effects of drought. Regarding the cotton seed selected and distributed and the cotton growing area, the Board endeavoured to enlist the aid of Messrs. Harvey Brothers at Thoothukudi, who during the time had been in the southern districts that month, and perhaps were able to obtain valuable advice from them.\textsuperscript{171} At the same time the Board recommended improving the quality of cotton growing in the Kovilpatti farms.\textsuperscript{172}

They collected the pure cotton seed of the best local varieties in the Tirunelveli districts, with a view to distribute them among the ryots and thus improving the quality and outturn of Indian cotton.\textsuperscript{173} In order to study the cotton growing areas, the Board appointed, some inspector as cotton inspectors and also to analyse the good cotton progress Tracts. In Tirunelveli, inspector Ramaswamy Ayyar had a very considerable knowledge in uppam cotton, and probationer Muthuswami Ayyar had some also.\textsuperscript{174} The Deputy Director was requested to report, on the question of opening seed depots, in Thoothukudi and to state whether it was necessary to obtain the services of an expert for the collection and distribution of cotton seed as suggested by the government.\textsuperscript{175} Ramaswamy Ayyar’s services had been needed in Tirunelveli and the southern part of Madurai in connection with cotton.\textsuperscript{176}

\textsuperscript{171} G.O. No. 1645, Land Records and Agriculture, Dated, 2\textsuperscript{nd} Nov, 1904; G.O. No. 383, Board of Revenue, Dated, 5\textsuperscript{th} April, 1904.

\textsuperscript{172} Proceeding No. 483, Revenue Department, Dated, 28\textsuperscript{th} Dec, 1904.

\textsuperscript{173} G.O. No. 1152, Revenue Dept, Dated, 12\textsuperscript{th} October, 1904; Report on the Administration of the Madras Presidency, during the years 1904 – 1905, Madras, 1905, p. xii.

\textsuperscript{174} Proceeding No. 5542, Mis, Board of Revenue, Dated, 11\textsuperscript{th} Oct, 1904.

\textsuperscript{175} G.O. No. 3656, Land Records Agriculture, Dated, 21\textsuperscript{st} Oct, 1904.

\textsuperscript{176} G.O. No. 4633, Mis, Agriculture Dept, Dated, 26\textsuperscript{th} Nov, 1904.
The Board permitted to communicate to the experienced persons of the Tirunelveli areas like, *Messrs. Andrew and Frank. Harvey Brothers, Messrs. Binny & Co, Messrs. Dymes & Co, Messrs. Volkarts Brothers*, and *Messrs. Ralli Brothers* the areas good cotton growing progressed.\textsuperscript{177}

**Interviewed by Mr. C. Benson, Deputy Director of Agriculture held 15\textsuperscript{th}, November, 1904:**

*When I was recently at Thoothukudi, I also interviewed Messrs. Harvey Brothers and the agent of Messrs. Ralli Brothers and of Messrs. Dymes & Co; and although much direct assistance cannot be expected from them in the matter, I am in hopes of receiving from them useful information as to the growers of comparatively pure samples of the cottons produced in the southern districts. It must, however, be remembered that Messrs. Dymes & Co, who have probably been the largest purchasers of cotton in the Presidency, have recently suspended payment, and neither they nor their agents are likely to afford us much further information or assistance.*\textsuperscript{178}

*From the information, I have obtained, I do not think that the proprietors of ginning factories will be able to do anything useful in the matter. The selection will have to be made in the fields where the decree of admixture varies very greatly, and I would draw the particular attention of the Board to the opinion expressed by Messrs. Volkarts Brothers regarding the causes for the variation of the quality of cotton produced from any given lot of seed. This is a point which can only*

\textsuperscript{177} G.O. No. 3933, Agriculture Dept, Dated, 14\textsuperscript{th} Nov, 1904; G.O. No. 1152, Agriculture Dept, Dated, 12\textsuperscript{th} Oct, 1904; G.O. No. 1797, Agriculture Dept, Dated, 25\textsuperscript{th} Nov, 1904.

