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A. FIELD EXPERIMENTS

1. 4 x 4 x 4 NPK Experiment on Adult Palms—Bandirippuwa Estate (Commenced November 1960).

The 20 year data of this experiment are being statistically analysed. The results will be reported in the 1980 Annual Report.

The experiment was closed down at the end of 1978 and the yield data of the plots 19, 38, 15, 49, 35, 61, 9 and 22 were maintained. The following changes in fertilizer treatments were made to determine the rate of decline in production of palms which have received regular application of fertilizers, on stoppage of fertilizers.

Plots	*Treatment before 1979*	*Treatment Commencing 1979*
19	$N_3P_3K_3$	$N_3P_3K_3$
38	$N_0P_3K_3$	$N_0P_3K_3$
15	$N_1P_3K_3$	$N_0P_0K_0$
49	$N_2P_3K_3$	$N_0P_0K_0$

The following changes in fertilizer treatments were made to determine the rate of recovery of palms which have not received fertilizer for a long time, on resumption of fertilizer application.

Plots	*Treatment before 1979*	*Treatment commencing 1979*
35	$N_0P_0K_0$	$N_0P_0K_0$
61	$N_3P_0K_0$	$N_3P_0K_0$
9	$N_1P_0K_0$	1.575 kg SA, 0.9 kg SP, 1.575 kg MP
22	$N_2P_0K_0$	,,

SA — Sulphate of ammonia (20.6%N), SP — Saphos phosphate (27.5% P_2O_5), MP — Muriate of potash (60% K_2O).

Plots 19, 38, 61, 9 and 22 were manured in September 1979.

2. 3 x 3 x 3 NPK Experiment on Young Palms—Ratmalagara Estate (Commenced December 1948).

As at Bandirippuwa, the above experiment at Ratmalagara Estate was also closed down at the end of 1978 and the yield data of 8 plots were maintained. The following changes in the fertilizer treatments were made to determine the rate of decline in production of palms which have received regular application of fertilizers, on stoppage of fertilizers.

Plots	*Treatment before 1979*	*Treatment commencing 1979*
16	$N_3P_3K_3$	$N_3P_3K_3$
22	$N_3P_2K_3$	$N_3P_2K_3$
38	$N_3P_3K_3$	$N_0P_0K_0$
49	$N_3P_2K_3$	$N_0P_0K_0$

The following changes in the fertilizer treatments were made to determine the rate of recovery of palms which have not received fertilizers for a long time on resumption of fertilizer application.

Plots	*Treatment before 1979*	*Treatment commencing 1979*
8	$N_1P_1K_1$	$N_1P_1K_1$
26	$N_1P_2K_1$	$N_1P_2K_1$
28	$N_1P_1K_1$	$N_3P_3K_3$
50	$N_1P_2K_1$	$N_3P_3K_3$

Plots 16, 22, 8, 26, 28, 50 were manured in December 1979.

The yield data for 1979 showed significant response to potassium. The main effects are shown in Table A1.

Table A 1. *Yield data for 1979 -kg copra/ha- 136 palms/ha*

Treatment/palm/yr	*kg Copra/ha*	%	*Difference kg Copra/ha*
N_0	1963	100	—
N_1	1854	95	—109
N_2	1856	95	—107
P_0	1845	100	—
P_1	1972	107	+127
P_2	1857	101	+12
K_0	1799	100	—
K_1	1871	104	+72
K_2	2004	111	+205*

Significant difference P 0.05 = 148.0 kg/ha
*Significant at P 0.05.

3. 4 x 4 x 4 NPK Experiment on Young Palms - Pottukulama Research Station, Pallama (commenced December 1961).

Annual application of fertilizers was done in December, 1978. Several palms in the experimental plots have been affected by "leaf scorch."

4. Experiment on Forms of Nitrogen and Phosphorus and Frequency of Manuring — Pottukulama Research Station, Pallama (commenced June 1967).

Owing to the drought conditions, half-yearly manuring was not done. Annual manuring was done in November 1979.

5. 5 x 5 x 5 NPK Experiment on Adult Palms — Naiwala Es tate, Veyangoda (commenced July 1967).

The experiment was closed down at the end of 1977.

The yield data for 1970-1977 were combined and fitted to a quadratic function of the form, $Y = a_1 + a_2N + a_3P + a_4K + a_5N^2 + a_6P^2 + a_7K^2 + a_8NP + a_9NK + a_{10}PK$ where Y = yield (number of nuts or kg copra/palm/yr) or copra/nut (copra out-turn), N,P and K = kg/palm/yr of sulphate of ammonia, saphos phosphate and muriate of potash respectively and a_1-----a_{10} are the partial regression coefficients shown in Table A 2. The multiple correlation coefficients were very high showing that the quadratic function closely described the response to the applied fertilizers. Muriate of potash (60% K_2O) upto 1.8 kg/palm/yr linearly increased nut/palm, copra/palm and copra/nut, while sulphate of ammonia up to 4.4 kg/palm/yr decreased copra/nut. The optimum rates of fertilizers were 1.1 kg sulphate of ammonia, 0 to 0.83 kg saphos phosphate and 1.8 kg muriate of potash/palm/yr giving an yield of 12 kg copra/palm/yr.

