CHAPTER II

Experimental Farming

"For the future as hereafter my plans are all directed to the attainment of one grand object, the extension and improvement of our agricultural and commercial productions. With this view, I am now engaged in superintending the construction of an improved sugar boiling apparatus and a light plough suited to this country but on the best English mode. To the same and I am preparing a series of papers for circulation embodying the most improved methods of calculating the more valuable articles of commerce, cotton, coffee, sugar, tobacco etc. with such suggestions for the further improvement as a careful study of vegetable physiology may supply."

Reported by Robert Wight to the Government of Fort St. George.

The East India Company (EIC) government had evinced great interest in the investigation of Indian resources and, several times, had expressed this interest in their official correspondences made with the Court of Directors. Subsequently several scientific missions had been sent to India to make investigation of Indian resources. It seems that these investigations had paid great attention on botany and agricultural resources. But these interests of the colonial government to investigate Indian resources were not without a definite colonial purpose. Zaheer Baber argues that research of Indian botany and agriculture was designed to serve better the interests of the metropolitan botanists and contribute to the reproduction of the colonial rule. The colonial government imposed some sort of moral obligation on the colonial botanists employed in the Indian colony to supply information mainly to facilitate 'imperialistic' research at metropolitan institutions. Under East India Company these scientists enjoyed great deal of autonomy and they served the frontiers of knowledge as well. It was a dual mandate where botanists were expected to

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1 Proceedings of the Madras Board of Revenue Department, Fort. St. George, 20 March 1837, proc. No. 1-3, NAI.
meet the colonial requirements while working also at the frontiers of knowledge. As in the case of the colonial geologists and surveyors, the botanical scientists had to struggle in their act of balancing between their interests in botany and their attempts to satisfy their patrons. Their scientific knowledge thus was articulated mainly within the context of the imperatives of colonialism.

Significance of Botany:

Developments in the early phase of agricultural science comprised largely the scientific progress in agricultural botany. A number of colonial botanists before 1835 had devoted themselves to botanical investigations in India. Researches in Indian botany commenced with the explorations of Hendric Van Rheede, the then Governor of Dutch possession in Malabar in the seventeenth century. His explorations on the coast of Malabar continued for about seven years and published his collections in 12 volumes entitled ‘Hortus Malabaricus’. It was considered a significant contribution to botanical knowledge and was used as a reference work by the successive botanists who worked on India. Several new species, which were described and classified in the Malabaricus were incorporated even in the works of the leading European taxonomists and scientists such as Linneaus, Lamark, Burman and Anderson.

At the beginning of the nineteenth century, Francis Buchanan, a medical officer of the Imperial government, was appointed to study the agricultural condition in Madras and Mysore. He was instructed to provide information on the potentials of different land resource and crops improvement. Perhaps his popularity as an expert botanist and, more generally as a natural historian in the Company, attracted Lord Wellesly, who appointed him for the work. Throughout his surveys botany and agriculture remained his primary interest

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and had received a large part of his time and energy. His botanical collections increased during the surveys. When he returned to England in 1805, where he made extensive discussion with Smith, an economic botanist, who richly benefited from Buchanan’s findings brought out a volume titled ‘Exotic Botany.’ His botanical works in India were acknowledged in England and based on this he was offered the fellowship in the Royal Society in May 1806. Over twenty years, he studied Indian natural history and produced a number of papers and books on Indian botany and natural history. Van Rheede’s works influenced him greatly. He had spent five years in interpreting the Flora Malabarica and produced a number of papers in the scientific journals.

Several botanists had investigated the flora of Madras Province earlier, most important among them was Robert Wight, an army surgeon by profession exhibited a remarkable sagacity and boundless energy. He worked on the Madras botany and agriculture since 1819. He arrived in Madras as a Company surgeon and in the same year he was assigned by the company to study the flora of northern part of the Madras presidency. His explorations in the subsequent years yielded a huge amount of plants and some of these specimens had been even directed to Robert Graham for the identification. But having lost this set of specimens in the sea travel, he later sent another set of specimens to Professor Robert Hooker in Glasgow. Wight’s first exploration had consisted of an area of 87 miles inland from Samalkottah to Rajahmundry.

In the year 1826, Wight was relieved of his regimental duties and was appointed to the official post of Madras botanist, which had been previously held by Koening, Roxburgh, Heyne, Russel and Shutter. While he was holding the post of official botanist, he travelled to the very south of the Palni Hills and found quite a new flora there. However, when he was planning out

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5 Burkill, I.H., Chapters on the History of Botany in India, Delhi, Botanical Survey of India Publication, 1965, p. 46.
6 The post of official botanist was first created by the English East India Company and John Gerhard Koening (1728-1785) was the first professional botanist employed by the Company.
another much longer trip, the Company abruptly abolished his post. But this did not hamper his devotion to botany seriously. He proceeded to London with two tons of dried plants to get them illustrated on the same pattern as followed in London. In 1833 he returned to India and was posted at Bellary and then transferred to Palamcottah where he went on a mission of inspection to the experimental spice garden at Courtallum where he acquired the second great experience of the southern mountain flora after having experienced first in the Palni Hills in the year 1826.7

Wight's investigations had influenced the botany of Madras greatly. Being dissatisfied with the Linnean’s artificial system in which he found incomplete plant description, he introduced the natural system into the Indian botanical research.8 His natural system placed the first substitution to the Linnean artificial system thereby gave diverting the course of the Indian botanical taxonomy. He published several important works on the flora of Southern India. The preface in his work ‘Prodrumus Flora Peninsula of India Orientalis’ illustrates a brief historical sketch of the rise, progress and status of botanical science. From the preface of this volume it appears that every work on India published before this volume was arranged according to the Linnaean sexual or artificial system.9 Further, it reveals that until the publication of this work nearly all those who were devoted to the investigation of Indian plants found the Linnaean system exceedingly difficult, if not irksome, in the studies of plant’s natural affinities.

**Agricultural Horticultural Society of Madras:**

The increase in botanical knowledge in the earlier period had helped institutional establishment of botanical gardens and agricultural-horticultural societies. Some historians of science do not recognise the close relation

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7 Home, Land Revenue Records, 19 December 1836, proc. no. 4-6, NAI.
between botany and agriculture. They, however, do not deny the progress of botany but reject the progress of agriculture botany. This seems to be incorrect. There was a realisation of the value of botanical knowledge to the improvement of plantation and agriculture which Satpal Sangwan rightly called as the initiation of 'Plant Colonialism'. Knowledge of botany had enormous value to the improvement of agriculture and plantations. In fact it formed the scientific basis for agriculture and plantation experiment. In the year 1835 the Agricultural and Horticultural Society of Madras (AHSM) was established in Madras with twofold objectives: firstly, advancing agriculture by the introduction of new or better varieties of those already in cultivation and by the distribution of the prizes for improved agricultural products, secondly, to develop horticulture through pecuniary grants to native gardens. The society organised an experimental garden and the garden was later extended by purchasing the lands adjacent to the garden belonging to one Anderson who maintained earlier an experimental garden and one Coomarswamy Moodaly. The Society's garden occupied importance for the work performed by it on the same line of work performed by the botanical garden at Calcutta and Bombay Presidency. But the society's did not aim to cope with the gigantic works of that magnificent establishment but was intended within its humble sphere to imitate them. The Society has directed attention particularly to the improvement of agricultural products of the country. The Society gave awards for the best specimens of sugar, coffee, cotton, tobacco and also the improvements in the machinery for drawing water, implements and manure.

