

SOIL SURVEY IN NETHERLANDS NEW GUINEA

by

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Already before World War II soil surveys of a number of areas in Netherlands New Guinea were carried out by the Soil Survey Institute at Buitenzorg (Java). In the first place the soil survey expeditions of F. A. Wentholt (1932–1940) are to be mentioned. When considering that present-day soil surveys in New Guinea with better communications and contacts still bear the character of expeditions, Wentholt's achievements command the greatest respect. A summary of pre-war surveys is given by Van Beusechem (1948). Afterwards Van Baren (1954) and Van Loenen (1954) gave descriptions and data of New Guinea soils.

As the economic potentialities of New Guinea were principally to be looked for in the field of agriculture, Ir. F. C. van Loenen was commissioned by the Government of Netherlands New Guinea, after the transfer of the sovereignty of Indonesia, to establish a Bureau of Soils in Hollandia.

In order to begin the survey of various areas as soon as possible, two experienced soil surveyors²⁾ of the former Netherlands East-Indian Soil Survey were appointed (1951–1952). In 1952 a mineralogist³⁾ was appointed and a soil scientist (Ir. J. J. Reynders) for the establishment of a laboratory for soil chemical and physical research. In 1953 a young assistant soil surveyor joined the service⁴⁾ in order to safeguard a certain rejuvenation of the field staff.

Till 1956 the activities of the Bureau of Soils were carried out by 3 sections viz.

1. Soil Survey and Mapping
2. Mineralogical Research
3. Soil Physical-Chemical Research

In the period 1951–1955 various surveys were carried out by Van Soelen, Razoux Schultz and Andriesse, occasionally also by Reynders and Mouthaan. In 1954 the Bureau of Soils was transformed into the Agriculture Experimental Station which was in 1954 divided into two departments for soil and agricultural research respectively. In 1956 Ir. H. Schroo was appointed Head of the soil department which was subdivided into:

- | | | |
|----------------------------|---|--------------------|
| 1. Soil Survey and Mapping | – | Head: Ir. Reynders |
| 2. Soil Fertility Research | – | } Head: Ir. Schroo |
| 3. Laboratory | – | |

In 1957 the Director Ir. Van Loenen retired and was succeeded by Mr. J. G. Rozenboom. In that year the staff consisted of two assistant soil surveyors⁵⁾ and in 1958 a soil scientist (Ir. G. Hekstra) was appointed while the oldest soil surveyor was excused from field duties in consideration of age.

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²⁾ W. J. van Soelen and F. H. N. Razoux Schultz.

³⁾ W. P. J. L. Mouthaan.

⁴⁾ P. J. Andriesse.

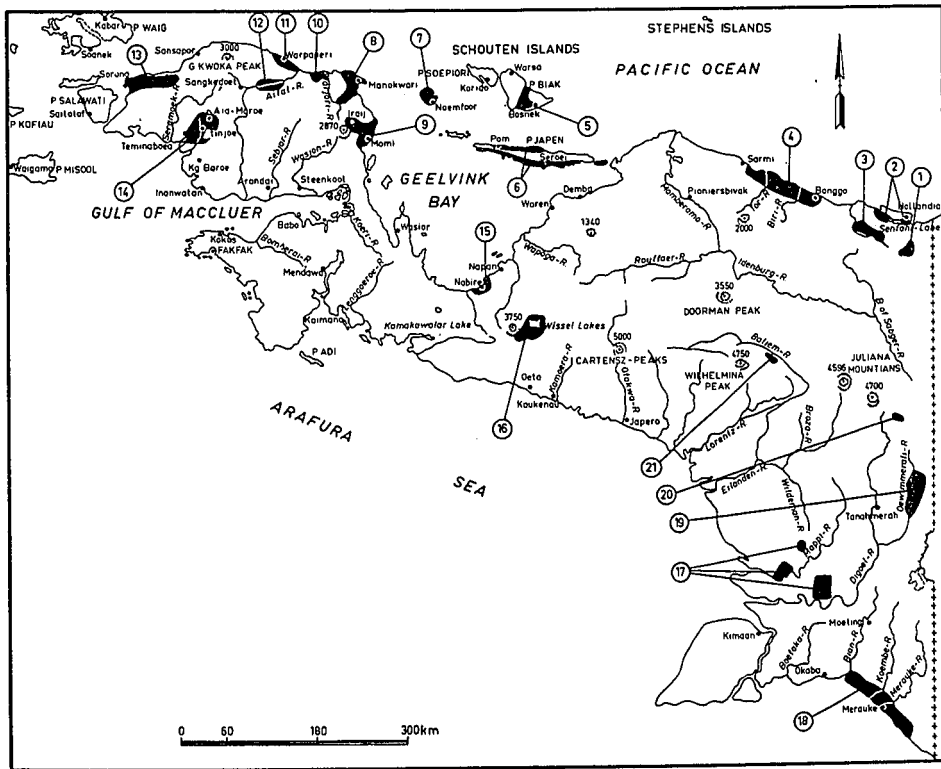
⁵⁾ B. Schlette and R. H. de Bock.

