



2008 North American Proficiency Testing Program
4th Quarter Report - November 28, 2008

Laboratory ID

Soil Analysis	Units	n	Soil 2008-116			Soil 2008-117			Soil 2008-118			Soil 2008-119			Soil 2008-120		
			Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}
Salinity																	
Sat. Paste Moisture	%	22	36.8	2.01		37.2	3.00		40.1	1.95		41.1	1.61		38.0	1.58	
pH - sp	Unit	31	5.12	0.133		6.78	0.080		7.76	0.140		7.10	0.110		5.97	0.130	
ECe - sp	dS/m	32	0.460	0.075		0.390	0.064		0.403	0.073		0.680	0.127		2.10	0.270	
HCO ₃ - sp	mmolc/L	11	1.30	0.520		2.18	0.170		4.04	0.540		4.74	1.260		0.950	0.150	
Ca - sp	mmolc/L	26	3.37	0.349		3.01	0.366		4.07	0.565		4.96	0.740		13.7	1.33	
Mg - sp	mmolc/L	26	1.48	0.132		0.920	0.140		0.600	0.105		2.63	0.430		5.08	0.495	
Na - sp	mmolc/L	26	0.300	0.175		0.670	0.153		0.165	0.108		0.670	0.150		0.730	0.180	
SAR - sp	value	19	0.210	0.120		0.460	0.090		0.130	0.079		0.330	0.080		0.240	0.052	
Cl - sp	mmolc/L	15	0.250	0.089		0.250	0.064		0.200	0.060		1.16	0.099		0.590	0.080	
SO ₄ - sp	mmolc/L	17	1.51	0.270		0.700	0.100		0.290	0.040		1.27	0.120		2.21	0.186	
NO ₃ - sp	mmolc/L	13	0.810	0.490		1.06	0.540		0.050	0.050		0.050	0.050		16.3	2.67	
B - sp	mg/L	14	0.130	0.036		0.078	0.028		0.086	0.018		0.120	0.020		0.169	0.022	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	27	0.180	0.020		0.240	0.040		0.280	0.070		0.220	0.020		0.740	0.090	
Soil EC (1:2)	(dS/m)	47	0.131	0.019		0.124	0.029		0.150	0.035		0.150	0.019		0.486	0.066	
pH (1:1) Water	Unit	72	5.20	0.070		7.06	0.065		8.13	0.130		7.32	0.065		6.15	0.065	
pH (1:2) Water	Unit	27	5.34	0.120		7.17	0.170		8.27	0.157		7.40	0.100		6.29	0.120	
pH (1:1) 0.01M CaCl ₂	Unit	22	4.71	0.050		6.58	0.065		7.62	0.080		6.90	0.060		5.93	0.070	
pH (1:2) 0.01M CaCl ₂	Unit	12	4.65	0.045		6.50	0.095		7.54	0.065		6.81	0.050		5.91	0.070	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	53	6.16	0.100		7.24	0.060		7.51	0.050		7.30	0.055		6.98	0.055	
Adams-Evans Buf pH	Unit	12	7.33	0.030		7.70	0.030		7.80	0.020		7.80	0.025		7.58	0.050	
Woodruff Buf. pH	Unit	23	6.10	0.100		6.94	0.020		7.13	0.030		7.00	0.040		6.80	0.050	
Mehlich Buffer pH	Unit	7	5.70	0.090		6.49	0.010		6.90	0.070		6.60	0.020		6.24	0.040	
Titrateable Acidity	cmol/kg	0															

1 - Values flagged exceed Warning Limits " * " 2.5x MAD (Median Absolute Deviation) and Control Limits " ** " 4 x MAD. "<" and "ND" values not recorded.

