

APPENDIX

Results of Soil Analyses in Asia 1995-2000

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The following tables present the analysis results of soil samples taken in various countries in Asia, mainly in soil fertility maintenance experiments and in FPR trials in farmers fields. To facilitate interpretation of the results, **Table 1** indicates the approximate classification of soil chemical characteristic according to the nutritional requirements of cassava.

Table 1. Approximate classification of soil chemical characteristics according to the nutritional requirements of cassava.

Soil parameter ¹⁾	Very low	Low	Medium	High	Very high
pH	<3.5	3.5-4.5	4.5-7	7-8	>8
Org. matter (%)	<1.0	1.0-2.0	2.0-4.0	4.0-8.0	>8.0
Al-saturation (%)			<75	75-85	>85
Salinity (mmhos/cm)			<2	2-10	>10
Na-saturation (%)			<2	2-10	>10
P (µg/g)	<2	2-5	5-20	20-50	>50
K (me/100g)	<0.10	0.10-0.15	0.15-0.25	>0.25	
Ca (me/100g)	<0.25	0.25-1.0	1.0-5.0	>5.0	
Mg (me/100g)	<0.2	0.2-0.4	0.4-1.0	>1.0	
S (µg/g)	<20	20-40	40-70	>70	
B (µg/g)	<0.2	0.2-0.3	0.3-1.0	1-2	>2
Cu (µg/g)	<0.1	0.1-0.2	0.2-1.0	1-5	>5
Mn (µg/g)	<5	5-10	10-100	100-250	>250
Fe (µg/g)	<1	1-10	10-100	>100	
Zn (µg/g)	<0.5	0.5-1.0	1.0-5.0	5-50	>50

¹⁾pH in H₂O: OM by ethod of Walkley and Black;
 Al saturation = 100 x Al / (Al + Ca + Mg + K) in me/100g;
 P in Bray II; K, Ca, Mg and Na in 1N NH₄-acetate; S in Ca-phosphate;
 B in hot water; and Cu, Mn, Fe and Zn in 0.05 N HCl + 0.025 N H₂SO₄
Source: modified from Howeler, 1996.

REFERENCE

Howeler, 1996. Diagnosis of nutritional disorders and soil fertility maintenance of cassava.
In: G.T. Kurup et al. (Eds.). Tropical Tuber Crops. Problems, Prospects and Future Strategies. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi, India. pp. 181-193.

¹⁾CIAT Cassava Office for Asia, Dept. of Agric., Chatuchak, 10900 Thailand.

Table 2. Soil samples taken in China, 1997-2000.

Sample no.	Sample location and description	Date
Hainan	-1 Danzhou, CATAS; NPK trial before planting 6 th cycle, N ₀ P ₀ K ₀	Mar 97
	-2 Danzhou, CATAS; NPK trial before planting 7 th cycle, N ₀ P ₀ K ₀	Dec 97
	-3 Danzhou, CATAS; NPK trial before planting 9 th cycle, N ₀ P ₀ K ₀	Jan 00
	-4 Danzhou, CATAS; NPK trial before planting 10 th cycle, N ₀ P ₀ K ₀	Dec 00
	-5 Danzhou, CATAS; NPK trial before planting 6 th cycle, N ₂ P ₀ K ₂	Mar 97
	-6 Danzhou, CATAS; NPK trial before planting 7 th cycle, N ₂ P ₀ K ₂	Dec 97
	-7 Danzhou, CATAS; NPK trial before planting 9 th cycle, N ₂ P ₀ K ₂	Jan 00
	-8 Danzhou, CATAS; NPK trial before planting 10 th cycle, N ₂ P ₀ K ₂	Dec 00
	-9 Danzhou, CATAS; NPK trial before planting 6 th cycle, N ₂ P ₂ K ₀	Mar 97
	-10 Danzhou, CATAS; NPK trial before planting 7 th cycle, N ₂ P ₂ K ₀	Dec 97
	-11 Danzhou, CATAS; NPK trial before planting 9 th cycle, N ₂ P ₂ K ₀	Jan 00
	-12 Danzhou, CATAS; NPK trial before planting 10 th cycle, N ₂ P ₂ K ₀	Dec 00
	-13 Danzhou, CATAS; NPK trial before planting 6 th cycle, N ₂ P ₂ K ₂	Mar 97
	-14 Danzhou, CATAS; NPK trial before planting 7 th cycle, N ₂ P ₂ K ₂	Dec 97
	-15 Danzhou, CATAS; NPK trial before planting 9 th cycle, N ₂ P ₂ K ₂	Jan 00
	-16 Danzhou, CATAS; NPK trial before planting 10 th cycle, N ₂ P ₂ K ₂	Dec 00
	-17 Danzhou, CATAS; NPK trial before planting 6 th cycle, N ₃ P ₃ K ₃	Mar 97
	-18 Danzhou, CATAS; NPK trial before planting 7 th cycle, N ₃ P ₃ K ₃	Dec 97
	-19 Danzhou, CATAS; NPK trial before planting 9 th cycle, N ₃ P ₃ K ₃	Jan 00
	-20 Danzhou, CATAS; NPK trial before planting 10 th cycle, N ₃ P ₃ K ₃	Dec 00
	-21 Tunchang county, Nankun town, FPR erosion trial, poor rocky soil	Aug 97
	-22 Tunchang county, Nankun town, FPR erosion trial, check plot, good soil	Aug 97
	-23 Danzhou county, Panja town (FPR diagnosis), cassava+rubber	July 98
	-24 Baisha county, Kongba village, Mr. Ju Yong Quan, check in NPK trial	Aug 97
	-25 Baisha county, Kongba village, ZM 93274 with clear N deficiency	Aug 99
	-26 Baisha county, Kongba village, FPR variety trial Mr. Tan Yin Chai	Dec 99
	-27 Baisha county, Kongba village, FPR variety trial Mr. Zhou Yong Ming	Dec 99
	-28 Baisha county, Kongba village, FPR variety trial Mr. Fu Yong Cheng-high yield first year, no fertilizers applied	Dec 99
	-29 Baisha, Kongba, variety trial Mr. Yong Cheng, small top growth after 6 years of continuous cassava	Dec 99
	-30 Baisha county, Kongba village, variety trial Mr. Jhou Wensheng	Dec 99
	-31 Baisha county, Kongba village, variety trial Mr. Liu Huangcheng	Dec 99
	-32 Baisha county, Kongba village, variety trial of Mr. Jhou Wensheng (on mountain)	June 00
	-33 Baisha county, Tapuling village, Mr. Shou Wen Lin, check in NPK trial	Aug 97
	-34 Baisha county, Tapulin village, erosion trial, poor growth	Aug 99
	-35 Baisha county, Tapulin village, above erosion trial, good growth SC205	Aug 99
	-36 Baisha county, Tapulin village, FPR variety trial Mr. Fu Jiabang	Dec 99
	-37 Baisha county, Tapulin village, FPR variety trial Mr. Fu Yu Ming	Dec 99
	-38 Baisha county, Tapulin village, FPR variety trial Mr. Fu Yonggen	Dec 99
	-39 Baisha county, Tapulin village, FPR variety trial Mr. Fu Jia Yu (50% slope)	Dec 99
	-40 Baisha county, Tapuling village, variety trial of Mr. Fu Chang	June 00
Guangdong	-1 Qing Yuan county, check plot in NPK on-farm trial	Aug 97
	-2 Gaozhou Agric. College, check plot in NPK trial on campus	Aug 97
	-3 Gaozhou county, on-farm NPK trial before '98 planting	Dec 97
	-4 Yunan county, on-farm NPK trial before '98 planting	Dec 97

Table 2. Soil samples taken in China, 1997-2000. (continued)

Sample no.	Sample location and description	Date
Guangxi	-1 Wuming county, Xinglian village, FPR site; red soil, 30% slope	Aug 99
	-2 Wuming, Xiawang village, ZM 8634 with Zn and B deficiency symptoms	June 00
	-3 Near Pingguo town, Zn+Fe deficiency in limestone-derived soil	June 00
	-4 Near Pingguo town at foot of limestone mountain, field of GR 911	June 00
Yunnan	-1 Honghe district, Pingbian county, Pingbian Prod. Base near Vietnam border	Aug 97
	-2 Honghe district, Pingbian Production Base; variety trial	Nov 00
	-3 Honghe district, Jinping county, large cassava plantation on black clay	Aug 97
	-4 Honghe district, Yuanjang county, Si-jiao Tian village, cassava on 80% slope	Aug 97
	-5 Jianshai county, Chenguan town (north of Jiangshui), red clay eroded soil	Aug 97
	-6 Jinping county, Dazhai town, Michang village, Machaokou Production Base, black soil with banana	Aug 99

Table 3. Chemical and physical characteristics of cassava soils in China, 1997-2000.