It was engaged mainly in distribution of large quantities of the foreign varieties of plant species.

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12 Botanical researches were divided into two principal branches; systematic botany and economic botany. The first deals with the study of anatomy, physiology, classification, description and geographical distribution of plants. It concerns the structure or organisation of plants. The economic botany concerns the study agricultural and medicinal use of plants.
13 Govt of India, Home, Land Revenue Records, 26 June 1837, proc. no. 23-24, NAI.
14 Govt. of India, Home, Land Revenue Records, 29 May 1837, proc. no. 2-6, NAI.
of cotton to its members and also asked district collectors to encourage local farmers to try with new varieties. The Society had requested district collectors to recommend applicants in their respective districts. The Society mainly showed interest in big farmers, Zamindars regarding them as leaders of the agricultural modernisation. The seeds were also distributed through inviting applications from all quarters by public advertisement. Society had also sent cottonseed to Ceylon and Travancore.

Group of private individuals mostly company servants were initiated work first on improvement of scientific agriculture through agri-horticultural society. At one point of time, the government thought seriously on the continuation of the grants for the garden. However, the Society revived again and advocated encouragement given to it by government. In 1869 Dr. Bidies, the Secretary of the Society, had sketched out of the origin, history and status of the Society which was then printed and circulated. It will not be inappropriate to quote the last paragraph of sketch.

"It is the only body at the present, which the Government can consult and seek assistance from in introducing new plants or improving those indigenous to the country, such advice and aid are often asked, and always cordially given. It is the only botanical garden on the plains of Southern India, and is therefore, the sole source from which other tropical countries can get useful plants belong to the peninsula, and botanists. Procure specimens for information regarding the indigenous flora. From its infancy, it has constantly been engaged in experiments having for their purpose the improvement of agriculture and horticulture. It has introduced and distributed great numbers of new and useful plants likely to extend and improve the commercial resources of the country. It has added and improved the food supplies of the people in various ways and for some years it has been trying to get for the ryot better forage plants than our pastures produce to enable him to improve the breed of cattle and feed them in dry seasons when ordinary supplies fail. Such have been, and such are still, the object of the society."15

The Society was supported from the donations made by the members, but such funds were insufficient and it also received government aid. In 1839,

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15 Govt. of India, Revenue and Agriculture Dept., Agriculture-Horticulture Branch, December 1873, proc. no. 19, NAI.
the Secretary of the Society had approached the government with the request for grants to improve experimental garden.\textsuperscript{16} The aid of the government was requested on the ground that such assistance was already extended to the sister societies existing in Bengal and Bombay Presidencies and the Society received annual grant of 10,000 rupees.\textsuperscript{17}

**Ootacamund Botanical Garden:**

By the year 1845, a botanical garden was established at Ootacamund, initially it was opened with the subscriptions made by the Europeans for the purpose of cultivation and supplying up English vegetables at reasonable cost. The garden was placed under Capt. Molyneux’s management and subscribers with a payment of Rs. 3 a month, received vegetables free of charge. However, this arrangement continued for brief period as it failed to satisfy as had been expected and in less than two years led to the reorganisation into a new horticultural society and a public garden. The moving spirit for the new scheme came from the Company officers. The then Governor of Madras, Marquis Tweedale himself had shown great personal interest in this scheme and, in addition to becoming a regular subscriber, he contributed a donation of Rs. 1,000 to the Society. The prospectus issued while forming the Society mentioned the purposes that were “the inferiority of all the common vegetables of England, and the almost total absence of fine flowers, for the growth of which the climate is so admirably adapted, and for the want of depot for their collection, horticulturists at home have as yet but few of the beautiful flowers indigenous to Nilgiris.”\textsuperscript{18} To correct them, it was proposed to establish a public garden that offers an agreeable resort for the residents of Ootacamund. It was designed to ensure a constant supply of flowers and vegetables of the finest descriptions and at the same time be the repository for the plants of the

\textsuperscript{16} Govt of India, Home, Land Revenue Records, 26 June 1837, proc. no. 23-24. NAI.
\textsuperscript{17} Govt. of India, Home, Land Revenue Records, 29 May 1837, proc no. 6, NAI.
\textsuperscript{18} Govt. of India, Home, Land Revenue Records, 26 June 1837, proc. nd. 23-24. NAI.
neighbouring country, and a store from which the stations of Presidency could procure seeds of undoubted quality. It was also thought that the establishment of a garden would afford much satisfaction to men of science and amateurs in Great Britain. ‘With the extensive knowledge which many a gentleman residing on the hills possesses vegetables, floral and arboreal productions of India will lead to communications attended with mutual advantage, thus rendering a public garden under judicious management of far more extensive usefulness than can at present be foreseen’ The garden further contemplated to augment the produce of the public gardens by rendering to public and private horticulturists and botanists in Great Britain the opportunity of procuring the beautiful flowers, creepers and plants which grow on the hills, and the similarity of the climate with that of many parts of the north materiel beneficial to both the countries. The Committee of the garden approached the government for gardener and funds. The Directors of the East India Company accepted the request of the Society and had sent Mr. M.G. McIver, a trained botanist of the Royal Botanical Garden at Kew, in the year 1848. He was an enthusiastic institution builder. He turned garden into a well-equipped scientific botanical research centre. The Garden was provided the implements and monthly grant of 15 rupees. A managing body was constituted with the direction of the government known as the Committee of the Ootacamund Horticultural Gardens with five ex-officio and five non-officio members. The non-official members included both visitors and residents. The Committee was responsible to draw rules for the management of the garden.

But friction erupted between the Committee and the Superintendent of the Garden with reference to the professional work of the Superintendent. In this dispute Dr. Wight, the noted botanist who was a member of the Committee

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20 Ibid., p. 118.
21 Ibid. p. 120.
22 Ibid., p. 119.
supported McIver when they addressed government. In 1853, the Government of Madras dissolved the Committee and had appointed the Collector and Senior Medical Officer as the ex-officio visitors. In 1854, the ex-officio visitors constituted a managing committee but this also did not get well on with McIver. Finally in November 1855, Lord Dalhousie recommended the Garden to be taken over by the government and accordingly the garden was controlled by the forest department until April 1883 and then controlled by the Superintendent of Cinchona Plantations.

McIver had described in a report about the progress made in the garden during the time of his control. Most of the basic structure in the garden was constructed during McIver’s period. The garden was equipped with necessary equipment and the land arrangements were improved. McIver’s another important contribution to the garden was introduction of several exotic plants. The improvements made in the garden had been described by him that “in 1848 the year of assuming charge of the garden, the upper portion was a forest, with heavy trees on its steep and rugged banks, the lower part was a swamp, the whole being traversed by deep ravines . . . the steep and rugged banks have also been transformed into easy walks, terraces, lawns. Flower beds are now planted with a choice and rare selection of plants illustrating productions of large portion of the world.” The Garden was enlarged by adding a nursery in 1867 and Seed houses and a herbarium together costing Rs. 3,110 in 1872. Foreign trees introduced into Ootacamund consisted melanoxydon, wattle and blue gum. The first two types of trees were introduced at much earlier date but the first gum tree was planted in 1843 in Gayton Park at Ootacamund, it cannot be traced how the seed first found its way to India. However its introduction into Nilgiris was for a long time considered a failure. In 1854, the joint-Magistrate of Ootacamund, Col. Babington, wrote to the Collector regarding

these trees as follows: "You have amply tried the extension of Australian trees here, but have found it impossible to cloth the hills with them to any extent from their early delicacy their being stolen, and their shape which is not adapted to affecting climate by foliage as are commoner forest trees." 25

Another attempt came in 1856 when Capt. Morgan imported blue gum seed from Australia and set to work in a definite plan at the Tudor Hall Estate, which was then his wife's property. The gum tree popularly known as Eucalyptus became gradually a main source of fuel at Ootacamund.

