Soil Science Society of America

2004 North American Proficiency Testing Program

1st Quarter Report June 10, 2004

Laboratory ID

Soil			Soil 2004-101			Soil 2004-102			Soil 2004-103			Soil 2004-104			Soil 2004-105		
Analysis	**Units**	***n***	**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Salinity -SP																	
Sat. Paste Moisture	%	32	64.5	5.1		47.9	4.8		42.2	4.5		39.6	4.1		43.1	3.3	
pH - sp	Unit	37	7.30	0.10		8.30	0.08		6.20	0.12		7.60	0.10		5.60	0.10	
ECe - sp	dS/m	43	0.73	0.04		19.0	2.5		0.43	0.08		2.05	0.20		0.55	0.07	
HCO_3 - sp	mmolc/L	12	4.6	1.4		4.5	1.0		1.6	0.55		9.6	3.7		0.75	0.39	
Ca - sp	mmolc/L	33	3.42	0.50		23.0	4.1		2.26	0.46		10.2	1.6		2.66	0.45	
Mg - sp	mmolc/L	32	3.13	0.47		60	11		1.2	0.21		7.25	1.47		1.04	0.17	
Na - sp	mmolc/L	34	1.38	0.25		191	28		0.78	0.33		2.58	0.26		0.41	0.15	
SAR - sp	value	28	0.77	0.14		32	2.6		0.46	0.21		0.87	0.08		0.30	0.10	
Cl - sp	mmolc/L	20	0.46	0.15		38.6	5.4		1.20	0.26		3.73	0.59		0.46	0.13	
SO_4 - sp	mmolc/L	21	2.19	0.35		237	42		1.28	0.25		3.28	0.64		0.66	0.09	
NO_3 - sp	mmolc/L	11	0.67	0.53		4.53	1.12		0.04	0.03		3.38	2.97		2.79	0.61	
B - sp	mg/L	15	0.10	0.010		0.80	0.10		0.12	0.020		0.12	0.020		0.11	0.010	
Soil EC																	
Soil EC (1:1)	(dS/m)	33	0.68	0.12		7.20	1.09		0.22	0.10		0.79	0.13		0.27	0.05	
Soil EC (1:2)	(dS/m)	46	0.33	0.05		7.13	1.09		0.13	0.05		0.53	0.08		0.15	0.02	
Soil pH																	
pH (1:1)	Unit	89	7.56	0.10		8.52	0.08		6.49	0.10		7.90	0.10		5.84	0.12	
pH (1:2)	Unit	34	7.70	0.11		8.41	0.10		6.60	0.18		8.00	0.10		5.99	0.14	
pH (1:1) 0.01M $CaCl_2$	Unit	21	7.21	0.09		8.40	0.08		5.81	0.11		7.60	0.07		5.29	0.09	
pH (1:2) 0.01M $CaCl_2$	Unit	13	7.20	0.17		8.34	0.09		6.00	0.12		7.60	0.13		5.31	0.09	
Buffer pH																	
SMP Buffer pH	Unit	43	7.35	0.06		7.74	0.06		6.81	0.10		7.52	0.10		6.72	0.08	
Adams-Evans Buf pH	Unit	14	7.61	0.03		7.84	0.04		7.53	0.05		7.82	0.05		7.53	0.07	
Woodruff Buf. pH	Unit	15	7.10	0.08		7.34	0.11		6.70	0.05		7.15	0.08		6.63	0.06	
Mehlich Buf. pH	Unit	5	6.64	0.07		7.16	0.11		6.22	0.04		6.81	0.03		6.09	0.08	
Titratable Acidity	cmol/kg	3	0.0	5.4		0.0	0.50		4.92	4.92		0.00	1.83		9.91	0.66	

