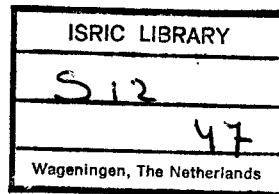


THE LABORATORY METHODS AND DATA EXCHANGE PROGRAMME
INTERIM REPORT ON THE EXCHANGE ROUND 1990

J. BRUNT



INTERNATIONAL SOIL REFERENCE AND INFORMATION CENTRE



THE LABORATORY METHODS AND DATA EXCHANGE PROGRAMME

Interim Report on the exchange round 1990

C O N T E N T S

1	Introduction	3
2	Indication of outliers	3
3	New Members	5
4	Results	6
5	References	34
ANNEX		
	List of participating laboratories LABEX round 1990	35

1. Introduction

Samples of the 1990 exchange round were sent to the participants in the period of January to March 1990. A list of collaborating laboratories can be found in ANNEX 1.

Participants were requested to analyze the samples according to their own methods or according to the LABEX procedures. It is emphasized that the methods as described in the LABEX proceedings are not intended to be standard methods. No standard methods exist yet. The LABEX methods are the methods as used in our and many other laboratories and are suited for the performance of our quality control.

The International Standard Organization (ISO) is currently investigating which procedures will finally become international standard methods.

Many laboratories analyzed the samples according to their own methods as well as to the LABEX procedures. For comparison purposes three types of tables are presented in this report:

- a. Tables presenting the analytical results and statistical analysis of ALL METHODS in a sample (tables 1, 4, 7, 10)
- b. Tables presenting the analytical results and statistical analysis of the LABEX METHODS in a sample (tables 2, 5, 8, 11) and
- c. Tables presenting the analytical results and statistical analysis of ALL METHODS EXCEPT THE LABEX method in a sample (table 3, 6, 9, 12).

Tables are separately analyzed by statistical procedures and it is therefore possible that values in different tables will be marked different as the tagging of a value depends amongst others on all other values.

2. Indication of outliers

To reduce the influence of extreme outliers the *median* is preferred to the average. When data are ranked in order of size, the median is:

- a. The mid value in an odd number of a ranked range of observations or
- b. The average of the two mid values in an even number of a ranked range of observations.

First the median is calculated (MED1), then the Median of the Absolute Differences of the observed values and the median (MAD1).

Those values larger than $MED1 + 2 \times F \times MAD1$ or smaller than $MED1 - 2 \times F \times MAD1$ are tagged with two stars (**) and are considered as outliers.

The same procedure is repeated with the same data excluding those values tagged with two stars (**). This results in a second median (MED2) and a second Median of the Absolute Differences of the observed values and the second median (MAD2).

Those values larger than $MED2 + 2 \times F \times MAD2$ or smaller than $MED2 - 2 \times F \times MAD2$ are tagged with one star (*) and are considered as dubious.

The factor F depends on the number of participating laboratories and is therefore often higher in the "*" tagging procedure as some values are omitted (the "***" or double asterisked values).

The factor F is such that had the data been normally distributed, 5% of the data would have been marked and is estimated at:

$$F = (0.7722 + 1.604/n) * t_{n-1}(0.025)$$

where: n = number of observations

t = the Student t with 0.025% confidence level (n-1 degrees of freedom)

At the end of each table one finds:

- N1 - the number of all observations
- MED1 - the median of all values
- MAD1 - the median of the absolute differences of all the observed values and the median (MAD1).
- F1 - the F factor for N1 (=all) observations
- N2 - the number of observations excluding double asterisked values
- MED2 - the median of the values excluding double asterisked values
- MAD2 - the median of the absolute differences of the observed values and the median (MAD2).
- F2 - the F factor for N2 observations
- CV1% - the coefficient of variation for N1 (= all) observations
- CV2% - the coefficient of variation for N2 observations (excluding double asterisked values).
- CV3% - the coefficient of variation for non-asterisked values

It may be assumed that the "true value" of a parameter is approximated by:

$$MED2 \pm MAD2$$

Statistical procedures are carried out using programmes written in Dbase-4.

3. New Members

We welcome the following new members of the LABEX Programme:

Laboratorio Agrícola CORDECH
c/o Ing. Agr. Rubén Camacho
P.O. Box 156
Sucre
BOLIVIA

University of Ibadan
c/o Prof. E.J. Udo
Department of Agronomy
Ibadan
NIGERIA

Universidad de Chile
Ms. M.A. Carrasco R.
Casilla 1004
Santiago
CHILE

Agricultural Chemistry Section
Mr. F. Grieshaber
P.O. Box 2141
N.C.D. Boroko
PAPUA NEW GUINEA

INICA
Ing. Idanis Chavez Fleitas
Ave. van Troi no 17203
Boyeros
CUBA

Soil Survey & Land Classification
c/o Mr. M.A. Ali
FAOR P.O. Box 1867
Sana
YEMEN ARAB REPUBLIC

Faculty of Agriculture
Prof. Dr. F. Hanna
Fac. of Agric. P.O. Box 281
Cairo
EGYPT

4. Results

The precision of the determination depends in general on:

1. The parameter analyzed
2. The size range of the parameter (the smaller the size the larger the C.V.)

The majority of laboratories presented their data with two decimals (total nitrogen in three decimals), therefore the compilation of all data is presented accordingly.

It is obvious, however, that in most cases the notation of decimals is no more than a illusory accuracy.

The results are presented in the next 12 tables. Statistical calculations are omitted when the number of observations for a calculation is less than 5.

For easy reference purposes, the last page of this report can be spread out and explains the abbreviations mentioned at the end of each table.

Table 1. Results of Chemical Analysis Round 1990 Sample 28 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-75 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
3	7.10	5.70**	6.10	26.00**	68.00	6.00	0.16	0.08*	10.60	0.00	0.00	14.05	0.36**	0.73**	10.43	1.74**					
4				18.00	74.50	7.50															
4	6.60	5.10	5.90	19.00	74.00	7.00	0.16	15.50	0.90**	0.00		9.10	0.23	0.15	7.25	1.21					
6	6.54	5.10	5.75	18.00	76.50	5.50	0.14	57.00**				12.00	0.20	0.10	8.45	0.95					
7	6.70	5.20		13.80*	19.90	59.00	0.02*	11.80	0.14			9.30	0.31**	0.13	7.83	0.87				0.032	
9	6.30			23.00*	62.00	15.00	0.20		3.50**			10.35	0.25	0.15	8.85	0.90					
11	6.70		5.90	17.00	61.15	21.85	0.16	18.00	0.04			13.17	0.23	0.09	8.50	1.00					
24	6.68	5.06	6.02	13.50**	62.50	47.50**	0.24	15.23													
27	6.79	4.98	5.87				0.12	39.82**													
30	6.21			18.10	15.80**	66.10**	0.19					26.50**	0.22	0.13	7.90	0.96				0.097**	
31	6.79	5.15	5.90				0.00**					11.48	0.22	0.08	7.43	0.80					
34	7.14	5.16	6.12				0.14	18.65	0.04	0.00		9.97	0.23	0.10	6.92	0.77					
35	6.79	5.00	5.70	17.50	65.50	17.00	0.10					12.70								0.035	
37				18.56	66.36	15.08															
37	7.60**	5.30		17.95	61.55**	4.50	0.87**	2.50**				14.50	0.24	0.32**							
38	7.00	5.10		19.60	15.45	50.85	0.18	18.50	13.40			10.23	0.23	0.30*	10.53	0.86					
41	6.50	4.90		19.00	14.80							12.60	0.20	0.10	8.90	1.00					
43	7.10	5.00	5.80	17.50	17.50	56.50	0.16	14.60	0.00			11.10	0.19	0.10	2.07**	0.09**				0.020	
45	5.73**			37.40**	32.17**	18.68	0.61**	24.05*													
47	6.21	5.13		24.00*	13.60	40.00	0.22	18.60													
48	6.50	5.00		17.75	36.55*	45.72*	0.22														
50																					
50	6.55		5.90	18.35	15.40	43.75	0.18	22.50				9.84	0.25	0.12	11.30	1.02					
69				18.90	15.10		0.13					105.0**	2.25**	1.10**	79.50**	9.25**					
69	7.02	5.08							0.05	0.05**		119.0**	2.45**	1.10**	82.65**	9.10**					
69												9.38	0.34**	0.06	8.14	0.92				0.030	

continued on next page

continued on next page

continued on next page

Continuation of :

Table 1. Results of Chemical Analysis Round 1990 Sample 28 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt 2-50 μm	% Sand μm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
73	6.84								0.18		13.43	11.43				0.18	0.15	9.45	1.29*	0.027
77	6.84	5.16													9.98	0.20	0.07	8.33	0.91	
77	6.84	5.13		20.50	16.50	51.00	67.50	12.00							9.81	0.20	0.05	8.43	0.94	0.030
83	6.90		6.01	9.80**	4.20**	3.00	7.20**	83.00**	0.20			13.00			9.70	0.50**	0.10	10.60	0.50**	
88															10.05					
88	6.94	6.16**		20.00	13.50	50.97	64.47	13.00	0.18		17.17		0.12	0.00		0.22	0.10	7.80	1.00	0.031
92	6.50	4.80**	6.60**	17.90			71.30	10.80	0.03*	0.00	21.00	17.00	0.32		8.17	0.17	0.37**	9.34	0.92	0.000
92				18.00			45.00*	37.00												
93	6.85	5.10		23.20*			71.20	5.60		0.00	16.61	23.00*	0.20	0.50**	12.09	0.21	0.00	0.00**	9.38**	0.051
95			5.81	19.00	17.50	40.50	58.00	23.00	0.02*							0.19		7.00	0.81	
97	6.45			21.00			68.00	11.00	0.17		15.95		0.10		11.20	0.26	0.17	8.44	0.63*	0.020
98																				
98	7.19	5.21		18.70	14.10	52.30	66.40	15.30	0.16		19.00	11.35		0.00	2.43**	0.27	0.04	0.98**	0.97	
99	6.50	5.22	6.03	17.10	19.22				0.10				0.18			0.18	0.27*	5.37*		
100	7.70**		6.75**	30.76**			23.00**	46.24**	0.26*		13.50				10.88	0.17	0.09	11.73*	1.73**	0.025
104	6.65			21.61	14.73	46.65	50.85	17.02				10.60								
112				20.80			64.80	12.85		0.26*										
112	7.06	5.34							0.16			11.10			12.30	0.19	0.06			0.028
121	6.64			13.40**			68.00	18.60	0.13			34.00**				0.29*	0.18	7.01	6.04**	0.025
123	5.90**	5.40**	6.20	12.50**	16.00	20.00	36.00*	51.50**	0.14	0.46**	20.47	13.25			8.30	0.21	0.18	7.00	1.40**	0.020
125	5.72**	5.53**		20.00			50.00	30.00		0.59**			4.20**		11.87	0.22	0.13	6.18	1.15	
128	6.40	5.20	5.90	20.00			66.80	13.20	0.20			86.12**	0.10	0.00	11.17	0.24	0.08	9.61	1.08	0.020
129	6.90			23.00*			70.00	7.00	0.19							0.37**	0.23	9.42	1.08	0.040
130	6.75			23.13*			60.12	16.75	0.12						9.72	0.18		8.04	0.87	
131	6.80				17.40			60.80**	26.00**		17.50									

continued on next page

continued on next page

continued on next page

Continuation of :