Efforts at growing European fruits carried from quite the early days of the settlement, but apparently remained very small. McIver reported on garden for 1858 that "the late Mr. Cosamjor being noted for their interest in the welfare and prosperity of these mountains, spent large sums in their endeavours to introduce European fruits and the results of their united efforts extending over a period of 15 years, has been to secure to the country two varieties of apple only. At Kotagiri, of European fruits, strawberries, peaches, and apples were tried. The plum, which did not ripe at Ootacumand, did well at Coonoor and Kotagiri". 26

Spices

In the East India Company's trade, spices had formed one of the main export commodities of merchandise. 27 In order to ensure the continuous supply of spices, way back in 1778 spice gardens were established under the direct management of the Company government. Such gardens were established in Tinnevelly district, Northern Circars, Salem district and Nilgiris. The existing empirical evidences supports the existence of a small experimental garden at Samallakota in Godavary district under the direction of Roxburgh who worked

as a Company botanist till 1792. After his posting to Samallakota in the Northern Circars in 1781, Roxburgh experimented at this station with pepper, suppan, tobacco, and cardamoms. He showed the possibility of cultivating pepper plants at this place. The records also show existence of the two more gardens at a distance of six miles from Samallakota at the places called Mangatope and Irwa. It was to these places that pepper was introduced first and then sent to the Samallakota garden. Roxburgh's successful management of the Samallakota garden made him most suitable botanist to succeed Robert Kyd at Calcutta botanical garden as superintendent in 1792.²⁸ Roxburgh's successor Dr. Heynes who came Samallakota in 1793 also improved the gardens further. Under Heynes the number of plant varieties was increased to nineteen at Mangatope garden alone. In 1793 Heynes remarked 'the intention of these gardens was that they should become nurseries for pepper as well as for cinnamon plants. If these end could be attained in any period of time, certainly reward the pains taken by Dr. Roxburgh and amply restore the expenses that have been incurred especially when the plants with much expense were to be brought from a great distance.'

During this period such gardens for spice cultivation were also established at other places too. In 1798, James Anderson a surgeon with the Madras army obtained a large piece of land at Ft. St. George in Madras and experimented with the crops of sugarcane, coffee, American cotton, and European apples. But the Company maintained under its own control gardens for spice crops in the Courtallum Hills in Tinnevelly district and Perambakkam, Madurantakam and Salavakkam in Chingleput district. Districts reports of Salem also mention the existence of such spice gardens at Hosur and Dharmapuri taluks. By 1843, the number of gardens of both private and government increased to twenty-five in Tinnevelly district alone and five

of them had been started in the same year by the district collector E.B. Thomas.

Spices are indigenous crops yet colonial government had introduced and promoted foreign spices with commercial purpose. It is said that one Christopher Smith, sent by the East India Company to Maluccas, secured nutmegs and clove plants for British colonies which had arrived and were planted in 1798 in the spice gardens in Courtallum Hills and seedlings raised from them were again redistributed to other districts. In 1843 the collector of Tinnavelly district reported that 100 nutmeg seeds had been sown in the nursery, 500 sent to the collector of Selam for trials in the Shevaroys and 1,000 sold for trials in Travancore. A few seeds had also been supplied free of cost for trials in the Nilgiris, and Wynnaad. In 1846, interestingly Madras government obtained printed instructions about nutmeg processing from the Prince of Wales Island in the West Indies which was subsequently dispatched to the district collectors. But expenses on government gardens incurred was much higher than the income derived from their yields. In addition to that East India Company’s direct trade, which was ended at this period, led the Company ultimately to sell out its gardens established at Courtallam hills in Tinnevelly district. By 1853 government gave up opening new gardens and had even sold out or leased out most of the already established gardens to the private individuals through public auction. However, the horticultural and botanical gardens established in the Nilgiris were continued under the direct management of the Company control.

Coffee

The date when coffee was first introduced into South India is not known. According to a prevailing popular legend, coffee was first brought

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from Macha by a Muslim pilgrim named Babauddin in 1600 AD and planted them on the hills near Chigmuglur in Mysore state which were named after him. One more mention appears in a letter written from Malabar by the Rev. Jacob Visscher, chaplain at Cochin during 1717 to 1723 AD. He mentioned that “A shrub is planted in gardens for pleasure and yielded plenty of fruits which attains a proper degree of ripeness”. Mention about coffee estate appeared in Abbe Dubbois’s letter written on 15th September 1805 to Colonel Miller, a resident at Mysore. The letter mentioned “about ten years ago, when I was in Baramahal, Colonel Read, collector of that part of the country under took to make a large plantation at Trippatur. The plantation I saw many times had thriven well during the first year and promised success”.30

Earliest intervention of the East India Company also began when it had established an experimental station to coffee at Anjarakandy near Tellicherry under Murdock Brown to whom it was handed over on 1799.31 This did well for several years, supplying seed and plants to various places. In the year 1801 Francis Buchanan remarks that he saw near Tellicherry coffee trees in a very thriving condition. When in the year 1825 Capt. Bevan of the 27th Regiment of Madras Native Infantry took over charge of the garrison at Manantoddy in North of Wynaad, he gave his attention to the introduction of the cultivation of coffee into the district. But it seems that he did not raise the cultivation to wider extent, but merely put down a few plants given him by Brown of Anjarakandy. These thrrove so well and proved so productive that led him to recommend them for a more general introduction into Wynaad. Similarly W. Sheffield, collector of Malabar, also sent seeds to be distributed among the native inhabitants. However, this experiment ultimately failed basically owing to the want of knowledge and negligence. Capt. Beven himself noted down ten years later leaving the place that “I extend my plantation considerably while I

30 UPASI, Planting Directory of Southern India, Coonoor, UPASI, 1931, P. 1.
31 E.G. Windle, Modern Coffee Planting, Madras, Higgenbothams, 1933, P. 3.
remained in the station on ascertaining from impartial and good judges that it possessed the flavour and aroma of the finest Mocha berries.” What was the extent of his plantation is not known, but he was certainly the pioneer of the industry on Western Ghats.