Three periods of soil survey activities in Netherlands New Guinea can be distinguished viz.:

- a. before 1950
- b. from 1950 to 1956
- c. 1956 to 1958 inclusive.

Before 1950 soil surveys were generally restricted to small scale reconnaissance surveys. The years following (b) were dedicated to organisation and constitution of the soil survey. As reliable maps were not available in most cases in addition to soil mapping also topographical mapping was necessary. In 1955 Mr. Razoux Schultz and Mr. Reynders, during leave, attended a course in pedological aerial photographic interpretation at the International Training Centre for Aerial Survey at Delft (Netherlands). By application of aerial photographic interpretation the soil survey could be founded on modern lines (1956-1958).

In table 1 and fig. 1 a summary is given of the surveyed areas in Netherlands New Guinea. As for the map scales three categories are distinguished viz.:



■ mapped areas / gekarteerde gebieden

Fig. 1. General map of Netherlands New Guinea scale 1 : 600,000 indicating areas of which soil surveys have been carried out. Numbers refer to table 1 (page 82 and 83).
Overzichtskaart van Nederlands Nieuw Guinea schaal 1 : 600.000 aangevende de gebieden waarin bodemkundige karteringen zijn uitgevoerd (zie tabel 1, pag. 82 en 83).

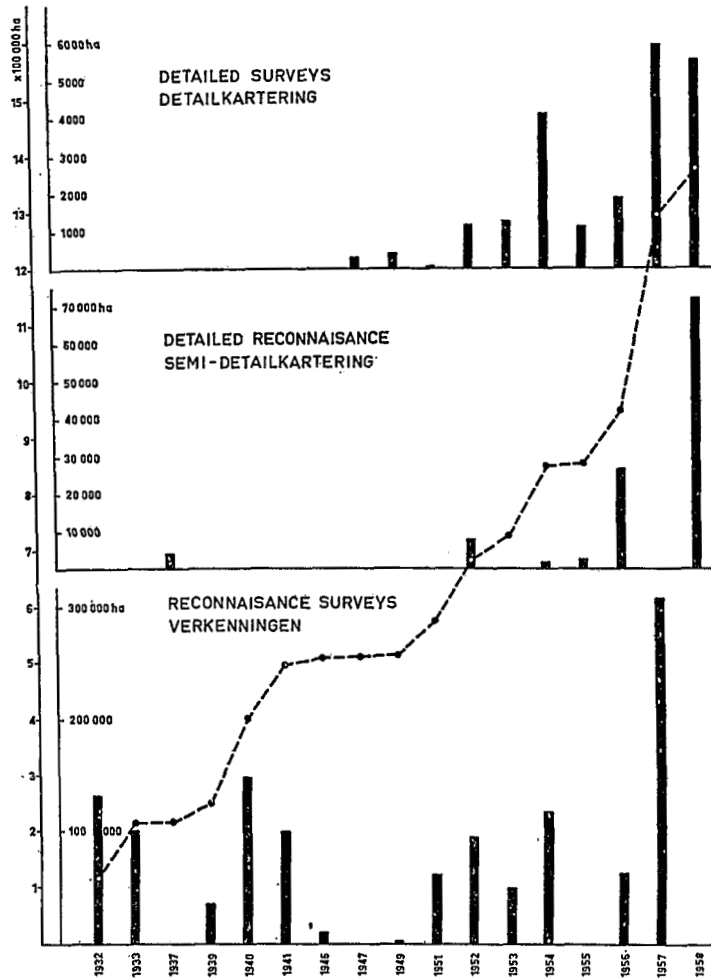


Fig. 2.

Graph representing surveyed areas in Netherlands New Guinea. The broken line (accumulation curve) indicates the increase of the total surveyed area.