Table 1. Results of Chemical Analysis Round 1990 Sample 28 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt 50-100 μm	% Sand μm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
132	6.50			36.00**			16.00**	48.00**		0.05*		16.00			7.80	2.10**	0.13	0.05**	0.01**	
133	6.85	5.20		19.10	13.20	34.10	47.30	33.60	0.33**			15.00	4.69**		15.10	0.22	0.07	9.15	0.95	
135	6.91	5.06	6.03	19.35	14.24	45.81	60.05	20.61	0.18		54.44**		0.25		7.54	0.24	0.05			0.021
138	6.65	5.16	6.18	50.00**			18.92**	31.08	0.20	11.45**		8.20	0.15		13.00	0.56**	0.19	9.25	1.17	
139	5.75**	5.13							0.12			17.80			12.76	0.21	0.24*	8.96	0.75	0.035
141	6.62															0.21		9.11	0.95	
142				22.80*	24.60**	6.60	31.20**	46.00**				53.00**			8.96	0.22	0.08	6.00	1.12	
142	6.70	5.70**		25.00**	12.50	11.90	24.40**	50.60**	0.24	0.00		9.59			11.63	0.23	0.20	7.94	1.03	
143	6.29			17.50	27.38**				0.14		15.40		0.03							
144	6.91	5.24							0.10			12.10								0.028
147	6.40	5.10		19.33	15.77	59.87	75.63	4.97				0.09**				0.19	0.07	9.07	0.90	0.310**
N1	51	34	20	47	26	21	43	44	43	17	19	26	20	8	39	48	45	45	43	21
MED1	6.70	5.14	5.85	19.00	15.43	45.81	62.50	16.88	0.16	0.05	17.17	14.00	0.13	0.00	11.10	0.23	0.13	8.45	0.96	0.028
MAD1	0.20	0.08	0.16	1.50	1.93	10.69	8.80	8.88	0.04	0.05	1.94	3.40	0.10	0.00	1.50	0.03	0.05	1.02	0.12	0.007
F1	1.72	1.67	1.78	1.74	1.72	2.04	1.76	1.63	1.76	2.19	2.11	1.72	1.78	2.29	1.78	1.62	1.75	1.75	1.76	2.043
N2	45	28	18	37	21	21	36	35	38	12	15	22	16	6	35	38	40	37	33	19
MED2	6.70	5.13	5.90	19.00	15.10	45.81	65.78	15.00	0.16	0.00	16.61	13.33	0.10	0.00	10.88	0.22	0.10	8.45	0.95	0.028
MAD2	0.20	0.07	0.12	1.05	1.40	10.69	5.59	6.50	0.03	0.00	1.89	2.70	0.07	0.00	1.21	0.02	0.04	0.80	0.08	0.007
F2	1.75	1.70	1.82	1.80	2.04	2.04	1.66	1.82	1.65	1.99	2.29	1.76	1.86	2.65	1.82	1.65	1.64	1.80	1.84	2.106
CV1%	5.93	4.83	4.24	31.86	55.26	49.49	33.79	76.30	496.0	282.8	63.72	88.60	192.5	238.2	138.6	133.9	121.4	135.1	136.3	140.81
CV2%	3.69	1.88	2.35	11.04	12.57	49.49	16.66	57.81	35.18	184.5	15.30	28.93	85.61		17.09	12.52	54.88	16.40	15.59	36.696
CV3%	3.69	1.88	2.35	6.27	12.57	49.49	12.21	52.61	22.88		15.30	22.57	85.61		17.09	11.46	48.66	14.29	11.70	36.696

Table 2. Results of Chemical Analysis Round 1990 Sample 2 8 L A B E X methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-60 µm	% Sand µm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
7	6.70	5.20		13.80	19.90	59.00	78.90	7.20	0.02						12.00	0.20	0.00*	14.60	1.00	
27	6.79	4.98	5.87						0.12	0.77	15.23									
38	7.00	5.10		19.60	15.45	50.85	66.30	14.10	0.18	0.00	18.50	13.40			10.23	0.23	0.30**	10.53	0.86	
50	6.55		5.90	18.35	15.40	43.75	59.15	22.50	0.13						119.0**	2.45**	1.10**	82.65**	9.10**	
69	7.02	5.08													9.38	0.34**	0.06	8.14	0.92	0.030
77	6.84	5.16													9.98	0.20	0.07	8.33	0.91	
88	6.94	6.16**		20.00	13.50	50.97	64.47	13.00	0.18		17.17		0.12	0.00						
98	7.19	5.21		18.70	14.10	52.30	66.40	15.30	0.16		13.50	11.35								
100	7.70		6.75	30.76**			23.00	46.24	0.26											
112	7.06	5.34							0.16						12.30	0.19	0.06	5.37		0.031
142				22.80	24.60	6.60	31.20	46.00												
142	6.70	5.70*		25.00	12.50	11.90	24.40	50.60	0.24			53.00			8.96	0.22	0.08	6.00	1.12	
N1	11	9		8	7	7	8	8	9						7	9	9	8	7	
MED1	6.94	5.20		19.80	15.40	50.85	61.81	18.90	0.16						10.23	0.22	0.08	8.24	1.00	
MAD1	0.15	0.12		2.23	1.90	7.10	10.84	8.80	0.03						1.27	0.02	0.02	2.27	0.09	
F1	2.65	2.98		2.29	3.60	3.60	2.29	2.29	2.98						3.60	2.98	2.98	2.29	3.60	
N2	11	8		7	7	7	8	8	9						6	7	6	7	6	
MED2	6.94	5.18		19.60	15.40	50.85	61.81	18.90	0.16						10.11	0.20	0.07	8.14	0.96	
MAD2	0.15	0.09		1.25	1.90	7.10	10.84	8.80	0.03						0.94	0.02	0.01	2.14	0.05	
F2	2.65	2.29		3.60	3.60	3.60	2.29	2.29	2.98						2.65	3.60	2.65	3.60	2.65	
CV1%	4.25	6.64		22.54	24.06	49.61	39.72	61.72	41.01						146.2	149.2	142.5	137.2	133.6	
CV2%	4.25	3.95		16.62	24.06	49.61	39.72	61.72	41.01						11.98	8.16	49.91	33.10	8.69	
CV3%	4.25	2.06		16.62	24.06	49.61	39.72	61.72	41.01						11.98	8.16	20.23	33.10	8.69	

Table 3. Results of Chemical Analysis Round 1990 Sample 28 OTHER methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-75 µm	% Sand µm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	N Total %
3	7.10	5.70**	6.10	26.00**	68.00	6.00	0.16	0.08*	10.60	0.00	0.00	14.05	0.36**	0.73**	10.43	1.74**				
4				18.00	74.50	7.50														
4	6.60	5.10	5.90	19.00	74.00	7.00	0.16		15.50	0.90**	0.00	9.10	0.23	0.15	7.25	1.21				
6	6.54	5.10	5.75	18.00	76.50	5.50	0.14		57.00**			9.30	0.23	0.10	8.45	0.95				0.032
9	6.30			23.00	62.00	15.00	0.20		11.80	0.14		10.35	0.31*	0.13	7.83	0.87				
11	6.70			17.00	61.15	21.85	0.16		39.82**	3.50**		26.50**	0.25	0.15	8.85	0.90				0.097**
30	6.21			18.10	15.80**	66.10**	0.19					11.48	0.22	0.13	7.90	0.96				
31	6.79	5.15	5.90				0.00**					9.97	0.22	0.08	7.43	0.80				
34	7.14	5.16	6.12				0.14		18.65	0.04	0.00	12.70	0.23	0.10	6.92	0.77				0.035
35	6.79	5.00*	5.70	17.50	65.50	17.00	0.10	0.00												
37				18.56	66.36	15.08														
37	7.60**	5.30*		17.95	61.55**	4.50	0.87**	2.40**	2.50*			14.50	0.24	0.32**						
43	7.10	5.00*	5.80	17.50	74.00	8.50	0.16	0.00	14.60	0.00		11.10	0.19	0.10	2.07**	0.09**				0.020
45	5.73**			37.40**	32.17**	18.68	0.61**		24.05				0.34**	0.18	16.63**					
47	6.21	5.13		24.00	53.60	22.40	0.22	0.09*	18.60			9.84	0.25	0.12	11.30*	1.02				
48	6.50	5.00*		17.75	36.55*	45.72*	0.22					105.0**	2.25**	1.10**	79.50**	9.25**				
50																				
69				18.90	15.10		0.18						0.05	0.05**						
73	6.84			20.50	67.50	12.00	0.18		13.43			9.81	0.18	0.15	9.45	1.29				0.027
77	6.84	5.13		9.80**	4.20**	3.00	0.20		13.00			9.70	0.20	0.05	8.43	0.94				0.030
83	6.90		6.01	9.80**	4.20**	3.00	0.20					10.05	0.50**	0.10	10.60	0.50*				
88																				
93	6.85	5.10		23.20	71.20	5.60	0.00	0.00	16.61	0.20	0.50**	12.09	0.21	0.00	0.00**	9.38**				0.051

continued on next page

continued on next page

continued on next page

Continuation of :

Table 3. Results of Chemical Analysis Round 1990 Sample 2 B O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt 50-75 μm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
95			5.81	19.00	17.50	40.50	58.00	23.00	0.02**							0.19		7.00	0.81		
97	6.45			21.00		68.00	68.00	11.00	0.17		15.95	15.00	0.10			0.20	0.15	8.60	0.60	0.020	
98															11.20	0.26	0.17	8.44	0.63		
99	6.50	5.22	6.03	17.10	19.22	46.65	50.85	17.02	0.10		19.00	10.60	0.18	0.00	2.43**	0.27	0.04	0.98**	0.97		
104	6.65			21.61	14.73										10.88	0.17	0.09	11.73*	1.73**	0.025	
112	6.64			20.80			64.80	12.85		0.26*		36.00**									
123	5.90**	5.40**	6.20	12.50**	16.00	20.00	36.00*	18.60	0.13	0.46**	20.47	13.25	4.20**		8.30	0.18	7.00	6.04**	0.025		
125	5.72**	5.53**		20.00			50.00	30.00	0.14	0.59**					11.87	0.22	0.13	6.18	1.15	0.020	
128	6.40	5.20	5.90	20.00			66.80	13.20	0.20			86.12**	0.10	0.00	11.17	0.24	0.08	9.61	1.08	0.020	
129	6.90			23.00			70.00	7.00	0.19						0.37**	0.23	9.42	1.08	0.040		
130	6.75			23.13			60.12	16.75	0.12			17.50			9.72	0.18	8.04	0.87			
131	6.80				17.40			60.80**	26.00**												
132	6.50			36.00**			16.00**	48.00**		0.05*		16.00			7.80	2.10**	0.13	0.05**	0.01**		
133	6.85	5.20		19.10	13.20	34.10	47.30	33.60	0.33**			15.00	4.69**		15.10	0.22	0.07	9.15	0.95		
135	6.91	5.06	6.03	19.35	14.24	45.81	60.05	20.61	0.18		56.44**		0.25		7.54	0.24	0.05			0.021	
138	6.65	5.16	6.18	50.00**			18.92**	31.08	0.20	11.45**		8.20	0.15		13.00	0.56**	0.19	9.25	1.17		
139	5.75**	5.13							0.12		17.80				12.76	0.21	0.24	8.96	0.75	0.035	
141	6.62															0.21		9.11	0.95		
143	6.29			17.50	27.38**				0.14	0.00	9.59			11.63	0.23	0.20	7.94	1.03		0.028	
144	6.91	5.24							0.10		15.40	12.10	0.03	0.00							
147	6.40	5.10		19.33	15.77	59.87	75.63	4.97			0.09*				0.19	0.07	9.07	0.90		0.310**	

continued on next page

continued on next page

continued on next page

Continuation of :

Table 3. Results of Chemical Analysis Round 1990 Sample 2 8 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-100 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
N1	37	22	15	35	18	14	32	33	32	14	13	21	17	7	29	36	33	34	33	17
MED1	6.65	5.14	5.90	19.10	15.89	43.16	63.40	16.75	0.17	0.07	16.61	14.60	0.14	0.00	11.10	0.23	0.13	8.45	0.95	0.028
MAD1	0.20	0.06	0.13	1.60	1.77	11.20	8.80	8.25	0.04	0.07	3.18	4.00	0.11	0.00	1.40	0.03	0.05	1.09	0.18	0.007
F1	1.80	1.76	2.29	1.82	1.82	1.91	1.68	1.84	1.68	1.91	2.44	2.04	2.19	3.60	1.88	1.66	1.84	1.67	1.84	2.187
M2	32	19	15	29	14	14	28	28	26	10	10	19	13	5	26	29	30	28	26	15
MED2	6.68	5.13	5.90	19.00	15.44	43.16	65.78	15.04	0.16	0.00	15.73	13.25	0.10	0.00	10.99	0.22	0.13	8.53	0.95	0.027
MAD2	0.18	0.03	0.13	1.50	1.64	11.20	5.69	6.68	0.03	0.00	2.61	2.75	0.07	0.00	1.23	0.02	0.05	0.81	0.13	0.007
F2	1.68	2.11	2.29	1.88	1.91	1.91	1.70	1.70	1.72	2.11	2.11	2.11	2.44	5.03	1.72	1.88	1.69	1.70	1.72	2.292
CV1%	6.06	3.20	2.52	34.02	61.50	49.37	33.38	82.68	448.8	267.1	69.02	91.84	180.5	220.0	121.2	124.3	113.5	124.8	135.8	137.54
CV2%	3.74	1.55	2.52	11.96	11.39	49.37	17.25	58.84	22.10	163.4	32.26	38.97	84.13		17.48	14.30	45.32	15.45	21.57	30.073
CV3%	3.74	0.97	2.52	11.96	11.39	49.37	12.86	51.85	22.10		15.88	30.33	84.13		17.48	12.70	45.32	13.11	17.75	30.073

