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Report No.140

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Report on a Semi-Detailed Soil Survey
of the
**MARUDI
FOREST RESERVE**

4th Division

by
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August, 1970.

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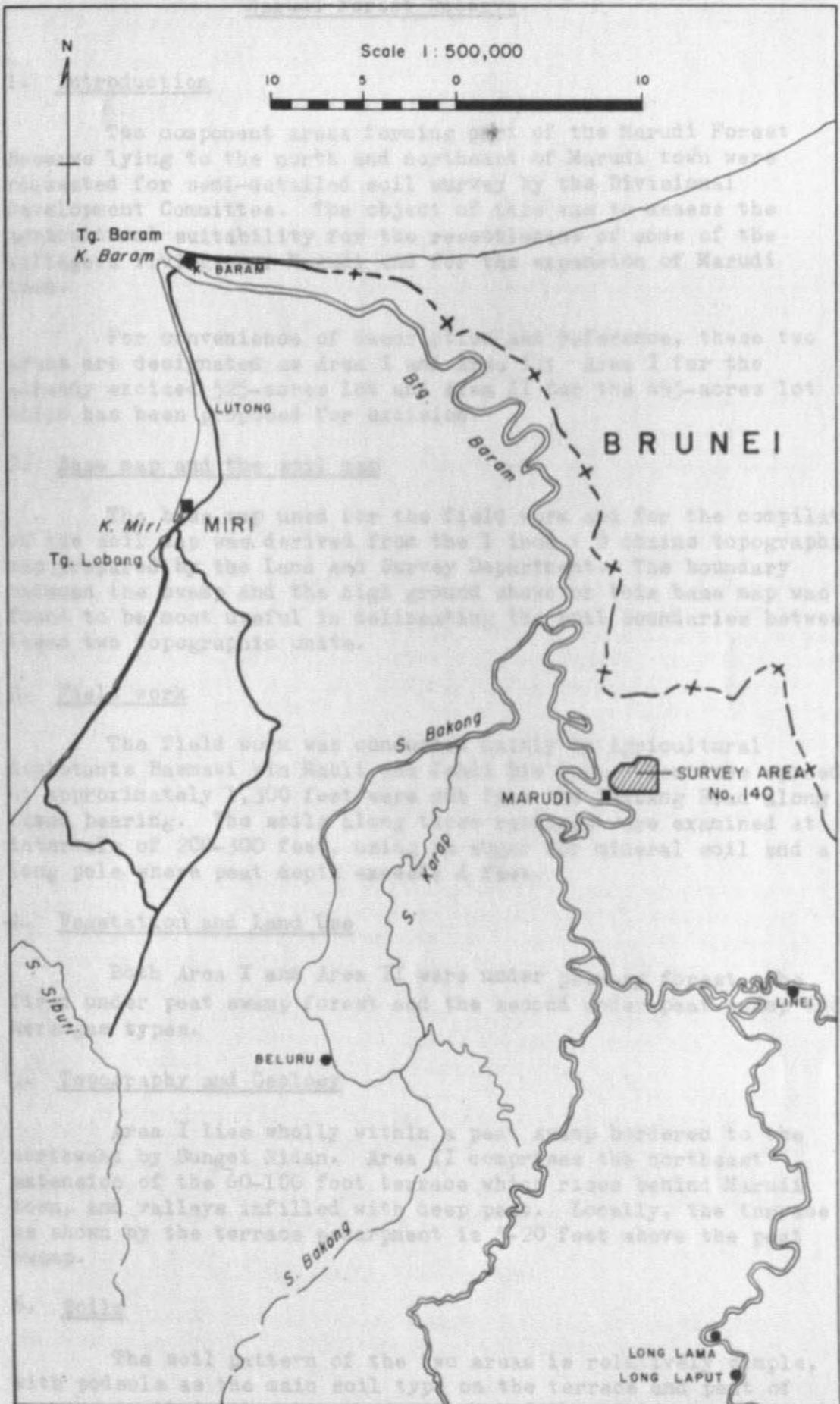
Soil Survey Division
Research Branch

Dept. of Agriculture
Sarawak

631.473
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HUNTING TECHNICAL SERVICES

Report on Topographical Soil Survey of 1954



LOCATION OF AREA SURVEYED

Report on a Semi-Detailed Soil Survey of the
Marudi Forest Reserve.