Table A 2. *Partial regression coefficients of the Production Functions*

	Nut/palm/yr	*kg copra/palm/yr*	*copra/nut*
a_1	10.30	0.64	199.37
a_2	10.57	1.92	—7.75*
a_3	8.08	2.46	2.08
a_4	19.84***	5.67***	9.61**
a_5	—1.12	—0.15	2.82
a_6	—0.12	—0.09	—0.82
a_7	—0.60	—0.13	—1.52
a_8	—2.20	—0.57	—3.05
a_9	—0.30	—0.25	—0.98
a_{10}	—3.14	—0.86	—1.35
Correlation Coefficient	0.9653	0.9671	0.9424

Muriate of potash increased leaf K and Cl but decreased leaf Ca and Mg (Table A 3). Sulphate of ammonia decreased leaf Cl and saphos phosphate increased leaf P and Ca. Yield was positively correlated with leaf K and Cl and negatively correlated with leaf Mg (Table A 4).

Table A 3. *Effect of fertilizer application on leaf nutrient concentration*

Fertilizer Treatment	*Leaf Nutrients-partial regression coefficients in multiple regression equation*					
	N	*P*	*K*	*Ca*	*Mg*	*Cl*
Components						
N	2.51	0.84	-2.26	2.25	-2.10	-2.96*
P	0.59	4.29**	-2.13	3.61*	0.38	-1.45
K	1.57	1.81	8.59***	-3.80*	-4.33**	-10.66***

Table A 4. *Correlation of Yield (copra) vs Leaf nutrient concentration (1976-1977)*

Copra weight		*N*	*P*	*K*	*Ca*	*Mg*	*Cl*
N	0.3581	1					
P	0.2334	0.1160	1				
K	0.6078*	0.2314	0.0434	1			
Ca	-0.3077	-0.0294	0.4880	-0.8128***	1		
Mg	-0.6135*	-0.6567**	-0.1427	-0.7331**	-0.4900	1	
Cl	0.6737**	0.2625	0.1164	0.9691***	-0.7603**	-0.6893**	1

The results indicated a need for increasing the rate of muriate of potash in the current fertilizer mixtures (recommendation prior to 1979) for adult coconut.

6. 5 x 5 x 5 x 5 NPK Mg Experiment on Adult Palms — Marandawila Estate, Bingiriya (commenced November 1967).

The annual manuring was done in December 1979. Significant positive responses to phosphorus at P 0.01 and negative responses to nitrogen at P 0.05 were obtained. A significant positive PK interaction was also observed.

The main effects and the interaction are shown in Table A 5 and Table A 6 respectively.

Table A 5. *Estimated yield for 1979 — kg copra/ha — 148 palms/ha*

	Treatment/palm/yr	*kg copra/ha*	*%*	*Difference kg copra/ha*
N_0	0.000 kg ammonium sulphate	2512	100	—
N_1	1.103 „	2345	93	—167
N_2	2.206 „	2175	87	—337
N_3	3.309 „	2005	80	—507
N_4	4.412 „	1833	73	—679

(Contd.)

P_0	0.000	kg saphos phosphate	1935	100	—
P_1	0.826	,,	2037	105	102
P_2	1.652	,,	2157	111	222
P_3	2.478	,,	2294	119	359
P_4	3.304	,,	2447	126	512
K_0	0.000	kg muriate of potash (60% K_2O)	2113	100	—
K_1	0.454	,,	2206	104	133
K_2	0.908	,,	2276	108	163
K_3	1.362	,,	2204	104	91
K_4	1.816	,,	2031	96	—82
Mg_0	0.000	kg kieserite	2004	100	—
Mg_1	0.681	,,	2189	109	185
Mg_2	1.362	,,	2274	113	270
Mg_3	2.043	,,	2259	113	255
Mg_4	2.724	,,	2144	107	140

Table A 6. *PK Interaction (kg/ha)*

	P_0	P_1	P_2	P_3	P_4
K_0	2420	2250	2096	1959	1839
K_1	2280	2213	2229	2229	2245
K_2	2037	2139	2259	2396	2549
K_3	1692	1931	2188	2461	2751
K_4	1244	1620	2013	2424	2851

7. Comparison of Eppawala Apatite with Saphos Phosphate — Mahayaya Estate, Makandura and Andigedera Estate, Bingiriya (Commenced June 1975).

Manuring at both estates was done in December 1979.

No significant response to phosphorus was obtained.

8. Magnesium Experiment on Young Palms — Bandirippuwa Estate, Lunuwila (Commenced October 1972).

The manuring which was due in December 1979 was not done due to severe drought. The 1979 application was done in July 1980. All palms were treated with the CA-1 mixture at the rate of 3750 gm/palm. Kieserite was also applied at the same rates as in 1978.

Percentage of palms in flower at the end of 1979 is given below.

	Mg_0	*Mg_1*	*Mg_2*
T x T	41.7	63.9	66.7
T x D	72.3	69.4	83.4
D x T	58 3	88.9	63.9
OP	36.1	47.2	61.1

9. Fertilizer Experiment on Young Hybrid Palm — Bandirippuwa Estate. (Commenced December 1973).

The experiment has completed six years.

The drainage in a few plots of the experiment is not satisfactory. Hence the data on flowers are not statistically analysed. However, the data for the different treatments from plots under well drained conditions are presented in the following table. Treatment L_2 (12 lb/palm/year) has given the best effect.

