



2010 North American Proficiency Testing Program 1st Quarter Report - May 2, 2010

Laboratory ID

Soil Analysis	Units	n	Soil 2010-101			Soil 2010-102			Soil 2010-103			Soil 2010-104			Soil 2010-105		
			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	%	26	32.9	1.86		47.0	2.87		28.0	1.73		33.1	1.83		43.5	2.30	
pH - sp	Unit	34	5.99	0.141		5.83	0.125		4.55	0.115		7.45	0.11		7.57	0.080	
ECe - sp	dS/m	35	2.43	0.223		0.370	0.071		2.46	0.280		0.680	0.070		7.90	0.430	
HCO ₃ - sp	mmol/L	12	3.27	2.11		1.10	0.439		0.400	0.128		2.52	1.12		7.79	2.91	
Ca - sp	mmol/L	27	4.53	0.845		1.79	0.340		10.9	1.08		5.22	0.480		32.3	2.37	
Mg - sp	mmol/L	27	4.13	0.640		0.590	0.102		6.72	0.659		0.510	0.090		44.0	6.07	
Na - sp	mmol/L	27	3.78	0.380		0.410	0.160		4.10	0.340		0.260	0.152		23.6	2.09	
SAR - sp	value	25	1.83	0.110		0.400	0.170		1.42	0.081		0.185	0.060		3.80	0.190	
Cl - sp	mmol/L	18	11.7	0.82		0.749	0.073		1.07	0.170		0.247	0.116		30.3	2.18	
SO ₄ - sp	mmol/L	15	5.62	0.600		1.02	0.156		5.86	0.286		0.650	0.140		65.2	4.87	
NO ₃ - sp	mmol/L	7	0.014	0.014		0.119	0.075		15.0	3.44		2.89	0.773		1.65	1.62	
B - sp	mg/L	10	0.095	0.025		0.075	0.019		0.403	0.045		0.060	0.030		7.86	1.15	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	28	0.695	0.136		0.240	0.032		0.670	0.120		0.270	0.030		2.92	0.280	
Soil EC (1:2)	(dS/m)	46	0.473	0.076		0.149	0.018		0.483	0.076		0.180	0.030		3.62	0.560	
pH (1:1) Water	Unit	72	6.11	0.050		5.95	0.075		4.79	0.075		7.70	0.100		7.78	0.080	
pH (1:2) Water	Unit	30	6.26	0.060		6.03	0.090		4.87	0.070		7.83	0.110		7.80	0.080	
pH (1:1) 0.01M CaCl ₂	Unit	21	5.66	0.050		5.42	0.060		4.50	0.050		7.24	0.090		7.62	0.080	
pH (1:2) 0.01M CaCl ₂	Unit	10	5.62	0.050		5.37	0.055		4.46	0.090		7.22	0.060		7.64	0.038	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	44	7.07	0.085		6.70	0.115		6.52	0.100		7.50	0.030		7.57	0.040	
Adams-Evans Buf pH	Unit	8	7.77	0.055		7.51	0.060		7.52	0.070		7.90	0.060		7.87	0.070	
Woodruff Buf. pH	Unit	21	6.80	0.060		6.59	0.085		6.40	0.045		7.10	0.070		7.20	0.060	
Mehlich Buffer pH	Unit	9	6.31	0.080		6.12	0.090		5.99	0.065		6.68	0.060		6.95	0.050	
Sikora Buffer pH	Unit	13	7.08	0.080		6.70	0.125		6.50	0.170		7.50	0.020		7.50	0.030	
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



