STUDIES ON COCONUT SOILS IN RELATION TO LAND USE

By

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INTRODUCTION

Studies on Ceylon soils have been made by Joachim and his colleagues at Peradeniya during a period of almost three decades. (2)

These studies which were the first to be carried out were of fundamental importance to the understanding of the varying soils types and groups of the Island, comprising almost the main agricultural areas of Ceylon, covering the major crops paddy. tea rubber and coconut, as well as the Highland areas of the dry zone where *chena cultivation* was practised.

While these studies have been of considerable value both for determining Land Use and for planning Colonization Schemes, as well as for better understanding of the manuring and cultivation of the agricultural crops, they were however of a broad nature and did not embrace anything like the details that would be necessary for determination of different areas of small units of land comprising a Colonization Scheme that need detailed study.

The Coconut Research Institute since its inception had endeavoured in the course of its advisory work carried out by the Soil Chemistry Division, before the establishment of the Advisory Division of the Institute in 1958 to collect and study morphologically soil samples from profile pits, road cuttings etc. and made observations and where possible carried out physical and chemical studies on soil samples as and when exigencies permitted. The records of such work have been more or less casually included in the Annual Reports of the Institute and Soil Chemist's Division.

Since Ceylon gained Independence the pace of land development increased and Highland Colonization Schemes began to be established on land comprising crown jungles interspersed throughout mostly in marginal areas of the island. A demand was made by the Ministry of Agriculture and Lands at that time to recommend extensive areas of the land for purpose of coconut cultivation.

The Author of this paper who happened to be the Soil Chemist at that time carried out *Reconnaissance Surveys* on the basis of which recommendations were made regarding the suitability or otherwise of such soils for opening up under coconuts wherever possible.

Field Method

The method of approach was to dig pits $3' \times 3' \times 4'$ deep in representative areas of such jungles, with the co-operation of the Revenue Officers of the different districts and the District Land Officers whose assistance and co-operation it is a pleasure to acknowledge.

Several problems were encountered during these surveys which were not sufficiently detailed in order to determine with a degree of reasonable precision the availability of such soils in order to fit in with the detailed requirements of five acre blocks which were given to peasants and/or 25 to 50 acres units which at that time comprised the extent of land alienated to peasants and/or middle class allottees.

The pace of Land development to meet the increase in demand for land by the rising population and of the consequent landless, as well as the needs of development to meet the requirements of an expanding economy, caused a severe strain on the limited staff of the Soil Chemistry Division of the Institute at that time.

Problems of Land Use

The problems associated with these developments were spotlighted by Salgado in his paper entitled "Land Use and Soil and Water Relations with Reference to Coconut Cultivation". (3) To quote from the paper:—

> "Of the three plantation crops of Ceylon, coconut covers the largest extent—a little over one million acres. Land use and Soil water relationships involved in the cultivation of the coconut palm are therefore of significant importance to the agricultural prosperity of Ceylon.
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> Unlike tea and rubber which are restricted to limited climatic, rainfall and soil types, the coconut palm by its distribution is almost ubiquitous, except of course at the higher altitudes. It is grown over an extensive range of soils ranging from Halophytic conditions extending from the Kalpitiya Peninsula to Hambantota on the West Coast, and from Mullaitivu to Arugam Bay and the Jaffna Peninsula on the East Coast; the alluvial lands of the North-Western and Western Provinces, mostly on the river valleys of the Ma Oya, Deduru Oya and the Mee Oya; the lateritic lands of the Wet-zone of the Western and Central Provinces and even on the hilly and undulating lands of the Kurunegala, Matale and Kandy Districts, and the silted up estuaries such as those of Madampe and Mundel lakes, where palms grow under water logged mesophytic conditions. Under such an array of soil, rainfall and topographic conditions land use and soil and water problems and their interrelated aspects are varied and manifold.
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> "Similarly there is a variety of social and economic conditions under which the coconut palm is cultivated, which determines its land use patterns, some of which are considered below. Under the conditions varying from village gardens, small-holdings and large coconuts estates, there are certain cultivation patterns which determine in particular the water regime of the coconut palm and its ultimate yield".

