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Ceylon Coconut Planters' Review, Vol. IV No. 4, November, 1966.

SOIL MAPS FOR LAND USE

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Soil survey is an essential preliminary requisite for agricultural planning and for this purpose a soil map is of the utmost importance.

Soil survey leads to the classification of soil into units, and their representation in a soil map. In this article I will endeavour to explain the understanding of soil maps, and will leave out the complex aspects of the soil survey given in technical soil survey reports. For further information the interested reader may refer to the reports of the Soil Survey Unit published in the Annual Reports of the C.R.I. from 1960 onwards.

Soviet scientists classified the soils of Russia according to climatic zones, the polar, cold, temperate, and tropical soils. These units of classification belong to the Great Soil Orders of the world.

The reddish brown soils of the North Central Province or the lateritic soils (or cabooky) soils of the South Western coast of Ceylon, derived from two different rock types, situated in two different rainfall belts, the dry and wet zones, belong to two different groups, each called a Great Soil Group, and maps are available representing the Great Soil Groups of Ceylon, c.f. map, Great Soil Groups of Ceylon—Panabokke. However, from the aspect of soil classification for agricultural use we must deal with smaller soil units, and for this purpose the soil series is used.

A simplified discussion of what is understood by a series is outlined, in order to understand the soil maps included in this article. A soil series is related to the following factors:

(1) Nature of the material from which the soil is developed, or the type of rock or rocky deposits underneath the soil.

(2) *Soil texture* e.g. Sandy soils, loamy soils, clayey soils, silty soils and various intermediate textures like the sandy clay loams.

(3) *Drainage* e.g. Sandy soils allow the passage of water freely, and these are perfectly drained. Clayey soils impede the passage of water and these are poorly drained. Incidentally soil colour is related to drainage. Red soils are well drained, and grey soils poorly drained.

Erosion—Soils on a hilltop are sometimes shallow and gravelly due to the greater degree or erosion. Soils in a valley are deep due to the greater degree of accumulation. Thus a soil series is related to parent rocks, texture, drainage and erosion and is named after a place where it was first described. The red, well drained deep soils of Puttalam North is called the Aruakalu series, as it was first described in the Aruakalu hill of this region.

The following maps are discussed, describing the series with reference to their suitability for coconut cultivation.

The Soil Map of Kurunegala North

Kurunegala North from Melsiripura to Beligama was mapped and classified into the following series:

Angurukanda Series—Soils here are formed on ridges of quartzite rock, and are shallow and highly eroded. They are dry, porous soils, of a deep red colour. Thus in the soil map legend these are marked as rapidly drained.

The coconut on these ridges were somewhat stunted, and the nuts small. This is probably due to the shallow and dry nature of the soils.

The Ragedera Series—This soil series is typical of the hillslope soils and are as stated in the legend of the soil map are well drained, deep loamy soils of a reddish brown colour. These were the best soils found in the area (according to the criteria of depth, texture and drainage) and the red loams of Beligama were comparable to the soils of Marawila in the above context.

The Lenawa Series—These were the poorly drained (highly moist) soils found in the valleys. The soils were yellowish brown, and clayey. Most of the estates (e.g. Lenawa) showed a high percentage of yellowing palms, c.f. Soil Survey of the Melsiripura Catena, C.C.Q., Vol. XIV, Jan.-June 1963, K. S. O. Perera.

Puttalam North unlike Kurunegala, represents a newly developing area which was till lately dense dry zone forests, which is now being opened up for coconut cultivation.