	Palms in Flower			
	Level O(Control)	*Level 1*	*Level 2*	*Level 3*
	8	4	12	9
	8	11	12	12
	5	12		
	1	9		
Mean/ plot	22 / 7	36 / 9	24 / 12	21 / 10.5
% Palms in flower	58.3	75	100	87.5

10. Chlorine Experiment at Ratmalagara Estate, Madampe (commenced June 1977).

The third manuring was done in September 1979.

11. 3 x 3 NK Experiment at Kobeigane Estate, Hettipola (commenced December 1978).

The second manuring was done in November 1979.

12. Experiment on Ammonium Chloride, Ammonium Sulphate and Urea at Manakkulama Estate, Kakkapalliya (commenced July 1976).

The manuring was due in December 1979. But due to drought conditions manuring was done in April 1980.

A significantly linear response to nitrogen was obtained. But there was no significant difference between the sources of nitrogen.

13. Comparison of Saphos Phosphate and Concentrated Superphosphate at Pallai (commenced July 1977).

14. Fertilizer Experiment on Hybrid Palms at Bandirippuwa Estate (Commenced August, 1979).

A new experiment was commenced at Bandirippuwa on a 4 ha sandy soil to determine the growth and yield responses of young palms (second plantation, Dwarf x Tall) to the application of three levels of an inorganic fertilizer mixture at different rates of increment with age of palms.

The experimental design consists of a randomized block design with 3 replicates. There are 9 plots in each block and each plot has 6 seedlings. The seedlings were planted in November, 1978.

The first fertilizer application was done in August 1979. Fertilizer mixture used consists of 2 parts urea, 1 part concentrated superphosphate and 3 parts of muriate of potash (60% K_2O).

The treatments are given below:

	Rate per palm in g				
Treatment	*1st year*	*2nd year*	*3rd year*	*4th year*	*5th year*
T_1	480	540	600	660	2280
T_2	960	1080	1200	1320	4560
T_3	1920	2160	2400	2640	9120
T_4	120	600	720	840	2280
T_5	240	1200	1440	1680	4560
T_6	480	2400	2880	3360	9120
T_7	228	456	684	912	2280
T_8	456	912	1368	1824	4560
T_9	912	1824	2736	3648	9120

Fertilizer will be applied biannually.

15. Husk Experiment at Ratmalagara Estate, Madampe (commenced August. 1978).

An experiment was commenced to study the effect of husk-burial on soil moisture conservation under coconut at Ratmalagara. Tensiometers were inserted at 6, 12 and 18 inches depths and about 2 feet away from the husk pits. Tensiometers were also installed at similar positions in plots having no husk pits. Soil moisture tension readings were noted once in three days in all the plots.

16. Soil Erosion Experiment at Bandirippuwa Estate (Commenced June, 1979).

A new experiment on the effects of intercropping on surface runoff, soil losses and water infiltration under a mature stand of coconut was commenced on a lateritic gravelly soil at Bandirippuwa. The intercrops are Guinea B (*Panicum maximum*) and Manioc (*Manihot utilissima*) in the 50 acre block and cori grass (*Brachiaria miliiformis*) at Kotakande.

B. POT EXPERIMENT

1. Comparison of Eppawala Apatite with Saphos Phosphate using *Paspalum commersonii.*

The series of glass house experiments was continued during the year. The soil samples for the experiment were taken from the differentially treated plots of the field experiment at Andigedera Estate, Bingiriya, where Eppawala Apatite (EP) at 2, 4 and 6 lb/palm/year and Saphos Phosphate (SP) at 1, 2 and 3 lb/palm/year are being tested. Within the manure circle of each treated palm 4 borings around similarly treated palms were bulked, air-dried and sieved (2 mm). From each lot about 7 kg were taken for the pot experiment.

Each treatment was replicated 4 times and a randomized block layout was used. Nitrogen and potassium were provided as basal doses. The plants were harvested 65 days after sowing. Weight of dry matter and the phosphorus content of the plants were determined.

For some unexplicable reason there is some inconsistency in the results so that the data is not analysed statistically. However it was noted that the effect of saphos phosphate was better than that of Eppawala Apatite.

C. LABORATORY INVESTIGATIONS

1. Evaluation of the phosphorus status of the major coconut-growing soils of Sri Lanka.

Of the coconut-growing countries of the world Sri Lanka alone appears to have shown significant effect on nut and copra yield to the application of P fertilizers (Wahid, P.A., *et al* (1977). *Phil J. Cocon Studies*, 2. 4, 1-8). In order to elucidate the reason for this response, a study of the P status of the major coconut-growing regions of Sri Lanka was undertaken.

The distribution of total, organic, various forms of inorganic P and available P extracted by four chemical methods was determined for 58 soils belonging to 15 soil series (Table C1 and C2). Total P was generally low in most soils ranging from 73 to 290 ppm. The relative abundance of the various forms of P was generally in the order of occluded P > organic P > Fe-P > Al-P > Ca-P with occluded P constituting 35 to 70% of total P. Al-P and Ca-P were highly correlated with Olsen's -, Bray I -, Bray II - and NH_4 OAc pH 4.8 extractable P. Available P by the four methods Al-P and Ca-P were positively-correlated with % sand and negatively correlated with % silt and % clay.