In 1838, two members of the firm of Parry and Company while passing Manantoddy on their way to the Babaudin’s hills opened the coffee estates on a large scale. It is said that it was on their suggestion the Pew Estate was opened on these hills. By 1840, Glassen, Richmond, Morris and others had opened estates around this place. In 1843 Freed Green started planting in the Munzerabad district and two or three years later Freed Meppen commenced the Yemmay Doddy Estate near Kodur. In 1840 Dr. Margate, the residence surgeon at Mysore, sent coffee plants from there to Lascelles estate in Nilgiris for the further experimentation. Many other British planters also made efforts to open estates on Nilgiris. The Hardathorai Estate and M.D. Cockburn Estate were few flourished on Kotagiri hills and in the year following Bonnahuth, commonly known as Hulical was commenced. By the year 1859 the number of European planters engaged in coffee growing rose to 32 in Wynaad, 10 in Shevaroys, 10 in Nilgiri, 8 in Southern Ghats.

Further north, extensive attempts were made in Coorg to enhance Coffee production. In Coorg, G.M. Martin, then acting superintendent in course of his report in June 1856 reported two Coffee estates. He mentioned two European planters working in the district, whose plantations, he said have yet not come into full bearing. One planter named Flower had started the first coffee plantation in 1854. During the year 1855 H. Mann and Donald Stewart had opened the second coffee estate on the Sampagi Ghat in north of Coorg. Two more estates later came up one in Nelliampathias named as Chandramalla in

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33 Papers Relating to the Coffee Districts of the Madras Presidency, Madras, Fort St. George, 1859, P. I.
1860 and another one at Sheirnelly in 1866, which was turned later to Rubber plantation.

Tea

Tea had been more interesting crop for the planters. In 1788, the authorities of Kew botanical garden recommended plantation of tea to the East India Company. But the movement renewed only in 1834 when Lord Bentinck appointed a committee to report on the possibility of introduction of tea from China into India.\textsuperscript{34} In 1832, Dr. Cristie, Madras based surgeon, while on special duty in the Nilgiris to conduct meteorological and geological investigations, developed interest for experimenting tea plantation in the district in observing the camilla plant growing well in Nilgiris which was closely resembling tea plant.\textsuperscript{35} Unfortunately, he died before tea plants had arrived from China. When they did arrive, a few were given to the commandant of Ootacamund, who planted them in the garden of Crewe Hall and distributed the rest for trial to various parts in the Nilgiris. On the initiative of William Bentinck, more plants were distributed in 1834, which opened up the experimental farm in Ketti under the management of one Perottett, a French botanist.\textsuperscript{36} Development of tea plantations on commercial lines involved successful processing and manufacturing. The improvement was made in this regard when a planter Mann secured a good supply of tea seed from China and started an estate near Coonoor.\textsuperscript{37} It was his success in planting which inspired hopes of developing tea plantations in the Nilgiris on a commercial basis.

By 1855, tea became a commercial product in Nilgiris. Pruning, plucking, cultivation and manure was improved in a remarkable way, which resulted in much large crops of high quality tea. Commercial planting of tea

\textsuperscript{34} Perceival Griffiths, \emph{The History of Indian Tea Industry}, London, 1975.
\textsuperscript{35} UPASI, \emph{Tea Plan for Nilgiris}, Coonoor, UPASI, 1989, p. 2.
\textsuperscript{36} UPASI, \emph{Planting Directory of South India}, Coonoor, UPASI, 1931, p. 3.
\textsuperscript{37} Home, Land Revenue Records, 19 August 1839, proc. no. 21-26, NAI.
began in Thiashola estate in Nilgiris in 1859 by employing the Chinese prisoners of war. About the same time, Dunsandle estate was opened up near Kalhatti. In the Kotagiri area, the first estate was recorded around 1863. Nearly 120 hectares came under cultivation by about 1869; in this year fine tea produced in the district were displayed at the Agricultural Exhibition in Ootacamund. Meanwhile, at the close of the nineteenth century, coffee which was the principal plantation crop in the district, received a severe setback following the devastating leaf rust disease as well as the entry of Brazil into world coffee market and these developments collectively provided the stimulus to tea cultivation.

Cinchona

Cinchona cultivation had attracted attention when the vulnerability of the British army to malaria was particularly severe and large number of soldiers was succumbing to the disease. The object of the government in the cinchona ventures was chiefly the production of an efficient febrifuge, which should be procurable at a low price in every Indian village. It was in this context of demographic changes and heightened concern about the vulnerability of the army that project of transplanting of cinchona trees from Peruvian lands to India took place. Although the idea of transplanting cinchona to India had been proposed by Joseph Banks in the early nineteenth century, the attempt had not been successful.

In 1858 John Forbes Royal of the East India Medical Board and Dr. Thomas Anderson, superintendent of the Calcutta Botanic Garden, persuaded secretary of the State of India Lord Stratchy to send teams of collectors to the Andes, South America the natural habitat of cinchona plant. Robert Markham, a clerk at the India office was accepted to lead the expedition. The first

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introduction of cinchona into India was made under Markham and his colleagues who volunteered to visit Bolivia and Southern Peru to collect seeds of Calisaya. Markham after encountering many difficulties successfully introduced Calisaya and a few Ovata and Macranta seeds. Unfortunately all of these seeds failed to germinate. The collection of one Pritchett's gray bark plants had also perished on transport, but the seeds he had collected germinated freely. But it was Spruce and Cross who were successfully obtained and transplanted into India both seeds and cuttings of C.succirubra variety. In 1861, Cross who has travelled to South America obtained seeds of the crown bark trees from the forests near Loxa. He also obtained large amount of seeds of Chahuarguera and Chrispa variety which were brought safely in India. The Officinalis variety seeds were planted in the Nilgiris, for the original Loxa bark introduced by J. E. Howard in 1862.

During the period 1860-79 a number of experiments were conducted in hybridisation. McIver, the superintendent of the Ootacamund botanical garden, who was also the superintendent for cinchona cultivation, engaged in a number of experiments and developed a method of increasing the amount of bark to be harvested for the manufacture of quinine. McIver had experimented in hybridisation to produce greater value bark and attained a success. By 1866, Cinchona was extended 20 hectares. The following extracts from McIver's notes show the origin of the hybrid c. pubescnes; "so soon as our plants flowered, or early in the spring of 1865, I made a vigorous attempt to attain this object. The result was that in 1866 a number of hybrid seedlings were produced. Among these, distinct varieties were selected and the weakly growing sorts destroyed. The selected varieties were planted here and there in every soil. Under all these conditions our new seedlings maintained that

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remarkable vigour of growth."^{42} By 1866, cinchona cultivation was extended in 20 hectares.

**Cotton**

Cotton improvement became a major concern of the East India Company as there was a growing demand for superior cotton in the European market. The cotton crop improvement in Madras was advanced through introducing exotic cotton varieties. The demand for the improvement of cotton was emanated basically from external pressure. The Court of Directors in London was flooded with innumerable entries and memorials asking them to pursue the development of cotton cultivation in India. In 1838, the Directors of Chamber of Commerce and manufacturers in Glasgow wrote to the Home authorities that "Britain was dependent on America for supply of raw cotton and that if war broke out between England and America, the textile industry at home would seriously suffer".^{43} The Chamber of Commerce and Manufacturers of Manchester also made similar suggestions during the year 1838 to the notice of the Court of Directors. They stated that "during first eleven months of the year 1838, India supplied only 5 per cent of the total imports of raw cotton to Britain which was aggregated to 13.7 lakhs of bales valued at 14 million sterling and employment of 2 million persons. The East India Association of Liverpool and Glasgow also urged for improving of Indian raw cotton exports to England. Having received the above representations, the Court of Directors had developed the opinion that "no less than an all out effort to import of American cotton seeds and culture into India ever solve the problem".^{44} The East India Company’s improvement in cotton consists of introducing a better variety, a better cultivation and better method

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44 Govt. of India, *Home, Land Revenue Records*, 1842, proc. no. 16, NAI.
of cleaning. In Madras Presidency cotton was grown predominantly in the districts of Krishna, Nellore, Cuddapah, Kurnool, Bellary Madura, Coimbatore and Tinnavelly.