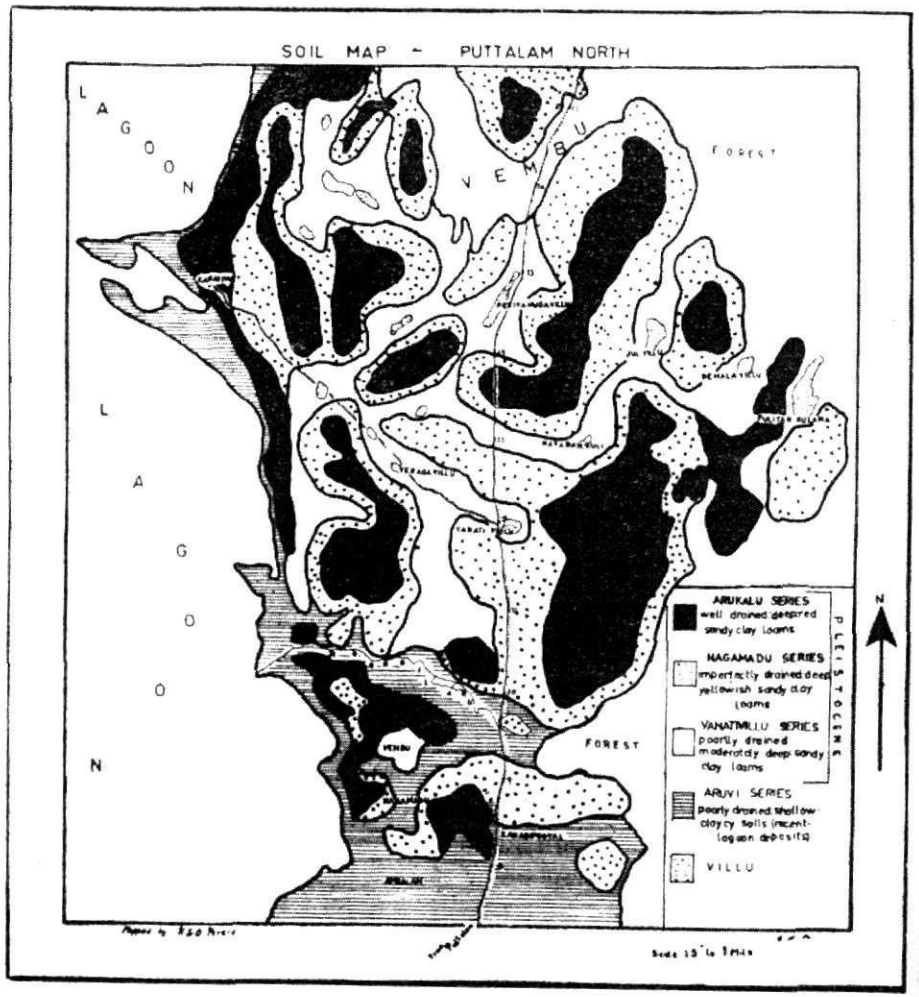
The Aruakalu Series—These are deep well drained red loamy soils. The richest forest vegetation, judging by the density of tall plants was in the Aruakalu Series.