Table 4. Results of Chemical Analysis Round 1990 Sample 50 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt 2-50 μm	% Sand μm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	EX. AL me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	N Total %
3	5.60**	4.90**	5.00**	57.00*	8.00	35.00	0.88	0.11**	0.50	1.10	5.60**	1.10	9.53	0.38**	0.58**	1.10**	0.73**			
4	4.60	4.00	3.90	49.00	19.50	31.50	0.15**	3.00	0.50	5.60**	1.10	9.53	0.13	0.05	0.06	0.06				
4				46.50	22.00	31.50														
6	4.56	4.00	3.85	47.50	4.50	16.00	1.12	8.00	4.75	0.15	0.03	0.05	0.10	0.03	0.05	0.10	0.10	0.30**		
7	4.60	4.10		42.90	8.80*	13.70	0.12**	8.00	5.60	0.10	0.00	0.20	0.30**	0.00	0.20	0.30**				
9	4.50			53.00	14.00	33.00	1.10	0.80	2.24	0.14	0.06	0.23	0.10	0.06	0.23	0.10	0.10	0.10		
11	4.60		4.20	46.20	4.60	11.75	1.32	2.50	6.30	0.20	0.10	0.15	0.10	0.10	0.15	0.10	0.10	0.10		
24	4.84	4.08	4.17	46.00	15.00	79.00**	1.34	2.50	10.55	0.14	0.04	0.40*	0.20	0.04	0.40*	0.20	0.20	0.20		
27	4.67	3.92	3.95				1.33	2.25												
30	5.04			42.00	11.00	47.00**	0.94	4.87	10.10	0.11	0.03	0.00	0.03	0.03	0.00	0.03	0.00	0.03	0.139**	
31	4.64	4.12	3.99				1.15	0.00	6.64	0.14	0.02	0.07	0.07	0.02	0.07	0.07	0.07	0.07		
34	4.83	4.05	4.17				1.26	3.30	5.43	0.15	0.04	0.06	0.06	0.04	0.06	0.06	0.06	0.06		
35	4.75	3.90	3.80	43.50	16.50	40.00	1.25	0.00	1.05	1.50	1.42	12.15	0.15	0.15	0.15	0.15	0.15	0.15	0.090	
37	5.60**	4.40*		45.25	14.58**	1.93	2.72**	2.20**	9.00**			11.30	0.23*	0.34**						
37				40.56	22.36	37.08														
38	4.80	3.90		52.40	3.90	9.00	1.20	5.60	1.75	0.00	0.00	7.83	0.15	0.15*	0.00	0.15	0.00	0.18		
41	4.90	4.40*		47.50																
43	4.70	4.00	3.80	53.00	4.00	8.00	1.34	3.00	2.40	0.00	0.00	7.09	0.16	0.00	0.00	0.02	0.01	0.01	0.070	
45	4.23			65.40**	24.01**	7.98	1.38	2.61**	4.48											
47	4.44	3.85		41.40	7.60	13.10	1.60	37.90	4.36											
48	4.40	4.00		47.20	10.97	41.76	1.42	41.76												
50	4.10*		3.90	49.05	1.80	10.20	1.23	39.00												
69	4.75	3.99		48.60	4.00		1.08													

continued on next page

continued on next page

continued on next page

Continuation of :

Table 4. Results of Chemical Analysis Round 1990 Sample 50 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-100 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
73	4.67								1.31		2.00	4.71				0.10	0.03	0.47*	0.22	0.080
77	4.85	4.13													5.94	0.13	0.01	0.03	0.06	
77	4.87	4.14		49.50	16.50	12.50	16.50	34.00	1.32		0.07				5.64	0.11	0.00	0.05	0.07	
83	5.00		4.16	50.60	8.10	8.10	14.20	35.20	1.10			2.10	0.80		8.00	0.10	0.10	0.20	0.10	
88															7.00					
88	4.88	4.27		47.38	11.44	11.44	15.69	33.87	1.21		3.07		1.45	1.00		0.17	0.04	0.20	0.08	0.082
92	4.50	3.80	4.30	42.10	19.00	19.00	38.90		0.08**		6.00	4.00	2.21		5.63	0.11	0.40**	5.05**	0.61**	
93	4.55	3.95		49.20	19.20	19.20	31.60			0.00	4.10	11.00**	2.30	2.00	12.09	0.20	0.00	0.00	0.61**	0.082
95			4.07	44.50	10.50	10.50	19.00	36.50	1.11							0.12		0.01	0.06	
97	4.75			50.00	15.50	15.50	34.50		1.02		4.25	2.25	1.90	1.40		0.14	0.04	0.30	0.10	0.065
98													0.00**							
98	4.77	3.83		46.10	15.40	15.40	37.50		1.06			5.60	1.30	0.60	7.85	0.16	0.16*	0.13	0.32**	
99	4.31	4.17	4.12	46.43	3.94**	3.94**	48.64**		1.25		3.50		2.46	1.86	2.71	0.17	0.01	0.01	0.07	
100	4.70		5.35**	41.76	20.00	20.00	38.24		1.82*		4.50					0.15	0.19**	0.18		
104	4.82		45.98	8.33*	9.92	9.92	18.25	35.83	1.95**			4.20			10.66	0.17	0.33**	1.90**	0.18	0.090
112										0.00										
112	4.91	4.20		50.00	14.10	14.10	36.10		1.35			3.42			8.20	0.10	0.01		0.083	
121	5.40**			19.40**	26.00*	26.00*	54.60**		1.27			6.00				0.18	0.09	0.17	2.08**	0.078
123	4.00**	4.30	4.10	29.50**	11.50	11.50	60.00**		1.29	0.00	6.70	2.33	1.32		8.70	0.15	0.16*	0.00	0.52**	0.070
125	4.32	4.26		50.00	8.00	8.00	42.00						9.42**		9.90	0.11	0.10	0.10	0.17	
128	4.40	4.05	4.05	51.40	17.80	17.80	30.80		2.13**			107.2**	1.79	1.43	10.09	0.16	0.01	0.11	0.09	0.110*
129	4.60		54.00		19.00	19.00	27.00		1.32							0.25**	0.12	0.30	0.13	
130	4.80		49.18		14.03	14.03	36.79		0.95						7.22	0.12	0.01	0.01	0.01	
131	4.80			47.40**					1.48											
132	4.60			16.00**	62.00**	62.00**	22.00**			0.05**	5.50				15.30	1.40**	0.01	0.01	0.01	

continued on next page

continued on next page

continued on next page

Continuation of :

Table 4. Results of Chemical Analysis Round 1990 Sample 50 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 2-50 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
133	4.85	4.10	3.82	38.20*	11.20*	6.85	18.05	43.75*	1.29			3.50	10.47**		11.05	0.16	0.00	0.29	0.12	
135	4.73	3.95	3.82	48.72	5.07	5.60	10.67	40.61	1.46		5.71		2.17		3.86	0.15	0.00			0.072
138	4.52	3.99	4.05	32.00**			16.48	51.52**	1.00	11.55**		0.00	1.75	1.40	11.50	0.43**	0.12	5.20**	0.33**	
139	4.30	4.08							1.78*		2.35	2.13	12.88		12.88	0.19	0.21**	0.73**	0.63**	0.150**
141	4.56															0.13	0.09	0.09	0.08	
142				50.80	5.30	8.90	14.20	35.00	1.46			16.00**			5.60	0.14	0.02	0.24	0.21	
142	5.10	4.80**		52.50	7.50	5.70	13.20	34.30	0.99	0.00		3.14		8.44	0.11	0.14*	0.86**	0.17		
143	4.35			43.31	21.34**				1.28											0.075
144	4.63	3.96									2.35	2.37	1.40	1.30						
147	4.40	4.10		48.67	4.47	13.37	17.84	30.70				300.0**				0.11	0.01	0.64**	0.11	0.860**
N1	51	34	20	46	24	21	43	44	45	13	19	27	23	13	39	48	45	45	44	17
MED1	4.67	4.07	4.06	47.44	5.50	9.70	16.48	35.97	1.27	0.00	3.50	3.50	1.75	1.42	8.00	0.15	0.04	0.13	0.12	0.082
MAD1	0.17	0.11	0.13	3.05	1.80	2.05	2.72	3.00	0.16	0.00	1.25	1.37	0.43	0.32	2.36	0.03	0.04	0.12	0.06	0.008
F1	1.72	1.67	1.78	1.63	1.74	2.04	1.76	1.63	1.75	2.44	2.11	1.91	1.99	2.44	1.78	1.62	1.75	1.75	1.63	2.187
M2	47	32	18	41	20	21	40	36	39	9	19	22	18	13	37	41	37	37	33	14
MED2	4.67	4.05	4.05	47.50	4.84	9.70	16.42	35.10	1.27	0.00	3.50	3.07	1.69	1.42	7.85	0.14	0.03	0.07	0.10	0.079
MAD2	0.15	0.09	0.12	2.50	0.90	2.05	2.59	2.60	0.12	0.00	1.25	1.05	0.33	0.32	2.22	0.02	0.03	0.07	0.04	0.006
F2	1.74	1.68	1.82	1.77	1.78	2.04	1.64	1.66	1.78	2.98	2.11	1.76	1.82	2.44	1.80	1.77	1.80	1.80	1.84	1.915
CV1%	6.66	5.74	9.12	18.19	104.7	33.09	48.92	28.35	35.64	287.9	51.52	308.6	102.1	25.87	147.6	157.0	132.8	239.3	141.5	136.80
CV2%	4.72	3.69	3.69	8.43	40.26	33.09	24.73	10.00	16.28		51.52	50.78	25.26	25.87	35.68	21.58	105.0	104.4	55.18	13.457
CV3%	4.42	3.12	3.69	7.39	30.50	33.09	23.38	9.43	13.48		51.52	50.78	25.26	25.87	35.68	19.82	105.1	99.76	55.18	9.337

Table 5. Results of Chemical Analysis Round 1990 Sample 50 L A B E X methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μ m	% Silt 20-50 μ m	% Silt 50-100 μ m	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
7	4.60	4.10		42.90	8.80	13.70	22.50**	34.40	0.12**						5.60	0.10	0.00	0.20	0.30	
27	4.67	3.92	3.95						1.33		2.25				7.83	0.15	0.15**	0.00	0.18	
38	4.80	3.90		52.40	3.90	9.00	12.90	34.80	1.20	0.00	5.60	1.75			108.0**	1.80**	0.30**	0.00	0.15	
50	4.10**		3.90	49.05	1.80	10.20	12.00	39.00**	1.08						6.66	0.15	0.00	0.05	0.10	0.078
69	4.75	3.99													5.94	0.13	0.01	0.03	0.06	
77	4.85	4.13																		
88	4.88	4.27		47.38	4.25	11.44	15.69	33.87	1.21		3.07		1.45	1.00		0.17	0.04	0.20	0.08	0.082
100	4.70		5.35	41.76		20.00	38.24		1.82		4.50					0.15	0.19**	0.18		0.083
112	4.91	4.20		50.00		14.10	36.10		1.35			3.42				0.10	0.01			
142				50.80	5.30	8.90	14.20	35.00							8.20	0.10				
142	5.10	4.80**		52.50	7.50	5.70	13.20	34.30	1.46			16.00			5.60	0.14	0.02	0.24	0.21	
N1	10	8		8	6	6	8	8	8						7	9	9	8	7	
MED1	4.78	4.12		49.53	4.78	9.60	14.15	34.90	1.27						6.66	0.15	0.02	0.12	0.15	
MAD1	0.11	0.14		2.51	1.80	1.27	1.40	0.82	0.14						1.06	0.02	0.02	0.09	0.06	
F1	2.11	2.29		2.29	2.65	2.65	2.29	2.29	2.29						3.60	2.98	2.98	2.29	3.60	
M2	9	7		8	6	6	7	7	7						6	8	6	8	7	
MED2	4.80	4.10		49.53	4.78	9.60	14.10	34.80	1.33						6.30	0.15	0.01	0.12	0.15	
MAD2	0.10	0.11		2.51	1.80	1.27	1.20	0.50	0.13						0.70	0.01	0.01	0.09	0.06	
F2	2.98	3.60		2.29	2.65	2.65	3.60	3.60	3.60						2.65	2.29	2.65	2.29	3.60	
CV1%	5.30	6.48		7.91	44.19	25.04	22.38	5.03	38.22						168.0	162.9	127.2	84.42	50.43	
CV2%	2.94	3.20		7.91	44.19	25.04	16.87	3.93	16.53						15.68	17.19	103.0	84.42	50.43	
CV3%	2.94	3.20		7.91	44.19	25.04	16.87	3.93	16.53						15.68	17.19	103.0	84.42	50.43	