2010 North American Proficiency Testing Program 1st Quarter Report - May 2, 2010

Laboratory ID

Soil Analysis	Units	n	Soil 2010-101			Soil 2010-102			Soil 2010-103			Soil 2010-104			Soil 2010-105		
			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	55	8.50	0.900		16.7	1.53		79.5	5.39		20.8	1.59		39.8	1.96	
NO3-N ISE	mg/kg	18	9.69	1.75		14.7	2.50		77.8	11.4		21.5	2.34		38.5	5.70	
NO3-N CTA	mg/kg	4	9.54	1.59		19.0	1.68		78.3	2.00		19.9	1.15		40.2	2.18	
NO3-N Ion Chr.	mg/kg	2	10.4	2.57					140	0.0		27.7	6.40		74.9	0.000	
NO3-N Other _____	mg/kg	10	8.97	0.580		19.0	0.92		74.4	12.3		20.7	1.40		38.4	3.35	
NH4 - N (KCl Extr.)	mg/kg	45	30.1	2.38		62.5	5.42		10.0	1.25		1.91	0.715		6.17	0.665	
Phosphorus and Sulfur																	
PO4-P Bray P (1:10)	mg/kg	46	36.0	4.00		18.5	4.67		103	6.0		45.2	2.78		52.0	6.17	
PO4-P Bray P1 (1:7)	mg/kg	7	27.0	3.18		12.2	1.78		84.3	5.29		32.7	7.30		47.7	2.70	
PO4-P Olsen/Bicarb	mg/kg	56	16.8	1.82		23.0	3.31		68.7	7.00		12.5	1.50		47.9	3.94	
PO4-P AB-DTPA	mg/kg	2	24.1	13.8		22.5	15.2		60.0	26.0		11.8	4.50		52.8	19.9	
PO4-P Modified Morgan	mg/kg	3	6.00	0.900		4.00	0.600		14.0	3.10		45.0	2.40		121	10.0	
PO4-P True Morgan	mg/kg	4	5.70	0.550		3.98	0.180		13.8	1.00		41.1	2.60		118	6.90	
PO4-P Mod. Kewlona	mg/kg	3	18.2	2.37		11.1	1.65		60.8	10.8		24.3	11.4		64.3	15.1	
PO4-P Stong Bray (1:10)	mg/kg	10	46.3	2.39		77.3	8.25		225	18.6		164	10.2		245	16.8	
PO4-P Water Soluble	mg/kg	4	4.93	2.76		2.95	1.55		9.37	3.63		5.40	2.18		8.81	6.09	
SO4 - S (PO4 Extr.)	mg/kg	37	31.6	5.16		8.47	2.03		34.7	5.10		5.81	2.76		882	569	
Bases																	
K Ammonium Acetate	mg/kg	77	449	45.3		220	17.9		420	40.0		198	19.5		501	26.9	
Ca Ammonium Acetate	mg/kg	71	579	89.8		1782	130		660	68.7		2352	237		6546	678	
Mg Ammonium Acetate	mg/kg	71	132	17.4		212	17.0		164	18.0		64.8	9.88		887	56.2	
Na Ammonium Acetate	mg/kg	60	53.2	6.80		19.0	5.00		57.3	7.20		11.4	4.96		335	27.7	
Bray Extractable K	mg/kg	3	405	10.0		164	4.0		367	5.0		191	3.0		395	18.0	
K- Olsen/Bicarb.	mg/kg	5	397	5.0		189	16.2		336	16.0		178	21.2		470	40.4	
K Modified Morgan	mg/kg	2	386	5.6		243	0.0		368	15.1		181	16.4		503	44.7	
K True Morgan	mg/kg	4	385	24.5		169	15.0		311	6.5		144	4.5		406	6.00	
Ca Modified Morgan	mg/kg	3	520	2.8		1908	47.5		570	22.4		4763	297		18306	1482	
Aluminum KCL Extr.	mg/kg	3	0.960	0.757		0.301	0.230		5.90	5.37		0.460	0.350		0.402	0.328	