The Agricultural Horticultural Society of Madras had assumed the role of quasi-governmental institution in introducing and acclimatizing exotic crops and plant species. In 1836, the Board of Revenue was informed about the supply of cottonseeds of New Orleans, Upland Georgian and Sea Island varieties received by them and the Society wanted to be distributed in different places of the presidency. The Society sent letters requesting the Board of Revenue to instruct the collectors of Salem, Coimbatore, and Tinnevelly and other district collectors to make trials with cottonseed. Seeds were distributed on the condition that each grower should return one half to the Society in order to enable supply to other growers. During the years 1837 and 1838, experiments were made with several cotton varieties, mainly to secure the varieties, which would by-pass the yield and quality of existing indigenous Nadum and Uppam cotton. In 1837, Agricultural Horticultural Society reported that on the suggestion of Wight, 100 seeds of each kind had been sown in the garden for testing the seeds. After several trials it was found that only Egyptian cotton seed had vegetated. In March 1838, 57 bags of Bombay cottonseed were distributed among collectors for the purpose of trial. The results of the trials in Tinnavelly and Salem were reported by their collectors as unsuccessful.

Having failed in these attempts to augment cotton production the Court of Directors moved to find out a permanent solution to this problem. By having resolved to adopt the American seeds and practices the Court of Directors dispatched a note entitled "on the cultivation of cotton in India by Dr. J.F. Royle was enclosed." The note contained detailed instructions as to how the American planters proposed to be sent to India could carry out the job to be

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45 Madras Board of Revenue Consultation Volume, General, Vol. No. 15793, pp. 16744 - 16755, TNA.
entrusted to them. On receipt of the above despatch the Governor General issued suitable instructions to the Governors in the provinces for utilizing the services of the American planters to the best advantages.

Wheeler describes arrival of ten American planters to instruct native ryots in cultivation of cotton in the following words. Captain Bayley of the Madras Army, who had been deputed to the cotton states for the purpose, managed to keep his secret for some time, but after he had engaged with great difficulty a few planters and purchased sixty saw gins, a model gin house, and other machinery. In the year 1840 three American Planters arrived to the Madras Presidency namely Morris, Howley and Simpson. But they reached Madras quite late after the sowing season was finished, hence for the first year they were placed under Captain Hughes, a planter in Tinnavelly district for familiarizing with the native mode of cultivation. A general proclamation was issued addressing ryots and calling them to receive instructions from the American planters. Accordingly a few ryots responded to this request and asked for the attention of planters where upon the planters proceeded to the locality and pointed out the defects in the native mode of gathering the seed cotton and explained the American method. The superiority of the American method was acknowledged by the ryots but regarded as more laborious and expensive unless government would purchase the cotton so produced at a fixed valuation during the season of 1840-41. The delay in arrival of saw gins prevented the planters from doing anything further in the way of preparing cotton wool.

In the season of 1841-42, on the advice of the Court of Directors, planters were removed to Coimbatore district. In the meanwhile, American ploughs and American cottonseed arrived in Madras, which were eventually

47 Govt. of India, Home, Land Revenue Records, 14 December 1840, proc. no. 3 - 4, NAI.
48 Govt. of India, Home, Land Revenue Records, 27 September 1841, proc. no. 4, NAI.
sent to field where experiments were conducted. In this regard government also
allotted sufficient land to agricultural experts in various stations to continue
experiments with seed and implements. In the neighbourhood of the
Coimbatore town, Howley and Simpson were given about 200 acres, whereas
about 100 acres were provided to Morris at Erode fifty miles away to the north
east of Coimbatore. The farm at Coimbatore was divided into three blocks, in
an area of 98 acres situated in the North of Coimbatore town was sown with
New Orleans and Uppam cotton. In an area of 9.5 acres situated to the east of
Coimbatore town that comprised red wasteland was sown with New Orleans
and Uppam seeds. The third block of 15.5 acres in the east of Coimbatore was
also under New Orleans and Uppam cotton. Whereas in the land allotted to
Morris at Erode, an area of about 13 acres was devoted to demonstrate the
American method of growing paddy and the remaining area was sown with
seeds of Bourban, Sea Island, New Orleans and Nodum Cottons. In spite of the
very optimistic beginning, the experiments had been turned down to be a
failure.

One of the questions is to be addressed here that in spite of continuous
failure how was it possible for the government to push forward their policy and
innovation towards logical end. Though main intention was to find out as many
alternatives as possible through the experimental research. Failure of cotton
experiments brought about a significant change in the management. Hugue was
replaced with Dr. Wight for superintending the experiment. Wight suggested
the American system for growing indigenous cotton and regarded introducing
of cotton varieties of America as less important. Accordingly he planned his
ideas and entered into an agreement with the ryots for growing cotton under
American system where he agreed to pay assessment of the land to government
sown under the agreement and also agreed to bear the cultivation charges. In
return the ryots were to hand over to him free of cost one half of the produce of
each holding, and the remaining half of the produce would be purchased at the
market rate. These ryots were guided in American system of growing by three American planters located there for this purpose at Udamalpet, Pollachi, and Coimbatore. The Madras government subsequently approved this proposal, but apart from the American system of cultivation, they also wanted Wight to introduce American cotton varieties, which was one of the main objectives of the Court of Directors in engaging American planters.

Central to the issue was not one of an introduction of agricultural know how or experimenting with new varieties. The Court of Directors were mainly interested in enhancing the production of long staple cotton to meet impending necessities whereas Wight, a seasoned agricultural expert concentrated mainly on indigenising American varieties in order to find a long term solution. His main focus was to find cultivation in order to integrate the Indian agriculture with the world system. Wight took a new area of about 200 acres at Coimbatore for experiment under his personal supervision. Another block of 200 acres was taken in the village of Kurchi near Coimbatore town and kept under the charge of Sherman who was another American planter appointed in June 1842 in place of Howley and about 300 acres was allotted to Simpson near Coimbatore. Morris another expert was stationed with 300 acres at Udumalpet farm.

First year trials ended in failure, nevertheless, Wight continued his research experiments with great sense of optimism as he was able to drastically cut down the actual expenditure. He pointed out that “I am further encouraged in advising the continuance of the experiment by the fact that during the first season the average expenditure per acre amounted to Rs.8.50 per acre. This year Rs.6/- is about the average for all charges which he considered indispensable towards maintaining an efficient farming establishment”. He also remarked that the superiority obviously with native cotton, the produce of which must on moderate estimate have been more than double that obtained from any of the native field by which it was surrounded on every side and this
simply from a little extra labour bestowed in working and cleaning the ground
without attempting to manure or otherwise improve the soil. The difference in
other filed is not so obvious but still was greatly in favour of the American
system. Observations recorded after two trials from 1842-43 to 1844-45, were
that the country plough was as good as the American plough discarding ridge
to coarse soil moisture, need of crops rotation and superiority of New Orleans
over Uppam variety of cotton. Thus he had a reason to continue these trials of
experiment with indefatigable spirit.