Sample no.	Chemical characteristics													Physical characteristics				
	pH	% OM	ppm P	me/100 g				% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	Clay	Texture ¹⁾	
Hainan	-1	5.4	1.0	18.6	0.52	0.95	0.21	0.09	29	-	-	-	-	-	-	-	-	
	-2	4.7	0.8	17.9	0.83	0.45	0.15	0.08	55	0.13	0.35	12.1	0.15	19.7	58.4	17.6	24.0	s.c.l.
	-3	5.2	0.8	12.0	0.62	0.39	0.06	0.09	53	0.20	0.61	10.7	0.13	14.7	58.8	27.2	14.0	s.l.
	-4	5.4	0.8	9.1	0.62	0.52	-	0.10	-	-	-	-	-	-	-	-	-	-
	-5	5.1	1.0	15.4	0.52	1.00	0.20	0.10	29	-	-	-	-	-	-	-	-	-
	-6	4.8	0.9	17.1	0.73	0.41	0.14	0.10	53	-	-	-	-	-	-	-	-	-
	-7	5.2	0.9	10.6	0.62	0.36	0.07	0.13	53	-	-	-	-	-	-	-	-	-
	-8	5.0	0.9	6.2	0.73	0.50	0.07	0.12	51	-	-	-	-	-	-	-	-	-
	-9	4.9	1.0	25.2	0.52	0.80	0.18	0.09	33	-	-	-	-	-	-	-	-	-
	-10	4.8	0.9	35.8	0.73	0.52	0.14	0.06	50	-	-	-	-	-	-	-	-	-
	-11	5.3	0.8	24.3	0.62	0.46	0.07	0.09	50	-	-	-	-	-	-	-	-	-
	-12	4.9	0.9	30.4	0.52	0.66	0.07	0.10	38	-	-	-	-	-	-	-	-	-
	-13	5.0	1.0	41.2	0.52	0.73	0.18	0.12	33	-	-	-	-	-	-	-	-	-
	-14	4.8	0.9	27.4	0.73	0.43	0.15	0.08	52	-	-	-	-	-	-	-	-	-
	-15	5.4	0.8	41.9	0.52	0.54	0.06	0.10	43	-	-	-	-	-	-	-	-	-
	-16	5.3	1.0	53.7	0.52	0.71	0.07	0.12	37	-	-	-	-	-	-	-	-	-
	-17	4.9	1.1	35.6	0.52	0.92	0.20	0.13	29	0.29	0.48	17.9	0.15	19.1	56.7	18.6	24.7	s.c.l.
	-18	4.8	1.0	43.8	0.83	0.52	0.14	0.11	52	0.16	0.28	15.5	0.17	22.4	58.4	16.3	25.3	s.c.l.
	-19	5.1	1.1	30.6	0.62	0.57	0.08	0.11	45	0.19	0.80	11.4	0.34	13.6	61.2	26.0	12.7	s.l.
	-20	5.0	1.0	48.3	0.52	0.85	0.09	0.12	33	-	-	-	-	-	-	-	-	-
	-21	5.0	2.4	5.9	1.04	1.50	1.00	0.13	28	0.24	0.53	32.2	0.17	24.5	65.9	11.9	22.2	s.c.l.
	-22	5.1	3.5	10.0	1.25	2.80	2.80	0.14	18	0.30	0.56	50.2	0.21	21.0	49.7	22.5	27.8	s.c.l.
	-23	4.3	3.2	9.9	0.62	0.38	0.28	0.14	44	0.67	0.57	15.0	0.16	50.6	71.0	8.8	20.2	s.c.l.
	-24	5.0	2.7	28.3	0.83	1.30	0.38	0.08	32	0.31	0.66	74.8	0.13	18.8	53.0	14.5	32.5	s.c.l.
	-25	4.5	2.1	15.2	2.29	0.33	0.12	0.10	81	0.49	0.44	9.4	0.25	38.1	48.8	15.2	36.0	s.c.
	-26	4.8	3.8	6.7	2.29	0.73	0.24	0.18	67	0.71	1.07	30.3	0.24	30.5	49.2	16.4	34.3	s.c.l.
	-27	4.7	3.3	31.6	2.50	0.67	0.16	0.12	72	0.66	0.81	24.1	0.37	36.6	49.3	17.7	33.0	s.c.l.
	-28	4.6	2.4	15.0	2.29	0.66	0.24	0.10	70	0.64	0.75	58.9	0.15	20.8	49.5	15.1	35.4	s.c.
	-29	4.7	2.4	28.0	1.77	0.74	0.23	0.10	62	0.60	0.87	51.9	0.21	19.7	50.6	16.4	33.0	s.c.l.
	-30	5.2	1.0	29.4	0.10	1.14	0.32	0.07	6	0.54	0.95	79.8	0.18	11.4	71.3	15.5	13.2	s.l.

¹⁾ s.c.l. = sandy clay loam; s.l. sandy loam

Table 3. Chemical and physical characteristics of cassava soils in China, 1997-2000. (continued)

Sample no.	Chemical characteristics													Physical characteristics				
	pH	% OM	ppm P	Al	me/100 g			% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	Clay	Texture ¹⁾	
-31	5.1	4.3	15.4	0.52	2.80	1.12	0.12	11	0.68	3.06	66.5	0.39	14.8	56.1	15.6	28.3	s.c.l.	
-32	4.5	6.0	7.8	4.06	0.52	0.27	0.41	77	0.75	1.28	15.6	0.22	32.2	39.7	19.7	40.6	clay	
-33	4.4	3.7	12.6	1.87	0.49	0.26	0.14	68	0.16	0.83	47.1	0.12	28.1	50.1	12.4	37.5	s.c.	
-34	4.7	1.4	10.6	1.04	0.32	0.18	0.08	64	0.52	0.93	41.2	0.33	9.6	66.8	10.0	23.2	s.c.l.	
-35	4.8	1.7	78.3	0.83	0.84	0.29	0.09	40	0.51	1.21	51.9	0.39	12.5	68.9	11.3	25.8	s.c.l.	
-36	5.0	1.1	6.6	0.94	0.42	0.14	0.08	59	0.39	0.85	41.3	0.25	10.0	67.6	9.2	23.2	s.c.l.	
-37	4.7	2.2	5.3	1.87	0.40	0.20	0.11	72	0.48	0.87	50.0	0.22	19.9	53.3	10.6	36.1	s.c.	
-38	4.6	2.6	4.4	1.87	0.36	0.16	0.12	75	0.50	1.06	53.8	0.28	37.2	49.7	14.4	35.9	s.c.	
-39	4.5	4.5	5.6	4.20	0.38	0.34	0.18	82	0.59	1.31	19.7	0.27	25.2	43.3	14.4	42.3	clay	
-40	4.7	2.5	10.6	1.46	0.42	0.27	0.20	62	0.99	1.30	57.6	0.32	17.8	60.7	13.1	26.2	s.c.l.	
Guangdong	-1	5.0	1.0	16.2	0.24	0.40	0.14	0.04	42	0.21	1.70	1.9	0.35	19.3	77.3	8.1	14.6	s.l.
	-2	4.9	12.2	82.0	0.42	1.10	0.26	0.10	22	0.16	1.18	25.3	2.35	135.2	-	-	-	-
	-3	4.7	1.6	146.0	0.62	1.00	0.26	0.23	29	0.17	3.10	19.9	2.54	193.0	59.4	16.4	24.1	s.c.l.
	-4	5.0	3.0	53.0	0.31	3.40	0.75	0.23	7	0.19	4.03	17.3	1.45	213.2	30.7	17.9	51.4	clay
Guangxi	-1	4.8	0.7	10.0	2.29	0.36	0.13	0.12	79	0.35	0.42	57.9	0.42	9.4	1.9	9.0	89.1	clay
	-2	5.1	3.3	16.5	1.87	2.16	0.37	0.42	39	0.91	0.76	9.6	0.37	12.2	15.7	13.3	71.0	clay
	-3	7.1	3.6	0.3	0	14.99	0.58	2.61	0	0.79	0.02	1.2	0.14	0.1	36.0	34.5	29.6	c.l.
	-4	7.3	3.0	28.0	0	21.54	0.67	0.77	0	0.72	1.16	94.3	0.17	2.2	37.4	33.8	28.8	c.l.
Yunnan	-1	4.6	6.1	6.5	4.40	0.50	0.52	0.25	78	0.34	0.92	53.5	0.66	19.7	20.3	35.2	44.5	clay
	-2	5.0	5.5	6.3	1.30	2.54	1.09	0.11	26	0.71	2.89	30.2	0.49	21.9	40.8	32.1	27.1	loam
	-3	4.3	5.3	16.0	5.40	0.40	0.18	0.13	88	0.26	0.47	6.3	0.86	49.3	33.4	23.6	43.0	clay
	-4	7.0	1.4	4.9	0	11.64	1.36	0.16	0	0.40	0.53	47.5	0.41	14.0	58.1	22.1	19.8	clay
	-5	5.6	0.3	0.5	1.04	2.80	1.30	0.08	20	0	0.83	38.5	0.33	19.4	2.7	1.9	95.4	clay
	-6	4.3	3.3	9.7	5.72	0.65	0.25	0.28	83	0.39	0.54	12.0	0.58	30.5	21.6	23.0	55.4	clay

¹⁾s.c.l.=sandy clay loam; s.c = sandy clay; s.l. = sandy loam

Table 4. Soil samples taken in Indonesia and East Timor, 1997-2000.