2 - Limits not compared to lab data for methods with < 7 labs reporting



2008 North American Proficiency Testing Program
4th Quarter Report - November 28, 2008

Laboratory ID

Soil Analysis	Units	n	Soil 2008-116			Soil 2008-117			Soil 2008-118			Soil 2008-119			Soil 2008-120		
			Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}
Inorganic Nitrogen (NO3-N & NH4-N)																	
NO3-N Cd. Rd.	mg/kg	59	10.2	1.07		10.1	0.80		2.74	3.690		5.72	0.777		93.0	4.80	
NO3-N ISE	mg/kg	12	9.82	1.929		10.7	1.62		4.72	2.035		5.78	1.390		83.5	10.3	
NO3-N CTA	mg/kg	4	13.6	0.69		11.8	0.65		3.80	0.240		7.93	0.350		96.5	2.77	
NO3-N Ion Chr.	mg/kg	1	7.95	0.00		7.84	0.00		1.96	0.00		4.33	0.00		100	0.00	
NO3-N Other _____	mg/kg	11	9.00	2.997		9.41	1.720		2.19	0.860		5.34	0.823		87.8	8.09	
NH4 - N (KCl Extr.)	mg/kg	44	5.92	1.120		15.6	1.92		3.03	0.681		10.4	1.44		45.9	4.00	
Phosphorus and Sulfur																	
PO4-P Bray P (1:10)	mg/kg	46	73.5	5.61		48.0	4.00		12.8	6.15		94.7	7.77		63.2	4.81	
PO4-P Bray P1 (1:7)	mg/kg	7	68.0	7.40		45.0	2.28		10.0	1.41		84.0	8.00		58.0	8.00	
PO4-P Olsen/Bicarb	mg/kg	46	34.7	2.75		24.7	2.26		12.8	1.77		45.0	3.00		30.7	2.02	
PO4-P AB-DTPA	mg/kg	2	26.4	13.8		12.5	1.40		7.88	0.845		42.4	16.8		18.6	6.14	
PO4-P Modified Morgan	mg/kg	4	7.65	0.70		7.45	1.20		12.1	0.80		20.3	1.40		12.3	2.00	
PO4-P True Morgan	mg/kg	5	8.80	0.250		10.7	0.45		14.1	0.70		20.4	1.30		14.5	0.80	
PO4-P Mod. Kewlona	mg/kg	4	49.8	1.08		32.0	0.85		22.4	1.90		76.0	6.60		48.9	5.29	
PO4-P Stong Bray (1:10)	mg/kg	8	114	8.5		82.0	7.50		50.3	4.25		153	12.5		257	9.5	
PO4-P Water Soluble	mg/kg	6	9.23	2.46		6.39	1.77		2.49	0.645		9.14	3.41		8.37	2.305	
SO4 - S (PO4 Extr.)	mg/kg	34	8.83	2.15		4.95	1.13		4.38	2.141		10.1	2.23		17.3	2.09	
Bases																	
K Ammonium Acetate	mg/kg	72	179	12.8		183	11.3		305	19.9		144	6.50		742	36.0	
Ca Ammonium Acetate	mg/kg	69	1328	150		2561	244		5147	747		1338	110		2386	143	
Mg Ammonium Acetate	mg/kg	70	203	16.7		349	24.3		221	17.4		237	16.4		375	18.5	
Na Ammonium Acetate	mg/kg	54	12.4	5.80		26.5	5.50		12.0	5.29		19.0	4.42		21.3	4.43	
Bray Extractable K	mg/kg	1	160	0.0		142	0.0		219	0.0		136	0.0		535	0.00	
K- Olsen/Bicarb.	mg/kg	7	150	10.0		91.1	11.1		179	10.9		132	4.6		494	6.0	
K Modified Morgan	mg/kg	3	152	8.4		163	8.6		288	33.6		129	13.8		604	141	
K True Morgan	mg/kg	5	129	4.0		71.0	2.00		145	7.0		118	2.0		397	23.0	
Ca Modified Morgan	mg/kg	3	1131	26.0		2333	45.8		18745	147		1493	187		2366	59.0	
Aluminum KCL Extr.	mg/kg	7	4.00	0.625		0.000	0.000		0.600	0.600		0.500	0.500		0.165	0.165	

1 - Values flagged exceed Warning Limits " * " 2.5x MAD (Median Absolute Deviation) and Control Limits " ** " 4 x MAD. "<" and "ND" values not recorded.