In meantime another American planter, Finnie who had been practicing
farming in Tinnavelli district experimented with cotton. As a keen observer
Finnie assessed at every stage what the reactions of the local farmers were to
his experiments and understood how each year’s crop thrived as a practical
proposition. Based on his experience he came to a conclusion that American
cotton could never be made to grow in this part of India. On the other hand
Wight regarded the meteorological factors of Mexico, the original home of
New Orleans cotton, as the integral to the introduction to American variety. He
saw a great deal of climatic compatibility between Mexico and India.
Therefore he believed a patient endeavours should be continued until a
desirable result is arrived. He gave scientific reasons for the details of the
experiments like line sowing; inter-cultivation and use of sandy loom lands for
growing American cotton were being adopted. But yields were very poor and
ryots could not be persuaded to grow American cotton despite ten years trials.
The experiments, therefore, discontinued. However, cultivation of American
seed was not withdrawn completely, experiments with Cambodia variety
became successful in the beginning of twentieth century.

Sugarcane

Sugarcane is a tropical plant that belongs to genes Saccharin of the
Graminieae family. Some historians traced the existence of sugarcane in India
to the ancient period. It was grown for the dual purpose of chewing and preparing jaggery or gur. Some scholars pointed out cultivation of six varieties of indigenous canes in the Madras Presidency, but red or purple cane was the commonest and most widely spread but, not extensively cultivated. Next was a small hard white reed cane, which dominated nearly one-third of area under cane cultivation. In a work F.N. Gill, who possessed an extensive knowledge of the canes of the Madras Presidency, alluded to two foreign varieties in Madras Presidency. Initial efforts on sugarcane cultivation were documented by Robert Wight in his letter to government of Fort St. George.

In the year 1836, while working at Salem, Wight had made a detailed proposal for initiating experiments in growing sugarcane under unirrigated conditions. He pointed out that this was the practice in Mauritius and West Indies’ and that “the investigations of Peddingston have shown that the finest sugar soils of the Mauritius contain a considerable percentage of calcareous matter and red oxide of iron, the presence of these ingredients is essential to a good sugar soil, because on such soil the cane attains its greatest perfection both as to the size and yield.” He considered that “the red soils of Coromandal agree in the possession of these ingredients.”

Sugar was an important article of merchandise therefore the East India Company wanted to introduce a better cane variety into India. Foreign varieties had been brought into Madras and experimented in different places but only a few of them succeeded. The object of introducing these foreign varieties was mainly to raise the produce required by the colonial merchants as the indigenous varieties of sugarcane regarded by them as incapable of meeting their requirement. Among foreign sugarcanes introduced into Madras Presidency, the main concern was laid on the introduction of Mauritius sugarcane. The Garden of the Agri Horticultural Society was importing and

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49 Govt. of India, Home, Land Revenue Records, 4 October 1837, proc. no. 4, NAI.
also distributing acclimatized canes in all parts of the presidency. In the year 1836 the society requested the Mauritius government for the supply of seed cane but there was an inordinate delay in shipping them to Madras. The canes were received only in July 1838 but the quantity supplied was limited.

The imported cane was largely sown in the garden of the Agricultural Horticultural Society and at Wight’s private garden. In the subsequent communication made by the Society showed that the original supply had been considerably multiplied and that a larger proportion of cuttings were made available in subsequent years for distribution. Wight in a communication addressed to the Board of Revenue remarked that with reference to the distribution of the stock now in hand, amounting to about 800 full-grown canes, or between 4,000 and 5,000 sets several applications have already been made by sugarcane growers of the Society members. Nearly half of the cane stock had been distributed among the members of the Society, 100 cane sets were given to a ryot in Vizagapatam district, 100 to a ryot in Madras, 100 to Mr. Fischer of Salem and 100 for cultivation in the Cuddapah district intending to test in various parts of the presidency. Non-members of the Society for which a new plantation was opened have made applications in large number. It is reported in the proceedings of the Society “judging from the favourable result of this trial, it seems probable that the society will have for distribution next season perhaps as many as 20,000 sets of this very valuable variety of sugarcane”.

A little later in the year 1839 the Society was instructed to make arrangements for distributing canes throughout the presidency. On this matter a circular was addressed on 25th June 1839 to all the collectors by Dr. Wight, Secretary of the Society which stated that by “instructions from the general committee of the Agricultural Horticultural Society, I have the honour to subjoin a copy of letter to my address from the Board of Revenue, expressing
wish on the part the government that steps might be taken for the distribution of cuttings of Mauritius sugarcane throughout the provinces as generally as possible, and requesting the society to take such steps as may appear best calculated for carrying this object into effect.\textsuperscript{52}

During the year 1840, demand for seed cane increased on the society which itself found unable to meet without having aid from Government. The Company government moved to render such help by having granted Rs. 1,000 to enable the Society to extend its cane nursery. During 1839, a small quantity of cane were distributed by the Society chiefly among its members but in October of that year, the secretary reported that 2,540 canes had been dispatched to various parts of the presidency. Request for further supply came in from all parts of the presidency. In an application sent by the sub-collector of Karur for the supply of sugarcane, it was stated that sugarcane of a very superior kind was cultivated in many villages along the banks of the river Amaravati on rich alluvial soils. At Dharmapuram and Alangyam, sugarcane was grown to 8 feet high and 6 inches in circumference. It was from this variety of small red cane that sugar was manufactured to a considerable extent in Karur and Darmapuram taluks. But the quality of the sugar was inferior and had yielded dark colour. The Collector added that the inhabitants appear anxious to try this Mauritius cane and from Darmapuram alone the collector had received applications for a thousand cane cuttings, and demand for cartload canes. Similarly in 1840, the collector of North Arcot wrote that he could easily dispose 50,000 to 100,00 cuttings.

Until 1841 the Society was not able to comply so with any great extent. In the year 1841 the society reported that “the returns from the gardens are now becoming considerable, and remunerating for the heavy expense incurred last year in preparing ground for Mauritius sugarcane of which we have now an


\textsuperscript{52} Madras Board of Revenue Consultation Volume, General, Vol. no. 15747, pp. 18549 - 18556.
abundant supply with a sure prospect of its advantageous disposal”. It also added “the Mauritius sugarcanes planted in the year 1840 surpassed our expectations as they attained great size and maturity in May 1841 being only nine months after they were planted. These were disposed of to collectors and others applied for them. Seed cane nurseries were maintained under the district collectors.

By 1842 the garden had achieved success in enabling itself in producing and distributing required supply of seed canes. During this time the Society regarded the extension of Mauritius canes in the garden unnecessary because it was instructed to almost every collector to have a nursery from the supplies already furnished from the Society’s garden. In the enquiry, however, made by the Society as to the extent to which nurseries had been formed in the districts and whether future supplies of sets were required, several replies were received during the early months of 1842. The reports were interesting and the results of the earlier distributions were very varying in success. Reporting in 1847, the collector of the Kurnool stated that the superiority of the Mauritius cane had been completely established and the cultivation was extending. On the whole it appears that this cane is grown successfully and was even cultivated in several parts of the presidency. In 1855-56 about 5,00,000 cwts of sugar were exported the value being nearly 32 lakhs of rupees. Even mills came up for manufacturing of refined sugar, the method of manufacturing crystallized and refined sugar was newly invented. Iron mills were rapidly superseding the old inefficient wooden mills in extracting the juice of canes.

