Soil Science Society of America

2004 North American Proficiency Testing Program

2nd Quarter Report August 20, 2004

Laboratory ID

Soil			Soil 2004-106			Soil 2004-107			Soil 2004-108			Soil 2004-109			Soil 2004-110		
Analysis	**Units**	***n***	**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Saturated Paste Analysis																	
Sat. Paste Moisture	%	30	42.0	2.3		29.3	1.8		44.3	1.7		55.6	1.7		27.0	1.5	
pH - sp	Unit	33	5.60	0.10		7.83	0.14		6.75	0.13		5.60	0.11		4.66	0.10	
ECe - sp	dS/m	38	0.57	0.05		2.11	0.19		0.49	0.07		0.10	0.02		0.60	0.06	
HCO_3 - sp	mmolc/L	13	0.62	0.28		2.9	1.1		3.7	0.72		0.40	0.30		0.55	0.25	
Ca - sp	mmolc/L	31	2.49	0.35		8.2	1.0		3.77	0.67		0.30	0.05		2.69	0.32	
Mg - sp	mmolc/L	31	1.00	0.10		2.0	0.2		1.2	0.19		0.16	0.04		2.41	0.30	
Na - sp	mmolc/L	31	0.43	0.19		13.9	1.3		0.66	0.26		0.42	0.18		0.51	0.18	
SAR - sp	value	23	0.30	0.15		6.1	0.3		0.38	0.15		0.73	0.27		0.30	0.10	
Cl - sp	mmolc/L	21	0.48	0.12		3.1	0.5		0.30	0.10		0.36	0.16		0.57	0.19	
SO_4 - sp	mmolc/L	16	0.69	0.08		16.6	1.7		0.71	0.07		0.12	0.04		2.32	0.25	
NO_3 - sp	mmolc/L	8	2.61	1.00		1.00	0.97		0.03	0.06		0.04	0.02		1.68	0.61	
B - sp	mg/L	16	0.10	0.020		0.56	0.12		0.07	0.030		0.04	0.040		0.10	0.010	
Soil EC																	
Soil EC (1:1)	(dS/m)	38	0.28	0.04		0.73	0.11		0.24	0.03		0.05	0.02		0.18	0.06	
Soil EC (1:2)	(dS/m)	44	0.14	0.02		0.49	0.06		0.13	0.03		0.04	0.01		0.12	0.02	
Soil pH																	
pH (1:1)	Unit	88	5.80	0.09		8.24	0.09		7.10	0.10		5.52	0.10		4.82	0.08	
pH (1:2)	Unit	33	5.90	0.11		8.44	0.16		7.20	0.14		5.62	0.12		4.92	0.09	
pH (1:1) 0.01M $CaCl_2$	Unit	22	5.29	0.11		7.70	0.10		6.60	0.10		4.79	0.13		4.30	0.10	
pH (1:2) 0.01M $CaCl_2$	Unit	14	5.27	0.10		7.78	0.11		6.56	0.09		4.78	0.09		4.33	0.11	
Buffer pH																	
SMP Buffer pH	Unit	65	6.70	0.08		7.53	0.06		7.20	0.05		6.05	0.09		6.00	0.10	
Adams-Evans Buf pH	Unit	15	7.52	0.07		7.77	0.04		7.74	0.04		7.06	0.16		7.27	0.05	
Woodruff Buf. pH	Unit	20	6.63	0.06		7.10	0.10		6.98	0.07		6.19	0.11		5.99	0.10	
Mehlich Buf. pH	Unit	6	6.09	0.05		6.80	0.02		6.47	0.05		5.75	0.09		5.73	0.07	
Titratable Acidity	cmol/kg	2	7.7	0.11		0.11	0.20		4.3	0.8		23.4	1.1		8.0	0.7	