Sample no.	Sample location and description	Date
Lampung	1-12 Tamanbogo, NPK trial, at harvest 6th year, T ₁ -T ₁₂	Oct 97
	13-21 Tamanbogo, erosion trial, after harvest 6th year, T ₁ -T ₉	Dec 97
	22-33 Umas Jaya farm, NPK trial, after harvest 10th year, T ₁ -T ₁₂	May 98
	34 Tamanbogo, in Experiment Station, very poor cassava with K deficiency	May 99
	35 Tamanbogo, in Experiment Station, very good cassava	May 99
Yogyakarta	-1 Playen, farmers field near cassava-soybean trial	Feb 98
	-2 Playen, cassava variety trial	Feb 98
	-3 Playen, plot next to variety trial, severe Fe/Zn deficiency symptoms	Feb 98
	-4 Playen, top part of erosion control trial	Feb 98
East Java	-1 Blitar, Ringin Rejo, Mr. Jaido for demonstration plot	Aug 97
	-2 Blitar, Ringin Rejo, Mr. Hardy FPR variety trial, sticks red clay	Feb 98
	-3 Blitar, Ringin Rejo, Mr. Katamin, FPR erosion trial, poor cassava	Feb 98
	-4 Blitar, Karang Bendo-Forestry Dept., cassava under coconut, volcanic ash soil	Feb 98
	-5 Blitar, Ringin Rejo, FPR erosion trial, Mr. Mat Dasuki, black clay soil	June 98
	-6 Blitar, Ringin Rejo, FPR erosion trial, Mr. Tamami, red clay soil, good cassava	June 98
	-7 Blitar, near Ringin Rejo, land of Forestry Dept., mahogany+cassava, red soil	May 99
E. Kalimantan	-1 Sepaku II, near house Mr. Suharto	Mar 98
	-2 Makroman, near meeting hut, yellow clay	Mar 98
	-3 Makroman, cassava on steep slope	Mar 98
	-4 Makroman, cassava field intercropped with <i>Andropogon</i>	Mar 98
East Timor	-1 Baucau, Fatomaca Technical School-field of dark brown limestone derived soil	Nov 00
	-2 Ailey, before Maubisse, 80% slope, purple brown clay soil with shale, after burning	Nov 00
	-3 Ailey, after Maubisse, at 1300 masl; yellow clay loam with limestones	Nov 00
	-4 Ailey, after Maubisse, same site, lower field, brown-red clay soil	Nov 00

Table 5. Chemical and physical characteristics of cassava soils in Indonesia and East Timor, 1997-2000.

Sample no.	Chemical characteristics										Physical characteristics						
	pH	% OM	ppm P	Al	me/100 g Ca	Mg	K	% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	Clay	Texture ¹⁾
Lampung -1	4.5	2.2	5.1	1.35	0.60	0.45	0.09	54	0.23	0.62	11.6	0.33	30.9	51.7	11.4	36.9	s.c.
-2	4.6	2.8	26.0	1.46	0.95	0.45	0.36	45	-	-	-	-	-	-	-	-	-
-3	4.5	2.4	13.9	1.56	0.71	0.34	0.24	55	-	-	-	-	-	-	-	-	-
-4	4.4	2.7	14.4	1.87	0.56	0.29	0.31	62	-	-	-	-	-	-	-	-	-
-5	4.2	2.3	14.2	1.66	0.42	0.22	0.38	62	-	-	-	-	-	-	-	-	-
-6	4.0	2.5	9.8	1.56	0.88	0.34	0.24	52	-	-	-	-	-	-	-	-	-
-7	4.5	2.6	19.8	1.87	0.44	0.26	0.23	67	-	-	-	-	-	-	-	-	-
-8	4.5	2.5	42.1	1.77	0.66	0.29	0.19	61	-	-	-	-	-	-	-	-	-
-9	4.3	2.7	33.8	1.77	0.60	0.40	0.11	61	-	-	-	-	-	-	-	-	-
-10	4.4	2.7	10.2	1.98	0.35	0.24	0.28	69	-	-	-	-	-	-	-	-	-
-11	4.5	2.5	10.9	1.26	0.41	0.25	0.47	53	-	-	-	-	-	-	-	-	-
-12	4.3	2.9	22.0	2.08	0.54	0.26	0.31	65	0.39	0.52	26.3	0.61	33.1	-	-	-	-
-13	4.6	2.4	6.1	1.04	0.74	0.49	0.17	43	-	-	-	-	-	-	-	-	-
-14	4.4	2.2	5.4	1.56	0.46	0.34	0.18	61	-	-	-	-	-	-	-	-	-
-15	4.5	2.2	6.4	1.35	0.66	0.41	0.21	51	-	-	-	-	-	-	-	-	-
-16	4.6	2.3	9.9	1.25	0.64	0.38	0.23	50	-	-	-	-	-	-	-	-	-
-17	4.4	2.6	21.1	1.87	0.49	0.27	0.16	67	-	-	-	-	-	-	-	-	-
-18	4.3	2.2	30.9	1.56	0.49	0.22	0.15	64	-	-	-	-	-	-	-	-	-
-19	4.3	2.2	15.3	1.35	0.45	0.32	0.15	59	-	-	-	-	-	-	-	-	-
-20	4.6	2.3	24.6	0.94	0.69	0.59	0.21	39	-	-	-	-	-	-	-	-	-
-21	4.6	2.5	19.1	1.04	0.89	0.57	0.35	36	-	-	-	-	-	-	-	-	-
-22	4.2	2.2	6.6	2.50	0.40	0.30	0.12	75	0.62	0.64	3.4	0.73	58.7	-	-	-	-
-23	4.3	2.6	22.5	1.98	0.64	0.41	0.22	61	-	-	-	-	-	-	-	-	-
-24	4.1	2.1	18.5	2.18	0.58	0.24	0.16	69	-	-	-	-	-	-	-	-	-
-25	4.1	2.7	26.9	2.08	0.60	0.26	0.28	65	-	-	-	-	-	-	-	-	-
-26	4.1	2.6	27.0	2.39	0.58	0.31	0.15	70	-	-	-	-	-	-	-	-	-
-27	4.0	2.4	7.4	2.18	0.37	0.30	0.21	71	-	-	-	-	-	-	-	-	-
-28	4.0	2.5	8.9	2.29	0.46	0.19	0.15	74	-	-	-	-	-	-	-	-	-
-29	4.1	2.4	45.7	2.18	0.64	0.27	0.18	67	-	-	-	-	-	-	-	-	-

¹⁾ s.c.l. = sandy clay loam; s.c. = sandy clay

Table 5. Chemical and physical characteristics of cassava soils in Indonesia and East Timor, 1997-2000. (continued)

Sample no.	Chemical characteristics										Physical characteristics							
	pH	% OM	ppm P	me/100 g Al	Ca	Mg	K	% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	Clay	Texture ¹⁾	
Lampung	-30	4.0	2.4	18.6	2.18	0.63	0.30	0.10	68	-	-	-	-	-	-	-	-	
	-31	3.9	2.5	26.4	2.29	0.64	0.23	0.15	69	-	-	-	-	-	-	-	-	
	-32	4.1	2.4	28.4	1.87	0.64	0.33	0.30	60	-	-	-	-	-	-	-	-	
	-33	4.0	2.6	33.0	2.18	0.62	0.27	0.20	67	0.49	0.49	4.0	0.52	70.1	43.5	16.6	39.9	c.l.
	-34	4.7	2.3	6.8	2.70	0.25	0.09	0.06	87	0.40	0.47	10.1	0.41	59.8	42.0	14.0	44.0	clay
	-35	4.4	2.0	25.9	2.18	0.42	0.18	0.08	76	0.43	0.42	15.1	0.46	43.7	44.7	14.0	41.3	clay
Yogyakarta	-1	6.5	2.4	28.0	0	54.65	1.85	0.74	0	0.63	0.16	16.1	0.14	0.8	7.3	17.9	74.8	clay
	-2	7.2	1.2	10.4	0	59.86	2.31	0.26	0	0.58	0.04	1.5	0.13	0.3	16.5	11.0	72.5	clay
	-3	7.5	1.6	9.7	0	60.16	2.31	0.21	0	0.68	0.04	1.0	0.16	0.2	15.8	11.6	72.6	clay
	-4	7.5	1.5	14.4	0	60.67	2.81	0.23	0	0.36	0.10	5.6	0.13	0.2	14.1	9.0	76.9	clay
East Jaya	-1	7.0	2.2	10.8	0	38.90	0.96	0.21	0	0.28	0.17	8.2	0.10	0.2	23.6	17.0	59.4	clay
	-2	5.6	0.7	9.6	0.10	38.00	4.70	0.05	0	0.48	0.33	22.4	0.82	9.7	-	-	-	-
	-3	5.7	1.0	3.3	0.10	34.60	4.20	0.07	0	0.61	0.23	19.2	1.25	11.3	18.5	25.8	55.7	clay
	-4	6.3	0.8	36.6	0	0.89	0.07	0.10	0	0.20	0.35	3.9	1.39	21.8	79.3	7.3	13.4	s.l.
	-5	6.1	2.2	4.8	0	36.34	7.53	0.17	0	1.01	0.32	60.5	0.29	0.8	12.2	13.8	74.0	clay
	-6	5.5	1.8	4.6	0.33	32.59	8.55	0.07	1	1.07	0.81	87.4	2.01	13.4	11.4	17.8	70.7	clay
	-7	5.1	2.7	21.5	0.31	12.36	3.53	0.48	2	0.66	2.59	127.9	2.14	9.5	9.1	15.1	75.8	clay
E. Kalimantan	-1	4.6	3.1	4.0	3.30	0.87	0.58	0.20	67	0.31	0.54	8.9	0.35	169.2	33.5	33.4	33.1	c.l.
	-2	4.3	3.2	7.6	3.00	0.88	0.74	0.21	62	0.32	1.28	10.2	0.31	169.4	36.0	29.6	34.4	c.l.
	-3	4.5	2.3	3.9	3.10	0.84	0.59	0.16	66	0.19	0.36	7.5	0.31	166.2	37.3	29.6	33.1	c.l.
	-4	4.3	2.3	5.4	2.40	0.55	0.44	0.09	69	0.30	0.46	2.2	0.34	137.9	59.1	14.3	26.6	s.c.l.
East Timor	-1	5.6	3.3	6.2	0	15.41	0.98	0.28	0	0.48	0.32	209.7	0.24	0.6	20.0	25.0	55.0	clay
	-2	6.5	6.0	28.5	0	15.39	3.20	0.84	0	2.00	2.75	140.2	1.01	4.4	64.2	16.7	19.1	s.l.
	-3	6.6	3.1	2.4	0	16.17	5.40	0.51	0	0.56	1.78	95.0	1.31	8.8	21.0	36.4	42.6	clay
	-4	6.6	3.3	2.3	0	16.18	5.51	0.47	0	0.56	1.87	126.7	1.57	15.2	26.3	33.7	40.0	c.l.