Table 6. Results of Chemical Analysis Round 1990 Sample 50 OTHER methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt >50 μm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
3	5.60**	4.90**	5.00**	57.00*	8.00	35.00	0.88	0.11**	0.50	1.10	5.60**	1.10	9.53	0.38**	0.58**	1.10**	0.73**	0.06			
4	4.60	4.00	3.90	49.00	19.50	31.50	0.15**	3.00	0.50	5.60**	1.10	9.53	0.38**	0.58**	1.10**	0.73**	0.06				
4				46.50	22.00	31.50															
6	4.56	4.00	3.85	47.50	4.50	16.00	1.12	8.00	1.12	1.69	8.00	4.75	0.15	0.03	0.05	0.10	0.10	0.10			
9	4.50			53.00	14.00	33.00	1.10	0.80	1.10	10.40**	1.70	2.24	0.14	0.06	0.23	0.10	0.10	0.10			
11	4.60		4.20	46.20	4.60	11.75	1.32	2.50	1.32	1.69	2.50	6.30	0.20	0.10	0.15	0.10	0.10	0.10			
24	4.84	4.08	4.17	46.00	15.00	79.00**	1.34	4.87	1.34		4.87	10.10	0.11	0.03	0.00	0.03	0.00	0.03	0.139**		
30	5.04			42.00	11.00	47.00	0.94		0.94			6.64	0.14	0.02	0.07	0.07	0.07	0.07			
31	4.64	4.12	3.99				1.15	3.30	1.15	1.50	3.30	1.05	1.50	1.42	5.43	0.15	0.04	0.06	0.06	0.090	
34	4.83	4.05	4.17				1.26		1.26												
35	4.75	3.90	3.80	43.50	16.50	40.00	1.25	0.00	1.25	0.00	9.00*	9.40	0.10	0.00	0.00	0.00	0.00	0.05	0.070		
37	5.60**	4.40**		45.25	14.58**	1.93	2.72**	2.20**	2.72**	2.20**	9.00*	7.09	0.16	0.00	0.02	0.01	0.01	0.01	0.01		
37				40.56	22.36	37.08						4.48	0.00**	0.07	7.07**	0.41**	0.41**	0.41**	0.41**		
41	4.90	4.40**		47.50																	
43	4.70	4.00	3.80	53.00	4.00	8.00	1.34	0.00	1.34	0.00	2.40	2.40	1.68								
45	4.23			65.40**	24.01**	7.98	31.99**	2.61**	1.38		4.36	4.36									
47	4.44	3.85		41.40	7.60	13.10	1.60	0.00	1.60	0.00											
48	4.40	4.00		47.20	10.97	41.76	1.42		1.42					1.74	6.04	0.15	0.02	0.41*	0.13		
50															56.00**	2.05**	0.50**	0.00	0.60**		
69				48.60	4.00		1.23		1.23		2.00	4.71	2.14	1.79							
73	4.67						1.31		1.31		0.07									0.080	
77	4.87	4.14		49.50	4.00	12.50	1.32	34.00	1.32												
83	5.00		4.16	50.60	6.10	8.10	1.10	35.20	1.10		2.10	0.80	0.80								
88											7.00										
92	4.50	3.80	4.30	42.10	19.00	38.90	0.08**	6.00	0.08**	2.21	5.63	4.00	2.21								

continued on next page

continued on next page

continued on next page

Continuation of :

Table 6. Results of Chemical Analysis Round 1990 Sample 50 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-75 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	N Total
93	4.55	3.95		49.20	19.20	10.50	8.50*	31.60		0.00	4.10	11.00**	2.30	2.00	12.09	0.20	0.00	0.00	0.61**	0.082
95			4.07	44.50				36.50	1.11							0.12		0.01	0.06	
97	4.75			50.00	15.50			34.50	1.02		4.25		1.90	1.40		0.14	0.04	0.30	0.10	0.065
98													0.00**							
98	4.77	3.83		46.10	15.40	9.70	5.70	37.50	1.06		5.60	5.60	1.30	0.60	7.85	0.16	0.16*	0.13	0.32*	
99	4.31	4.17	4.12	46.43	3.94**			48.64	1.25		3.50		2.46	1.86	2.71	0.17	0.01	0.01	0.07	
104	4.82			45.98	8.33*	9.92	8.33*	35.83	1.95**		4.20				10.66	0.17	0.33**	1.90**	0.18	0.090
112										0.00										
121	5.40**			19.40**	26.00**			54.60**	1.27		6.00	6.00				0.18	0.09	0.17	2.08**	0.078
123	4.00	4.30	4.10	29.50**	7.50		3.00	60.00**	1.29	0.00	6.70	2.33	1.32		8.70	0.15	0.16*	0.00	0.52**	0.070
125	4.32	4.26		50.00	8.00			42.00					9.42**		9.90	0.11	0.10	0.10	0.17	
128	4.40	4.05	4.05	51.40	17.80			30.80	2.13**			107.2**	1.79	1.43	10.09	0.16	0.01	0.11	0.09	
129	4.60			54.00	19.00			27.00	1.32							0.25*	0.12	0.30	0.13	0.110
130	4.80			49.18	14.03			36.79	0.95						7.22	0.12	0.01	0.01	0.01	
131	4.80				47.40**			32.00	1.48		5.50									
132	4.60			16.00**	62.00**			22.00*		0.05**	3.00	3.00			15.30	1.40**	0.01	0.01	0.01	
133	4.85	4.10		38.20*	18.05	6.85	11.20*	43.75	1.29		3.50	3.50	10.47**		11.05	0.16	0.00	0.29	0.12	
135	4.73	3.95	3.82	48.72	10.67	5.60	5.07	40.61	1.46		5.71		2.17		3.86	0.15	0.00			0.072
138	4.52	3.99	4.05	32.00**	16.48			51.52*	1.00	11.55**	0.00	0.00	1.75	1.40	11.50	0.43**	0.12	5.20**	0.33**	
139	4.30	4.08							1.78*		2.13				12.88	0.19	0.21**	0.73**	0.63**	0.150**
141	4.56			43.31	21.34**				0.99	0.00	3.14				8.44	0.11	0.14	0.86**	0.17	
143	4.35								1.28		2.37		1.40	1.30						0.075
144	4.63	3.96		48.67	13.37			30.70			300.0**					0.11	0.01	0.64**	0.11	0.860**
147	4.40	4.10																		

continued on next page

continued on next page

continued on next page

Continuation of :

Table 6. Results of Chemical Analysis Round 1990 Sample 50 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-75 µm	% Sand	% Org. Carbon	% Cat03	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
M1	4.1	2.6	1.7	3.8	1.8	1.5	3.5	3.6	3.7	1.2	1.5	2.4	2.2	1.2	3.2	3.9	3.6	3.7	3.7	1.4
HED1	4.63	4.05	4.07	46.85	5.90	9.70	16.50	36.65	1.27	0.00	3.50	3.75	1.77	1.43	8.57	0.15	0.05	0.13	0.11	0.081
MAD1	0.19	0.09	0.10	3.15	1.90	2.20	2.50	4.65	0.16	0.00	1.37	1.56	0.45	0.30	2.38	0.03	0.05	0.13	0.06	0.010
F1	1.77	1.72	2.19	1.65	1.82	2.29	1.82	1.66	1.80	1.99	2.29	1.74	1.76	1.99	1.68	1.78	1.66	1.80	1.80	1.915
M2	3.8	2.3	1.6	3.3	1.4	1.5	3.1	3.2	3.2	0.8	1.5	2.1	1.7	1.2	3.1	3.4	3.0	2.9	2.8	1.1
HED2	4.60	4.00	4.06	47.50	4.84	9.70	16.50	36.17	1.27	0.00	3.50	3.14	1.69	1.43	8.44	0.15	0.04	0.07	0.10	0.078
MAD2	0.19	0.08	0.11	2.25	0.85	2.20	2.50	4.00	0.13	0.00	1.37	1.06	0.37	0.30	2.22	0.03	0.04	0.07	0.04	0.008
F2	1.65	1.99	1.86	1.84	1.91	2.29	1.86	1.68	1.68	2.29	2.29	2.04	2.19	1.99	1.86	1.67	1.69	1.88	1.70	2.648
CV1%	6.94	5.42	6.63	19.68	102.1	35.93	51.90	30.84	35.04	275.2	55.43	302.6	101.5	24.68	89.20	151.9	132.1	221.5	143.1	137.75
CV2%	4.87	3.05	3.79	8.50	38.39	35.93	23.58	16.41	15.74	55.43	58.41	58.41	25.50	24.68	36.30	24.71	96.97	107.9	65.46	15.143
CV3%	4.87	3.05	3.79	7.18	24.86	35.93	23.58	13.35	14.05	55.43	51.38	51.38	25.50	24.68	36.30	20.32	96.64	104.9	55.18	15.143

Table 7. Results of Chemical Analysis Round 1990 Sample 51 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 2-50 µm	% Sand µm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
3	7.00	6.30**	6.20	34.00			16.00	51.00	0.55	0.10**	6.95	0.00	0.00		9.49	0.63**	0.57**	5.43	2.12**		
4				27.00			21.00	52.00													
4	6.80	6.00	6.10	29.00			20.50	50.50	0.69		12.00		0.90**	0.00		0.44	0.07	3.21	1.20		
6	6.52	5.90	6.00	28.00	8.00		20.00	26.00**	0.66		30.50**				5.65	0.04**	0.00	4.13	1.30		
7	6.60	6.00		23.90	10.20		34.10**	43.00*	0.08**						6.40	0.50	0.00	7.40**	1.00		
9	6.10**			35.00			14.00	51.00	0.84		6.70		0.14		6.23	0.52	0.09	4.22	1.07	0.073	
11	6.70		6.10	27.20	7.80		10.90	54.10	0.84				3.05**		6.05	0.50		4.45	1.30		
24	6.70	5.85	6.15	24.50			18.00	114.0**	0.87		12.00		0.04		8.75	0.50	0.05	4.20	1.30		
27	6.87	5.84	6.13						0.79	0.49**	13.43										
30	6.01**			23.50			13.90	62.60*	0.60		20.95				11.05	0.47	0.00	4.24	1.38	0.120**	
31	6.89	5.97	6.12						0.77	0.00					6.75	0.42	0.02	3.72	1.15		
34	7.26	6.05	6.40				19.00	55.00	0.77	0.00	14.35		0.04	0.01**	6.29	0.48	0.04	3.09	1.12		
35	6.97	5.90	6.00						0.79	0.00					15.05**					0.064	
37	7.10	5.80		26.00			18.36	55.08	2.85**	2.00**											
37				20.56			16.36	58.82													
37				24.82	10.53	5.83															
38																					
38	6.90	5.90		29.10	5.90	14.20	20.10	50.80	0.79	0.00	15.50	7.60			10.50	0.49	0.34**	4.30	1.10	0.000**	
41	6.90	5.90		29.10	7.70			0.00**							9.10	0.43	0.39**	4.49	1.14		
43	7.05	5.85	6.10	27.00	8.00	6.00	14.00	59.00	0.76	0.00					6.38	0.44	0.42**	4.70	1.30		
45	6.10**			49.40**	27.02**	14.48	41.50**	9.10**	1.40**				0.00		8.10	0.40	0.00	0.95**	0.14**	0.070	
47	5.75**	5.47**		31.70	14.20	12.05	26.25*	42.05*	1.02	0.00					6.80	0.48	0.04	0.95**	0.14**		
48	6.30	5.80		26.84			14.12	58.89	0.84												
50									0.80												
50	6.60		6.10	29.00	5.05	8.90	13.95	57.00			17.00				6.79	0.50	0.10	4.51	1.47		
69									0.74						65.50**	4.95**	0.60**	39.50**	13.40**		
69	6.97	5.85		29.45	5.65				0.68						81.00**	4.80**	0.40**	40.40**	13.00**	0.058	

continued on next page

continued on next page

continued on next page

Continuation of :

