

A PRELIMINARY REPORT ON THE SOILS OF THE ISLANDS OF PALAU

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Introduction

Palau Islands are situated in the Circum-Pacific Zone and most of them are derived from volcanic origins. Their soils, therefore, have been formed mainly from extrusive volcanic rocks (basaltic) and tuffaceous breccia.

The authors have been studying on the tropical soils with special respects to changes of their fertilities (physio-chemical properties) with soil management or cropping. In this paper, sampling of soils are described.

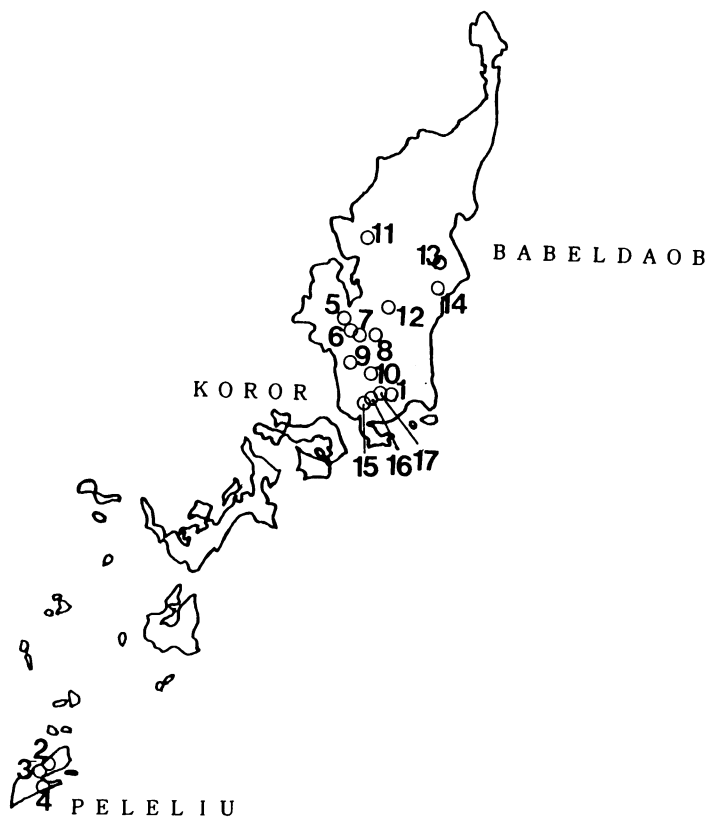


Fig. 1. Location of sampling plots.

Description of soil samples

Soil samples were observed and collected on Babeldaob and Peleliu islands. The sampling sites are shown in Fig. 1 and Table 1.

The soils of Peleliu are very thin as less than 10 cm. In the soils, many whitish particles (sand to gravel) are commonly observed. The particles were rapidly dissolved out with bubbling by addition of HCl, which indicated the substance of the particles to be coral limestone, CaCO₃. Reflecting the parent materials, the reactions of the Peleliu soils showed alkaline pH ranging 7 to 8.

Meanwhile the soils of Babeldaob, the largest island of Palau, are well-developed probably from volcanic material and they have thick red-yellowish deposits as to a few ten centimeters.

As the representatives of them, samples Nos. 1, 11 and 15 were collected uncultivated area. Soil samples from the profiles were collected at each 10 cm to 1 m depth. All three profiles were characteristic of thin and not so blackish colored A horizon with gradual transition to lower horizon and of very deep yellowish B horizon. The soil colors were expressed in the Munsell color chart. Different from Peleliu soils, all of the sample soils from Babeldaob showed low pH values ranging from 5.3 to 4.8 in H₂O and from 4.3 to 4.0 in 1N-KCl suspensions (soil/soln. ratio of 1/2.5). All these observations were attributable to the low accumulation of humus on their surface due to rapid decomposition of organic matters and to the advanced stage of weathering from much of secondary minerals (clay) under tropical climate conditions.

Table 1. List of soil sampling place and description of its fields conditions in Palau

| Sample No. | Name of sampling place | Kind of feilds and crops | Remarks |
|------------|--------------------------------|--------------------------|--|
| 1 | Airai | Grass land | Sampling from 0-100 cm in depth |
| 2 | Ngesias | Taro | 2nd year after cutting the mangrove forest |
| 3-2 | " | Cassava | 1st year after burning, good growth |
| 3-3 | " | " | Adjacent field to No. 3-1, poor growth |
| 3-4 | " | " | Adjacent field to No. 3-1, just planting |
| 3-5 | " | Forest | Near field of No. 3-1 |
| 3-6 | " | Cassava | 2nd year after burning |
| 4 | " | Forest | |
| 5-1 | Nekken | Pineapple | Applied fertilizers and composts, good growth |
| 5-2 | " | " | Adjacent field to No. 5-1, poor growth |
| 6 | " | Vegetables | After harvesting, applied fertilizers and composts |
| 7 | " | Taro | " |
| 8 | " | Daikon | Applied fertilizers, good growth |
| 9 | Ngetchum | Grass land | |
| 10 | Sechersoi | Vegetables | After harvesting, applied fertilizers |
| 11 | Asahi village | Grass land | Sampling from 0-100 cm in depth |
| 12 | Unknown (In Aimeliik State) | Grass land | |
| 13-1 | Melekeok | Grass land | |
| 13-2 | " | " | Adjacent land to No. 13-1 |
| 13-3 | " | Forest | Adjacent land to No. 13-1 |
| 14 | Ngerngesang | Upland field | Crop rotation field, applied fertilizer |
| 15 | Airai | Forest | Sampling from 0-120 cm in depth |
| 16 | " | Experimental field | Experiment of some fruits and trees growing |
| 17 | " | Fruits and Vegetables | Mixed cropping |