

Report No. 136

**Report on a Semi-Detailed Soil Survey
of the
NANGA MERIT AREA**

3rd Division

**by
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Report on a semi-detailed soil survey of the Nanga
Merit Area, Third Division.

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At the request of the Third Division Development Committee a soil survey at a semi-detailed level was undertaken during September, 1969, of the land enclosed by the tanjong opposite Nanga Merit on the Batang Rajang. This area has been under consideration for development as an irrigated rice project and preliminary investigation by Drainage and Irrigation Department had been completed at the time of the soil survey. The D. & I. eastern boundary was approximately followed during this survey and some 620 acres were surveyed. The survey was undertaken by the writer and A.A. Donald Lawan and was completed in six days. One rentis running centrally through the tanjong had been cut by D. & I. staff during the month before the survey and this was employed for soil sampling. Other D. & I. rentises were too old to be traceable and the remaining rentises indicated on Map 2 were cut by the survey party.

Topography

The terrain of the area is shown on Map 1. This is largely based on spot heights supplied by Drainage and Irrigation Department from levelling records along their rentis lines. Interpolation of contours was made independantly using form line data from the soil survey rentises and stream and levee pattern data from an enlarged air photograph.

The amplitude of relief is some 15 to 20 feet, the highest point in the area being at roughly 68 feet above sea level while the bulk of the area lies at approximately 52 to 62 feet above sea level. As, however, the 'normal' level of the Batang Rajang in this locality is at only 40 feet or below, the minor streams draining off the tanjong into the main river have cut deeply incised narrow valleys and produce a complex of short but steep slopes particularly in the northwest of the area and in the south (associated with the Sg. Tekalong). The present river bank has a pronounced levee form and this is normally a complex of two or three ridges, broken by the numerous minor streams already mentioned. In addition, there are remnants of old levee lines present back from the present river bank. Downstream from Rh. Peng. Jemut two such fossil levees are present, both being roughly parallel to the present river bank and extending with minor breaks almost to the Sg. Pendam. In the south of the area a further remnant, of smaller extent, is present west of Sg. Tekalong. These fossil levees are located on Map 1. On the ground those in the north appear as abrupt four to six feet microscarps facing the

river and backed by a very gentle dip slope. The present levee and the fossil levee remnants appear to have summit lines at approximately the same height, varying from slightly above to slightly below 60 feet above sea level. While the land back from the present levee drops fairly rapidly to below 55 feet at the scarp of the first fossil levee, the dip slope behind this scarp has a shallower gradient remaining above the 55 foot contour to the base of the oldest levee front. The dip slope of the latter appears to be almost flat, at above the 60 foot contour for roughly 200 yards width through most of its length.

In the east of the area the central part of the tanjong, although devoid of permanent streams, has a complex of hummocks and depressions with an amplitude of 2 to 3 feet which presumably link up with stream channels near the main river, although this is not obvious in crossing them on a rentis. This pronounced erratic microrelief was not seen elsewhere in the area but may be patchily present. No attempt has been made to indicate these hummocks in interpolating the contours.

Although the area enclosed by the tanjong can, broadly speaking, be considered fairly flat, there is thus considerable variation in levels over short distances which may well affect the irrigation plan. It is gathered that the dissected land in the northeast is already excluded from the D. & I. plan for improvement and similar areas close to the Sg. Tekalong and possibly elsewhere may also have to be excluded. The fossil levee lines will also have to be considered.

Soils

All soils recorded in the area are developed in riverine alluvium. Drainage characteristics are variable as, to a lesser degree, is the texture of the profile. Three families have been mapped.

Seduau Family soils comprise brownish yellow to dark yellowish brown well-drained to moderately well-drained clays. The surface soil may be a dark brown clay loam. The subsoils are characteristically uniform in colour and texture to a depth of at least 30 inches. Below this level in depression sites grey mottles may be present. Consistency is friable to firm, some profiles being very firm at depth.

Semilajau Family soils are very fine or fine sandy loams or sandy clay loams, slightly loose and well-drained throughout. These soils are confined to the present levee and appear to be absent from the levee on the south side of the tanjong. Where present they generally form a complex association with Seduau soils and a number of transitional profiles were also recorded, with alternating bands of coarse and fine texture in the subsoil. As a result no attempt has been made to map Semilajau soils separately and a Semilajau-Seduau mapping unit has been employed.

Bijat Family soils are imperfectly to poorly drained clays developed in riverine alluvium. The profile is generally a grey or greyish brown clay with yellow or pale brown mottles. The subsoil is normally firm and plastic. At the time of survey the watertable was within 30 inches of the surface at most points at which this soil was examined. At sites where the watertable is permanently high the subsoil may be completely gleyed and at a few sites in this area, too small to be mapped, thin surface peat layers have accumulated (Sebandi Family soils). Such soils are associated in this area with small ponds of standing water. Bijat Family soils are dominant in the centre of the tanjong, where the terrain is very gently sloping and surface runoff is slow. They are also mapped patchily elsewhere, particularly in the low-lying tracts footing the minor ridges formed by old levees.

Suitability of the area for wet rice

Semilajau soils are extremely porous and where, as in this case, they occupy levee sites, it is difficult to maintain levels of irrigation water in them. These soils (i.e. the Semilajau-Seduai association on Map 2) should be excluded from an irrigation scheme. The remaining soils in the area, Seduai and Bijat soils, are well-suited to wet rice cultivation provided adequate water is available and the water level is controlled. It is probable that the dissected terrain east of Rh. Peng. Jemut and possibly some land near the Sg. Tekalong in the south will have to be excluded to avoid considerable bunding off of incised valleys. It is understood that Drainage and Irrigation Department have allowed for this in their planning. It is also likely that the Sg. Pandam will have to be considered the southwestern boundary as much of the land between this stream and the tanjong itself is a grave site. It is gathered that Drainage and Irrigation Department consider the usable acreage for this scheme to be some 400 acres, a figure which agrees quite well with calculations based on the soil map. The considerable local variation in height in this area suggests that many problems of water-distribution will be met when a scheme is implemented.

NANGA MERIT AREA

MAP I: TERRAIN

Legend

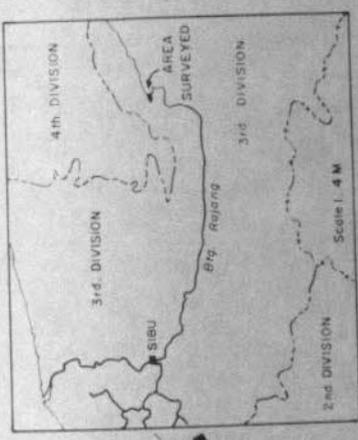
- Contour
- Front of fossil levee (4-6 feet rise)
- Streams
- Longhouse

Contours based on air photo interpretation and form line records in conjunction with spot heights supplied by Drainage and Irrigation Dept. (Their Drawing No. 68/87/1-1 refers.)

pronounced microrelief in this locality



LOCATION



SCALE 1:10,000



The grid located on the map border has an arbitrary origin and forms 40-acre squares.