\textsuperscript{178} G.O. No. 4141, Agriculture Dept, Dated, 1\textsuperscript{st} Dec, 1904; G.O. No. 1859, Agricultural Dept, Dated, 7\textsuperscript{th} Dec, 1904; Proceedings No. 3933, Board of Revenue, Dated, 14\textsuperscript{th} November, 1904.
be determined by very careful and continued experiment.\textsuperscript{179} Messrs. A. and F. Harvey, Thoothukudi, state that they cannot be of much assistance in regard to the subject as they are not in touch with the growers. They are of opinion that the suggestions contained in the government of India letter for the proper selection of seed with added inducements to certain cultivators for the carrying out of experiments should prove effective.\textsuperscript{180}

The experimental farms were at work during the year 1905, at Kovilpatti the chief experiments concerned the collection and utilization of cattle manures, and the extent to which deep tillage would operate as a remedy for the effects of drought. The results were of little practical utility.\textsuperscript{181} At Kovilpatti local varieties of cotton were chiefly tried, but here again the season was not favourable. However, the advantage of sowing in drills over broadcast sowing was proved. The Deputy Director of Agriculture and the Collectors of Tirunelveli districts, with remarks of the government order of the Revenue Department, approved the Board’s proposals for improving the quality and outturn of cotton, grown in Thoothukudi;\textsuperscript{182} and requested the Accountant General to place two sums of Rs. 2,000 each at the

\textsuperscript{179} G.O. No. 1911, Agricultural Dept, Dated, 13\textsuperscript{th} Dec, 1904; Letter No. 1797, Agricultural Dept, Dated, 25\textsuperscript{th} Nov, 1904; Proceeding No. 6476, Mis, Board of Revenue, Dated 29\textsuperscript{th} November, 1904.

\textsuperscript{180} Proceeding No. 6476, Board of Revenue, Dated, 29\textsuperscript{th} Nov, 1904; G.O. No. 1987, Agriculture Dept, Dated, 24\textsuperscript{th} Nov, 1904; Letter No. 1859, Agriculture Dept, Dated, 7\textsuperscript{th} Dec, 1904; Proceeding No. 6476, Mis. Board of Revenue, Dated, 29\textsuperscript{th} November, 1904.

\textsuperscript{181} G.O. No. 0508, Financial Dept, Dated, 20\textsuperscript{th} Feb, 1905; G.O. No. 162, Revenue Dept, Dated, 20\textsuperscript{th} Feb, 1905; G.O. No. 254, Revenue Dept, Dated, 13\textsuperscript{th} Feb, 1905; Letter No. 69, Revenue Dept, Dated, 27\textsuperscript{th} Feb, 1905.

\textsuperscript{182} Report on the Operations of the Agricultural Department, Madras Presidency, for the official years 1904 – 1905; Madras Administrative Report during the years 1904 -1905 p. 52.
immediate disposal of the Deputy Director of Agriculture in the Huzur Treasuries at Tirunelveli.\textsuperscript{183}

**The Board’s Proposals were approved subject to the following remarks**

The object of the suggestions of the government of India was to effect some early improvement in the cotton supplied to the market. The operations must therefore be on a large scale and the attention of the agricultural department should not be diverted to an unduly minute selection of the plants from which seed was to be obtained. The government also considers that private agency should be more largely used in the work of collection and that Tahsildars should be required to see that village officer’s cooperate, though the latter should not be allowed to do the work of selection.\textsuperscript{184} Order was issued in the financial department providing a sum of Rs. 6,000 in the current year and of Rs. 5,000 in the ensuing year to meet the cost of the operations during the current season. The Board of Revenue was requested to submit the necessary reappropriation statement through the Accountant General.\textsuperscript{185}

**Mr. C. Benson Quoted**

\textit{I have the honour to draw the attention of the Board to point which appear to have been over looked That the probationer at Bellary and the Inspector at Kovilpatti can neither of them leave the respective farms at all during the cotton season as their services are required there for cotton crossing and collection from}

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\textsuperscript{183} Proceeding No. 35, Board of Revenue, Dated, 4\textsuperscript{th} Feb, 1905; G.O. No. 68, Revenue, Dated 27\textsuperscript{th} Jan, 1905; G.O. No. 483, Agriculture Dept, Dated, 28\textsuperscript{th} Dec, 1904; G.O. No. 1152, Revenue Dept, Dated 12\textsuperscript{th} Oct, 1904; G.O. No. 3656, Agriculture Dept, Dated, 21\textsuperscript{st} Oct, 1904; G.O. No. 1645, Agriculture Dept, Dated, 2\textsuperscript{nd} Nov, 1904.