1. Introduction

Two component areas forming part of the Marudi Forest Reserve lying to the north and northeast of Marudi town were requested for semi-detailed soil survey by the Divisional Development Committee. The object of this was to assess the agricultural suitability for the resettlement of some of the villagers living near Marudi and for the expansion of Marudi town.

For convenience of description and reference, these two areas are designated as Area I and Area II; Area I for the already excised 525-acres lot and Area II for the 495-acres lot which has been proposed for excision.

2. Base map and the soil map

The base map used for the field work and for the compilation of the soil map was derived from the 1 inch : 8 chains topographic map prepared by the Land and Survey Department. The boundary between the swamp and the high ground shown on this base map was found to be most useful in delineating the soil boundaries between these two topographic units.

3. Field work

The field work was conducted mainly by Agricultural Assistants Basmawi bin Mahli and Johdi bin Juko. Rentises spaced at approximately 1,300 feet were cut from the Limbang Road along fixed bearing. The soils along these rentises were examined at intervals of 200-300 feet, using an auger for mineral soil and a long pole where peat depth exceeds 4 feet.

4. Vegetation and Land Use

Both Area I and Area II were under primary forest, the first under peat swamp forest and the second under peat swamp and kerangas types.

5. Topography and Geology

Area I lies wholly within a peat swamp bordered to the northwest by Sungei Ridan. Area II comprises the northeast extension of the 60-100 foot terrace which rises behind Marudi town, and valleys infilled with deep peat. Locally, the terrace as shown by the terrace escarpment is 5-20 feet above the peat swamp.

6. Soils

The soil pattern of the two areas is relatively simple, with podsoils as the main soil type on the terrace and peat of varying depth in the swamp. A summary of the soils mapped is shown below:

<u>Area</u>	<u>Origin</u>	<u>Mapping Unit</u>	<u>Acreage</u>
I	Alluvial Organic	Bijat Family	10
		Mukah Family	15
		Anderson 1	18
		Anderson 2	261
		Anderson 3	221
			Total: 525
II	Alluvial Organic	Miri Family	298
		Anderson 3	165
			Total: 463

6.1. Soils of the Terrace (298 acres)

Soils of the terraces occur only in Area II and are mapped as the Miri Family. The soils are assumed to have an alluvial origin, developed from almost white, fine to medium-grained sand. The soils are characterised by the well-developed, very dark brown to black indurated humus pan horizon (B2h) occurring at depth varying from 20-48 inches underlying white, fine to medium-grained sand. Where the pan occurs at depth greater than 48 inches, the soil is well drained, but where it is found at depth less than 24 inches, the impermeable nature of the hard pan commonly gives rise to perched water table immediately above it and hence moist to wet conditions in the soil.

Associated with the Miri Family are isolated pockets of light grey clayey soil (Saratok or Kerait Family) occurring on the lower parts of terrace escarpments or on gentle lower slopes on the terrace surface. Genetically, these clayey pockets are thought to be derived from lateral movements of clay-size material from upper slopes and accumulated at the lower slopes. Because of their irregular nature of occurrence and their size, they have not been mapped separately from the Miri Family.

No soil profile of the Miri Family was analysed but analytical data for Miri Family soils from elsewhere invariably give extremely low nutrient figures, and Miri soils are not recommended for any crop, although there are areas where pine-apples have been seen to survive fairly well.

6.2. Soils of the Peat Swamp (680 acres)

Soils of the peat swamp mapped include three families: these are the Mukah Family, the Anderson Family and the Bijat Family.