Table 7. Results of Chemical Analysis Round 1990 Sample 51 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt >50 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
73	6.92			29.50	9.50	9.00	18.50	52.00	0.82		11.00				6.06	0.45	0.00	4.15	1.33	0.060
77	6.96	6.02		29.50	9.50	9.00	18.50	52.00			12.00				6.08	0.45	0.02	4.01	1.28	
83	6.91	5.96	6.19	31.80	8.00	8.00	16.00	52.20	0.70		8.20				6.30	0.10**	0.10	5.00	0.90	
88															6.35					
88	7.09	6.03		29.88	6.00	11.46	17.46	50.52	0.74		16.73		0.10	0.00		0.40	0.04	3.20	1.50	0.061
92				23.00			19.00	58.00												
92	6.80	5.70	6.30	26.60			16.70	56.70	0.06**	0.00	22.00	12.00	0.38**		7.99	0.35	0.56**	7.19**	0.77	
93	6.95	5.95		32.20			23.20	44.60*		0.00	9.99	22.50**	0.40**	0.50**	11.22	0.49	0.44**	0.00**	4.90**	0.053
95			6.00	29.50	6.50	11.50	18.00	52.50	0.56							0.40		2.63	0.98	
97	6.60			32.00			15.00	53.00	0.58		13.70	7.75	0.10	0.00		0.39	0.07	4.45	0.75	0.080
98																				
98	6.48	5.71		27.30	8.50	8.25	16.75	54.50	0.74			8.80			9.45	0.54	0.16*	4.57	0.51**	
99	6.83	5.96	6.26	28.21			6.19**	64.10*	0.55		13.00		0.07	0.00	2.46**	0.53	0.01	0.43**	1.43	
100	6.80		6.35	21.76			20.00	58.24	1.21**		16.50					0.40	0.21*	2.01**		
104	6.62			26.42	11.52	10.23	21.74	51.85	1.58**			11.70			10.43	0.49	0.69**	3.70	2.11**	0.055
112				32.50			16.40	51.30		0.00										
112	7.09	6.02							0.84			7.41			13.25*	0.38	0.03			0.060
121	6.53			25.40			20.00	54.60	0.74			31.00**				0.46	0.12	6.85**	4.79**	0.043
123	6.10**	6.10	6.10	19.50**	4.50	6.50	11.00*	69.50**	0.80	0.00	14.04	8.45	0.03		12.00*	0.44	0.25*	3.20	2.60**	0.060
125	6.63	6.16		30.00			10.00**	60.00		0.25**			4.32**		8.14	0.41	0.10	1.85**	1.46	
128	6.60	6.25**	6.25	32.40			23.20	44.40*	1.38**			52.76**	0.08	0.00	7.87	0.56	0.02	4.64	1.53	
129	7.00			36.00			19.00	45.00*	0.79							0.61**	0.02	4.10	1.33	0.070
130	6.35			27.13			20.04	52.83	0.53						5.71	0.41		3.59	4.35**	
131	6.80				27.40**			54.80	0.90		11.50									
132	7.90**			45.00**			21.00	34.00**		0.05**	9.00				5.50	2.50**	2.90**	0.43**	0.02**	

continued on next page

continued on next page

continued on next page

Continuation of :

Table 7. Results of Chemical Analysis Round 1990 Sample 51 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-200 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
133	6.90	5.90							0.84			9.00	3.44**		8.95	0.48	0.01	3.78	1.25	
135	7.05	5.92	6.34	30.30	6.06	6.57	12.63	57.08	0.87		25.69**	8.10	0.25*		4.24	0.44	0.00			0.054
138	6.77	5.90	6.28	24.00			51.88**	24.12**	0.50*	11.80**		6.40	0.05		9.00	0.46	0.37**	3.50	1.42	
139	6.48	5.80							1.56**		8.00	7.93			8.54	0.39	0.21*	4.94	1.36	0.168**
141	6.65																0.44**	4.34	1.34	
142	6.60	6.20*		33.80	13.10	5.10	18.20	48.00	0.90			27.00**			5.76	0.46	0.06	3.44	0.95	
143	6.65			35.00	5.00	7.00	12.00*	53.00	0.66	0.00		5.75			8.00	0.47	0.17*	4.28	1.37	
144	6.96	5.96		24.80	24.42**				0.77		12.30	10.10	0.02	0.00						0.054
147	6.70	5.80		28.87	7.50	11.73	19.23	51.80				500.0**					0.01	3.72	0.69*	0.680**
M1	51	34	20	46	24	20	43	45	45	17	21	26	20	8	40	47	45	45	44	19
MED1	6.80	5.91	6.14	28.94	8.00	9.62	18.36	52.50	0.79	0.00	13.70	8.90	0.09	0.00	7.93	0.46	0.07	4.15	1.30	0.060
MAD1	0.20	0.09	0.09	2.90	2.15	2.41	2.36	4.50	0.09	0.00	2.70	2.23	0.08	0.00	1.64	0.04	0.07	0.56	0.20	0.007
F1	1.72	1.67	1.78	1.63	1.74	1.78	1.76	1.75	1.75	2.19	2.04	1.72	1.78	2.29	1.64	1.74	1.75	1.75	1.63	2.106
M2	45	31	20	43	21	19	38	38	37	11	19	21	14	6	36	40	33	33	33	15
MED2	6.80	5.90	6.14	28.87	7.80	9.00	18.28	52.92	0.77	0.00	13.43	8.20	0.05	0.00	7.34	0.46	0.04	4.15	1.30	0.060
MAD2	0.17	0.07	0.09	2.83	1.80	2.50	1.90	2.28	0.07	0.00	2.07	1.25	0.04	0.00	1.28	0.04	0.03	0.42	0.15	0.006
F2	1.75	1.86	1.78	1.76	2.04	2.11	1.65	1.65	1.80	2.65	2.11	2.04	1.91	2.65	1.66	1.64	1.84	1.84	1.84	2.292
CV1%	5.23	2.68	1.90	18.61	63.01	56.33	42.53	31.24	49.84	321.0	36.84	301.8	188.7	258.7	130.6	139.1	196.6	136.2	130.6	141.83
CV2%	3.18	1.94	1.90	12.83	32.13	29.53	18.28	9.50	15.73		27.26	29.67	99.57		26.36	11.21	106.8	14.92	20.03	14.724
CV3%	3.18	1.78	1.90	12.83	32.13	29.53	14.94	5.69	14.80		27.26	21.17	82.27		23.15	11.21	93.51	14.92	16.55	14.724

Table 8. Results of Chemical Analysis Round 1990 Sample 51 L A B E X methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-100 µm	% Sand	% Carbon Org.	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Hg me/100g	% N Total
7	6.60	6.00		23.90	10.20**	34.10**	44.30**	43.00	0.08**						6.40	0.50	0.00	7.40**	1.00	
27	6.87	5.84	6.13						0.79	0.49	13.43									
30	6.01			23.50			13.90	62.60	0.60		20.95				11.05*	0.47	0.00	4.24	1.38	0.120
38	6.90	5.90		29.10	5.90	14.20	20.10	50.80	0.79	0.00	15.50	7.60			6.38	0.44	0.42**	4.49	1.14	
50	6.60		6.10	29.00	5.05	8.90	13.95	57.00							81.00**	4.80**	0.40**	40.40**	13.00**	
69	6.97	5.85		29.45	5.65				0.68						6.63	0.51	0.01	3.91	1.26	
77	7.09	5.96													6.08	0.45	0.02	4.01	1.28	
88	7.09	6.03		29.88	6.00	11.46	17.46	50.52	0.74		16.73		0.10	0.00	9.45*	0.54	0.04	3.20	1.50	0.061
98	6.48	5.71		27.30	8.50*	8.25	16.75	54.50	0.74		8.80					0.40	0.16	4.57	0.51	
100	6.80		6.35	21.76			20.00	58.24	1.21**		16.50					0.40	0.21*	2.01		
112	7.09	6.02							0.84			7.41			13.25**	0.38	0.03			0.060
142				33.80	13.10**	5.10	18.20	48.00												
142	6.60	6.20		35.00	5.00	7.00	12.00	53.00	0.90		27.00				5.76	0.46	0.06	3.44	0.95	
N1	12	9		10	8	7	9	9	10		5					11	11	10	9	
MED1	6.84	5.96		29.05	5.95	8.90	17.46	53.00	0.77		16.50				6.63	0.46	0.04	4.13	1.26	
MAD1	0.24	0.07		3.25	0.93	2.56	2.64	4.00	0.08		1.00				0.87	0.05	0.04	0.57	0.24	
F1	1.99	2.98		2.11	2.29	3.60	2.98	2.98	2.11		5.03				2.98	2.65	2.65	2.11	2.98	
N2	12	9		10	6	6	8	9	8		5					10	9	8	8	
MED2	6.84	5.96		29.05	5.78	8.58	17.11	53.00	0.77		16.50				6.40	0.46	0.03	3.96	1.20	
MAD2	0.24	0.07		3.25	0.48	2.23	2.95	4.00	0.05		1.00				0.32	0.05	0.03	0.53	0.19	
F2	1.99	2.98		2.11	2.65	2.65	2.29	2.98	2.29		5.03				3.60	2.11	2.98	2.29	2.29	
CV1X	4.52	2.23		14.42	36.91	71.97	46.42	10.39	36.41		14.79				141.9	147.0	122.1	141.0	152.9	
CV2X	4.52	2.23		14.42	19.53	32.40	16.90	10.39	11.45		14.79				25.35	10.87	120.1	21.13	25.72	
CV3X	4.52	2.23		14.42	7.61	32.40	16.90	10.39	11.45		14.79				4.81	10.87	123.1	21.13	25.72	

Table 9. Results of Chemical Analysis Round 1990 Sample 51 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt >50 μm	% Sand μm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
3	7.00	6.30**	6.20	34.00	16.00	51.00	0.55	0.10**	6.95	0.00	0.90**	0.00	9.49	0.63**	0.57**	5.43	2.12**			
4	6.80	6.00	6.10	27.00	21.00	52.00	0.69		12.00	0.90**	0.00	0.00	5.65	0.44	0.07	3.21	1.20			
6	6.52	5.90	6.00	28.00	20.00	26.00**	0.66		30.50**				6.23	0.04**	0.00	4.13	1.30			0.073
9	6.10**			35.00	14.00	51.00	0.84		6.70	0.14	3.05**		6.05	0.50	0.09	4.22	1.07			
11	6.70			27.20	18.70	54.10	0.84		12.00	0.04	0.04		8.75	0.50	0.05	4.45	1.30			
24	6.70	5.85	6.15	24.50	18.00	114.0**	0.87						6.75	0.42	0.02	3.72	1.15			
31	6.89	5.97	6.12				0.77			0.00	0.01**		6.29	0.48	0.04	3.09	1.12			0.064
34	7.26	6.05	6.40	26.00	19.00	55.00	0.79		14.35	0.04	0.04		6.29	0.48	0.04	3.09	1.12			
35	6.97	5.90	6.00	20.56	18.36	55.08	0.79			0.00			15.05**							
37	7.10	5.80		24.82	16.36	58.82	2.85**	2.00**												
38																				
41	6.90	5.90		29.10	7.70	7.90	0.00**													
43	7.05	5.85	6.10	27.00	14.00	59.00	0.76	0.00												
45	6.10**			49.40**	41.50**	9.10**	1.40**													
47	5.75**	5.47**		31.70	14.20	42.05*	1.02	0.00												
48	6.30	5.80		26.84	14.12	58.89	0.84													
50							0.80													
69							0.74													
73	6.92						0.82													
77	6.96	6.02		29.50	18.50	52.00														
83	6.91		6.19	31.80	16.00	52.20	0.70													
88																				
92				23.00	19.00	58.00														

continued on next page

continued on next page

continued on next page

Continuation of :