In the southern Konkan the cane found a congenial soil, and the acting collector gave a very gratifying account of its rising estimation among the ryots. He reported, “I am happy to be enabled to state that there is very reasonable prospect of the extension of the Mauritius sugarcane throughout the Concan”. He mentions one instance in which 10,000 canes had produced 2

khundis and 18 mundis of jaggery: and he says the results of the experiments so satisfied the growers and their tenants, that the canes immediately rose in general estimation. It seems indeed excited in all parts of the Ratnagherry Collectorate. The acting collector remarks that the already seed cane had been growing by the surrounding cultivators in the vicinity, and individuals at a distance have expressed their willingness to plant it.54

Board of Revenue, in summing up the conclusions from the reports sent by the collectors, had expressed the opinion that under judicious management the cultivation of Mauritius cane would rapidly increase. Though some consignments of cane cuttings sent by the Society reached the destinations in a state unfit for planting, so far as the experiments actually tried were with the superiority of Mauritius over the native varieties was fully established with juice being more abundant and jaggery or sugar made from it of a better quality.

The Board of Revenue made a further report to Government two years later (1845) reviewing the progress achieved in the spread of the Mauritius cane. It pointed out that although in few instances a satisfactory degree of progress has been made toward extending the cultivation of these valuable spices of sugarcane, in general the efforts of cultivation have not been attended with the favourable results that the Board anticipated. The Board however, expressed its satisfaction that wherever the Mauritius cane was tried its superiority over the country cane was established. The Board even asked the collectors to raise local nurseries because it took long time to get canes from far of places and canes would deteriorate in the transportation over long distances.

By 1844, the private enterprise entered into sugarcane improvement.55 The reports of the subsequent years show the development of three sugar

factories, one by Fletcher at Aska in Vizagapatam, the other two by Young and Mackenzie at Chittavalsa in Vizagapatam district. In 1840, a House of Agency of Madras and its constituent partners were invested their money to set up the Aska sugar refinery. The Aska refinery was built with the most up to date machinery imported in 1850 from the Glasgow firm. In Godavary district, cultivation of Mauritius sugarcane particularly the stout variety, was considered very good. Good results were obtained especially at Jaggampett and Mogaltur. The cultivation of this cane extended rapidly at Ellore. The report dated 1849 stated that the Mauritius cane was planted with great success. Moreover the stream water was considered by the ryot more suitable than well water for the cultivation of Mauritius variety.

On the other hand ryots in the Godavary district widely cultivated the sugarcane under well irrigation. Thirdly, a planter, Arbuthnot had started a garden with Mauritius cane watered by a steam pump. Similarly, plantations under well irrigation were started at Vaniagherry by C. W. Murray and James Rundall at Razole. In the South Arcot district, encouragement for the cultivation of sugarcane was given by the Parry and Company located in Kallakurichi from 1841. While in 1847 the establishment of the Parry and Company’s mill at Nallikuppam, seed cane was distributed to the local ryots freely.

**Saidapet Experimental Farm:**

The other attempt made was in the direction of the experimental farm with a view to prove to the people the advantage of the improved methods and appliances and also to experiment on new methods. Since 1865 the mode of experimentation had taken a new shift when a decision came up for establishing permanent farm for conducting all kinds of trials together. The government had agreed upon the suggestion of the Board of Revenue to open a permanent farm for experimental purpose at Saidapet in 1865, but this scheme
was not originally proposed in that year. In fact it was first proposed in the year 1837 when the Chambers of Commerce, Madras, wanted the formation of a company for improvement of American cotton and other seeds in the vicinity of Pulicat Lake near Madras.\textsuperscript{56} Dr. Wight had suggested a scheme for the farm with the three fold objectives: first that of a returning a profit on the capital on the undertaking, second that of forming a nursery for introduction and acclimatization of more valuable production of foreign countries as well as uncultivated indigenous one, and last, but certainly not least, that of forming of an agricultural school for the education of the East Indians in science and art of agriculture for the purpose of training them to become useful occupants and well qualified cultivators of the soil.

After giving an estimate of expenditure, both recurring and non-recurring in establishing the farm, Dr. Wight discussed the advantages of the farm establishment. "The principal advantages to be anticipated from the farm, I conceive to be the establishment by example of a better system of agriculture, the introduction of better kinds of produce, and on such a scale as to make them available for the benefit of the country at large, the teaching by example the natives and others who may wish to profit by it, a superior system of agriculture, the bringing into practice more efficient agricultural implements than the native ones now in use and lastly it is hoped that these important benefits will be obtained through its medium not only without the supporters incurring loss, but even after a few years receiving a profit on the capital subscribed."\textsuperscript{57} But this scheme did not receive serious attention till 1865. In the year 1863, the then Governor of Madras Sir William Denison paid attention to the defective native practices of continues cropping, deficient manure as fuel, and defective implements and poor cattle. In 1865, two estates, which had been

\textsuperscript{56} Govt of India, Home, Land Revenue Records, 11 January 1838, proc. no. 9 -11, NAI.

\textsuperscript{57} Ibid.
brought under Madras government from Nawab of the Carnatic were made over to a Committee of Gentlemen, which was constituted at state level for the purpose of starting an experimental farm.\textsuperscript{58} It covered a total area of 163.97 acres out of an estate of about 300 acres and located in Saidapet taluk of the Chingelput district, six miles away to south of Madras just beyond the municipal limits of Madras.

The objectives set for the farm by the government while sanctioning were; (1) to ascertain by experiment the proper use of rotation in crops, (2) to introduce the system of root or green crop in lieu of fallow with artificial irrigation, (3) to introduce new crops, (4) to provide new kinds of seed and fresh seed, for the crops already cultivated, (5) to make experiments in the use of water for the cultivation of crops then termed dry and for raising grasses and other crops to be used as fodder, (6) to make experiments in the use of lime and other manure- mineral, (7) to introduce new and improve implements of rural labour, (8) to improve the working cattle, sheep, horses and other varieties of live stock.\textsuperscript{59}

At a time when this estate was taken up, the land was entirely covered with shrubs of prickly pear and wild guavas. There were no roads and the few wells, which were already in the garden, were also in ruinous condition. Though the site was not ideal one, it was selected for the Farm simply because the land belonged to the government at that time and this was the readily available piece of land near Madras and that the land was a nuisance to the neighbouring town of Saidapet, it reduced to be cleared. The cost of the establishment and of experiments made from time to time was met, partly by a grant from receipts and contributions from locals.\textsuperscript{60}

\textsuperscript{58} C. Benson, Records of the Saidapet Experimental Farm: A Guide to the Farm, Madras, Govt. Press, 1885, p.2.
\textsuperscript{59} Ibid.,
\textsuperscript{60} Stuart, Charles, Chingleput District Manual, Madras, Government Press, 1879, p. 54.
The farm was started with a view to demonstrate the value of the new implements to the satisfaction of the ryot and to remove the native doubts as to the advantages derivable from them, partly to test various manure and partly to exhibit an improved system of agriculture. The Farm was organised under a committee constituted for the purpose, 'Committee of Gentlemen' till 1871 when it was abolished and was brought under direct control of the Board of Revenue. The actual control of the farm was placed under the charge of Superintendent. The experimental work was hampered initially for two years due to lack of efficient superintendent. In the first two years the post of superintendent changed hands four times, which was remained highly unsatisfactory. The committee had resolved to get from England on a salary of Rs. 200 a month a highly educated farmer, acquainted with agricultural chemistry and machinery and expertise in operations, and management of cattle, sheep etc. But the man obtained was an ordinary farmer without any scientific education and carried the business in his own way. After eleven months of trial, the Managing Committee removed him and turned for a new arrangement.