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Nitrate (NO_3-N)																	
Cd. Rd.	mg/kg	62	19.9	1.3		12.2	1.2		3.0	0.4		0.9	0.40		8.5	1.1	
ISE	mg/kg	25	17.2	2.2		14.5	5.5		3.5	0.9		1.5	0.6		8.0	1.4	
CTA	mg/kg	7	21.5	1.0		12.2	1.2		5.0	0.5		3.6	1.7		11.1	1.4	
Ion Chromatography	mg/kg	1	22.8	0.0		11.5	0.0		3.0	0.0		-	-		8.0	0.0	
Other	mg/kg	7	19.9	4.6		11.5	1.4		3.3	0.6		1.0	0.1		6.2	1.2	
NH_4 - N (KCl Extr.)	mg/kg	51	19.0	1.9		4.7	0.7		6.1	1.2		5.0	1.1		7.0	1.2	
Amino-N (Mulvaney)	mg/kg	6	253	28		44	5.5		158	3		162	7		121	6	
Phosphorus & Sulfur																	
PO_4-P Bray P1 (1:10)	mg/kg	51	27.0	2.0		6.0	4.0		30.6	2.5		5.0	1.0		11.5	2.3	
PO_4-P Bray P1 (1:7)	mg/kg	10	24.8	3.1		12.5	4.3		25.7	2.3		2.2	0.9		8.0	1.8	
PO_4-P Olsen/Bicarb	mg/kg	63	13.4	1.7		8.7	1.7		20.2	1.9		8.0	1.9		7.0	2.4	
PO_4-P AB-DTPA	mg/kg	1	12.0	0.0		8.2	0.0		19.5	0.0		9.3	0.0		8.4	0.0	
PO_4-P M. Morgan	mg/kg	9	3.2	0.8		41	17		9.4	1.7		1.7	0.4		1.4	0.5	
PO_4-P M. Kewlona	mg/kg	4	17.6	0.9		20	1.1		21.6	1.2		3.5	1.5		6.2	0.9	
PO_4-P Strg Bray P-2	mg/kg	12	53	6.0		239	118.0		69	8.1		14.0	3.2		11.5	1.4	
PO_4-P Water Soluble	mg/kg	1	5.0	0.0		5.0	9.00		5.0	0.0		1.0	0.0		2.0	0.00	
SO_4 -S (PO_4 Extr.)	mg/kg	45	5.0	1.6		80	17		5.0	1.3		12.8	8.8		12.2	2.2	
Ammonium Ace. Bases																	
K	mg/kg	90	410	24		420	29		174	10		41	6.3		35	5.0	
Ca	mg/kg	86	2098	155		4110	635		2869	202		330	60		351	59	
Mg	mg/kg	87	330	25		262	23.0		342	20		35	9		79	11	
Na	mg/kg	66	16	5.9		289	30.5		23	7.8		21	7.0		13.0	6.0	
K - Bray (1:10)	mg/kg	6	301	20		305	23		133	11.0		25	2.5		34	4.8	
K- Bicarb.	mg/kg	10	338	19		257	32		138	21		40	6.5		35	5.5	
K - Modified Morgan	mg/kg	7	280	65		227	48		116	10		34	1.4		26	4.0	
Ca Modified Morgan	mg/kg	3	1998	68		8343	2270		2935	36		288	0.3		251	29	
Al KCL Extr.	mg/kg	7	0.60	0.42		0.50	0.44		0.20	0.44		31.3	8.4		40.0	9.5	

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Mehlich-1 Multi Element																	
Soil Scoop Mass	g	11	5.00	0.10		5.00	0.15		5.00	0.25		5.00	0.55		5.00	0.35	
P	mg/kg	12	37.9	3.7		70.8	7.0		36.7	2.2		2.8	1.1		4.1	0.7	
K	mg/kg	12	232	14.7		125	12.3		112	10		29	4.5		29	2.0	
Ca	mg/kg	12	1635	114		5011	605		2193	97		292	32		314	46	
Mg	mg/kg	12	251	16		223	11		286	13		31.5	2.4		69	9.5	
Mn	mg/kg	11	49.0	3.1		2.9	0.5		47.0	3.35		14.3	1.55		4.7	0.5	
Zn	mg/kg	10	0.93	0.04		0.10	0.04		2.35	0.14		0.60	0.16		2.44	0.24	
Mehlich-3 Mult-Element																	
Soil Scoop Mass	g	28	1.83	0.49		2.32	0.58		1.92	0.61		1.59	0.48		2.48	0.55	
Scoop Volume	mL	16	1.18	0.07		1.18	0.08		1.18	0.10		1.18	0.18		1.19	0.12	
P Colorimetric	mg/kg	17	26.0	2.0		58.0	5.3		40.0	1.0		4.6	1.4		9.3	1.5	
P ICP	mg/kg	37	31.0	3.9		62.0	4.7		42.0	4.2		3.9	1.1		13.9	2.0	
K	mg/kg	46	431	24		461	37.0		182	9.5		36.0	4.8		37.0	5.0	
Ca	mg/kg	45	2133	172		5595	682		3021	232		314	57		388	60	
Mg	mg/kg	45	348	25		383	43		378	23.0		36	8		100	12.8	
Na	mg/kg	30	17.7	5.4		334	42		24	6.4		24	5.8		17.8	6.0	
S	mg/kg	27	14.0	3.0		122	15		13.0	4.2		14.9	3.2		28.0	4.1	
Al	mg/kg	23	798	100		174	91		569	51		1977	170		953	113	
Zn	mg/kg	38	1.46	0.19		2.04	0.24		3.39	0.42		0.60	0.20		3.33	0.31	
Mn	mg/kg	38	92	10.9		120	14.5		72	8.6		8.3	1.6		5.3	0.65	
Fe	mg/kg	36	133	21.4		37	5.3		254	35.6		133	20.3		255	28.4	
Cu	mg/kg	38	0.95	0.18		2.9	0.32		2.50	0.31		0.68	0.14		0.72	0.15	
B	mg/kg	32	0.65	0.14		2.90	0.36		0.70	0.19		0.25	0.15		0.32	0.20	