2 - Limits not compared to lab data for methods with < 7 labs reporting



2008 North American Proficiency Testing Program
4th Quarter Report - November 28, 2008

Laboratory ID

Soil Analysis	Units	n	Soil 2008-116			Soil 2008-117			Soil 2008-118			Soil 2008-119			Soil 2008-120		
			Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}
Mehlich-1 Multi Element (scoop)																	
Scoop Soil Mass	g	6	5.00	0.00		5.00	0.00		5.00	0.00		5.00	0.00		5.00	0.00	
P	mg/kg	7	59.8	1.47		51.2	2.63		3.42	0.445		77.2	2.24		204	5.7	
K	mg/kg	6	129	3.5		80.3	3.34		90.7	6.31		117	9.8		399	17.6	
Ca	mg/kg	6	1399	86.7		1894	110		5311	27.9		1639	68.5		2320	49.8	
Mg	mg/kg	6	195	17.5		274	22.7		173	8.6		257	12.7		320	6.7	
Mn	mg/kg	6	36.0	3.20		41.0	1.52		1.20	0.215		48.3	1.86		97.3	3.82	
Zn	mg/kg	6	3.87	0.405		2.97	0.376		0.109	0.064		3.38	0.096		1.04	0.230	
Mehlich-3 Multi-Element (scoop)																	
Scoop Soil Mass	g	28	2.37	0.182		2.40	0.157		2.36	0.170		2.09	0.155		2.03	0.140	
Assumed Density	g/cm ³	13	1.18	0.000		1.18	0.000		1.18	0.000		1.18	0.000		1.18	0.000	
Volume of Scoop	cm ³	30	2.00	0.30		2.00	0.30		2.00	0.30		2.00	0.30		2.00	0.30	
Extractant Volume mL	mL	31	20.0	0.00		20.0	0.00		20.0	0.00		20.0	0.00		20.0	0.00	
P Colorimetric	mg/kg	21	76.0	4.30		52.0	5.75		33.6	2.60		108	11.5		81.0	7.60	
P ICP-AES	mg/kg	41	103	7.8		54.8	5.70		35.8	3.29		119	5.3		90.6	7.10	
K	mg/kg	48	185	19.1		188	20.5		335	27.4		150	10.2		745	30.8	
Ca	mg/kg	45	1519	150		2746	206		7340	629		1578	99.0		2571	121	
Mg	mg/kg	45	232	17.5		395	22.6		295	25.0		289	17.3		414	17.5	
Na	mg/kg	35	13.0	5.04		26.0	5.00		11.5	6.59		21.3	5.90		19.0	5.80	
S	mg/kg	36	29.4	5.09		11.2	3.17		11.2	4.10		19.2	3.85		23.6	3.06	
Al	mg/kg	24	815	60.1		652	46.0		243	58.7		839	64.2		687	36.1	
Zn	mg/kg	39	5.03	0.417		5.20	0.340		1.00	0.200		4.20	0.310		2.08	0.139	
Mn	mg/kg	38	49.3	4.90		194	14.0		104	11.1		63.0	4.00		250	16.0	
Fe	mg/kg	35	259	26.0		89.0	10.0		27.8	2.90		167	16.0		85.3	10.3	
Cu	mg/kg	39	2.22	0.240		2.63	0.170		1.85	0.217		2.50	0.260		2.90	0.220	
B	mg/kg	31	0.600	0.180		0.647	0.133		1.50	0.155		1.00	0.140		0.772	0.180	

1 - Values flagged exceed Warning Limits " * " 2.5x MAD (Median Absolute Deviation) and Control Limits " ** " 4 x MAD. "<" and "ND" values not recorded.