Table 9. Results of Chemical Analysis Round 1990 Sample 51 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt >50 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
92	6.80	5.70	6.30	26.60	16.70	56.70	0.06**	0.00	22.00**	12.00	0.38*	7.99	0.35	0.56**	7.19**	0.77*					
93	6.95	5.95		32.20	23.20	44.60*		0.00	9.99	22.50**	0.40*	11.22	0.49	0.44**	0.00**	4.90**				0.053	
95			6.00	29.50	18.00	52.50	0.56						0.40				2.63	0.98			
97	6.60			32.00	15.00	53.00	0.58		13.70		7.75	0.10	0.39	0.07	4.45	0.75*				0.080	
98																					
99	6.83	5.96	6.26	28.21	6.19**	64.10*	0.55		13.00		11.70	2.46	0.53	0.01	0.43**	1.43					
104	6.62			26.42	21.74	51.85	1.58**					10.43	0.49	0.69**	3.70	2.11**				0.055	
112				32.50	16.40	51.30		0.00													
121	6.53			25.40	20.00	54.60	0.74				31.00**		0.46	0.12	6.85**	4.79**				0.043	
123	6.10**	6.10	6.10	19.50*	11.00*	69.50**	0.80		14.04	8.45	0.03	12.00	0.44	0.25*	3.20	2.60**				0.060	
125	6.63	6.16		30.00	10.00**	60.00		0.25**				8.14	0.41	0.10	1.85**	1.46					
128	6.60	6.25*	6.25	32.40	23.20	44.40*	1.38**				52.76**	0.08	0.56	0.02	4.64	1.53					
129	7.00			36.00	19.00	45.00	0.79					7.87	0.61**	0.02	4.10	1.33				0.070	
130	6.35			27.13	20.04	52.83	0.53					5.71	0.41		3.59	4.35**					
131	6.80				21.00	34.00**	0.90				11.50										
132	7.90**			45.00**				0.05**			9.00	9.00	2.50**	2.90**	0.43**	0.02**					
133	6.90	5.90					0.84						0.48	0.01	3.78	1.25				0.054	
135	7.05	5.92	6.34	30.30	12.63	57.08	0.87		25.69**	8.10	0.25	4.24	0.44	0.00							
138	6.77	5.90	6.28	24.00	51.88**	24.12**	0.50*	11.80**			6.40	0.05	0.46	0.37*	3.50	1.42				0.168**	
139	6.48	5.80					1.56**		8.00	7.93			0.39	0.21	4.94	1.36					
141	6.65													0.44**	4.34	1.34					
143	6.65			24.80	24.42**		0.66	0.00			5.75	8.00	0.47	0.17	4.28	1.37				0.054	
144	6.96	5.96					0.77		12.30	10.10	0.02										0.680**
147	6.70	5.80		28.87	7.50	11.73	19.23	51.80					0.43	0.01	3.72	0.69*					

continued on next page

continued on next page

continued on next page

Continuation of :

Table 9. Results of Chemical Analysis Round 1990 Sample 51 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 2-50 µm	% Sand µm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
M1	39	25	17	36	16	13	34	36	35	15	16	22	19	7	31	36	34	35	35	16
MED1	6.80	5.90	6.15	28.54	8.00	10.23	18.60	52.35	0.79	0.00	12.65	9.00	0.08	0.00	7.99	0.46	0.10	4.15	1.33	0.060
MAD1	0.17	0.10	0.10	3.15	1.72	1.82	2.40	4.54	0.09	0.00	1.68	2.55	0.08	0.00	1.69	0.04	0.09	0.56	0.21	0.009
F1	1.78	1.95	2.19	1.66	1.86	2.44	1.67	1.66	1.82	2.29	1.86	1.76	2.11	3.60	1.86	1.66	1.67	1.82	1.82	1.859
M2	34	23	17	34	13	13	30	29	29	10	13	18	15	5	29	30	26	26	26	13
MED2	6.80	5.90	6.15	28.11	8.00	10.23	18.60	52.83	0.77	0.00	12.00	8.33	0.05	0.00	7.87	0.46	0.06	4.18	1.30	0.060
MAD2	0.16	0.07	0.10	2.45	1.50	1.82	2.22	2.17	0.07	0.00	1.70	1.63	0.05	0.00	1.57	0.04	0.05	0.46	0.14	0.006
F2	1.67	1.99	2.19	1.67	2.44	2.44	1.69	1.88	1.88	2.11	2.44	1.82	2.29	5.03	1.88	1.69	1.72	1.72	1.72	2.437
CV1%	5.43	2.83	1.91	19.48	62.03	28.12	41.39	34.78	51.57	310.8	42.02	294.9	184.3	239.3	108.2	130.8	192.4	125.2	117.9	148.54
CV2%	3.18	2.09	1.91	13.38	28.54	28.12	18.06	9.21	16.73		21.64	31.40	119.6		27.43	11.32	114.5	15.55	21.11	15.789
CV3%	3.18	1.79	1.91	12.31	28.54	28.12	14.99	6.29	15.63		21.64	28.56	106.5		27.43	11.32	97.25	15.55	12.50	15.789

Table 10. Results of Chemical Analysis Round 1990 Sample 52 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt 2-50 μm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
3	8.00	7.10	7.30**	41.00	27.00	32.00	0.05	22.66	1.10	2.00	0.00	17.50	0.36*	2.41	79.28	5.98					
4	7.90	7.50	7.80	43.00	36.00	21.00*	1.15**	24.00	1.10	2.00	0.00	17.50	0.21	2.60	80.50	3.00					
4				41.00	34.00	25.00															
6	7.56	7.40	7.75	40.00	27.00	37.00	0.11	22.00	6.70**	2.00	0.00	12.15	0.23	2.35	157.7*	4.75				0.017	
7	7.90	7.30	7.80	40.60	31.60	27.80	0.01					12.00	0.20	4.20	79.49	3.70				0.019	
9	7.20**			43.00	32.00	25.00	0.14					86.91**	0.29	3.40	79.49	3.70					
11	7.65		7.65	28.05	34.55	11.65	0.10					12.80	0.30	3.00	82.00	4.00					
24	7.82	7.06	7.73	21.00	40.00	80.00**	0.06					19.58	0.24	3.11							
27	8.02	7.31	7.90	0.03**																	
30	6.80**			4.00*	38.40	57.60**	0.09					20.40*	0.24	3.33	167.4**	5.07				0.089**	
31	7.97	7.30	7.71				0.00	22.51				14.29	0.30	2.85	50.60	4.27					
34	8.22	7.52	8.13**				0.08	23.90				12.17	0.23	1.71							
35	7.87	7.37	7.81	9.50	56.50**	34.00	0.09	14.75**				8.05		1.50							0.063*
37	7.50*	6.70**		45.03	15.98	3.25	1.56**	27.90				23.30**	0.24	3.42							
38												15.20	0.24	2.02							
38	8.00	7.20		36.30	16.40**	36.30	0.11	28.00				17.10	0.24	2.02							
41	8.10	7.30		51.10	12.80									2.70	20.70	4.00					
43	8.10	7.30	7.80	46.00	19.50	11.50	0.09	79.05**				13.40	0.38*	0.61*	275.5**	0.47**					
45	7.45*			64.80	26.54	7.04	1.62**					3.08		3.27	97.11	5.32					
47	7.54*	6.45**		39.70	11.50	17.70**	0.27*	23.28				3.68									
48	7.65	7.20		16.06	54.61	29.27	0.17														
50	7.90		7.80	46.10	17.75	7.70	0.17	26.15				11.89	0.27	3.02	2.48	6.61*					
50												177.5**	2.85**	25.70**	135.5	39.90**					
50												11.80**	2.50**	11.80**	2683**	47.70**					
69	7.87	7.22		37.20	25.85		0.17	24.60				14.26	0.36*	0.73*	102.2	4.35					0.016

continued on next page

continued on next page

continued on next page

Continuation of :

Table 10. Results of Chemical Analysis Round 1990 Sample 52 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-75 µm	% Sand µm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Al Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
73	8.00								0.10		0.00	3.42									
77	8.02	7.30						28.50		20.22					15.42	0.24	0.51*	116.5	4.66		
77	8.02	7.35		45.50	7.50	26.00	6.30	27.00							12.49	0.22	2.91	49.30	5.07		
83	7.92		7.75	54.10	6.30	18.90	6.30	27.00	0.10	24.70	1.60				14.90	0.30	2.60	162.9*	0.70**		
92				20.00				48.00**													
92	7.90	7.10	7.70	6.80	62.60**	30.60		30.60	0.01		5.00*		0.72**		12.55	0.18	1.20	54.79	2.68		
93	8.10	7.40		6.40	42.20	51.40**		51.40**		24.15	1.61	3.00	0.80**	0.00	9.92	0.31	0.26**	16.73	15.10**	0.023	
95			7.51**	34.50	9.00	35.00		30.50	0.01							0.71**					
97	7.40**			22.50	35.00	35.00		42.50*	0.12		1.50	0.01*	0.00	0.00		0.16	1.41	71.50	1.20**		
98										0.25					30.40**						
98	7.71	7.13		43.60	8.65	30.05		25.85	0.10		1.85				13.95	0.27	3.08	75.25	6.07		
99	7.92	7.39	7.88	32.79	12.93	30.09		30.09	0.18	22.44	2.50	0.40**	0.30**	0.00	8.04	1.40	8.58	4.84			
100	7.40**		7.75	25.76	20.00	54.24**		54.24**	0.20		1.50					0.28	2.19	39.38			
104	7.76			3.59*	45.80**	18.58**		32.04	0.00			8.25**			8.55	0.28	2.78	8.35	0.63**		
112				29.40	40.00	40.00		30.70		24.00											
112	7.99	7.40							0.13			1.56			16.10	0.20	1.10			0.022	
121	7.85			1.40**	68.00**	30.60		30.60	0.15		4.00*					0.72**	2.69	71.00	44.17**	0.011	
123	7.70	7.40	7.70	13.00	8.00	16.00		71.00**	0.08	23.65	0.00	2.68	0.00		12.60	0.22	3.20	59.00	3.47	0.000	
125	7.89	7.55		47.00	23.00	30.00		30.00		24.46					14.67	0.19	2.53				
128	7.85	7.70**	7.70	50.00	23.20	26.80		26.80	0.14		18.10**		0.16*	0.00	17.43	0.25	2.63	79.98	4.42		
129	8.10			57.00	23.00	20.00*		20.00*	0.17	21.00	2.00					0.44**	3.30	99.96	5.28	0.070*	
130	6.90**			57.5%	12.10	30.36		30.36	0.03						10.32	0.18		81.15	4.35		
131	7.85				15.40			63.80**	0.30**		4.50*										
132	6.80**			32.00	33.00	35.00		35.00		22.60	2.00				7.30	5.00**	0.13**	0.03	0.01**		
133	7.80	7.40							0.21		2.50										

continued on next page

continued on next page

continued on next page

Continuation of :