Only in 1868 when Robertson arrived to the post of superintendent, experiments of the farm became more systematised. In Robertson, the Committee found the man exactly they wanted. His works became even more important in the farm in 1871 as the managing Committee ceased to exist in that year. The actual management of the farm remained with Robertson even after entrusting the supervision of the farm to the local Board of Revenue.

In the early days, farm gave attention mainly to experimentation of the implements and machines. In the first report of the farm, expressed satisfaction on the improvement of the work of the farm. The Committee of the farm was

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61 Ibid., p. 111.
63 Govt. of India, Department of Agriculture, Revenue and Commerce, Agricultural and Horticultural branch, July 1873, proc. no. 17-19, NAI.
remarked that “though trials had been incomplete, they had proved on the whole highly satisfactory and led them to hope that ryots of this presidency would soon learn that the extensive use of English implements and machinery in the cultivation of the land certain to be attended with great advantage.”

In this assumption they were mistaken, as it was not proved as they expected. They were not able to prove their contention with tangible results. Their experiments with the ploughs were unsatisfactory. They also tried other implements such as windmill pump and failed. However, a few experiments proved successful. For example a bucket pump was, however, tried with better results, and figures were published to show that it lifted water at one-third the cost involved in using the picotta. For chaff-cutters a demand soon sprung up and one of the winnows imported was said to be much applauded.

Robertson was instrumental in bringing in new innovations. He had begun the manufacture of farm implements. During his period, a number of implements and tools were sold in various parts of the presidency. At the same time the superintendent was given a special grant to import implements and machines from abroad to meet local demands. Plough was given much attention among all other implements, as it had been main thrust of the Indian agricultural implements. A type of plough was evolved in the farm, which proved considerable advantages. At the same time, a leaning towards American styles became general and imports became more frequent, especially of chaff cutters and maize-hulas. Of these machines, as well as of a number of water lifts including a bucket-pump driven by a steam engine were experimented and results were recorded in 1870. In the trials with double mhote the data was recorded as to the cost of lifting water. Water lifts and plough received attention in the farm trials for several years, but not withstanding the many

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64 Madras Administrative Report 1872-73, p. 136. During 1872-73, the Saidapet farm sold two improved carts, twelve ploughs, two iron cultivators, one chaff cutter, one maize Sheller, 76 improved reaping knives, one seed drill, several plough shares, wheel barrows and several working models of ploughs.
advantages of ploughs of European type they have not still came into general use. It was also about this time attention was first given to the raising of fodder crops. In 1869-70 attention was directed to crops and details were prepared and published by the superintendent on these matters. The scale of information and experience had accumulated considerably in this period. The experiments made in the early phase laid a foundation for next phase of scientific growth of crop research, which will be studied, in the fourth chapter.

What was wanted to make the farm of value was the dissemination of the facts ascertained, and it is the entire absence of any agency for such dissemination that led to dissatisfaction with the farm itself. Though from 1870 the farm was merely regarded as a central farm for the imitation of district demonstration farms, but no such farms were ever started.

**Failure of the Saidapet Farm:**

In spite of the special interest shown by Robertson, the farm was not able to attain a success. It was hardly able to make any impact on the general practice of agriculture in the presidency. The ryots continued their work totally ignorant of what was discovered on the Saidapet farm. The new methods or the results of the farm were not disseminated among the farmers. Robertson had planned to spread better methods of cultivation through district farms with the men who were trained at Saidapet but his plans did not succeed. The ryots did not take up the experimental cultivation. They were not familiar with the results of the experiments, as the farm did not spread its results among the farmers. Use of the manures, was one of the many experiment tried on the farm. Experiments with green manure or the knowledge of growing hedges as manure remained confined to the farm. The old practice of using cow-dung, ashes, tank-silt were continued by the ryots. In all the agricultural operations like sowing, transplanting or harvesting, the same traditional and uniform method was followed in different districts. The farmers were not aware of the
benefits of using new implements. There were hardly two farms started by the missionaries, who tried the new methods.65

Moreover, the farm and its small staff of officers were attending the work of a whole department. The soil of the farm was also ill favour to the work of the farm experiments. General Cotton, in his letter of 11 November 1871, warned the government that it was not fit for its purpose either in area or position and wanted selection of another site.66 It was not good enough for a proper seed farm or for cattle breeding and neither the extent nor the variety of the soil rendered it sufficiently typical to be a central farm, nor was the irrigation facilities such as to enable the great questions of the value and use of water to be properly asked or answered.

Madras Agricultural committee remarked on the failure of the farm that too much was expected from the farm. And that the failure to meet expectation was at least largely due to mistakes and difficulties incidental to new enterprise. The Committee stated that the farm was absolutely devoid of any foundation in experience. Hampered by consequent changes of policy, cramped by want of funds, impeded by general conservatism and ignorance and having as its actual agent only a single member of an organism were some of the factors prevented the progress of the farm.

Conclusion

Efforts of the Company government and the Crown government on crop experiments in the early phase were dominated by the introduction of exotic varieties. Series of experiments with American cotton, sugarcane, spices, coffee and tea were tried for introducing new varieties, new methods and

65 The missionaries tried to reap the benefits of Saidapet experiment. The Catholic Agricultural Orphanage at Chinnapalem in North Bhavani was established towards the end of 1866. The Government gave them 200 acres of wasteland but the experiment did not succeed. The Catholic Orphanise at Coimbatore also started an agricultural farm. Since there was no systematic effort it was also a failure. They might have done better if the Government had encouraged such private agencies to take to agricultural experiments, supplying better seeds and trained them.

66 Proceedings of the Madras Board of Revenue, 31 May 1872, proc. no. 300, AP State Archives.
improvement of practices. Cotton experiments were mostly dominated by the concern for cultivation of long staple cotton. But the cotton experiments conducted in various places in the Madras province hardly replaced the existing varieties in this period. Exotic seeds of various crops were imported from America, Egypt, Mauritius, Brazil. Growing cotton under irrigation was triad. But irrigation water was available only in areas, which paddy was grown as a wetland crop and this was more profitable than irrigated cotton. Some of them received irrigation also. Though success was reported at several centres, particularly at the Europeans, but experiments with exotic seeds usually failed as experiments were not based on the understanding of the local ecology and geological conditions. At the early period the exotic varieties did not find a place in the general scheme of cotton cultivation.

In the early period efforts at the improvements of cotton through scientific and technical way outs were spasmodic and unsystematic. The experts who were engaged with experimentation were amateur scientific people. Experiments were mostly dominated by economic and political considerations. Scientific and technical knowledge was applied on foreign standards, local topographical and ecological realities were not logically adjudged. In other words science was applied in isolation.