Phosphorus (%) in the 14th leaf of coconuts from selected sites ranged from 0.07 to 0.12. Cnly the palms in Negombo, Madampe and Katunayake series had values close to the critical phosphorus concentration of 0.12%. Leaf P was positively correlated with all four available forms, Al-P and Ca-P (Bray II and NH_4 OAc - extractable P statistically significant at the 0.05 level and the others very close to this level).

Table C 1. *Available P in coconut-growing soils of Sri Lanka (ppm)*

*Soil Series**	*Olsen-P*	*Bray and Kurtz I-P*	*Bray and Kurtz II-P*	*NH_4 OAc-P*
Boralu (12)	0.5	0.8	2	0.6
Kiriwana (3)	1.0	2.0	4	1.0
Kurunegala (3)	0.2	0.1	2	0.5
Maho (3)	2.0	2.0	7	2.0
Andigama (3)	1.0	2.0	3	2.0
Wilpattu (3)	1.0	4.0	9	3.0
Rathu (4)	0.4	4.0	3	1.0
Madampe (5)	3.0	4.0	7	2.0
Pallama (3)	0.5	1.0	5	0.8
Aruvi (3)	0.7	1.0	6	0.9
Wariyapola (2)	0.6	1.0	4	1.0
Ranorewa (2)	0.6	0.6	5	1.0
Gambura (2)	0.7	1.0	6	1.0
Katunayake (5)	6.0	10.0	24	6.0
Negombo (5)	6.0	9.0	20	7.0

* Number of sites in each soil series

Table C 2. *P Fractions in coconut-growing soils of Sri Lanka (ppm)*

*Soil Series**	*Total P*	*Occluded P*	*Organic P*	*Al-P*	*Fe-P*	*Ca-P*
Boralu (12)	174	89	50	6	23	5
Kiriwana (3)	241	158	49	6	22	5
Kurunegala (3)	174	91	48	4	24	6
Maho (3)	185	61	67	18	29	9
Andigama (3)	132	83	19	6	18	6
Wilpattu (3)	105	40	22	13	22	7
Rathu (4)	152	105	19	8	16	5
Madampe (5)	42	10	7	7	13	5
Pallama (3)	83	32	24	7	18	3
Aruvi (3)	73	29	20	5	14	5
Wariyapola (2)	169	116	20	7	20	6
Ranorewa (2)	182	105	39	5	28	4
Gambura (2)	106	37	30	13	14	12
Katunayake (5)	145	72	8	34	24	8
Negombo (5)	122	39	7	30	25	20

* Number of sites in each soil series

2. Leaf Water Potential Measurements

Soil moisture is one of the major factors affecting coconut yield. A better understanding of the effect of soil moisture on the plant water status of coconut is required to adopt suitable soil water management practices. Lack of a reliable and rapid method to determine the plant water status of coconut in the field has hindered progress in this field of study.

The Pressure Bomb method developed by Scholander (Scholander, P.F. *et al.* (1965). *Science*, 148,339.) was adopted to determine leaf water potential (LWP) of young coconut in the field. A marked diurnal variation of LWP ranging from—1 to—13 bars with the highest values during mid-day and the lowest during nights, was noted. Neither the age of the frond nor the position of the leaflets had significant influence on LWP. Irrigation of the palms decreased LWP by as much as —10 bars.

The results showed that LWP as measured by Pressure Bomb could be used as a reliable indicator of the moisture status of coconut.

3. Analysis of leaf and soil samples from the field experiments was continued.

4. Downward movement and transformation of phosphorus in soils at Naiwala and Marandawila estates were commenced.

D. SOIL SURVEY

(This report was submitted by Mr. K. S. O. Perera.)

1. A detailed soil survey was carried out at Tabbowa (Nattandiya), Kudagalgamuwa (Kurunegala) and Kotawila (Kamburugamuwa) to determine the land capability requirements of intercrops such as coffee, cocoa and pepper. This project was carried out under a U.N.D.P. programme. Though the areas lie in the semi-wet lowland and the wet lowland, the moisture holding capacity of the soils was considered to be an important factor in deciding the land capability for intercrops.

(*a*) *Tabbowa, Nattandiya* — Semi-wet lowland (Fig. 1)
The following soils were identified.

(1) *Pallama series — upper slope phase*

Deep, yellowish red, sandy clay loam, moist and well drained. Ironstone gravels are present at depths.

(2) *Pallama series — lower slope phase*

Deep, surface loamy sands grading downwards to sandy clay loam, dark yellowish brown, moist and well drained. Ironstone gravels are present at depths.

(3) *Madampe series*

Deep, grayish brown, loamy sands grading to sandy loams, moist at depth, well to imperfectly drained.

(4) *Boralu series — moderately deep phase*

Yellowish brown, sandy clay loams with 60 - 70% gravels, dry and well drained.

(5) *Boralu series — shallow phase*

Yellowish brown, sandy clay loam with 60-70% gravels, dry and well drained.

Order of capability

((1) and (2)), (3), (4), (5) — Pallama series having favourable soil depth, texture and moisture holding capacity was the most suitable soil for the proposed intercrops.

(*b*) *Kudagalgamuwa — Kurunegala, semi-wet lowland* (Fig. 2)

The following soils were identified.

(1) *Kurunegala series*

Deep, dark yellowish brown, sandy clay loam with fine quartz gravels passing to soft mottled lateritic horizon. Moist and well drained.