¹⁾s.c.l. = sandy clay loam; c.l. = clay loam; s.l. = sandy loam

Table 6. Soil samples taken in Thailand, 1995-2000.

Sample no.	Sample location and description	Date	
N. Ratchasima	1-6 HuayBong, TTDI Center, soil erosion demonstration I ₁ -I ₆	July 96	
	7-12 HuayBong, TTDI Center, soil erosion demonstration II ₁ -II ₆	July 96	
	13-18 HuayBong, TTDI Center, soil erosion demonstration I ₁ -I ₆	June 98	
	19-24 Huay Bong TTDI Center, soil erosion demonstration II ₁ -II ₆	June 98	
	-25 Road Paak Chong to Huay Bong, right side, severe Fe def. in cassava	July 96	
	-26 Road Paak Chong to Huay Bong, left side, severe Fe def. in cassava	Apr 97	
	-27 Road Paak Chong to Huay Bong, same field without Fe def. symptoms	Apr 97	
	-28 FCRC-Banmai Samrong, NPK trial, 21st year, N ₀ P ₀ K ₀	July 95	
	-29 FCRC-Banmai Samrong, NPK trial, 21st year, N ₁ P ₀ K ₀	July 95	
	-30 FCRC-Banmai Samrong, NPK trial, 21st year, N ₁ P ₁ K ₀	July 95	
	-31 FCRC-Banmai Samrong, NPK trial, 21st year, N ₁ P ₀ K ₁	July 95	
	-32 FCRC-Banmai Samrong, NPK trial, 21st year, N ₁ P ₁ K ₁	July 95	
	-33 FCRC-Banmai Samrong, NPK trial, 21st year, N ₁ P ₁ K ₁ +compost	July 95	
	-34 FCRC-Banmai Samrong, NPK trial, 21st year, N ₁ P ₁ K ₁ +stalks incorp.	July 95	
	-35 FCRC-Banmai Samrong, NPK trial, 21st year, N ₀ P ₀ K ₀ +stalks incorp.	July 95	
	-36 Daan Khun Thot, Huay Bong; TTDI plot 3/8	May 98	
	-37 Daan Khun Thot, Huay Bong; TTDI plot 4	May 98	
	-38 Daan Khun Thot, Huay Bong; TTDI plot 14	May 98	
	-39 Daan Khun Thot, Huay Bong; TTDI plot 28	May 98	
	-40 Daan Khun Thot, Huay Bong; TTDI plot 55	May 98	
	-41 Daan Khun Thot, Huay Bong; TTDI plot 60	May 98	
	-42 Thepharak; Mrs. Durian Fisantia to plant vetiver, white sandy soil	Aug 00	
	-43 Soeng Saang, Saphongphoot; plowed after cassava, red grey soil	Aug 00	
	Khon Kaen	-1 FCRC-Khon Kaen, NPK trial, 22d year, N ₀ P ₀ K ₀	June 97
		-2 FCRC-Khon Kaen, NPK trial, 22d year, N ₁ P ₀ K ₀	July 97
		-3 FCRC-Khon Kaen, NPK trial, 22d year, N ₁ P ₁ K ₀	July 97
		-4 FCRC-Khon Kaen, NPK trial, 22d year, N ₁ P ₀ K ₁	July 97
		-5 FCRC-Khon Kaen, NPK trial, 22d year, N ₁ P ₁ K ₁	July 95
		-6 FCRC-Khon Kaen, NPK trial, 22d year, N ₁ P ₁ K ₁ +compost	July 97
		-7 FCRC-Khon Kaen, NPK trial, 22d year, N ₁ P ₁ K ₁ +stalks incorporated	July 97
		-8 FCRC-Khon Kaen, NPK trial, 22d year, N ₀ P ₀ K ₀ +stalks incorporated	July 97
	Kalasin	-1 Sahatsakhan district; field selected for demonstration plots	Apr 97
		-2 Sahatsakhan district; FPR demonstration plots	June 97
		-3 FPR erosion trial #1 Mr. Tar Poommak 1-15cm	May 98
		-4 FPR erosion trial #2 Mrs. Joom Tong Bhutakom 1-15cm	May 98
		-5 FPR erosion trial #3 Mrs. Noopis Bhutakom 1-15 cm	May 98
		-6 FPR erosion trial #4 Mrs. Noodong Bhutakom 1-15 cm	May 98
		-7 FPR erosion trial #5 Mr. Somnuk Boonvasna 1-15 cm	May 98
		-8 FPR erosion trial #6 Mr Kunti Aimprasert 1-15 cm	May 98
		-9 FPR erosion trial #7 Mr. Tongbai Bookost 1-15 cm	May 98
		-10 FPR fert. trial #1 Mr Chainat Kumprisri 1-15 cm	May 98
		-11 FPR fert. trial #2 Mr. Thareep Sutyaka 1-15 cm	May 98
		-12 FPR fert. trial #3 Mr. Sankaya Boonvasna 1-15 cm	May 98
-13 FPR fert. trial #4 Mrs. Tim Duan Kunt 1-15 cm		May 98	
-14 FPR fert. trial #5 Mr. Tonglai Bhutatngan 1-15 cm		May 98	
-15 FPR fert. trial #6 Mr. Ngao Boonvasna 1-15 cm		May 98	
-16 FPR fert. trial #8 Mr. Watchala Boonvasna 1-15 cm		May 98	
-17 FPR fert. trial #9 Ms. Yanong Mudsingh 1-15 cm		May 98	

Table 6. Soil samples taken in Thailand, 1996-2000. (continued)

Sample no.	Sample location and description	Date
Kalasin	-19 Variety trial #1 Mr. Sumniang Soommart 1-15 cm	May 98
	-20 Variety trial #2 Mrs Sonjai Bhutakom 1-15 cm	May 98
	-21 Variety trial #3 Mr. Tongmuan Bhtakom 1-15 cm	May 98
	-22 Variety trial #4 Mrs. Rabiart Prasertsung 1-15 cm	May 98
	-23 Variety trial #5 Mr. Somsark Bhungamdao 1-15 cm	May 98
	-24 Variety trial #6 Mr. Jarun Booncharoen 1-15 cm	May 98
	-25 Variety trial #7 Mrs. Tongyoon Bhutongsri 1-15 cm	May 98
	-26 Variety trial #8 Mrs. Nuanlaat Chaikummi 1-15 cm	May 98
	-27 FPR erosion trial #1 Mr. Tar Poommak 15-30 cm	May 98
	-28 FPR erosion trial #1 Mr. Chainat Kumprisri 15-30 cm	May 98
	-29 FPR erosion trial #1 Mr. Sumniang Soommart 15-30 cm	May 98
	-30 Sahatsakhom, Noonsawan village 3; white-red sandy soil next to gully	Aug 00
	-31 Sahatsakhom, Noonsawan village 3; white-red soil of Mr. Phong Bai	Aug 00
	-32 Sahatsakhom, Noonsawaat village; white-red soil of Mrs. Tanam	Aug 00
	-33 Noonkhungsri, Khamsri village 3; sandy soil, cassava very poor	Aug 00
	-34 Noonkhungsri, Khamsri village 3; cassava with P-def symptoms, serious erosion	Aug 00
Prachinburi	-1 Kabinburi district; farmers field in Baannaa village	Apr 97
	-2 Kabinburi district, Naadii subdistrict; farmers field in Khaeng Dinso	Apr 97
	-3 Naadii, Kaengdinso, Aang Thong; Mr. Buunsong, sandy soil, poor cassava	Nov 00
	-4 Naadii, Kaengdinso, Aang Thong; Mr. Buunsong, very poor cassava with gulleys	Nov 00
	-5 Naadii, Kaengdinso, Aang Thong; Mr. Nuun Chaikhai, sandy soil, good cassava	Nov 00
	-6 Naadii, Kaengdinso, Khaw Khaat; white sandy soil with serious gulleys	Nov 00
	-7 Naadii, Kaengdinso, Khaw Khaat; very poor cassava in check plot, K def	Nov 00
	-8 Naadii, Kaengdinso, Khaw Khaat; field with severe K deficiency	Nov 00
Sra-Kaew	-1 Wang Nam Yen district, Wang Sombuun, 1 rai plot of Mrs. Daruni	Feb 98
	-2 Wang Nam Yen district, Wang Sombuun, 1 rai plot of Mr. Sawing	Feb 98

Table 7. Chemical and physical characteristics of cassava soils in Thailand, 1995-2000.