In this paper attention was drawn to the problem of Highland Development Schemes for coconuts popularly known as "Pilot Schemes" where peasants were settled mostly in what could be described as marginal and sub-marginal areas such as those in Puttalam, Chilaw, Kurunegala districts where jungle land was available for opening up with coconuts. Some of these areas which were alienated on a five acre basis have been in marginal areas such as Serukele (Puttalam District), Kadigawa (Kurunegala District) and Veharayaya near Wellawaya in Moneragala District, and similar schemes where the soil was very variable and demanded detailed soil surveys on five acre units and not merely broad reconnaissance surveys applicable to large extents of land.

Pursuant to ministerial requests for surveys of extensive areas which could not be carried out with any degree of satisfaction by the limited staff of the Soil Chemist's Division of the C.R.I., and on the recommendation of Prof. Hardy who reported on the work of the Soil Chemistry Division in 1957,

it was recommended that a Division of Land Use and Soil Surveys of the Government that should be established should undertake an all Island Survey of soils of this country on modern lines while at the same time the C.R.I. should establish a Soil Survey Unit to make detailed Soil and Land Use Surveys, on the existing Coconut lands.

On a directive by the Hon. Minister of Agriculture in 1958 given at a special meeting of the Coconut Research Board addressed by him it was also agreed that the newly set up Soil Survey Unit should expand its activities and should work with close co-operation with the Development of Agriculture on Soil Surveys of Crown Jungles for Coconut cultivation.

Soil Survey Unit of the C.R.I.

The Soil Survey Unit of the C.R.I. was established in 1959 and consisted of an Officer-in-Charge, Soil Survey Unit, working immediately under the supervision and direction of the author of this paper.

Fortunately for us the Canadian Aerial Surveys which had its headquarters at Telulla in the Monera-gala District, near Wellawaya, with whom we came in contact provided in due course very useful aerial photographs which have been of considerable assistance to us for the efficient and expeditious execution of the surveys which our Soil Survey Unit were called upon to carry out.

Besides a few detailed surveys on existing coconut plantations, this Unit co-operated with the Government in carrying out detailed surveys of the crown jungles, which in due course developed into Middle Class Schemes in the Chilaw District (the Wilpotha Middle Class Scheme) a successful venture in good coconut soil, and such peasant schemes as at Veherayaya near Wellawaya and those at Mudalakkuliya in the Puttalam Districts.

Of the more recent and fortunately well planned and successful schemes in which the Coconut Research Institute had a hand in advising on the suitability of land the Vanativillu Middle Class Scheme. Stage I of which is successfully completed and Stage II of which is nearing completion deserves special mention.

The first paper of this series gives an account of the detailed studies that the Soil Survey Unit of this Institute has been carrying out during the last few years and includes a follow up subsequent to the opening up of 3,000 acres of land under Middle Class Scheme, as also collateral detailed surveys of the Crown Jungles, which in due course developed into such schemes as Wilpotha Middle Class Scheme in the Chilaw District.

The peasant schemes as at Veherayaya near Wellawaya and those at Muddalakkuliya in the Puttalam districts. (which were less successful).

Of the more recent and fortunately well planned and successful schemes in which the Coconut Research Institute had a hand in advising on the suitability of land, the Vanativillu middle class scheme, the soil Survey of Stage II of which is nearing completion deserves further mention.

REFERENCES

1. Hardy, F.—Report on Soil Chemistry Division to the Board.
2. Joachim et al—Studies on Ceylon Soils. (Tropical Agriculturist).
3. Salgado, M.L.M.—Land Use and Soil and Water Conservation with reference to coconut cultivation. Ceylon Coconut Quarterly Vol. IX (1958), Nos. 1/2.