(2) *Kiriwana series*

Shallow to moderately deep, dark yellowish red, sandy clay loam, 60-70% quartz gravel. Dry and rapid drainage.

(3) *Rock knob plain*

Shallow, sandy clay loam with rock outcrops. Dry and well drained.

SOIL MAP - TABBOWA

REFERENCE.

Roads { Major, Minor

Railways: Negombo - Puttalam Canal

Tanks. * Area Not Surved.

Mapped: PERERA. K. S. 0. 1978.

Scale: 4 Inches to 1 Mile (approx)

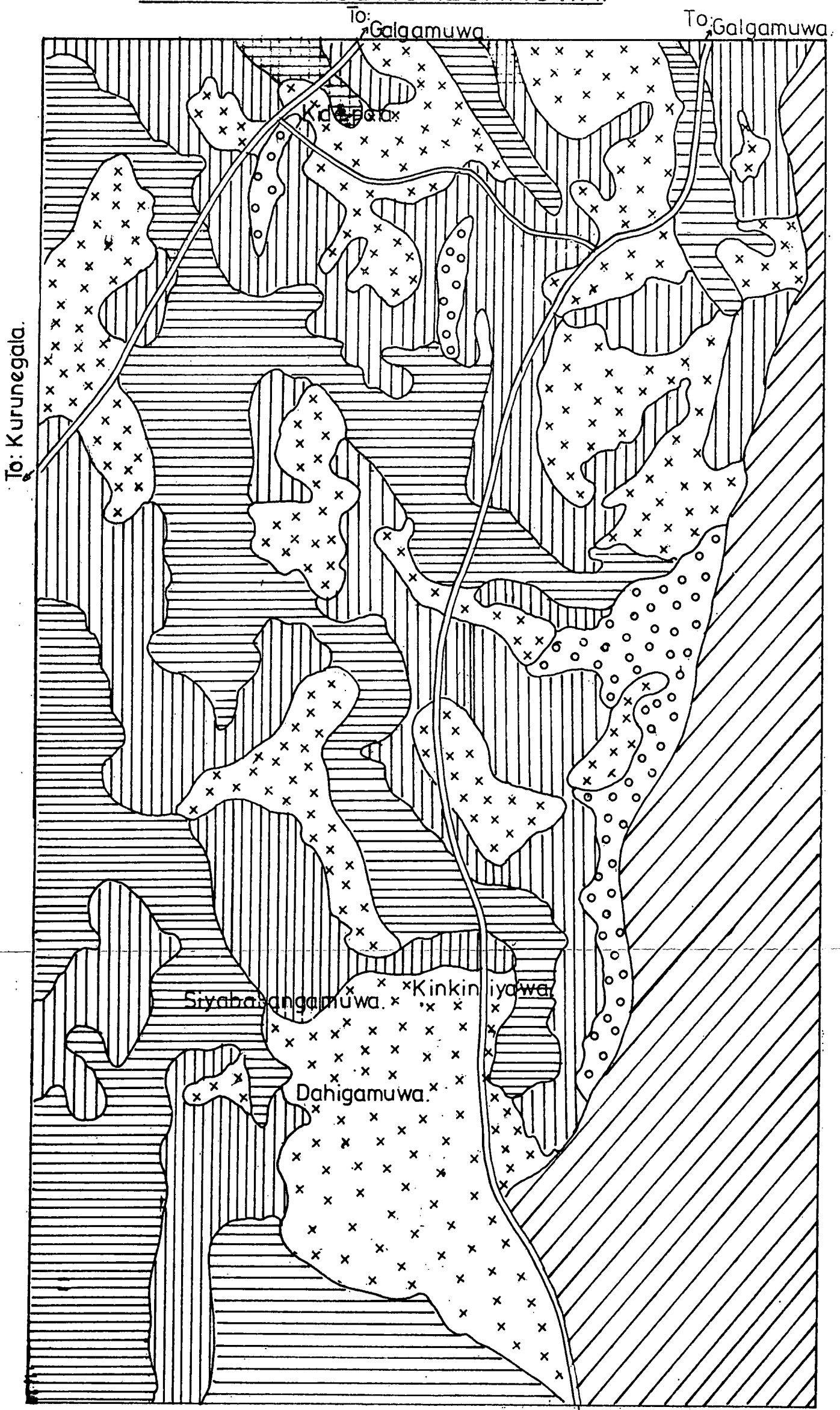
SOIL MAPPING UNIT.

- Boralu Series, Shallow Phase.
- Boralu Series, Moderately deep phase.
- Pallama Series, Lower Slope Phase.
- Paddy Fields.
- Pallama Series, Upper Slope Phase
- Madampe Series.

Cartography: D.S. Wijayatunge.

Field Assistance: E.N. Fernando.
D.S. Wijayatunge.

SOIL MAP KUDAGALGAMUWA.



Mapped: PERERA.K.S.O.1978.

Scale: 3 Inches to 1 Mile (Approx.)

SOIL MAPPING UNIT

Kurunegala Series.

Rock Knob Plain.

Kiriwana Series

Paddy Fields.