2 - Limits not compared to lab data for methods with < 7 labs reporting



2008 North American Proficiency Testing Program 4th Quarter Report - November 28, 2008

Laboratory ID

Soil Analysis	Units	n	Soil 2008-116			Soil 2008-117			Soil 2008-118			Soil 2008-119			Soil 2008-120		
			Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}
Micronutrients																	
Zn - DTPA	mg/kg	67	3.63	0.270		2.35	0.250		0.460	0.084		1.96	0.140		1.00	0.100	
Mn - DTPA	mg/kg	52	29.1	2.75		32.7	3.25		5.39	0.910		27.7	2.25		98.0	7.53	
Fe - DTPA	mg/kg	54	142	18.9		12.5	1.48		4.60	0.596		24.6	2.59		14.5	1.50	
Cu - DTPA	mg/kg	56	1.56	0.161		1.23	0.119		0.538	0.072		1.44	0.109		1.61	0.108	
Zn - HCl	mg/kg	4	5.34	0.154		4.94	0.275		0.179	0.135		3.92	0.145		1.95	0.200	
Mn-H3PO4	mg/kg	9	26.3	2.49		29.1	1.26		2.20	0.430		36.7	3.18		79.1	4.90	
Cl - Ca(NO3)2 Extr.	mg/kg	17	3.01	1.113		2.75	0.753		2.41	0.700		14.0	2.62		7.00	2.500	
B - Hot Wat.	mg/kg	43	0.628	0.118		0.460	0.160		0.503	0.203		0.640	0.140		0.740	0.160	
B-DTPA/Sorbitol	mg/kg	11	0.396	0.206		0.272	0.042		0.710	0.090		0.400	0.059		0.320	0.040	
Soil Organic Matter																	
Soil Kjeldahl N	%	19	0.171	0.009		0.074	0.006		0.092	0.011		0.115	0.007		0.123	0.010	
Soil TN (combustion)	%	33	0.177	0.006		0.076	0.010		0.091	0.009		0.121	0.011		0.128	0.012	
Soil TOC (Combustion)	%	11	1.81	0.070		0.650	0.120		1.22	0.170		1.19	0.031		1.24	0.060	
Soil Total C (Combustion)	%	22	1.92	0.098		0.670	0.125		1.36	0.052		1.22	0.038		1.31	0.110	
SOM - Walkley-Black	%	35	3.38	0.280		1.25	0.120		1.50	0.100		2.00	0.190		2.22	0.210	
SOM - LOI (% Wt loss)	%	67	3.33	0.200		1.65	0.243		1.90	0.149		2.77	0.130		2.70	0.203	
CaCO3 Content	%	12	0.295	0.180		0.302	0.122		5.20	0.430		0.370	0.260		0.417	0.190	
CEC - Cation Displacement	cmol/kg	17	13.1	1.35		15.8	1.76		16.1	1.50		10.1	1.84		20.1	1.80	
CEC - Estimation	cmol/kg	15	15.3	1.57		17.8	1.20		30.5	3.80		10.7	1.10		19.0	1.10	
Soil Density (Scoop)	g/cc	14	1.35	0.035		1.36	0.037		1.34	0.045		1.12	0.059		1.16	0.038	
Particle Size Analysis																	
Sand 2000 - 50 um	%	38	61.5	3.50		38.8	2.50		45.5	4.50		26.9	2.86		22.9	3.44	
Silt 50 - 2 um	%	38	26.6	3.51		39.6	2.45		38.5	2.95		54.0	3.43		56.0	4.75	
Clay 2 - 0 um	%	38	12.0	2.00		22.0	2.00		16.5	3.50		19.6	2.70		21.0	3.00	

1 - Values flagged exceed Warning Limits " * " 2.5x MAD (Median Absolute Deviation) and Control Limits " ** " 4 x MAD. "<" and "ND" values not recorded.

2 - Limits not compared to lab data for methods with < 7 labs reporting