Sample no.	Chemical characteristics											Physical characteristics						
	pH	% OM	ppm P	me/100 g			% Al			ppm		% Sand			Texture ¹⁾			
				Al	Ca	Mg	K	Al	B	Zn	Mn	Cu	Fe	Sand	Silt	Clay		
N. Ratchasima	-1	7.0	0.9	14.1	0	4.84	0.96	0.30	0	0.65	0.69	42.2	0.27	8.6	57.3	15.2	27.5	s.c.l.
	-2	7.7	1.3	11.9	0	10.76	1.30	0.40	0	0.58	0.73	63.0	0.39	11.3	56.0	13.9	30.0	s.c.l.
	-3	7.5	0.8	12.0	0	12.85	1.73	0.33	0	0.55	0.69	71.2	0.35	10.3	54.7	16.5	28.8	s.c.l.
	-4	7.1	0.8	7.0	0	4.98	0.90	0.28	0	0.70	0.40	32.5	0.35	11.4	58.6	15.2	26.2	s.c.l.
	-5	7.1	0.6	8.6	0	6.32	0.93	0.24	0	0.46	0.37	31.3	0.37	13.8	59.9	15.7	24.4	s.c.l.
	-6	7.1	1.0	9.5	0	5.78	1.08	0.28	0	0.57	0.63	41.4	0.34	7.2	58.6	14.5	26.9	s.c.l.
	-7	7.5	1.0	24.6	0	14.22	1.08	0.42	0	0.50	0.90	52.3	0.38	13.9	49.5	20.9	29.6	s.c.l.
	-8	6.9	0.6	7.9	0	4.20	0.98	0.23	0	0.63	0.37	25.6	0.28	26.0	60.2	18.1	21.7	s.c.l.
	-9	7.5	0.9	11.2	0	12.97	1.18	0.36	0	0.80	0.59	44.6	0.38	14.5	52.4	18.2	29.4	s.c.l.
	-10	7.6	0.9	16.6	0	13.39	1.08	0.35	0	0.55	0.58	56.0	0.38	9.7	55.7	15.3	29.0	s.c.l.
	-11	7.6	1.0	13.4	0	9.66	1.17	0.38	0	0.61	0.57	49.6	0.33	12.6	57.1	16.5	26.4	s.c.l.
	-12	7.6	0.8	12.3	0	11.34	1.17	0.31	0	0.66	0.51	44.2	0.34	10.0	55.6	15.3	29.1	s.c.l.
	-Av	7.35	0.88	12.4	0	9.28	1.86	0.32	0	0.60	0.59	46.2	0.35	12.4	56.3	16.3	27.4	s.c.l.
	-13	6.2	1.1	9.2	0	3.75	0.88	0.26	0	0.45	0.51	39.7	0.34	7.2	59.6	15.1	25.3	s.c.l.
	-14	7.0	1.1	11.9	0	9.80	1.25	0.45	0	0.49	0.53	57.1	0.46	9.4	56.7	14.0	29.3	s.c.l.
	-15	7.0	1.0	7.3	0	4.84	1.05	0.30	0	0.35	0.42	37.3	0.31	7.2	61.0	13.5	25.5	s.c.l.
	-16	6.1	0.9	5.7	0	2.50	0.71	0.34	0	0.94	0.29	21.9	0.18	6.5	61.2	16.0	22.8	s.c.l.
	-17	7.0	1.1	8.9	0	6.09	0.97	0.40	0	0.54	0.49	38.1	0.32	8.7	58.5	16.1	25.4	s.c.l.
	-18	6.9	1.2	9.6	0	4.12	0.96	0.36	0	0.36	0.65	36.9	0.27	6.4	61.2	13.5	25.3	s.c.l.
	-19	7.6	1.2	16.2	0	13.76	1.06	0.39	0	0.43	0.83	59.4	0.31	7.3	53.2	17.4	29.4	s.c.l.
	-20	7.3	0.8	16.2	0	3.62	0.67	0.29	0	0.35	0.26	22.4	0.23	32.2	60.9	18.8	20.3	s.c.l.
	-21	7.6	1.1	14.0	0	11.50	1.09	0.40	0	0.47	0.71	67.9	0.34	11.6	51.6	17.8	30.6	s.c.l.
	-22	7.5	1.0	9.6	0	7.14	0.88	0.31	0	0.43	0.47	40.7	0.31	7.6	54.1	17.8	28.1	s.c.l.
	-23	7.4	1.1	9.8	0	6.03	0.90	0.35	0	0.36	1.17	40.1	0.32	11.0	55.7	18.9	25.4	s.c.l.
	-24	7.5	1.2	10.3	0	10.16	1.12	0.38	0	0.34	0.65	54.2	0.32	12.5	53.1	17.7	29.2	s.c.l.
	Av.	7.09	1.07	10.7	0	6.94	0.96	0.35	0	0.46	0.58	43.0	0.31	10.6	57.2	16.4	26.4	s.c.l.
	-25	7.6	4.7	7.5	0	58.2	4.51	0.98	0	0.64	0.07	0.3	0.12	0.4	11.9	25.9	62.2	clay
	-26	7.4	4.5	13.2	0	43.72	2.17	0.50	0	0.80	0.02	0.9	0.15	0.3	17.9	22.3	52.8	clay
	-27	7.6	4.8	15.6	0	50.98	2.65	0.69	0	0.76	0.03	1.1	0.05	0.3	17.0	26.9	56.1	clay

¹⁾s.c.l. = sandy clay loam

Table 7. Chemical and physical characteristics of cassava soil in Thailand, 1995-2000. (continued)

Sample no.	Chemical characteristics											Physical characteristics					Texture ¹⁾	
	pH	% OM	ppm P	me/100 g				% Al			ppm Mn	Cu	Fe	% Silt Clay				
				Al	Ca	Mg	K		B	Zn				Sand	Silt	Clay		
N. Ratchasima	-28	7.1	1.5	41.4	0	5.40	0.80	0.32	0	0.23	2.15	34.9	0.59	6.0	52.4	20.7	26.9	s.c.l.
	-29	6.3	1.4	36.7	0	4.65	0.76	0.25	0	0.22	2.05	30.3	0.63	5.9	52.2	23.4	24.4	s.c.l.
	-30	6.2	1.3	56.0	0	4.41	0.69	0.25	0	0.26	2.93	37.4	0.79	8.6	52.6	23.2	24.2	s.c.l.
	-31	6.5	1.3	25.1	0	4.25	0.68	0.33	0	0.23	0.60	35.4	0.34	5.7	51.7	25.8	22.5	s.c.l.
	-32	6.0	1.6	54.0	0	4.05	0.74	0.33	0	0.30	0.70	36.6	0.39	7.8	51.6	24.5	23.8	s.c.l.
	-33	7.4	2.2	176.0	0	6.12	0.67	0.35	0	0.46	22.10	49.0	4.41	16.9	51.9	23.0	25.1	s.c.l.
	-34	7.1	1.9	46.6	0	6.30	0.96	0.37	0	0.37	1.47	37.1	0.56	6.3	50.1	23.4	26.5	s.c.l.
	-35	7.0	1.6	49.3	0	4.52	0.79	0.35	0	0.32	2.21	33.0	0.57	6.9	56.5	19.6	23.9	s.c.l.
	-36	7.5	0.99	15.6	0	5.44	0.69	0.21	0	0.53	0.54	40.9	0.31	15.9	62.0	13.8	24.2	s.c.l.
	-37	7.5	0.71	35.3	0	13.13	0.99	0.34	0	0.57	0.61	63.8	0.24	8.0	65.8	8.7	25.5	s.c.l.
	-38	7.7	1.80	15.5	0	16.48	1.20	0.64	0	0.82	0.98	72.9	0.22	4.1	39.0	24.0	37.0	c.l.
	-39	7.5	0.94	77.8	0	8.86	0.58	0.60	0	0.57	0.81	63.1	0.30	11.2	58.3	16.3	25.4	s.c.l.
	-40	7.5	0.45	6.4	0	5.07	0.71	0.25	0	0.47	0.46	48.2	0.31	12.4	60.8	11.2	28.0	s.c.l.
	-41	7.5	0.65	33.7	0	6.15	0.54	0.41	0	0.53	0.55	51.9	0.31	11.8	60.8	15.0	24.2	s.c.l.
-42	5.5	0.58	30.0	0	1.17	0.23	0.09	0	0.36	1.44	31.3	0.18	2.6	77.7	10.9	11.4	s.l.	
-43	5.5	0.95	20.0	0	1.15	0.45	0.11	0	0.36	1.02	20.3	0.22	5.1	75.1	12.2	12.7	s.l.	
Khon Kaen	-1	4.8	0.5	8.4	0.52	0.60	0.24	0.04	37	0.82	0.08	17.8	0.16	4.2	65.5	12.3	22.2	s.c.l.
	-2	4.2	0.6	6.8	0.83	0.30	0.17	0.04	62	-	-	-	-	-	-	-	-	-
	-3	4.3	0.5	54.8	0.73	0.40	0.18	0.03	54	-	-	-	-	-	-	-	-	-
	-4	4.5	0.6	5.5	0.62	0.30	0.17	0.06	54	-	-	-	-	-	-	-	-	-
	-5	4.4	0.6	46.0	0.62	0.30	0.16	0.06	54	0.41	0.14	6.7	0.19	6.1	-	-	-	-
	-6	6.7	1.3	241.0	0	3.27	0.47	0.16	0	0.69	16.88	37.7	4.76	24.3	-	-	-	-
	-7	5.3	0.8	46.0	0.25	0.80	0.32	0.09	17	0.46	0.65	22.8	0.37	6.6	-	-	-	-
	-8	5.5	0.5	13.3	0.10	0.90	0.31	0.04	7	0.39	1.21	18.2	0.61	7.4	-	-	-	-

¹⁾s.c.l. = sandy clay loam; s.l. = sandy loam

Table 7. Chemical and physical characteristics of cassava soil in Thailand, 1995-2000. (continued)