6.2a. Mukah Family (15 acres)

This has 10-40 inches of moderately well decomposed peat overlying light grey clay; water table is near the surface. Mukah soil is suitable for padi, coconut and other cash crops where water control measures are adequate. However, the very minor extent of occurrence of this soil in the area does not significantly affect the agricultural potential of Area I.

6.2b. Anderson Family

Soils of the Anderson Family are mapped as Anderson 1, 2, and 3 according to the depth of the peat.

Anderson 1 (18 acres)

This soil consists of 41-72 inches of peat overlying clay or sand, occurring in minor extent in Area I and is not mapped in Area II. This soil has marginal agricultural suitability where drainage measure is adequate.

Anderson 2 and 3 (648 acres)

Anderson 2 has peat ranging from 6-10 feet deep while Anderson 3 has peat over 10 feet deep. Both these soils have no agricultural potential because of the drainage difficulties involved. The only crop which can grow successfully after drainage is pineapple.

6.2c. Soils of riverine alluvium (10 acres)

Bijat Family soil is the only soil mapped which is derived from recent alluvial clay deposit. The soil is a light grey clay and occurs as a very narrow strip along the immediate bank of Sungai Ridan. This soil is agriculturally suitable for padi and a large number of crops but its occurrence is too minor to deserve consideration.

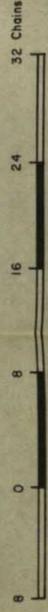
7. Conclusion

In the two areas semi-detailed soil surveyed, it was found that of the 525 acres in Area I, 482 acres or 92% is under deep peat which is considered unsuitable for cultivation because of the drainage difficulties involved; while in Area II, the soils comprise 165 acres (36%) deep peat and 298 acres (46%) podsoils both of which are unsuitable for agricultural purposes. The acreage of river alluvium and shallow peat occurring along Sungai Ridan is too small to affect the overall low agricultural potential of Area I.

Provided no strong emphasis is placed on the agricultural potential, the 298 acres mapped as Miri soil on the terrace in Area II appear fairly ideal and to be the logical site for the expansion of Marudi town. Access presents little difficulty on the almost flattish terrace topography, and the Miri soil is either naturally well drained or can be easily drained artificially. Access difficulties and poor drainage conditions of the peat swamp preclude consideration of Area I as a possible site for town expansion.

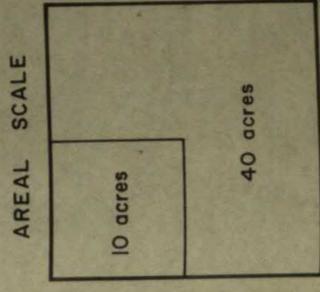
Marudi Forest Reserve SOIL EXAMINATION PLAN