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Analysis	**Units**	***n***	**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Nitrate (NO_3-N)																	
Cd. Rd.	mg/kg	54	22.8	1.5		45.0	3.0		1.3	0.6		60.8	7.2		20.0	1.3	
ISE	mg/kg	25	22.9	4.9		44.8	16.6		2.8	1.1		60.0	14.6		19.9	4.1	
CTA	mg/kg	6	23.7	1.0		42.8	3.6		2.1	0.4		60.0	3.9		21.2	1.2	
Ion Chromatography	mg/kg	1	19.4	0.0		19.4	21.4					50.2	0.00		18.1	0.0	
Other	mg/kg	9	22.5	2.3		43.7	4.9		1.5	0.5		58.1	4.3		20.0	2.4	
NH_4 - N (KCl Extr.)	mg/kg	47	8.5	1.4		4.5	0.8		9.0	1.4		63.4	7.0		18.5	2.2	
Amino-N (Mulvaney)	mg/kg	5	247	7.0		77	0.5		286	18		265	12		241	9	
Phosphorus & Sulfur																	
PO_4-P Bray P1 (1:10)	mg/kg	51	48.7	4.3		84.0	12.5		64.0	5.0		40.0	19.0		27.0	2.7	
PO_4-P Bray P1 (1:7)	mg/kg	13	33.3	4.0		82.5	20.4		52.5	8.6		65.5	27		23.0	4.5	
PO_4-P Olsen/Bicarb	mg/kg	59	36.4	3.1		115	11		38.0	3.0		166	23		14.0	2.1	
PO_4-P AB-DTPA	mg/kg	1	17.6	5.1		37.6	37.2		20.5	9.0		156	55		7.8	4.8	
PO_4-P M. Morgan	mg/kg	12	24.1	2.0		112	15		14.1	2.3		173	46		3.4	1.1	
PO_4-P M. Kewlona	mg/kg	3	43.5	1.9		142	12		47.5	1.4		243	29		20.0	1.0	
PO_4-P Strg Bray P-2	mg/kg	11	124	8.0		224	18.0		149	11.0		76.5	16.5		49.0	8.0	
PO_4-P Water Soluble	mg/kg	1	18.1	0.0		7.1	0.00		14.0	0.0		32.9	0.0		4.4	0.00	
SO_4 -S (PO_4 Extr.)	mg/kg	43	21.0	4.0		2285	731		10.0	3.8		26.7	6.4		5.9	2.2	
Ammonium Ace. Bases																	
K	mg/kg	91	618	42		482	38		198	20		435	29		423	34	
Ca	mg/kg	83	4453	313		6552	627		2902	277		4043	706		2160	200	
Mg	mg/kg	84	1752	147		1413	114.3		484	41		720	68		352	30	
Na	mg/kg	69	83	11.0		3480	348.0		30	9.2		58	8.0		15.3	5.3	
K - Bray (1:10)	mg/kg	5	363	14		361	20		146	4.0		324	8.0		332	15.0	
K- Bicarb.	mg/kg	9	400	16		335	11		139	9		308	12		338	18	
K - Modified Morgan	mg/kg	8	300	250		260	97		107	73		260	22		272	35	
Ca Modified Morgan	mg/kg	5	4647	351		10743	10361		3068	206		28935	5310		2390	141	
Al KCL Extr.	mg/kg	8	0.44	0.56		0.44	0.56		0.10	0.65		0.16	0.43		0.31	0.55	

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Mehlich-1 Multi Element																	
Soil Scoop Mass	g	12	5.00	0.07		5.00	0.20		5.00	0.31		5.00	0.20		5.00	0.19	
P	mg/kg	13	54.5	7.1		37.1	6.0		89.1	7.2		64.0	6.0		38.2	3.9	
K	mg/kg	12	257	14.0		166	9.3		102	9		191	14		250	26	
Ca	mg/kg	12	3096	281		3458	698		2677	212		5177	393		1672	123	
Mg	mg/kg	12	1178	154		1014	123		416	28		560.0	42.2		270	22	
Mn	mg/kg	10	36.0	1.9		2.5	0.5		20.5	1.06		1.9	0.40		47.8	2.9	
Zn	mg/kg	11	0.87	0.10		0.11	0.06		4.00	0.27		0.13	0.08		0.96	0.08	
Mehlich-3 Mult-Element																	
Soil Scoop Mass	g	36	2.20	0.50		2.20	0.42		1.93	0.53		2.21	0.39		2.02	0.42	
Scoop Volume	mL	20	1.18	0.04		1.18	0.07		1.18	0.07		1.18	0.07		1.18	0.07	
P Colorimetric	mg/kg	18	57.8	5.1		199	11.5		74.1	7.4		360	64.0		29.0	2.7	
P ICP	mg/kg	34	60.7	4.2		207	16.0		76.5	6.8		391	27.1		33.0	3.6	
K	mg/kg	46	639	46		491	30.7		207	19.7		468	32		433	26	
Ca	mg/kg	45	4720	343		7470	746		3045	253		9025	1441		2270	164	
Mg	mg/kg	45	1904	186		2105	206		496	31.9		914	70		351	20.4	
Na	mg/kg	26	91.0	11.0		3381	825		29.2	11.2		68	11.3		15.0	4.9	
S	mg/kg	23	29.0	3.5		4850	396		20.2	3.4		45.1	6.4		16.1	3.2	
Al	mg/kg	20	514	38		116	81		690	70		58.4	22.0		796	104	
Zn	mg/kg	34	2.76	0.36		15.2	1.6		6.1	0.70		21.1	1.67		1.57	0.23	
Mn	mg/kg	32	145	13.4		121	11.1		44	4.8		49	7.8		96	11	
Fe	mg/kg	29	124	16.5		172	17		179	22.6		51	6.3		125	14.3	
Cu	mg/kg	32	5.2	0.52		5.1	0.47		2.45	0.28		11.4	1.11		1.00	0.16	
B	mg/kg	27	2.30	0.20		7.53	0.82		1.02	0.12		2.11	0.26		0.69	0.11	