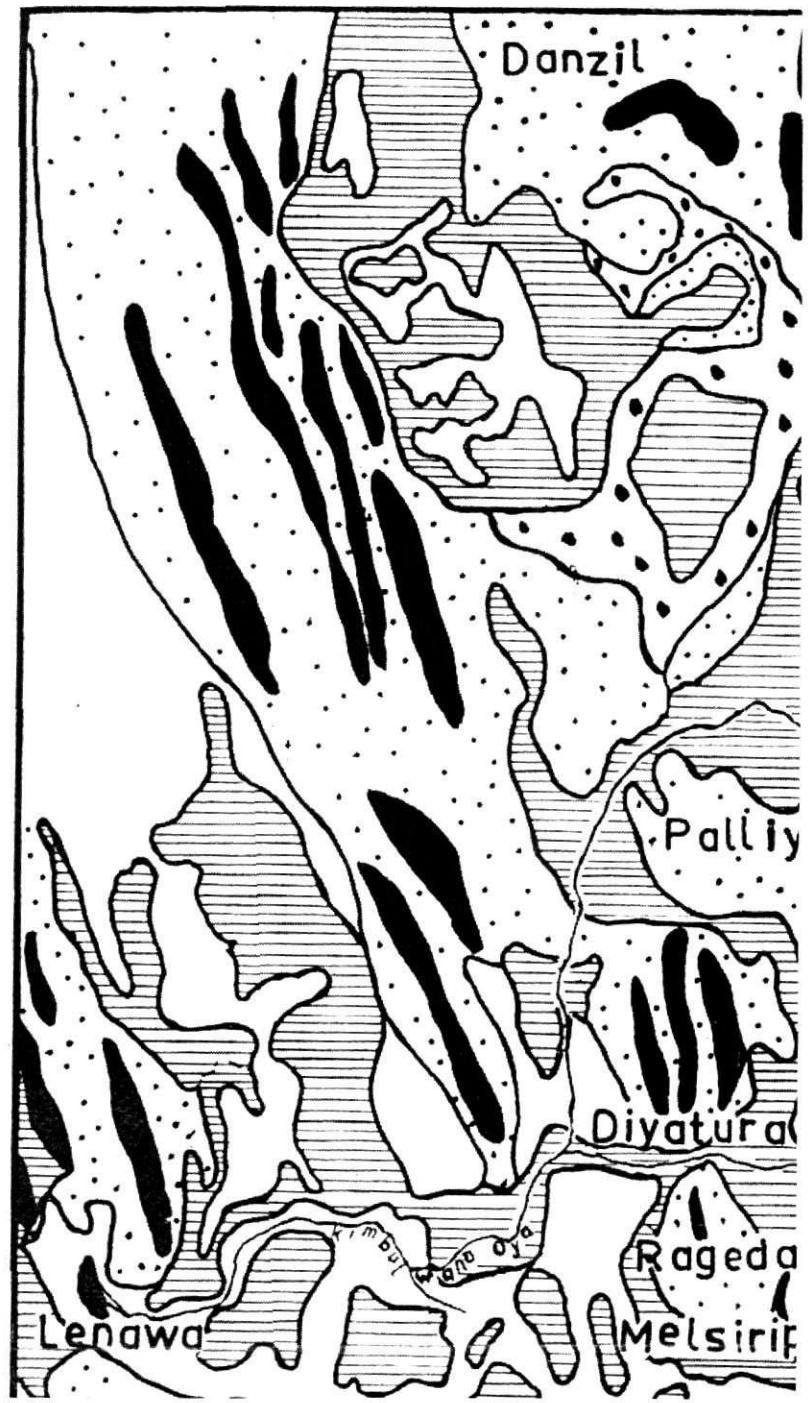
The Nagamadhu Series—These are the yellow soils occupying the middle slopes of the land.

The yellow soils are somewhat more clayey than the red soils, and during the drought it dries up to a hard mass. The soils are imperfectly drained.