Sample no.	Chemical characteristics											Physical characteristics					Texture ¹⁾	
	pH	% OM	ppm P	me/100 g				% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	% Clay		
Kalasin	-1	5.4	0.48	3.2	0.10	0.64	0.32	0.06	9	0.39	0.36	26.9	0.36	5.5	-	-	-	-
	-2	6.9	0.48	12.8	0	0.86	0.21	0.10	0	0.44	0.64	23.4	0.25	3.5	71.9	13.5	14.6	s.l.
	-3	5.4	0.17	3.2	0.10	0.83	0.27	0.10	8	0.63	0.45	5.7	0.24	8.3	66.0	17.5	16.5	s.l.
	-4	5.5	0.18	2.7	0.05	1.19	0.27	0.10	3	1.30	0.82	15.9	0.22	6.9	70.9	12.5	16.6	s.l.
	-5	5.5	0	5.3	0.05	0.46	0.15	0.07	7	0.38	0.58	4.3	0.29	15.5	68.8	14.7	16.5	s.l.
	-6	5.7	0.04	4.7	0.05	0.79	0.25	0.12	4	0.45	0.57	51.0	0.26	8.9	63.5	20.0	16.5	s.l.
	-7	5.7	0.37	3.6	0.05	1.64	0.40	0.19	2	0.92	0.60	24.4	0.44	17.4	67.1	16.4	16.5	s.l.
	-8	5.7	0	4.4	0.05	0.57	0.22	0.09	5	0.35	0.93	42.6	0.26	7.3	71.0	13.7	15.3	s.l.
	-9	6.0	0.03	6.0	0	0.32	0.11	0.09	0	0.58	0.38	20.8	0.28	10.3	55.9	26.3	17.8	s.l.
	-10	5.7	0.11	8.9	0.05	0.50	0.12	0.08	7	0.47	0.75	7.8	0.25	41.6	63.4	16.3	20.3	s.l.
	-11	5.7	0.24	4.0	0.05	1.00	0.21	0.08	4	0.62	0.70	18.7	0.24	14.6	61.0	22.5	16.5	s.l.
	-12	5.6	0.34	3.6	0.05	1.18	0.36	0.08	3	0.48	0.63	35.8	0.53	7.3	67.1	14.8	18.1	s.l.
	-13	5.6	0.14	13.7	0.05	0.83	0.21	0.12	4	0.57	0.81	35.9	0.34	14.1	71.0	13.4	15.6	s.l.
	-14	5.8	0.21	3.6	0.05	0.93	0.50	0.15	3	0.83	0.37	22.6	0.27	14.1	55.7	26.1	18.2	s.l.
	-15	5.5	0.54	3.3	0.05	1.77	0.68	0.22	2	0.64	0.76	28.7	0.27	14.9	63.3	16.0	20.7	s.c.l.
	-16	5.5	0	5.0	0.16	0.41	0.16	0.10	19	0.75	0.58	19.7	0.26	11.3	61.0	24.7	14.3	s.l.
	-17	5.7	0.09	15.7	0.10	0.64	0.19	0.05	10	0.38	0.31	25.4	0.32	19.1	69.5	14.0	16.5	s.l.
	-18	5.8	0.35	7.4	0.10	1.09	0.28	0.06	7	0.59	0.72	50.6	0.28	7.6	69.3	14.1	16.6	s.l.
	-19	5.8	0.10	2.7	0.09	1.09	0.22	0.07	6	0.56	0.43	12.0	0.23	4.2	69.3	14.1	16.6	s.l.
	-20	5.6	0.35	3.6	0.19	1.44	0.57	0.15	8	0.65	0.68	11.6	0.56	22.3	51.7	29.2	19.1	s.l.
	-21	5.7	0.19	11.4	0.16	0.96	0.31	0.09	10	0.19	0.58	31.6	0.33	31.4	-	-	-	s.l.
	-22	5.6	0.12	4.4	0.16	1.38	0.51	0.13	7	0.61	0.32	6.1	0.27	9.2	67.0	20.4	16.6	s.l.
	-23	5.5	0	7.0	0.10	0.50	0.19	0.12	11	0.28	0.97	24.3	0.26	112.4	70.9	15.0	14.1	s.l.
	-24	5.4	0.36	12.7	0.10	0.98	0.29	0.08	7	0.23	0.70	41.5	0.32	10.5	70.8	12.6	16.6	s.l.
	-25	5.4	0.48	21.8	0.08	1.37	0.34	0.08	4	0.25	1.30	65.7	0.25	7.5	68.4	13.8	17.8	s.l.
	-26	5.7	0.14	8.5	0.05	0.92	0.21	0.06	4	0.23	0.78	35.4	0.41	6.6	69.7	13.8	16.5	s.l.
	-27	5.8	0	2.0	0.05	0.63	0.15	0.06	6	0.32	0.51	5.3	0.25	7.5	69.6	13.8	16.6	s.l.
	-28	5.6	0	4.7	0.10	0.47	0.13	0.05	13	0.18	0.71	4.4	0.27	46.1	69.7	13.8	16.5	s.l.
	-29	5.8	0	1.4	0.10	1.90	0.35	0.06	4	0.20	0.27	4.9	0.27	10.0	63.4	15.0	21.6	s.l.
	-30	5.7	0.32	8.4	0	0.35	0.09	0.05	0	0.27	0.45	23.2	0.18	6.6	71.4	15.9	12.7	s.l.
	-31	5.5	0.50	8.7	0	0.68	0.29	0.07	0	0.50	0.46	46.5	0.21	7.6	65.2	21.7	13.1	s.l.

¹⁾s.c.l. = sandy clay loam; s.l. = sandy loam

Table 7. Chemical and physical characteristics of cassava soil in Thailand, 1995-2000. (continued)

Sample no.	Chemical characteristics											Physical characteristics						
	pH	% OM	ppm P	me/100 g			%		ppm			%			Texture ¹⁾			
			Al	Ca	Mg	K	Al	B	Zn	Mn	Cu	Fe	Sand	Silt	Clay			
Kalasin	-32	5.6	0.70	8.5	0	0.91	0.34	0.06	0	0.36	0.37	19.1	0.12	4.3	72.6	15.5	11.9	s.l.
	-33	5.8	0.55	6.7	0	0.74	0.20	0.07	0	0.28	0.81	27.4	0.15	6.3	70.0	18.1	11.9	s.l.
	-34	5.9	0.50	7.2	0	0.96	0.25	0.08	0	0.23	0.61	21.5	0.11	2.4	73.9	14.2	11.9	s.l.
Prachin buri	-1	5.3	1.60	4.3	0.10	2.98	0.69	0.12	3	0.41	1.55	103.9	0.35	25.7	58.7	18.5	22.8	s.c.l.
	-2	4.8	0.94	18.4	0.52	0.55	0.23	0.11	37	0.45	0.42	5.9	0.10	23.5	68.7	9.7	21.6	s.c.l.
	-3	5.1	0.64	7.0	0.42	0.37	0.09	0.03	46	0.50	0.73	4.4	0.25	38.8	73.9	14.3	11.9	s.l.
	-4	6.2	0.42	5.6	0	0.26	0.06	0.03	0	0.33	0.22	2.7	0.13	23.1	81.4	5.0	13.6	s.l.
	-5	4.3	0.99	7.4	2.29	0.28	0.11	0.12	82	0.37	0.24	1.1	0.07	49.7	68.7	14.3	17.0	s.l.
	-6	4.6	1.02	4.3	1.25	0.33	0.09	0.05	73	0.33	0.18	2.3	0.15	52.1	67.7	19.2	13.1	s.l.
	-7	4.4	0.95	31.0	1.87	0.21	0.05	0.10	84	0.31	0.25	1.1	0.11	64.4	67.5	16.3	16.1	s.l.
	-8	4.5	1.10	8.0	1.56	0.29	0.10	0.06	78	0.32	0.27	3.1	0.08	79.2	67.7	16.3	16.1	s.l.
Sra Kaew	-1	6.6	4.50	8.4	0	22.60	8.57	0.23	0	0.56	1.01	79.8	0.43	5.9	33.3	20.3	46.4	clay
	-2	6.5	3.50	5.3	0	21.41	8.27	0.30	0	0.40	1.58	92.4	0.86	6.0	39.9	15.0	45.1	clay

¹⁾s.c.l. = sandy clay loam; s.l. = sandy loam

Table 8. Soil samples taken in Vietnam, 1997-2000.