Table 10. Results of Chemical Analysis Round 1990 Sample 52 A L L methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-100 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
135	8.01	7.64	7.93**	43.05	10.50	8.40	18.90	38.05*	0.16	13.50**	1.90	1.90	0.28**	10.40	10.40	0.25	1.06			0.021
138	7.92	7.21	7.92	20.00		72.86**	7.14**		0.62**	5.90**	0.00*	0.00*	0.05*	20.77*	20.77*	2.95**	0.19**	88.00	3.83	0.035
139	7.45*	7.13							0.14		1.41					0.18	2.84	69.71		
141	7.70															0.21		74.35	4.36	
142	7.70	7.20		35.00	26.50	6.30	32.80	32.20	0.24*	9.90**	26.00**	26.00**		11.68	11.68	0.23	2.00	77.00	5.12	
143	7.79			1.60**	67.02**				0.09	19.83	0.66	0.66		14.68	14.68	0.27	3.18	44.35	3.68	
144	7.91	7.31							0.13		4.16	2.37	0.04*	0.00						
147	7.90	6.90**		32.43	29.53	9.00	38.53	27.76			500.0**	500.0**				0.21	2.67	56.40	4.33	0.190**
N1	50	33	20	44	22	18	40	41	43	26	14	30	14	7	36	46	43	37	37	13
MED1	7.87	7.30	7.75	35.65	20.65	8.83	32.90	30.36	0.13	23.47	1.30	2.44	0.05	0.00	14.11	0.25	2.63	75.25	4.36	0.022
MAD1	0.15	0.10	0.05	10.40	5.87	1.56	7.10	4.51	0.04	1.35	1.04	0.88	0.05	0.00	2.32	0.05	0.63	24.71	0.76	0.011
F1	1.62	1.84	1.78	1.63	1.76	1.82	1.64	1.77	1.76	1.72	1.91	1.69	1.91	3.60	1.66	1.63	1.76	1.80	1.80	2.437
N2	44	29	16	41	20	15	35	32	38	21	13	25	10	7	32	38	38	34	28	11
MED2	7.90	7.30	7.75	37.20	19.70	8.40	32.00	29.64	0.11	23.90	1.10	2.00	0.00	0.00	13.10	0.24	2.65	72.93	4.39	0.021
MAD2	0.11	0.10	0.05	8.90	6.55	1.36	6.40	2.49	0.04	1.24	0.82	0.50	0.00	0.00	1.95	0.04	0.54	22.98	0.62	0.005
F2	1.63	1.88	1.86	1.77	1.78	2.29	1.82	1.68	1.65	2.04	2.44	1.95	2.11	3.60	1.68	1.65	1.65	1.67	1.70	2.648
CV1X	4.08	3.33	2.10	53.42	54.68	40.28	41.73	44.29	147.1	50.98	113.2	433.2	148.6		140.9	170.0	129.9	290.7	148.9	110.34
CV2X	2.30	1.92	0.97	45.04	34.68	24.99	30.69	15.97	58.16	8.71	96.86	52.71	150.6		25.20	24.52	36.88	60.01	19.68	75.376
CV3X	1.81	1.92	0.97	39.50	34.68	24.99	30.69	11.10	54.06	8.71	96.86	32.96		22.77	16.49	29.13	55.48	18.18	49.001	

Table 11. Results of Chemical Analysis Round 1990 Sample 52 L A B E X methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 50-200 µm	% Sand	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	EX. Acidity me/100g	EX. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total
4	7.90	7.50	7.80	43.00	36.00	21.00	1.15**	24.00	2.00	0.21	2.60	80.50	3.00							
4				41.00	34.00	25.00														
7	7.90	7.30	7.90	40.60	21.70	9.90	0.01	24.98	0.28	12.00	4.20	157.7	4.90							
27	8.02	7.31	7.90	0.03**																
38	8.00	7.20	7.90	36.30	19.90	16.40	0.11	28.00	1.55	17.10	2.02									
50																				
69	7.87	7.22	7.80				0.13			177.5**	11.80**	2683**	47.70**							
77	8.02	7.30	7.90							14.26	0.36	107.2	4.35							0.016
98	7.71	7.13	7.75	43.60	21.40	8.65	0.10	25.85	1.85	15.42	0.24	116.5	4.66							
100	7.60**	7.40	7.75	25.76	20.00	54.24**	0.20	1.50		13.95	0.27	75.25	6.07							
112	7.99	7.40								16.10	0.20	39.38								0.022
142	7.70	7.20		35.00	26.50	6.30	0.24	32.20	26.00**	11.68	0.23	77.00	5.12							
N1	10	9		8	7	7	9	7	5	8	10	8	7							
MED1	7.90	7.30		38.45	32.80	27.50	0.13	27.50	1.85	14.84	0.24	91.35	4.90							
MAD1	0.11	0.10		4.00	2.75	2.50	0.07	2.50	0.29	1.76	0.04	20.63	0.55							
F1	2.11	2.98		2.29	3.60	3.60	2.98	3.60	5.03	2.29	2.11	2.29	3.60							
N2	9	9		7	7	6	8	6		7	9	7	6							
MED2	7.90	7.30		40.60	32.80	26.68	0.13	26.68	0.13	14.26	0.24	80.50	4.78							
MAD2	0.10	0.10		3.00	2.75	1.40	0.05	1.40	0.05	1.84	0.03	21.70	0.39							
F2	2.98	2.98		3.60	3.60	2.65	2.29	2.65	2.29	3.60	2.98	2.98	2.65							
CV1%	2.38	1.47		41.13	16.33	33.35	125.4	33.35	147.2	155.3	143.1	102.8	139.2							
CV2%	1.48	1.47		15.25	16.33	12.68	51.27	12.68	51.27	13.05	19.29	54.05	19.70							
CV3%	1.48	1.47		15.25	16.33	12.68	51.27	12.68	51.27	13.05	19.29	54.05	19.70							

Table 12. Results of Chemical Analysis Round 1990 Sample 52 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 μm	% Silt 20-50 μm	% Silt 2-50 μm	% Sand μm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
3	8.00	7.10	7.30**	41.00	27.00	10.00	32.00	0.05	22.66	1.10	2.00	0.00	17.50	0.36	2.41	79.28	5.98				
6	7.56	7.40	7.75	40.00	37.00	23.00	23.00	0.11	22.00	6.70**		0.00	12.15	0.23	2.35	79.49	4.75			0.017	
9	7.20**			43.00	32.00	25.00	25.00	0.14					86.91**	0.29	3.40	79.49	3.70			0.019	
11	7.65		7.65	28.05	34.55	11.65	46.20	0.10		0.50		0.09*	12.80	0.30	3.00	82.00	4.90				
24	7.82	7.06*	7.73	21.00	40.00	80.00**	38.40	0.06		1.84			19.58	0.24	3.11	167.4**	5.07			0.089**	
30	6.80**			4.00				0.09					20.40	0.24	3.33	50.60	4.27				
31	7.97	7.30	7.71					0.00	22.51	0.25	1.75		14.29	0.30	2.85						
34	8.22	7.52	8.13**					0.08	23.90				12.17	0.23	1.71						
35	7.87	7.37	7.81	9.50	56.50	34.00	34.00	0.09	14.75**				8.05							0.063	
37	7.50	6.70**		45.03	15.98	3.25*	19.23	1.56**	27.90*				23.30**	0.24	1.50						
38													15.20	0.24	3.42						
41	8.10	7.30		51.10	12.80					0.00											
43	8.10	7.30	7.80	46.00	19.50	11.50	31.00	0.09	79.05**				13.40	0.38	0.61**	20.70	4.00				
45	7.45*			64.80	26.54	7.04	33.58	1.62**	1.13**			8.20**			2.70	275.5**	0.47**				
47	7.54	6.45**		39.70	11.50	17.70**	29.20	0.27*	23.28			3.08			0.12	97.11	5.32				
48	7.65	7.20		16.06	54.61	29.27	0.17					3.68									
50	7.90		7.80	46.10	17.75	7.70	25.45	28.45	26.15				11.89	0.27	3.02	2.48*	6.61*				
69				37.20	25.85			0.17	24.60						2.85**	135.5*	39.90**				
73	8.00							0.10		0.00											
77	8.02	7.35		45.50	18.50	7.50	26.00	28.50	20.22				12.49	0.22	2.91	49.30	5.07				
83	7.92		7.75	54.10	12.60	6.30	18.90	27.00	24.70				14.90	0.30	2.60	162.9**	0.70**				
92				20.00	32.00	48.00**															
92	7.90	7.10	7.70	6.80	62.60*	30.60	0.01						12.55	0.18	1.20*	54.79	2.68				
93	8.10	7.40		6.40	42.20	51.40**							9.92	0.31	0.26**	16.73	15.10**			0.023	
95			7.51**	34.50	35.00	30.50	0.01							0.71**		4.49*	3.43				
97	7.40*			22.50	35.00	42.50*	0.12							0.16	1.41*	71.50	1.20**				
98									30.40**												
99	7.92	7.39	7.88	32.79	12.93	30.09	0.18		22.44				8.04	0.40*	1.40*	8.58	4.84				
104	7.76			3.59	45.80**	18.58**	64.38*	32.04	0.00				8.55	0.28	2.78	8.35	0.63**				
112				29.40	40.00	30.70			24.00												

Continuation of :

Table 12. Results of Chemical Analysis Round 1990 Sample 52 O T H E R methods

LAB No.	pH H2O	pH KCl	pH CaCl2	% Clay	% Silt 2-20 µm	% Silt 20-50 µm	% Silt 2-50 µm	% Sand µm	% Org. Carbon	% CaCO3	P Bray (ppm)	P Olsen (ppm)	Ex. Acidity me/100g	Ex. Al me/100g	CEC me/100g	ex. K me/100g	ex. Na me/100g	ex. Ca me/100g	ex. Mg me/100g	% N Total	
121	7.85			1.40			68.00**	30.60	0.15			4.00				0.72**	2.69	71.00	44.17**	0.011	
123	7.70	7.40	7.70	13.00	8.00	8.00	16.00	71.00**	0.08	23.65	0.00	2.68	0.00		12.60	0.22	3.20	59.00	3.47	0.000	
125	7.89	7.55		47.00			23.00	30.00		24.46					14.67	0.19	2.53				
128	7.85	7.70**	7.70	50.00			23.20	26.80	0.14			18.10**	0.16*	0.00	17.43	0.25	2.63	79.98	4.42		
129	8.10			57.00			23.00	20.00*	0.17	21.00		2.00				0.44**	3.30	99.96	5.28	0.070	
130	6.90**			57.54			12.10	30.36	0.03						10.32	0.18		81.15	4.35		
131	7.85				15.40			63.80**	0.30**			4.50									
132	6.80**			32.00			33.00	35.00		22.60		2.00			7.30	5.00**	0.13**	0.03*	0.01**		
133	7.80	7.40							0.21		2.50										
135	8.01	7.64*	7.93	43.05	10.50	8.40	18.90	38.05*	0.16	13.50**		1.90	0.28**		10.40	0.25	1.06*		0.021		
138	7.92	7.21	7.92	20.00			72.86**	7.14**	0.62**	5.90**		0.00	0.05*		20.77	0.18	2.84	88.00	3.83		
139	7.45*	7.13							0.14		1.41					0.21		74.35	4.36	0.035	
141	7.70															0.27	3.18	44.35	3.68		
143	7.79	7.31		1.60	67.02**				0.09	19.83		0.66									
144	7.91								0.13		4.16*		0.04*	0.00							
147	7.90	6.90**		32.43	29.53	9.00	38.53	27.76				500.0**				0.21	2.67	56.40	4.33	0.190**	
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
N1	40	24	17	36	18	14	33	34	34	22	11	25	14	7	28	36	33	29	30	11	
MED1	7.85	7.31	7.75	33.65	19.00	8.70	33.00	30.55	0.12	22.97	1.10	2.50	0.05	0.00	13.10	0.25	2.69	71.00	4.34	0.023	
MAD1	0.15	0.10	0.05	13.00	7.25	1.48	9.20	4.10	0.05	1.56	0.85	0.92	0.05	0.00	2.74	0.05	0.51	21.70	0.80	0.012	
F1	1.64	1.74	2.19	1.66	1.82	1.91	1.84	1.67	1.67	1.76	2.65	1.95	1.91	3.60	1.70	1.66	1.84	1.88	1.69	2.648	
N2	36	20	14	36	16	12	31	26	30	18	10	21	10	7	25	30	28	26	22	9	
MED2	7.88	7.33	7.75	33.65	18.13	8.20	32.00	30.23	0.10	23.47	0.80	2.37	0.00	0.00	12.60	0.24	2.74	64.36	4.36	0.021	
MAD2	0.12	0.07	0.05	13.00	7.13	0.98	8.00	2.14	0.04	1.01	0.75	0.71	0.00	0.00	2.28	0.05	0.38	17.22	0.60	0.010	
F2	1.66	1.78	1.91	1.66	1.86	1.99	1.86	1.72	1.69	1.82	2.11	2.04	2.11	3.60	1.95	1.69	1.70	1.72	1.76	2.983	
CV1%	4.37	3.80	2.24	55.96	59.63	41.35	44.33	45.60	154.0	52.98	121.2	416.3	148.6		85.20	174.3	137.1	79.66	146.8	105.96	
CV2%	2.59	2.07	1.08	55.96	38.85	26.45	40.19	15.74	58.29	8.25	107.6	53.84	150.6		27.78	27.60	26.97	60.54	19.55	76.672	
CV3%	2.16	1.73	1.08	55.96	38.85	18.88	35.51	11.17	54.92	7.03	88.14	53.84			27.78	25.97	16.91	43.63	17.31	76.672	

5. References

- Brunt, J., 1990. The Laboratory Methods and Data Exchange Project. Interim Report on exchange round 1989.
- Montfoort, M.A.J., 1987. Statistical remarks on marking data. Working paper Agricultural University, Wageningen.
- Pleijzier, L.K., 1986b. Interim report on the LABEX exchange round 86-1. ISRIC working paper 86/4.
- Pleijzier, L.K., 1986. Proceedings of an International Workshop on the Laboratory Methods and Data Exchange Programme 25 - 29 August 1986. ISRIC Technical Paper N° 13.