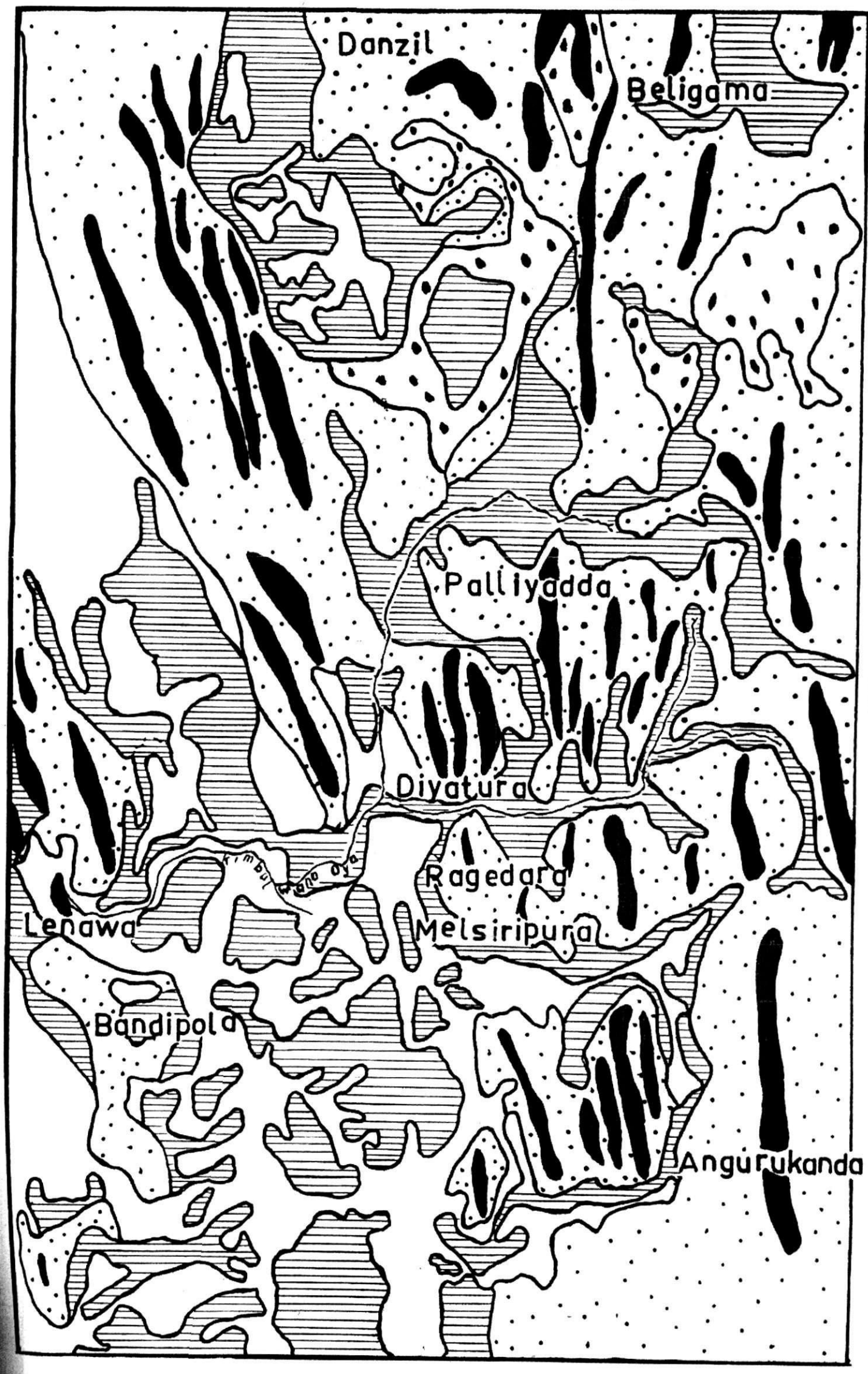
It was also observed that the wells situated in the yellow soils dry up faster during the drought.

The Vanathavillu Series—These soils are situated in the valley of the lakes or villus situated in the lowest contours of the land.


SOIL MAP - PUTTALAM NORTH
LAGOON
LAGOON
FOREST
FOREST
ARUKALU SERIES
well drained deepred sandy clay loams
NAGAMADU SERIES
imperfectly drained deep yellowish sandy clay loams
VANATHILLU SERIES
poorly drained moderately deep sandy clay loams
ARUVI SERIES
poorly drained shallow clayey soils (recent-lagoon deposits)
VILLU
PLEISTOCENE
N


Danzil
Pallıy
Diyatura
Rageda
Melsiri
Lenawa

SOIL MAP OF KURUNEGALA NORTH



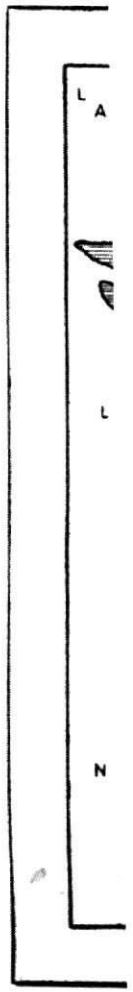
ANGURUKANDA SERIES
Red Gravelly Loam: Shallow: Rapidly Drained

RAGEDARA SERIES
Reddish Brown Deep: Sandy Loam Perfectly Drained

LENAWA SERIES
Alluvial Association
Brown Coarse Sandy Clay: Deep: Imperfectly Drained