Map I

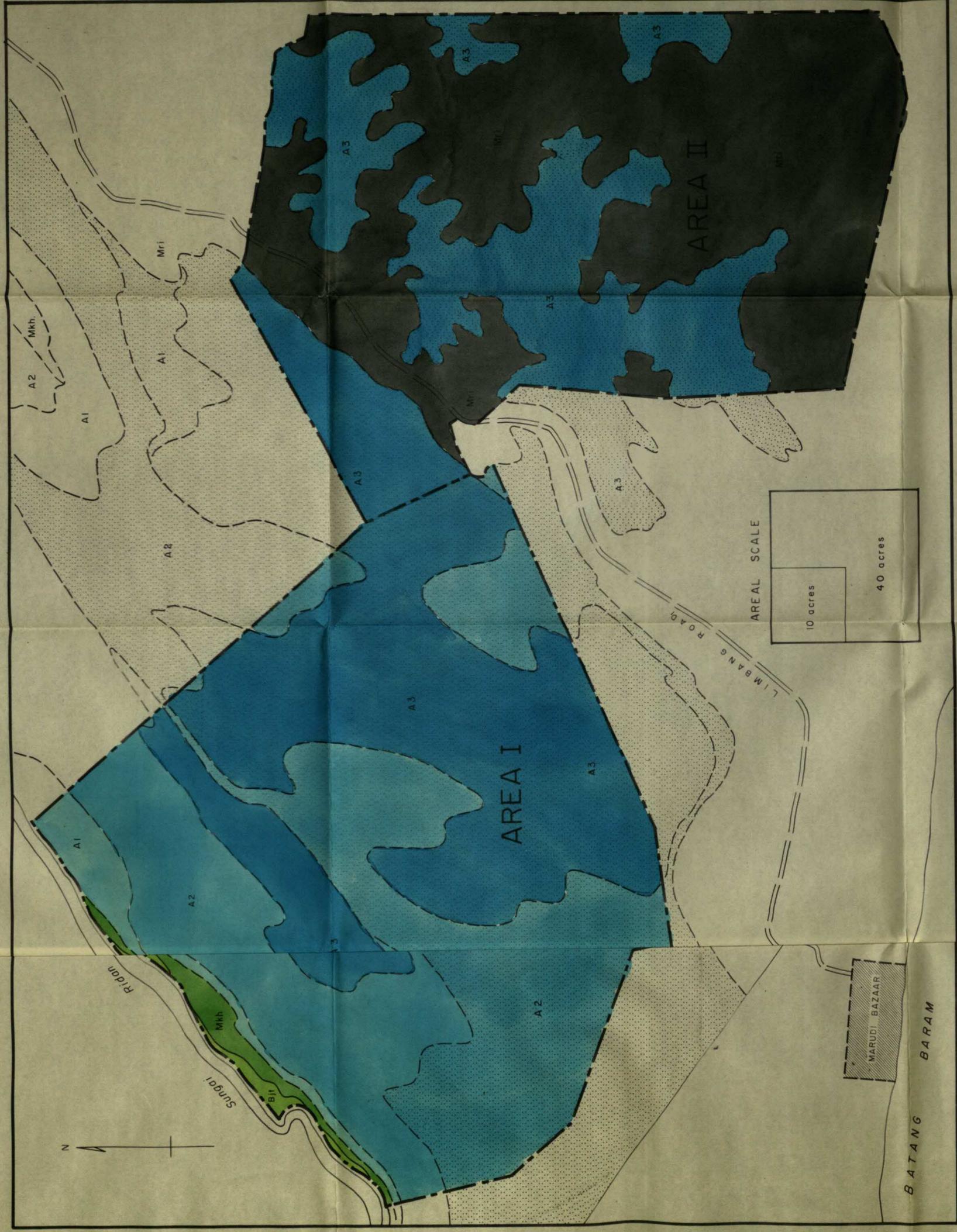
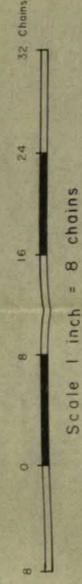


Scale 1 inch = 8 chains

- Cut path used for soil investigation.
- R 4 Code number of cut path.
- - - Boundary of area requested for semi-detailed soil survey.
- == Road



SOILS



KEY

AREA	ORIG	GREAT SOIL GROUP	MAPPING SYMBOL	SOIL CHARACTERISTICS	SUITABILITY	ACREAGE
I (Excised)	Alluvi	Alluvial	Bjt	Light grey clay	Suitable for cultivation with water control	10
	Orgar	Bog	Mkh	10 - 40" peat		15
				A1	Marginal	18
II (Unexcised)			A2	41 - 72" peat	Unsuitable except for Pineapples	261
			A3	73 - 120" peat		221
				121" + peat	525	
		Orgar	Bog	A3	Unsuitable	165
	Alluvi	Podzols	Mri	Light grey sand with well developed humus pan in sub - soil	Unsuitable	298
				Subsoil mainly sand		463
				Subsoil mainly clay		