Grafische voorstelling van de gekarteerde oppervlakte in Nederlands Nieuw Guinea. De sommatiecurve geeft de stijging van de totale gekarteerde oppervlakte.

- a. Reconnaissance maps on scales 1 : 63.360, 1 : 100.000 and 1 : 200.000
- b. Detailed reconnaissance maps on scales 1 : 25.000 and 1 : 50.000
- c. Detailed maps on scale 1 : 20.000 and larger.

From various areas so-called visual reconnaissance was made in some cases followed by a closer survey.

In fig. 2 a graphical summary is given. In this figure the three categories are separately represented while also an accumulation curve of the surface area of the surveyed regions is given. Conspicuous in the continuously ascending line from 1951 to 1958 is the sudden change of direction in 1954/55 as at the time most of the soil surveyors were on leave. The strong ascent of

the line after 1955 is a consequence of the use of aerial photographs. This is strongly confirmed by each of the graphs separately. In 1957 the surface area of the reconnaissance surveys increased to more than threefold the preceding yearly average.

Not only the surface area of the detailed reconnaissance surveys has increased but also areas which before 1955 could only be mapped on a 1 : 100.000 scale are being mapped on a 1 : 50.000 scale after 1955.

Data obtained by aerial photographic interpretation proved to be very valuable also for detailed surveys.

It must be observed that it is quite natural that by an increasing knowledge of the soil and of the agricultural potentialities of the various areas of a country the surface area surveyed and mapped on a large scale increases greatly. In Netherlands New Guinea of a total surface area of 1.375.480 ha, soil surveys were carried out of which 1.200.000 ha for the first time. The first figure corresponds with ca. 3.5% of the total surface area of Netherlands New Guinea, or by a very rough estimation after a deduction for rugged mountainous and swamp areas, with ca. 10% of the area having agricultural potentialities.

A summary of the area surveyed in the three above mentioned periods is given here.

Period	Detailed surveys ha	Detailed recon- naissance surveys ha	Reconnaissance surveys ha	Total ha
1932/50	700	4.000	510.100	514.800
1950/55	7.605	12.200	323.900	343.705
1955/58	13.270	98.675	405.030	516.975
Total	21.575	114.875	1.239.030	1.375.480

(Submitted December 1958.)

SAMENVATTING

Een overzicht is gegeven over de organisatie en stand van de bodemkartering in Nederlands Nieuw-Guinea tot en met 1958.

ZUSAMMENFASSUNG

Die Abhandlung gibt einen Überblick von der Organisation und dem Stande der Bodenkartierung in Niederländisch Neu-Guinea.

LITERATURE

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- Baren, F. A. van*, 1954: In: Nieuw-Guinea, de ontwikkeling op economisch, sociaal en cultureel gebied. Dl 2.
- Loenen, F. C. van*, 1954: Idem.

TABLE I.

SURVEYS/Karteringen

Year <i>Jaar</i>	Surveyed areas <i>Gekarteerde gebieden</i>	No. on map <i>Nr. op kaartje</i>	Detailed <i>Detail</i>	Detailed reconnaissance <i>Semi-detail</i>		Reconnaissance <i>Verkenning</i>	Visual reconnaissance <i>Visuele verkenning</i>	Map scales <i>Kaartschalen</i>	Soil surveyor <i>Karterings- leider</i>
				ha	ha				
1932	Hollandia-Sentani-Depapré Momi-Ransiki-Angimeren	2				20.000		1:100.000	Wentholt, F. A.
1933	Omgeving Manokwari	9				55.000		1:100.000	Wentholt, F. A.
	Amberbaken	8				40.000		1:100.000	Wentholt, F. A.
	War Samson	11				25.000		1:100.000	Wentholt, F. A.
1937	Ransiki	13				75.000		1:100.000	Wentholt, F. A.
1939	Grimé-Sekoli	9		4.000		35.000		1:25.000	Wentholt, F. A.
1940	Legari	3				8.000		1:100.000	Wentholt, F. A.
1941	Merauke (west)	15				140.000		1:100.000	Wentholt, F. A.
1946	Merauke (oost)	18				100.000		1:200.000	Wentholt, F. A.
1947	Soegroen-Arso	18				10.000		1:200.000	Druif, J. H.
1949	Manggoapi-Wosi	1	300					1:63.360	Soelen, W. J. van
1950	Amban	8	400					1:10.000	Soelen, W. J. van
	Achterland Sorong	8				2.100		1:20.000	Es, F. W. J. van
	Dojo	13						1:100.000	Es, F. W. J. van
1951	Omgeving Enarotali	2					V.V.		Loenen, F. C. van
	Z.O. hoek Humboldtbaai	16					V.V.		Loenen, F. C. van
	Omgeving Manokwari	2					V.V.		Loenen, F. C. van
	Genjem	8					V.V.		Loenen, F. C. van
	Tor-Biër	3	25						Loenen, F. C. van
1952	Oransbari	4				60.000		1:200.000	Soelen, W. J. van
	Omgeving Merauke	9				2.400		1:63.360	Soelen, W. J. van
	Sago-mocras Kota Radja	18					V.V.		Soelen, W. J. van
	Sentani-Hollandia Strip	2					V.V.		Loenen, F. C. van
	Kota Radja	2	415					1:20.000	Soelen, W. J. van
	Kota Nica	2	300					1:20.000	Soelen, W. J. van
1953	Biër-Wiroc	2	450						Razoux Schultz, F.
	Omgeving Merauke	4		8.000		95.000		1:250.000	H. N.
	Dojo Lama	18						1:25.000	Soelen, W. J. van
1953	Grimé-Sekoli	2	1.215						Razoux Schultz, F.
	Koembe	3							H. N.
	Biak-Korim	18				17.500		1:20.000	Soelen, W. J. van
	Tagemeer	5						1:100.000	Reynders, J. J.
		16							Mouthaan, W.P.J.L.