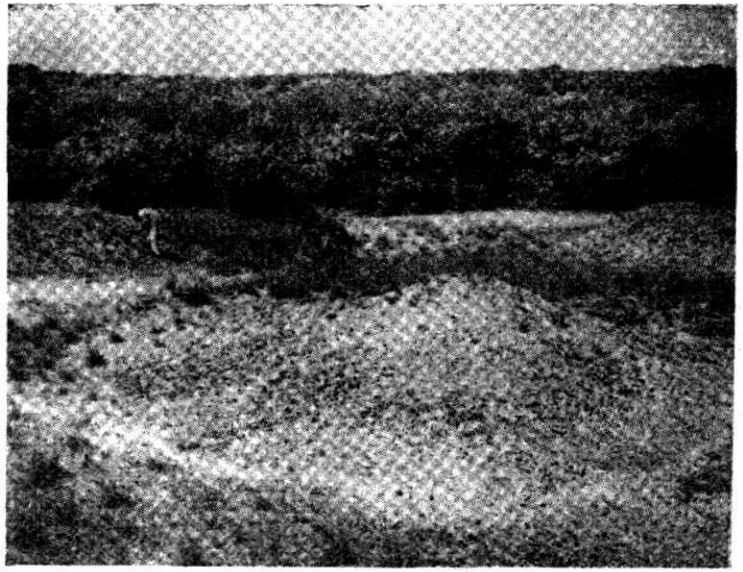
Alluvial Association
Paddy Soils
Poorly Drained

Rock Knob Area

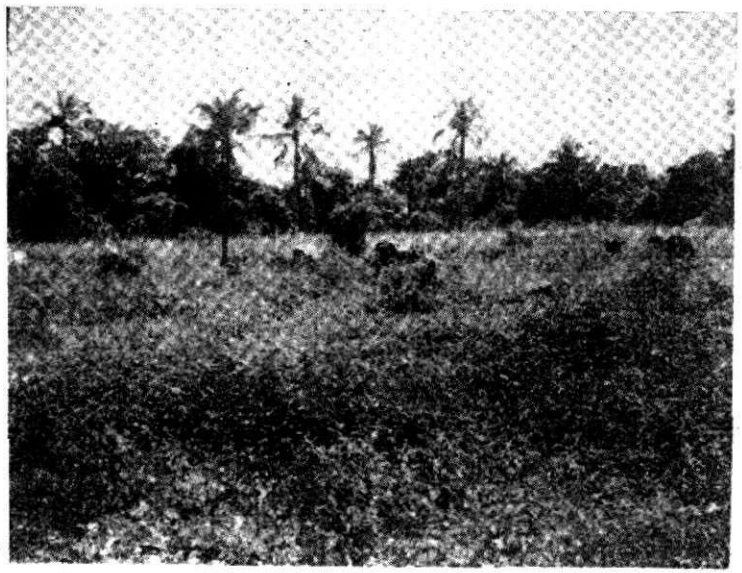


Forest in the Red Loam—Puttalam North

Coconut Plantation in the Red Loam, Kalladichena—Puttalam North



Vembu or Desert Tracts Highly Eroded Areas; Exposing Limestone—Puttalam North



Lagoon Clay Plain, with Tapering Palms—Puttalam North

The soils are poorly drained, having a high water table. The soil colour is a bleached yellow.

The Aruvi Series—These are soils deposited by the lagoons, and are thus clayey and water logged, the drainage being very poor. The soils are shallow and passes into beds of sandstone.

It was observed as at the 7th mile post from Puttalam that the coconuts were very poor in these soils.

The Vembus—These are desert tracts, lying in highly eroded landscapes, exposing the limestone beds. It is obvious that no coconut could be grown in these areas, c.f. Soil Survey of Puttalam North. K. S. O. Perera. Annual Report, Soil Survey Unit, C.C.Q., Vol. XV, Nos. 1-2.

A study of the water levels (water tables) of the wells in the Puttalam North area indicated that the first wells to run dry were the ones situated in the yellow loams (Nagamadu Series).

It was proposed in the Soil Survey of Puttalam North C.C.Q. XV that the yellow loams dried up during dry conditions, and hence had a low capacity for water retention. It follows from these arguments that coconut plants in the yellow loams should be badly effected during the prolonged drought in this area.

A survey was carried out in the young plantations of this area during the last week of August 1965, and it was found that a large percentage of the young palms in the yellow loams were partially dried up.

However the young palms in the red loams (Aruakalu Series) and the palms in the bleached yellow loams (Vanathivillu Series) were hardly affected by the drought.