\textsuperscript{184} G.O. No. 68, Revenue Dept, Dated, 27\textsuperscript{th} January, 1905.

\textsuperscript{185} G.O. No. 1152, Revenue Dept, Dated, 12\textsuperscript{th} Oct, 1904.
\end{footnotesize}
day to day; and that to enable a seed depot to be formed at Kovilpatti, it is essential that the seed stores applied for should be handed over complete. I would also add that at other places where we may be able to collect kappas, a considerable amount of space will be required in the first place for receiving and sorting it before it can be ginned and thereafter special care in its storage to preserve it from vermin, etc. I may further remark that it is not probable that any large portion of the expenditure proposed can be incurred during the current official year.\textsuperscript{186}

I saw Messrs. Harvey Brothers’ agent at Virudupatty and to state that arrangements can be made through that firm for obtaining a large quantity of seed cotton at comparatively small cost. The arrangement which may be proposed is that the firm should purchase the kappas collected from selected fields of selected growers, and give the department the option of having all or any portion thereof hand ginned for seed. What the department will have to do will be to arrange with ryots who are known to produce good cotton for bringing in the kappas from selected fields separately and this, I believe, will be feasible with the assistance of the firm. We shall have to offer the growers a small premium on the Kappas alluded to, but the advantage of the plan will be that government will not have to pay for the cotton and then sell it again later on. The funds available will therefore go much further.

This plan will apply only to the northern part of Tirunelveli, where the crop is already beginning to come in most exceptionally early and it seems the only one feasible with the very small staff available. It is desirable that very early

\footnote{186 G.O. No. 84, Agriculture Dept, Dated, 20\textsuperscript{th} January, 1905; Proceeding No. 483, Board of Revenue, Dated, 28\textsuperscript{th} Dec, 1904.}
arrangement should be made with the growers, and that their fields should be inspected, and, though I am arranging for some of the latter work being done, before anything can be done in the former direction, it is necessary that I should know what funds will be available and how they are to be allotted. As at present informed, it is only in a very few places that any good crops of Northerns and Westerns cotton can be found and in respect to the former, arrangements for purchasing and storing the kappas should be made at a very early date; but it is not likely that an arrangement so satisfactory as that suggested for Sattur and Virudupatty, as described in paragraph 1, will be feasible so far as these cottons are concerned.

Owing to the extraordinary character of the season, new seasons’ cotton is already coming in, and the field selection necessary should be made at once, and arrangements settled with the growers for the kappas required. I have already explained why the Inspector at Kovilpatti can do little or nothing in this direction, and especially so, as the villages whence we are likely to obtain pure “Uppam” and “Karunganni” seeds are situated a good way off Kovilpatti.\textsuperscript{187}

At the same time the scientific agriculture departments were allotted sum of Rs. 22,000 for cotton experiment in Kovilpatti areas.\textsuperscript{188} Then, the government approved to ‘Kovilpatti Cotton Farm’ for constructions of seeds stores.\textsuperscript{189} The plans and estimates for Rs. 4,500 were submitted by the Collector of Tirunelveli for the

\textsuperscript{187} G.O. No. 136, Revenue Dept, Dated, 28\textsuperscript{th} Jan, 1905; Letter No. 84, Agriculture Dept, Dated, 20\textsuperscript{th} Jan, 1905; G.O. No. 161, Agriculture Dept, Dated, 2\textsuperscript{nd} Feb, 1905; Letter No. 136, Agriculture Dept, Dated, 28\textsuperscript{th} Jan, 1905.

\textsuperscript{188} Proceeding No. 197, Board of Revenue, Dated, 16\textsuperscript{th} Jan, 1905; G.O. No. 195, Revenue Dept, Dated, 1\textsuperscript{st} Mar, 1905; G.O. No. 1039, Board of Revenue, Dated, 4\textsuperscript{th} Feb, 1905; G.O. No. 35, Revenue Dept, Dated, 4\textsuperscript{th} Feb, 1905; G.O. No. 68, financial Dept, Dated, 27\textsuperscript{th} Jan, 1905.