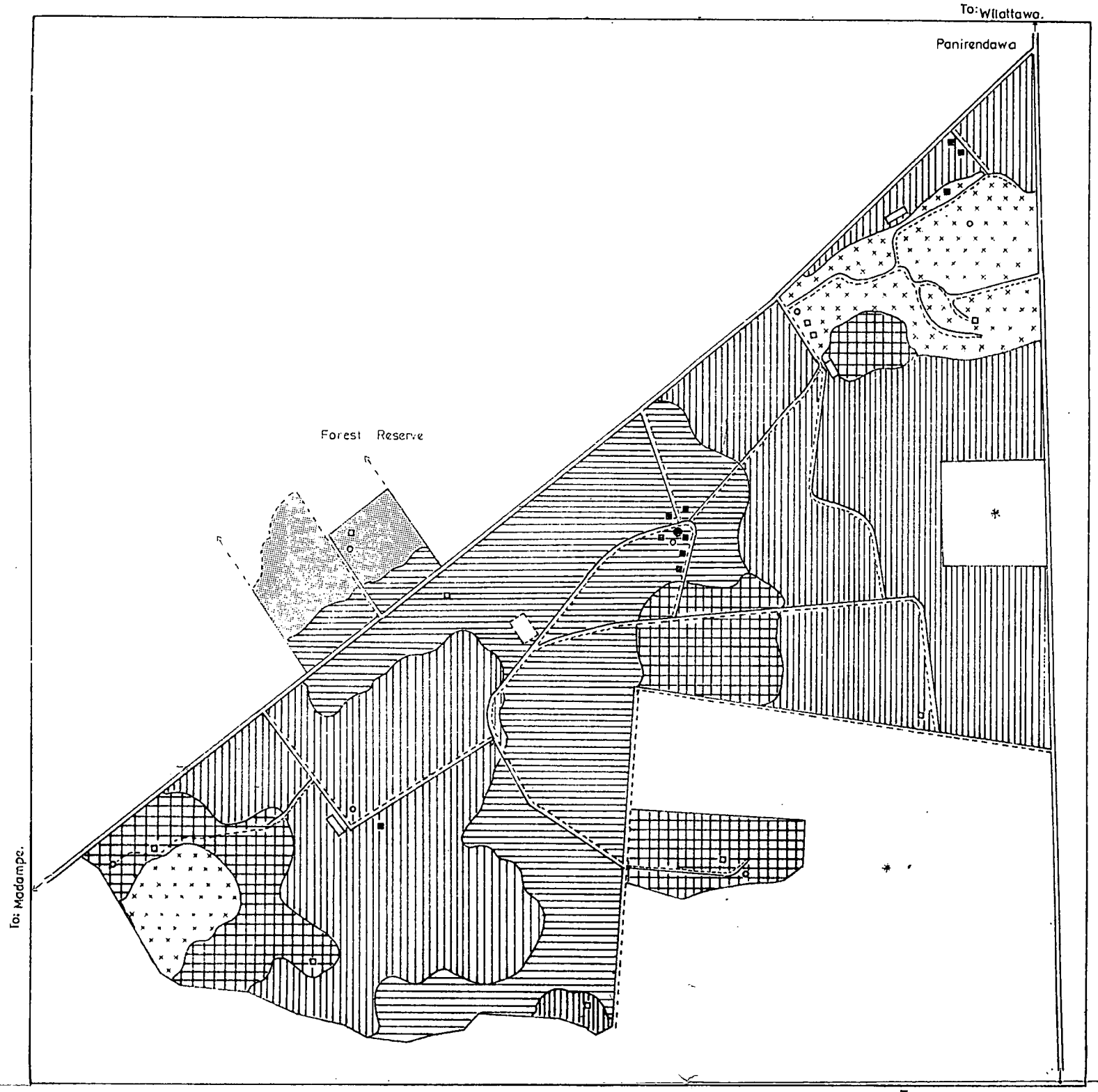
Ridge

Field Assistance:

E.N.Fernando.
D.S.Wijayatunge.

Cartography: D.S.Wijayatunge.

SOIL MAP OF THE RATMALAGARA RESEARCH STATION.



REFERENCE

- Roads [Minor.
- Roads [Cart Track.
- Offices.
- Power House
- Circuit Bungalow.
- Bungalows.
- Watchers Quarters
- Wells
- Cattle Shed.
- Private Land

Scale: 5 Chains to 1 Inch Approx.

Mapped: PERERA K.S.O. 1979.

	SOILS	PHYSIOGRAPHY	GEOLOGY
	PALLAMA SERIES Red Clay Varient	Upper Slope Plain	Colluvial Sediments.
	PALLAMA SERIES PHASE ASSOCIATIONS Deep [+ Moderately Deep]	Lower Slope Plain Slightly Eroded Summits.	- Do -
	Moderately Deep [+ Shallow]	Moderately Eroded Mid Slopes.	- Do -
	Shallow [+ Very Shallow]	Strongly Eroded Bottom Slopes.	- Do -
	SUDU SERIES AND ROCK KNOB PLAIN.	Maring Plain on Eroded Valley.	Marine Sediments.

Note Sub Dominent Phase Within Brackets.

Cartography: D.S. Wijayatunge.

Assisted: E.N. FERNANDO.
D.S. Wijayatunge.

Order of capability

Soils (2) and (3) are of low capability for intercrops (perennials). Soil (1) appears to be of moderate capability.

(c) *Kotawila (Kamburugamuwa), wet lowland*

Three soil categories were identified.