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Micronutrients																	
Zn - DTPA	mg/kg	72	**0.78**	*0.12*		**0.55**	*0.07*		**1.52**	*0.12*		**0.40**	*0.09*		**2.39**	*0.36*	
Mn - DTPA	mg/kg	60	**57.7**	*6.25*		**10.7**	*1.50*		**27.5**	*1.7*		**5.7**	*0.70*		**4.0**	*0.57*	
Fe - DTPA	mg/kg	65	**44.2**	*6.3*		**2.0**	*0.5*		**42.7**	*4.3*		**62.3**	*6.1*		**131**	*28.4*	
Cu - DTPA	mg/kg	64	**0.60**	*0.10*		**1.16**	*0.15*		**1.47**	*0.12*		**0.50**	*0.09*		**0.39**	*0.09*	
Zn - HCl	mg/kg	2	**1.31**	*0.29*		**1.3**	*0.56*		**3.3**	*0.55*		**0.8**	*0.17*		**2.69**	*0.42*	
Mn-H_3PO_4	mg/kg	11	**36.8**	*2.8*		**5.5**	*1.3*		**25.6**	*2.2*		**8.6**	*2.21*		**4.2**	*0.7*	
Cl - $Ca(NO_3)_2$ Extr.	mg/kg	18	**6.1**	*1.0*		**33**	*3.8*		**3.4**	*2.6*		**4.0**	*0.9*		**5.1**	*2.3*	
B - Hot Water	mg/kg	55	**0.60**	*0.20*		**1.32**	*0.34*		**0.36**	*0.13*		**0.18**	*0.08*		**0.30**	*0.10*	
B - DTPA-Sorb	mg/kg	11	**0.27**	*0.08*		**1.79**	*0.21*		**0.25**	*0.05*		**0.13**	*0.04*		**0.39**	*0.19*	
Soil Organic Matter																	
Soil Kjeldahl N	%	21	**0.170**	*0.010*		**0.044**	*0.004*		**0.122**	*0.006*		**0.130**	*0.010*		**0.095**	*0.006*	
Soil TN (combustion)	%	36	**0.170**	*0.020*		**0.040**	*0.010*		**0.120**	*0.010*		**0.130**	*0.011*		**0.092**	*0.014*	
Soil TOC (combustion)	%	30	**1.80**	*0.060*		**0.66**	*0.065*		**1.25**	*0.050*		**3.09**	*0.063*		**2.15**	*0.14*	
SOM - Walkley-Black	%	48	**3.00**	*0.23*		**0.80**	*0.16*		**2.14**	*0.24*		**4.60**	*0.61*		**3.90**	*0.38*	
SOM - LOI (Raw Values)	%	72	**3.62**	*0.28*		**1.20**	*0.16*		**2.66**	*0.25*		**7.31**	*0.42*		**3.58**	*0.18*	
$CaCO_3$ Content	%	14	**0.20**	*0.52*		**2.79**	*0.51*		**0.40**	*0.50*		**0.20**	*0.10*		**0.05**	*0.20*	
CEC - Displacement	cmol/kg	24	**18.2**	*2.5*		**11.6**	*1.7*		**18.9**	*2.34*		**17.0**	*3.1*		**7.9**	*1.08*	
- Estimation	cmol/kg	9	**16.7**	*0.4*		**22.5**	*5.0*		**17.5**	*1.5*		**7.1**	*5.0*		**10.3**	*3.3*	
Scoop Density	mg/cm^3	11	**1.14**	*0.09*		**1.33**	*0.10*		**1.17**	*0.14*		**0.98**	*0.080*		**1.47**	*0.065*	
Particle Size Analysis																	
Sand 2000 - 50 um	%	42	**19.4**	*4.4*		**61.8**	*2.5*		**29.0**	*3.4*		**30.0**	*3.5*		**84.2**	*2.8*	
Silt 50 - 2 um	%	41	**55.0**	*3.0*		**19.0**	*2.0*		**45.2**	*2.7*		**60.0**	*3.6*		**9.0**	*1.3*	
Clay 2 - 0 um	%	41	**26.7**	*2.7*		**19.0**	*3.0*		**26.0**	*2.0*		**9.0**	*3.4*		**7.0**	*1.9*	

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