Sample no.	Sample location and description	Date
Thai Nguyen	-1 Pho Yen district, Dac Son village; FPR trial with B def. symptoms	Mar 98
	-2 Pho Yen district, Dac Son village; FPR fert. trial Mr. Toan, T ₁ KM95-3+KM60	June 98
	-3 Pho Yen district, Dac Son village; FPR erosion trial Mrs. Doan T ₁	June 98
	-4 Pho Yen district, Minh Duc village; FPR erosion trial of Mr.Hung	Apr 99
	-5 Pho Yen district, Minh Duc village; FPR fert. trial Mr. Nguyen Van Hai, check	May 00
Tuyen Quang	-1 Son Duong, Thuong Am; good soil on hill with eroded sediments, SC205	Sept 99
	-2 Son Duong, Thuong Am; poor soil on same hill with SC205	Sept 99
	-3 Son Duong, Thuong Am; FPR fert. trial check plot on slope with Vinh Phu	May 00
	-4 First FSP site, SC205 with <i>Flemingia</i> hedgerows, poor cassava	Aug 00
Phu Tho	-1 Thanh Ba, Kieu Tung; FPR erosion trial, Mr. Quet, T ₂ mono cassava, no fert.	June 98
	-2 Thanh Ba, Kieu Tung; FPR erosion trial, Mr. Quet, T ₃ C+P, with fert.	June 98
	-3 Thanh Ba, Kieu Tung; FPR erosion trial, Mrs. Ngan, T ₆ C+P just above vetiver	June 98
	-4 Thanh Ba, Kieu Tung; FPR erosion trial, Mr. Ngan, T ₆ C+P in plot below vetiver	June 98
	-5 Thanh Ba, Kieu Tung; FPR fertilizer trial, Mr. Fu, check plot	June 98
	-6 Thanh Ba, Kieu Tung; FPR fert. trial, Mr. Bui Xuan Nghiem, check plot	May 00
	-7 Phu Ninh, Thong Nhat; yellow-red soil on 20% slope, future FPR trials	Sept 99
	-8 Phu Ninh, Thong Nhat; farmer's field with <i>Tephrosia</i> hedgerows	May 00
Ha Tay	-1 Thach That district, Thach Hoa; field of Mrs. Sau	Sept 99
	-2 Thach That district, Thach Hoa; check plot in fertilizer trial Mrs. Sau	May 00
	-3 Thach That district, Thach Hoa; yellow soil on steep slope, future erosion trial	Sept 99
	-4 Chiong Mi district, Tran Phu; yellow-red soil in cassava fields	Sept 99
	-5 Chiong Mi district, Tran Phu; FPR variety trial Mr. Nguyen Van Xiem	May 00
Hoa Binh	-1 Luong Son district, Dong Rang village; FPR trial with B. def. symptoms	Mar 98
	-2 Luong Son, Dong Rang; FPR erosion trial Mr. NguyenVan Tho, T ₁	June 98
	-3 Luong Son, Dong Rang; FPR erosion trial Mrs. Bui Thi Ban, T ₁ , poor cassava	June 98
	-4 Luong Son, Dong Rang; FPR erosion trial Mrs. Bui Thi Ban, T ₁ , with vetiver	June 98
	-5 Luong Son, Dong Rang; Mrs. Bui Thi Ban-T ₂ with vetiver+fert.	June 98
Hue	-1 Hue University; cassava varietal evaluation	June 98
	-2 Hue, Univ. Research Station near Hue city; intercropping trial, Av. 3 Reps	Apr 99
	-3 A-Luoi district, Hong Van commune; field with <i>Tephrosia</i> +pineapple hedgerows	Apr 99
	-4 A-Luoi district, Hong Bac 1 commune; red soil with <i>Tephrosia</i> +pineapple hedgerows	Apr 99
	-5 A-Luoi district, Hong Ha village; cassava field, sandy loam soil	Mar 98
	-6 A-Luoi district, Hong Ha village; hill side reforested with <i>Cassia mangium</i>	Nov 98
	-7 A-Luoi district, Hong Ha village; cassava garden with yellow sandy loam soil	Nov 98
	-8 A-Luoi district, Hong Ha village; variety trial, red-yellow clay	Apr 99
	-9 A-Luoi district, Hong Ha; FPR fert. trial Mrs. Ram, Av. 3 check plots	May 00
	-10 A-Luoi, Hong Ha; cassava field on 40% slope with hedgerows of Mr. Thao	May 00
	-11 A-Luoi, Hong Ha; erosion trial Mr. Dow; yellow sandy soil with K deficiency	May 00
	-12 A-Luoi, Hong Ha; field of 50% slope next to Mr. Thao	Aug 00
	-13 Nam Dong district, Xuan Loc village; slash/burn field of cassava	Mar 98
	-14 Nam Dong, Huang Hiu; cassava field with N+K deficiencies in Nep variety	May 00
Khanh Hoa	-1 Suai Cat, Khanh Hoa Extension station; Regional trial	June 98
	-2 Suai Cat, Khanh Hoa Extension station; mulliplication field	June 98

Table 8. Soil samples taken in Vietnam, 1997-2000. (continued)

Sample no.	Sample location and description	Date
Lam Dong	-1 Dalat; mottled clay loam from steep embankment	June 98
	-2 Dalat; yellow clay loam from vegetable nursery	June 98
	-3 Duc Trong, between Phu Hai and Di Linh; grey soil, maize field	June 98
	-4 Di Linh; south of Di Linh; red soil in new coffee field	June 98
Dong Nai	1-12 Hung Loc Center; NPK trial, 8th year, T ₁ -T ₁₂	Apr 97
	13-20 Hung Loc Center; soil improvement trial, 6th year, T ₁ -T ₉	Apr 97
	-21 Hung Loc Center; soil erosion trial, 1st year	May 97
	-22 Thong Nhat district, An Vien village; on-farm NPK trial, T ₁ Av.3 Reps	July 99
Baria-Vungtau	-1 Suoi Rao, Chau Duc district; FPR fert. trial Mr. Hugnh, sandy soil+ laterite	Aug 00
	-2 Chau Duc district, sample taken by Mrs. Sam	Aug 00
Ho Chi Minh	-1 Thu Duc, Univ.; experim field, Av. 4 Reps N ₀ P ₀ K ₀ of fertilizer trial	July 99
	-2 Thu Duc Univ.; experim. field, Av. 3 Reps N ₀ P ₀ K ₀ of fertilizer trial	Aug 00
	-3 Thu Duc Univ.; sample 1 taken by Mrs Sam	Aug 00
Binh Phuoc	-1 Dong Xoai, Vedan factory; red-clay soil, variety trial	Sept 99
Tay Ninh	-1 Tay Ninh; grey sandy soil in T ₁ of on-farm fertilizer trial	Sept 99

Table 9. Chemical and physical characteristics of cassava soils in Vietnam, 1997-2000.

Sample no.	Chemical characteristics											Physical characteristics						
	pH	% OM	ppm P	me/100 g				% Al	ppm				% Sand			Texture		
				Al	Ca	Mg	K	Al	B	Zn	Mn	Cu	Fe	Sand	Silt	Clay		
Thai Nguyen	-1	4.1	1.8	19.2	1.04	0.80	0.31	0.44	40	0.27	0.75	6.1	0.22	55.2	51.5	27.5	21.0	s.c.l.
	-2	4.8	1.4	228.0	0.43	3.24	0.30	0.11	11	1.80	1.35	14.4	0.40	78.6	66.2	16.9	16.9	s.l.
	-3	4.7	2.3	60.6	0.87	2.50	0.40	0.38	21	1.74	1.93	20.2	0.42	62.8	45.7	35.2	19.1	loam
	-4	4.1	1.7	19.6	2.29	0.61	0.12	0.10	73	0.47	0.47	4.3	0.38	116.7	57.4	16.4	26.2	s.c.l.
	-5	5.1	0.9	11.2	0.73	0.64	0.16	0.15	43	0.50	0.71	6.2	0.29	47.3	71.4	15.5	13.1	s.l.
Tuyen Quang	-1	5.5	3.4	1.6	0.31	7.57	3.35	0.18	3	0.85	1.97	355.5	0.43	16.8	38.6	26.1	35.2	c.l.
	-2	5.7	2.4	1.3	0	6.18	1.75	0.10	0	0.85	2.91	225.5	0.72	15.1	40.5	29.7	29.8	c.l.
	-3	5.4	3.9	1.9	0.21	9.33	4.84	0.17	1	0.65	1.89	283.0	0.40	16.8	31.9	28.8	39.2	c.l.
	-4	4.9	2.4	1.7	1.98	0.83	0.48	0.11	58	0.21	1.23	25.6	1.06	21.4	-	-	-	-
Phu Tho	-1	4.2	2.1	15.0	5.41	1.11	0.19	0.09	80	1.34	1.16	13.0	0.68	70.7	21.2	17.9	60.9	clay
	-2	4.2	1.9	6.1	5.30	0.88	0.13	0.10	83	1.22	0.70	8.3	0.57	47.5	17.0	20.0	63.0	clay
	-3	4.2	2.4	12.0	5.10	1.33	0.18	0.09	76	1.16	0.97	10.8	0.46	58.2	22.3	17.9	57.8	clay
	-4	4.2	1.7	4.9	5.20	1.07	0.18	0.09	80	1.27	0.95	10.0	0.51	54.5	21.8	17.9	60.3	clay
	-5	4.1	2.3	6.7	5.00	1.11	0.18	0.08	78	0.94	0.98	10.9	0.37	83.3	29.6	27.7	42.7	clay
	-6	4.3	2.3	2.3	7.24	0.73	0.20	0.10	87	0.45	1.18	8.9	0.55	59.7	24.8	20.9	54.3	clay
	-7	4.3	1.4	11.5	2.60	0.44	0.07	0.06	82	0.87	0.59	6.0	0.96	21.8	35.7	11.8	52.4	clay
	-8	4.5	1.6	7.8	2.08	1.14	0.15	0.14	59	0.50	0.74	9.5	0.78	23.2	37.0	8.8	54.2	clay
Ha Tay	-1	4.4	4.9	38.2	2.91	1.85	0.33	1.89	42	0.99	1.86	22.1	0.94	23.0	15.7	23.5	60.8	clay
	-2	4.6	1.8	36.7	2.08	0.53	0.14	0.13	72	0.57	1.59	52.6	2.48	33.7	44.7	17.7	37.6	c.l.
	-3	3.4	4.5	3.1	8.20	0.18	0.06	1.82	80	0.75	0.79	2.0	2.37	55.6	21.1	27.2	51.6	clay
	-4	4.5	2.9	9.1	2.60	1.81	0.58	0.29	49	0.86	1.67	22.5	0.96	43.6	22.3	23.5	54.3	clay
	-5	4.2	1.8	6.9	2.08	0.59	0.26	0.41	62	0.52	1.02	41.0	0.96	31.9	35.2	14.0	50.8	clay

s.c.l. = sandy clay loam; c.l. = clay loam.