(1) Shallow, yellowish red, sandy clay loam with coarse gravels. Dry and well drained. The soils occur on high ridges.

(2) Moderately deep, dark yellowish brown, sandy clay loam with gravels, moderately moist at depths, well drained. The soils occur on steep narrow ridges.

(3) Deep, reddish yellow, sandy clay loams. Moist and well drained.

These soils are developed on the foot slopes of (2).

Order of capability

(3), (2), (1)
Depth, texture and moisture holding capacity of (3) is very favourable for the proposed intercrops.

Soil Survey of Research Stations

(1) *Ratmalagara Research Station* — (271 acres) (Fig. 3)
Agroclimatic regime — semi-wet lowland

General. Geomorphology of the area suggests that cycles of sedimentation and erosion may have formed the landscape which consists of a basement lateritic surface below a compacted gravel hard pan on which the colluvial *Pallama surface* has been formed. Erosion may have taken place towards the valleys and in the highly eroded valley bottom, marine sediments could have deposited the *sudu surface.*

Soils of the Pallama surface

(i) Pallama series, red clay variant developed on the foot slopes of the north-west ridge. The soils are yellowish red, deep, sandy clay loams, grading downwards to red fine sandy clays. Well drained.

(ii) Pallama series, phase complexes.

These soils are developed on a plain lower to the plain in (1) and consist of a summit area dipping towards the valleys. Due to erosion, the soils are in a complex of depth phases, one depth phase being dominant for each complex.

(iii) Soils of the summits and upper slopes — slightly eroded. Pallama series, deep to moderately deep phase complex.

Dark yellowish brown, deep, sandy clay loams on lateritic gravel hardpan resting on lateritic basement. The moderately deep phase is subdominant. Well drained.

(iv) Soils of the mid-slopes — moderately eroded.

Pallama series moderately deep to shallow phase complex. The soils are similar to (iii). The moderately deep phase is the dominant one.

(v) Soils of the bottom slopes — strongly eroded.

Pallama series, shallow to very shallow phase complex. Here the soils are similar to (iii) and (iv). The dominant phase is the shallow one. The very shallow phase is subdominant.

Soils of the marine phase on eroded valley bottoms

The soils are deep to shallow sands imperfectly to poorly drained, associated with outcropping of a rock knob plain on elevated areas.

(2) *Walpita Research Station*

Lattice 'A' Block — (Fig. 4)

This work was done at the request of the intercropping Division.

Extent: About 25 acres.

Agroclimatic regime — wet lateritic lowland

General

The lateritic ridge which forms the Boralu surface has deposited colluvial products to form the Pallama surface. Marine sediments may have formed the bottom slope sandy soils, and probably buried the lower Pallama surface.

The following soils identified resembled some of the soils of Tabbowa, Nattandiya, already described.

(1) Boralu series, shallow to very shallow phase.

(2) Boralu series, shallow to moderately deep phase.

(3) Pallama series, moderately deep to deep phase.

(4) Pallama series, deep phase.

(5) Pallama series, buried phase.
This is similar to the lower slope phase of the Tabbowa area.

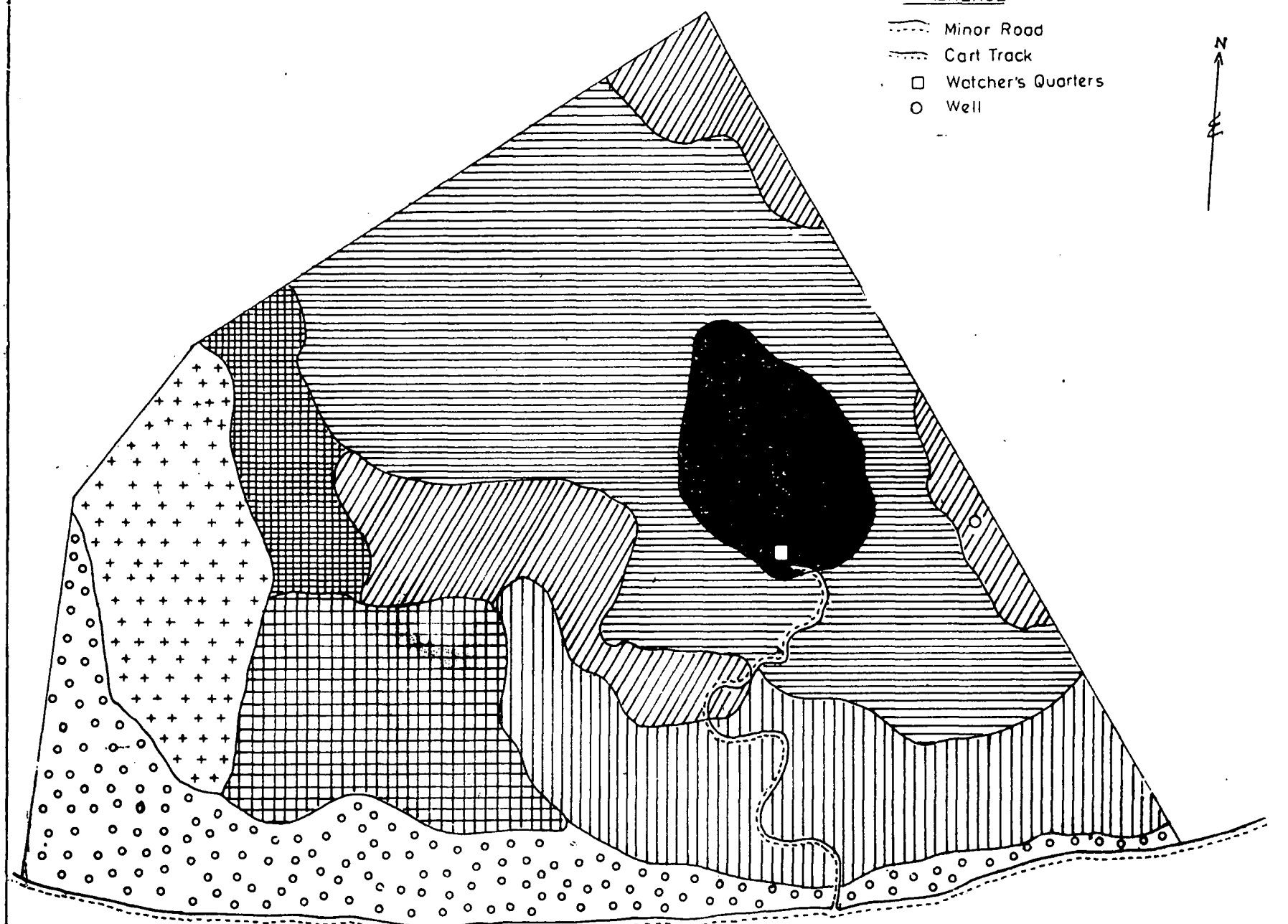
(6) Katunayake series, gravelly phase.
Light yellowish brown, coarse loamy sands, moderately deep, deposited on the gravelly foot slopes of the Boralu landscape — well drained.