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Micronutrients																	
Zn - DTPA	mg/kg	72	**1.00**	*0.10*		**4.29**	*0.49*		**3.35**	*0.37*		**4.25**	*0.75*		**0.77**	*0.13*	
Mn - DTPA	mg/kg	66	**34.0**	*3.05*		**7.6**	*1.20*		**20.7**	*3.2*		**2.9**	*1.0*		**55.6**	*5.5*	
Fe - DTPA	mg/kg	68	**11.6**	*1.6*		**12.4**	*2.3*		**55.0**	*7.0*		**6.2**	*1.5*		**45.0**	*4.8*	
Cu - DTPA	mg/kg	67	**2.03**	*0.18*		**2.60**	*0.29*		**0.90**	*0.16*		**5.50**	*0.89*		**0.60**	*0.11*	
Zn - HCl	mg/kg	6	**2.7**	*0.70*		**2.0**	*8.10*		**5.3**	*0.65*		**11.2**	*10.80*		**1.50**	*0.20*	
Mn-H_3PO_4	mg/kg	5	**26.7**	*4.3*		**5.0**	*2.0*		**14.4**	*3.0*		**2.8**	*0.81*		**36.1**	*3.2*	
Cl - $Ca(NO_3)_2$ Extr.	mg/kg	22	**7.7**	*2.1*		**661**	*91.2*		**13.8**	*6.1*		**55.8**	*9.8*		**5.8**	*1.6*	
B - Hot Water	mg/kg	49	**1.08**	*0.28*		**3.22**	*0.78*		**0.86**	*0.26*		**1.04**	*0.31*		**0.68**	*0.16*	
B - DTPA-Sorb	mg/kg	13	**1.10**	*0.18*		**5.20**	*0.51*		**0.30**	*0.10*		**1.04**	*0.17*		**0.21**	*0.10*	
Soil Organic Matter																	
Soil Kjeldahl N	%	22	**0.230**	*0.020*		**0.089**	*0.008*		**0.220**	*0.010*		**0.200**	*0.010*		**0.170**	*0.010*	
Soil TN (combustion)	%	34	**0.253**	*0.010*		**0.090**	*0.010*		**0.229**	*0.009*		**0.205**	*0.014*		**0.171**	*0.009*	
Soil TOC (combustion)	%	25	**3.00**	*0.11*		**1.54**	*0.09*		**2.79**	*0.10*		**4.51**	*0.58*		**1.80**	*0.09*	
SOM - Walkley-Black	%	47	**4.20**	*0.42*		**1.58**	*0.17*		**4.54**	*0.36*		**2.99**	*0.23*		**3.09**	*0.21*	
SOM - LOI (Raw Values)	%	66	**5.60**	*0.52*		**1.89**	*0.17*		**5.00**	*0.40*		**3.20**	*0.25*		**3.5**	*0.3*	
CaCO3 Content	%	13	**1.31**	*1.08*		**5.70**	*1.10*		**0.30**	*0.35*		**24.66**	*2.53*		**0.34**	*0.23*	
CEC - Displacement	cmol/kg	34	**43.3**	*5.9*		**17.1**	*2.5*		**24.3**	*2.95*		**17.6**	*2.4*		**19.6**	*2.80*	
- Estimation	cmol/kg	7	**38.9**	*2.6*		**55.1**	*9.9*		**21.5**	*1.4*		**28.4**	*3.7*		**17.2**	*1.2*	
Scoop Density	mg/cm^3	7	**1.30**	*0.07*		**1.31**	*0.16*		**1.21**	*0.14*		**1.34**	*0.12*		**1.20**	*0.11*	
Particle Size Analysis																	
Sand 2000 - 50 um	%	43	**12.5**	*3.5*		**31.2**	*3.0*		**26.6**	*3.4*		**36.7**	*2.7*		**19.1**	*4.4*	
Silt 50 - 2 um	%	43	**40.0**	*4.0*		**42.0**	*5.0*		**46.0**	*4.0*		**34.9**	*3.1*		**57.0**	*4.2*	
Clay 2 - 0 um	%	43	**46.8**	*4.3*		**27.0**	*6.0*		**28.0**	*3.0*		**28.0**	*3.6*		**25.6**	*2.6*	

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