Table 9. Chemical and physical characteristics of cassava soils in Vietnam, 1997-2000. (continued)

Sample no.	Chemical characteristics													Physical characteristics				
	pH	% OM	ppm P	me/100 g				% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	Clay	Texture ¹⁾	
Hoa Binh	-1	5.0	5.0	46.2	0.31	2.20	1.80	0.18	7	0.41	1.52	222.1	6.11	19.6	20.2	23.1	56.7	clay
	-2	4.7	4.7	2.6	1.35	1.29	0.60	0.18	39	1.90	1.94	442.3	7.65	19.5	11.3	35.6	54.1	clay
	-3	4.7	4.3	2.2	0.99	0.96	0.49	0.08	39	1.68	2.14	586.8	8.02	22.2	22.4	22.1	55.5	clay
	-4	4.8	4.3	4.5	0.54	1.62	0.95	0.16	16	1.63	2.25	549.4	7.38	17.4	21.2	22.2	56.6	clay
	-5	4.9	4.6	5.7	0.42	2.00	1.15	0.20	11	1.13	2.72	457.0	7.39	14.7	-	-	-	-
Hue	-1	6.3	1.9	195.0	0	14.03	0.52	0.41	0	0.52	17.66	37.1	1.94	17.1	46.2	27.5	26.3	s.c.l.
	-2	5.0	0.2	38.6	0.10	0.55	0.09	0.06	12	0.53	0.61	5.0	0.48	86.4	65.0	17.2	17.8	s.l.
	-3	4.4	3.2	7.6	1.98	0.47	0.29	0.16	68	0.74	0.92	4.9	0.50	131.8	47.0	28.7	24.3	s.c.l.
	-4	4.0	4.9	4.0	4.16	0.30	0.15	0.16	87	0.94	0.75	4.1	0.46	116.7	12.4	26.8	60.8	clay
	-5	4.6	2.0	2.6	1.25	0.21	0.23	0.08	71	0.35	0.62	21.8	1.22	73.3	44.0	28.1	27.9	c.l.
	-6	4.7	1.9	2.4	1.46	0.57	0.25	0.08	62	0.69	2.60	10.0	0.68	172.0	34.2	34.0	31.8	c.l.
	-7	4.6	2.1	2.9	1.72	0.41	0.18	0.09	72	1.20	0.91	31.0	1.41	105.5	31.7	34.0	34.3	c.l.
	-8	4.5	2.6	1.7	2.70	0.35	0.20	0.08	81	0.68	2.02	64.4	1.76	69.6	47.8	15.0	37.2	s.c.
	-9	4.8	1.9	3.2	2.18	0.42	0.29	0.12	72	0.52	1.14	25.0	1.08	89.6	43.1	28.8	28.1	c.l.
	-10	4.3	4.8	2.6	5.91	0.19	0.22	0.16	91	0.71	1.62	4.4	1.93	200.7	30.6	26.6	42.8	clay
	-11	4.6	2.6	1.6	2.61	0.72	0.73	0.17	62	0.65	6.10	55.7	1.46	53.3	48.0	21.7	30.3	s.c.l.
	-12	4.4	3.2	2.6	3.80	0.25	0.18	0.21	86	0.35	1.54	7.8	1.11	143.4	-	-	-	-
	-13	4.4	1.6	2.8	1.35	0.12	0.14	0.06	81	0.25	0.50	1.6	0.55	105.2	65.4	11.8	22.8	s.c.l.
	-14	4.4	2.4	4.1	3.02	0.14	0.10	0.09	90	0.52	0.71	6.4	0.54	90.5	30.0	36.6	33.4	c.l.
Khanh Hoa	-1	5.3	1.4	68.0	0.22	4.68	0.91	0.26	4	0.27	3.00	118.9	1.73	102.8	29.1	36.7	34.2	c.l.
	-2	4.8	1.0	73.3	0.73	1.60	0.41	0.15	25	0.22	1.45	14.5	0.61	139.4	57.6	21.2	21.2	s.c.l.
Lam Dong	-1	5.3	0.0	2.4	3.12	0.10	0.05	0.12	92	0.16	0.17	0.1	0.76	5.9	16.6	40.7	42.7	c.l.
	-2	4.9	0.0	1.9	2.50	0.34	0.09	0.05	84	0.20	0.08	0.4	1.18	13.9	17.7	43.3	39.0	si.c.l.
	-3	4.9	3.6	210.0	0.98	11.51	7.02	0.54	5	0.50	2.19	48.7	0.38	32.3	17.2	46.8	36.0	si.c.l.
	-4	5.0	1.9	4.4	0.16	0.50	0.30	0.10	15	0.40	0.53	4.9	0.57	15.8	31.2	20.5	48.3	clay

s.l. = sandy loam; c.l. = clay loam; s.c.l. = sandy clay loam; si.c.l. = silty clay loam

Table 9. Chemical and physical characteristics of cassava soils in Vietnam, 1997-2000. (continued)

Sample no.	Chemical characteristics									Physical characteristics								
	pH	% OM	ppm P	me/100 g			% Al	B	Zn	ppm Mn	Cu	Fe	Sand	% Silt	Clay	Texture ¹⁾		
Dong Nai	-1	4.7	3.0	14.7	1.66	1.00	0.61	0.21	48	-	-	-	-	-	-	-	-	
	-2	4.3	2.9	38.4	2.18	0.90	0.32	0.20	60	-	-	-	-	-	-	-	-	
	-3	4.3	3.1	33.7	1.98	0.90	0.31	0.17	59	-	-	-	-	-	-	-	-	
	-4	4.4	2.5	28.0	1.77	1.10	0.35	0.16	52	-	-	-	-	-	-	-	-	
	-5	4.3	2.9	38.4	1.98	1.20	0.37	0.19	53	-	-	-	-	-	-	-	-	
	-6	4.4	3.0	15.2	1.35	1.50	0.64	0.25	36	-	-	-	-	-	-	-	-	
	-7	4.3	2.7	21.5	2.18	0.84	0.35	0.22	61	-	-	-	-	-	-	-	-	
	-8	4.4	2.9	39.6	1.66	1.60	0.45	0.19	43	-	-	-	-	-	-	-	-	
	-9	4.3	2.7	26.5	2.18	0.95	0.39	0.12	60	-	-	-	-	-	-	-	-	
	-10	4.4	2.6	25.7	1.77	1.30	0.35	0.18	49	-	-	-	-	-	-	-	-	
	-11	4.4	2.6	23.4	1.98	1.10	0.37	0.25	53	-	-	-	-	-	-	-	-	
	-12	4.3	3.0	37.1	1.66	1.50	0.47	0.24	43	0.30	1.18	105.9	0.80	16.7	11.1	11.2	77.6	clay
	-13	4.6	2.5	9.5	1.04	1.70	0.58	0.24	29	0.24	1.60	125.1	0.90	16.0	-	-	-	-
	-14	4.6	2.7	14.4	1.98	1.80	0.62	0.34	42	-	-	-	-	-	-	-	-	-
	-15	4.6	2.9	12.0	1.04	1.70	0.60	0.26	29	-	-	-	-	-	-	-	-	-
	-16	4.4	2.9	10.2	1.35	1.50	0.51	0.27	37	-	-	-	-	-	-	-	-	-
	-17	5.1	3.0	11.3	0.31	2.80	0.69	0.32	7	-	-	-	-	-	-	-	-	-
	-18	4.7	2.7	9.7	0.83	1.80	0.65	0.27	23	-	-	-	-	-	-	-	-	-
	-19	4.7	3.0	19.2	0.62	2.10	0.75	0.38	16	-	-	-	-	-	-	-	-	-
	-20	4.6	2.9	11.3	0.73	1.90	0.72	0.37	20	-	-	-	-	-	-	-	-	-
	-21	4.8	3.5	8.0	0.62	2.70	1.20	0.14	13	0.34	1.30	159.7	0.74	17.8	24.3	12.7	63.0	clay
	-22	4.6	1.0	8.1	0.98	0.19	0.08	0.04	76	0.52	0.50	1.4	0.45	113.5	64.1	12.4	23.3	s.c.l.
Baria-Vungtau	-1	5.3	1.8	4.0	0.62	1.46	0.78	0.10	21	0.25	0.73	65.7	0.36	22.0	59.7	25.8	14.5	s.l.
	-2	5.1	2.5	6.5	0.31	1.45	0.33	0.16	14	0.36	0.97	50.4	0.49	18.5	-	-	-	-

s.c.l. = sandy clay loam; s.l. = sandy loam; c.l. = clay loam

Table 9. Chemical and physical characteristics of cassava soils in Vietnam, 1997-2000. (continued)

Sample no.		Chemical characteristics											Physical characteristics					
		pH	% OM	ppm P	me/100 g			% Al	ppm			%		Texture ¹⁾				
				Al	Ca	Mg	K	B	Zn	Mn	Cu	Fe	Sand	Silt	Clay			
Ho Chi Minh	-1	4.7	1.1	54.9	0.42	0.57	0.14	0.09	34	0.54	2.68	2.2	2.16	215.4	64.4	16.3	19.4	s.c.l.
	-2	5.2	0.6	164.0	0.10	0.72	0.07	0.06	11	0.24	2.75	5.5	2.03	81.8	74.4	13.8	11.8	s.l.
	-3	5.5	0.6	148.0	-	1.54	0.08	0.15	-	1.35	3.22	7.2	2.39	91.3	73.1	10.8	16.1	s.l.
Binh Phuoc	-1	4.7	4.2	53.0	3.33	0.51	0.10	0.10	82	0.93	0.67	38.4	0.37	19.4	17.0	17.1	65.9	clay
Tay Ninh	-1	4.9	0.9	57.3	0.83	0.64	0.15	0.11	48	0.92	0.47	12.9	0.27	60.6	61.2	23.1	15.7	s.l.

s.c.l. = sandy clay loam; s.l. = sandy loam; c.l. = clay loam

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