(7) Katunayake series.
Light yellowish brown, coarse loamy sands. Deep and well drained.

(8) Sudu series.
Light yellowish brown, deep, coarse sands, imperfectly to poorly drained.

Figure 4

SOIL MAP OF THE WALPITA ESTATE. LATTICE A BLOCK



Scale: 15 Chains to 1 Inch Approx

Mapped: PERERA.K.S.O. 1979

	SOILS	PHYSIOGRAPHY	GEOLOGY
	BORALU SERIES Very Shallow to Shallow Phase	Eroded Summit	Laterization of Khondalite Basement.
	BORALU SERIES Shallow to Moderately Deep Phase.	Moderately Eroded Ridge.	- D. o -
	PALLAMA SERIES Moderately Deep to Deep Phase	Upper Ridge Slope	Colluvial Sediments on Buried Boralu Surface.
	PALLAMA SERIES Deep Phase	Mid Slope	- D o -
	PALLAMA SERIES Buried Phase	Lower Mid Slope	Marine Sands on Buried Pallama Surface
	KATUNAYAKA SERIES Gravelly Phase	Mid Slope	Marine Sands on Buried Boralu Surface.
	KATUNAYAKA SERIES. Deep Phase.	Upper Valley Slope	Marine Sands
	SUDU SERIES	Lower Valley Slope	Marine Sands.

Assisted D.S.Wijayatunge

Cartography: D.S.Wijayatunge

III Soil Survey of Lands in the Monaragala District

Lands in several AGA Divisions of the Monaragala District in the Intermediate and Dry Zones were surveyed to determine their suitability for planting coconut. A Report was submitted to C.D.A.

E. MISCELLANEOUS

The following papers were presented in scientific meetings during 1979.

(1) Loganathan, P. and Balakrishnamurti, T. S. (1979). Effect of NPK fertilizers on the yield and leaf nutrient status of adult coconut on a lateritic gravelly soil. Paper presented at the 35th Annual Sessions of the *Sri Lanka Association for the Advancement of Science*, Dec., 17th 1979.

(2) Loganathan, P., Dayaratne, P.M.N. and Shanmuganathan, R.T. (1979). Evaluation of the phosphorus status of some coconut-growing soils of Sri Lanka. Paper presented at the 35th Annual Sessions of the *Sri Lanka Association for the Advancement of Science*, Dec., 18th 1979.

(3) Loganathan, P., (1979). Soil and fertilizer research to increase coconut production. Paper presented at the Annual Sessions of the *Soil Science Society of Sri Lanka*, Dec., 21st 1979.

(4) Jayasekera, K.S. and Loganathan, P. (1979). Leaf water potential measurements on coconut using pressure bomb. Paper presented at the 5th Annual Sessions of the *Sri Lanka Association for the Advancement of Science*, Dec., 19th 1979.

F. PERSONNEL

(1) The Soil Chemist continued to serve in the Board of study for Agricultural Chemistry and as a Visiting Lecturer at the Post Graduate Institute of Agriculture, University of Peradeniya.

(2) The Soil Chemist was elected as a Fellow of the Royal Institute of Chemistry (F.R.I.C.) on 29th November, 1979.

(3) Mr. A. S. Amarasinghe, Research Assistant, resumed duties from 26th December 1979 after successfully completing his post-graduate studies at the University of Western Australia.

(4) Miss G. V. Mallika and Mr. N. D. S. Pinidiya, Technical Assistants, resigned from their posts on 1st October 1979 and 15th October 1979 respectively.

P. LOGANATHAN
Soil Chemist