\textsuperscript{189} G.O. No. 265-W, Public Work Dept, Dated, 4\textsuperscript{th} Feb, 1905; G.O. No. 195, Revenue Dept, Dated 1\textsuperscript{st} March, 1905.
construction of a seed stores for “agricultural cultivations” at Kovilpatti Farm Station. Then, it was requesting the government to instruct the Public Works Department to erect it at a very early date. In 1906 – 1907, the Department of Agriculture was reorganised during the year and the staff was largely augmented. The most interesting work undertaken under the auspices of the department was that of improving the method of cotton cultivation and the quality of the plant.

In 1907 – 1908, the south west monsoon was deficient and not well distributed, while the north east monsoon was better distributed and was up to above normal in the majority of districts including Tirunelveli, so this year under cotton cultivation exceeded the normal extent by 1.9 percent. At the same time, no new agricultural stations were opened during the year, but useful works were done in the ten stations already in existence. Experimental and demonstration works were conducted in respect of cotton. Experiment in this crop took the form of comparing indigenous and foreign varieties and in reducing the cost of labour and the discovery of the kind of manure best suited to the crop.

Experiment work in cotton growing was mainly directed to obtain pure seed for distribution to ryots with a view to eliminate inferior varieties of cotton and to the improvement of methods of cultivation. In Tirunelveli district seed cotton of

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191 G.O. No. 6760 Mis, Revenue Dept, Dated, 13th Nov, 1906.

192 Report on the Administration of the Madras Presidency, during the years 1906 - 1907, Madras, 1907, p. X.

pure Karunganni was distributed in sufficient quantity to sow 3,000 acres. This seed being a superior variety, continued distribution cannot fail to have a good effect on the cotton crop as a whole. The Bellary method of sowing cotton with the drill has been introduced Tirunelveli with satisfactory results. The large increase in the acreage under cotton (+ 267,523 acres) was due to a large demand for export purposes.

In 1909 the south west monsoon was good and fairly distributed, but the north – east monsoon was very deficient in most of the districts. The dry weather and hot weather rains were below the average. The area under cultivation fell short of the normal extent by 0.56 percent. At that time a Cotton Exhibition was conducted at Kovilpatti in March 1909 by the Zamindar of Ettaiyapuram. This exhibition was given suggestions about cotton for further improvement in and around Thoothukudi.

**Conclusion**

After 1909, at Kovilpatti Agricultural Station, as before, attention had been concentrated on practical work on the main cotton crops. The efficiency of the farm managers and assistant managers was improving. Cotton experiments were being continued. But as the best experts cannot give a final opinion till at least a bale

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194 Report on the Administration of the Madras Presidency, during the years 1907 – 1908, p. 46 – 47.
195 Report of the Weather and Crops, Fasli 1317 – 1st July 1907 to 30th June 1908 and Season and crop report for the agricultural year, 1907 - 1908; Report on the Administration of the Madras Presidency, during the years 1907 – 1908P. 52.
197 Proceeding No. 3163, Board of Revenue, Dated, 17th Oct, 1908; General Record No. 4605, Revenue Dept, Dated, 17th Oct, 1908; G.O. No. 4236- Mis, Board of Revenue, Dated, 29th Sept, 1908; Proceeding No. 802, Board of Revenue, Dated, 13th Mar, 1909; General Record No. 856, Revenue Dept, Dated, 13th Mar, 1909; G.O. No. 723-Mis, Revenue Dept, Dated, 3rd Mar, 1909.
of cotton was available, several years were required before the real value of a selected plant could be determined.\textsuperscript{198}

All factors were determined for the cotton improvement in and around Thoothukudi from 1888 to 1909, and it has been a unique one of the world cotton markets, as “Tinnevelly Cotton”. This chapter identifies how cotton was improved in Thoothukudi areas, and also provides its gradual progress from 1888 to 1909. From the above mentioned reasons, it is determined that Thoothukudi had good cotton related trade and industrial centres.

\textsuperscript{198} Report on the Administration of the Madras Presidency, during the years 1909 – 1910, Madras, 1910, p.43; Fasli 1319 – Dated, 1\textsuperscript{st} July, 1909 to 30\textsuperscript{th} June, 1910 and \textit{Season and crop} report for the agricultural year, 1909 – 1910; Agricultural Statistics of British India and \textit{Area and Yield of certain principal Crops in India}; Report on the Administration of the Madras Presidency, during the years 1909 – 1910 p.45.