1954	Toran-Koembe-Maró	18			32.000		1: 100.000	Soelen, W. J. van
	Ransiki	9	3.500				1: 20.000	Reynders, J. J.
	Noemfoor	7			30.000		1: 63.360	Razoux Schultz, F. H. N.
	Moejoe	19			60.000		1: 250.000	Razoux Schultz, F. H. N.
	Bian-Toran	18			27.000		1: 100.000	Razoux Schultz, F. H. N.
1955	Koerik	18	600				1: 20.000	Reynders, J. J.
	Randawaja	6		2.000			1: 50.000	Razoux Schultz, F. H. N.
	Noordkust Japen	6	850				1: 20.000	Soelen, W. J. van
	Rheinauwen	2	150				1: 10.000	Reynders, J. J.
	Sidai	10		2.200			1: 50.000	Soelen, W. J. van
1956	Sentani	2	100				1: 5.000	Andriessé, P. J.
	Kota Nica	2	70				1: 2.000	Andriessé, P. J.
	Soemberbaba	6		200			1: 50.000	Reynders, J. J.
	Seroei-Korenbobi	6		175			1: 50.000	Reynders, J. J.
	Mokmer	5				230	1: 100.000	Reynders, J. J.
	Kepi	17	150				1: 10.000	Soelen, W. J. van
	Mappi	17			58.000		1: 100.000	Soelen, W. J. van
	Maro-Koembe	18		26.300			1: 50.000	Reynders, J. J.
	Rijstbedrijf Koembe	18	400				1: 5.000	Reynders, J. J.
	Mappi	17						V.V.
	Mopa-vlakte	18	1.250				1: 10.000	Loenen, F. C. van
	Zd.kust Japen-Koeroedoe	6			4.800		1: 100.000	Soelen, W. J. van Razoux Schultz, F. H. N.
1957	Orai-Woské-Tor	4	3.250				1: 20.000	Soelen, W. J. van
	Ajamaroe	14			220.000		1: 100.000	Reynders, J. J.
	Wisselmeren, Kamoe	16			120.000		1: 100.000	Reynders, J. J.
	Amban-Andai	8	1.900				1: 20.000	Soelen, W. J. van
	Manokwari	8			2.000			Reynders, J. J.
1958	Mopa-vlakte	18	750				1: 10.000	Soelen, W. J. van
	Kebar	12		37.000			1: 50.000	Reynders, J. J.
	Grimevlakte	3		5.000			1: 50.000	Razoux Schultz, F. H. N.
	Sibil	20						V.V.
	Hollandia	2	4.000				1: 20.000	Reynders, J. J.
	Grimevlakte	3		5.000			1: 50.000	Razoux Schultz, F. H. N.
	Baliem	21						V.V.
	Paal Poetih	18	1.500				1: 10.000	Schroo, H.
	Betaf-Armopa	4		25.000			1: 50.000	Schlette, B. Reynders, J. J.