A N N E X 1

List of participating laboratories in LABEX round 1990.

For the good order we mention that the order of listing of laboratories in this ANNEX does not correspond with the numbering and/or order of listing of laboratories in the data tables.

Inst.de Investig. Agronomica
A.S. Mateus
C.P. 406
Huambo
ANGOLA

Inst. de Evaluacion de Tierras
Geologa Gladys Herrera
Laboratorio de Suelos CIRN-INTA
1708 Buenos Aires (Castelar Pcia)
ARGENTINA

CSIRO Division of Soils
Mr. T.A. Beech
Private Bag no. 2
Glen Osmond SA 5064
AUSTRALIA

Dept. of Soil Science
Dr. M. Eaquib
Dept of Soil Sc., Bangl. Agr. Univ.
Mymensingh 2202
BANGLADESH

Mision Brit. en Agricult. Trop.
Mr. Richard. G. Barber
Casilla 359
Santa Cruz
BOLIVIA

Soil Mapping and Advisory Unit
Mr. B. Schalk c/o UNDP Office
P. Bag 003
Gaborone
BOTSWANA

SNLCS-EMBRAPA
Dr. W.O. Barreto
Rua Jardim Botânico 1024 Gavea
22.460 Rio de Janeiro RJ
BRAZIL

Canadian Forestry Service
Dr. Y.P. Kalra
5320 122 Street
Edmonton Alberta T6H 3S5
CANADA

Direction de la Recherche
Mr. Yvan Auger
2700, rue Einstein
Sainte Foy Quebec G1P 3W8
CANADA

INIA
Mrs. Angelica Sadzawka
Casilla 439/3
Santiago
CHILE

Faculty of Agriculture
Prof. Dr. Shafik I. Abdel-Aal
University of Cairo
Giza
EGYPT

Soil Science Department
Prof. Dr. M.A. Kishk
El Minia University
El Minia
EGYPT

National Soil Service Project
Dr. Sahlemedhin Sertsu
c/o FAOR Office P.O.Box 5536
Addis Abeba
ETHIOPIA

Bundesanst. Geowissenschaften
Dr. W. Kantor
Postfach 510 153
3000 Hannover 51
GERMANY Fed. Rep.

Agricultural Research Service
Mr. N. Theodorou
Land Reclamation Institute
547 00 Sindos
GREECE

Brawijaya Univ. Dept. Soil Sc.
Dr. Ir. Syekhfani, MS.
Jalan Majen Haryono 169
Malang
INDONESIA

Soil Institute of Iran
Dr. M.H. Roozitalab
North Kargar Avenue
Teheran
IRAN

Direction de Grand Travaux
M. A. Traore
01 BP 1395
Bouake 01
IVORY COAST

Centro de Edafologia
Dr. J.D. Etchevers
Colegio de Postgraduados
56230 Chapingo
MEXICO

ISRIC
Dr. L.P. van Reeuwijk
P.O. Box 353
6700 AJ Wageningen
NETHERLANDS

LABOSOL ICRISAT CENTRE SAHELIEN
Dr. André Bationo
B.P. 12404
Niamey
NIGER

Cocoa Research Inst. of Nigeria
Dr. N.E. Egbe
P.M.B. 5244
Ibadan
NIGERIA

Agricultural Chemistry Section
Mr. F. Grieshaber
P.O. Box 2141
Boroko N.C.D.
PAPUA NEW GUINEA

Dole Philippines INC.
c/o Dr. Leticia S. Pilando
P.O. Box 362, CCPO, MM
Manila
PHILIPPINES

Centro de Estudos Pedologia
Prof. Dr. Rui Pinto Ricardo
Tapada da Ajuda
1399 Lisboa
PORTUGAL

Ist. Sup. Latt. Caseario
Dr. Francesco Dugoni
Via L. Pilla 25/B
46100 Mantova
ITALY

Nat. Agric. Res. Laboratories
Dr. F.N. Muchena
P.O. Box 14733
Nairobi
KENYA

Forestry Research Division
Mr. Mrigendra Bhupal Malla
P.O. Box 106
Kathmandu
NEPAL

Forest Research Institute
Mrs. G. Nicholson
Private bag 3020
Rotorua
NEW ZEALAND

I.I.T.A. -NIGERIA
Dr. J.L. Pleysier
PMB 5320
Ibadan
NIGERIA

Soil Survey of Pakistan
Dr. Ghulam Saeed Khan
P.O. Shahnoor Multan Road
Lahore 54570
PAKISTAN

EEA San Camilo - INIAA
Mrs. J.Sanz c/o Mr.E Soto
Tupac Amaru 312 Cerro Colorado
Arequipa
PERU

Soil Research Division
Dr. Modesto R. Recel
P.O. Box 1848
Ermita Manila
PHILIPPINES

Ministry of Agriculture & Water
c/o Mr. M.A. Ben Mahfouz
Land Management Department
Riyadh
SAUDI ARABIA

ORSTOM
Mr. Duprey
B.P. 1386
Dakar
SENEGAL

Land Use Division
S. Dimantha
P.O. Box 1138
Colombo 7
SRI LANKA

ICARDA
Mr. Abdallah Matar
P.O. Box 5466
Aleppo
SYRIA

Institut National des Sols
Mr. A.K.L. Allaglo
B.P. 1026
Lome
TOGO

Trop. Soils Analysis Unit ODNRI
Mr. R. Baker
Central Avenue, Chatham Maritime
Chatham, Kent ME4 4TB
UNITED KINGDOM

FONAI CENIAP
Ing. Julia G. de Brito
Apdo. 4653
Maracay 2101
VENEZUELA

Laboratorio de Agric. y Aliment.
c/o Mrs. Carmen Arroyo
Apartado de Correos 1265
26080 Logrono (La Rioja)
SPAIN

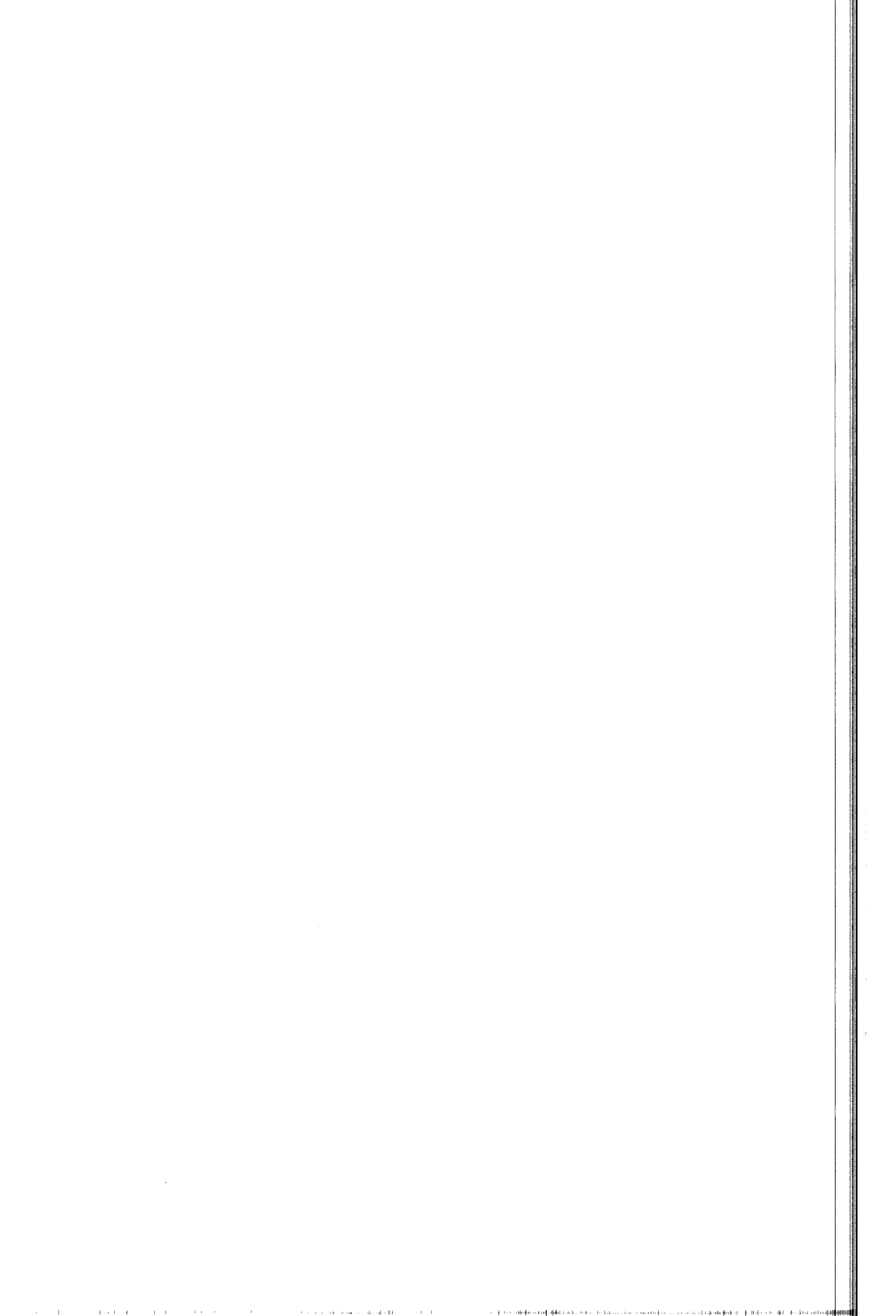
Dienst Bodemkartering
Ir. M.J. Taus
Coppenamestr./Duisburg
Paramaribo
SURINAME

SELIAN AGRIC.RESEARCH INSTITUTE
Frida, W. Sway Lab. Supervisor
P.O. Box 6160
Arusha
TANZANIA

Soil Conservation Service/NSSL
Dr. J.M. Kimble
100 Centennial Mall North
Lincoln NE 68508-3866
U.S.A.

Dirección de Suelos
Ing. Agr. Juan C. Sganga
Av. E. Garzón 456
Montevideo
URUGUAY

Mt. Makulu Research Station
Mr. D. Mlotha
P.O. Box 7
Chilanga
ZAMBIA



At the end of each table one finds:

- N1 - the number of all observations
- MED1 - the median of all values
- MAD1 - the median of the absolute differences of all the observed values and the median (MAD1).
- F1 - the F factor for N1 (=all) observations
- N2 - the number of observations excluding double asterisked values
- MED2 - the median of the values excluding double asterisked values
- MAD2 - the median of the absolute differences of the observed values and the median (MAD2).
- F2 - the F factor for N2 observations
- CV1% - the coefficient of variation for N1 (= all) observations
- CV2% - the coefficient of variation for N2 observations (excluding double asterisked values).
- CV3% - the coefficient of variation for non-asterisked values

It may be assumed that the "true value" of a parameter is approximated by:

$$\text{MED2} \pm \text{MAD2}$$

Statistical procedures are carried out using programmes written in Dbase-4.