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



**2010 North American Proficiency Testing Program
1st Quarter Report - May 2, 2010**

Laboratory ID

Soil Analysis	Units	n	Soil 2010-101			Soil 2010-102			Soil 2010-103			Soil 2010-104			Soil 2010-105		
			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	5	5.00	0.000		4.88	0.125		5.00	0.000		5.00	0.000		5.00	0.000	
P	mg/kg	6	16.6	1.49		9.82	2.19		106	13.4		95.4	18.6		86.8	5.38	
K	mg/kg	6	429	21.9		134	8.1		324	16.6		131	6.6		307	17.9	
Ca	mg/kg	6	650	39.5		1617	167		776	34.4		5339	576		5006	696	
Mg	mg/kg	6	143	4.1		182	13.7		159	1.5		88.8	4.65		781	25.8	
Mn	mg/kg	6	28.5	0.79		268	31.3		47.0	4.84		15.4	2.21		7.37	1.20	
Zn	mg/kg	6	7.60	0.360		3.05	0.260		5.17	0.34		1.20	0.605		0.080	0.022	
Mehlich-3 Multi-Element (scoop)																	
Scoop Soil Mass	g	27	2.50	0.201		1.87	0.190		2.46	0.19		2.44	0.144		2.09	0.190	
Assumed Density	g/cm ³	10	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	23	2.00	0.300		2.00	0.300		2.00	0.300		2.00	0.300		2.00	0.300	
Extractant Volume mL	mL	25	20.0	0.00		20.0	0.00		20.0	0.00		20.0	0.00		20.0	0.000	
P Colorimetric	mg/kg	21	36.0	5.37		25.4	1.93		121	14.7		59.0	6.00		145	19.8	
P ICP-AES	mg/kg	35	45.1	3.64		30.0	3.03		135	9.4		62.3	4.81		169	11.6	
K	mg/kg	43	484	47.0		217	13.5		441	31.1		221	21.6		538	24.0	
Ca	mg/kg	41	689	68.7		1871	104		731	74.5		3754	357		8058	963	
Mg	mg/kg	42	155	10.7		219	15.0		180	13.9		92.0	9.09		1095	50.6	
Na	mg/kg	32	60.6	4.23		18.0	5.02		61.1	6.20		12.5	6.24		362	32.4	
S	mg/kg	29	49.4	6.79		15.3	2.78		48.5	6.05		11.7	4.05		3341	334	
Al	mg/kg	23	400	25.6		624	62.0		601	52.0		213	31.2		70.0	45.1	
Zn	mg/kg	36	7.65	0.634		3.24	0.262		5.40	0.325		2.97	0.205		6.84	0.450	
Mn	mg/kg	34	26.9	2.57		282	22.9		71.0	6.50		73.0	8.0		66.0	6.30	
Fe	mg/kg	32	417	40.5		565	67.5		393	31.7		68.0	9.0		64.6	6.40	
Cu	mg/kg	35	0.913	0.143		1.10	0.287		1.56	0.160		2.25	0.301		4.06	0.365	
B	mg/kg	26	0.620	0.277		0.740	0.360		0.64	0.170		0.698	0.102		19.5	1.30	

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



**2010 North American Proficiency Testing Program
1st Quarter Report - May 2, 2010**

Laboratory ID

Soil Analysis	Units	n	Soil 2010-101			Soil 2010-102			Soil 2010-103			Soil 2010-104			Soil 2010-105		
			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	68	5.34	0.555		2.36	0.158		3.74	0.350		1.18	0.125		2.60	0.162	
Mn - DTPA	mg/kg	53	20.8	2.26		241	28.6		35.5	3.75		3.97	0.826		8.30	0.902	
Fe - DTPA	mg/kg	56	140	20.5		238	27.0		165	20.9		7.50	1.03		5.40	0.600	
Cu - DTPA	mg/kg	58	0.495	0.095		2.60	0.23		1.45	0.163		0.991	0.122		1.50	0.130	
Soil Organic Matter																	
Zn - HCl	mg/kg	5	7.90	0.460		4.23	0.530		5.80	0.300		3.39	0.310		1.60	0.920	
Mn-H3PO4	mg/kg	11	21.9	2.22		204	17.0		30.5	2.18		13.4	0.729		11.2	1.27	
Cl - Ca(NO3)2 Extr.	mg/kg	11	141	9.7		10.0	1.50		12.0	1.00		1.90	0.675		479	31.0	
B - Hot Wat.	mg/kg	39	0.339	0.089		0.360	0.120		0.678	0.188		0.290	0.105		12.8	2.60	
B-DTPA/Sorbitol	mg/kg	11	0.232	0.115		0.269	0.171		0.399	0.101		0.210	0.041		13.7	1.24	
Soil Kjeldahl N	%	17	0.118	0.017		0.216	0.013		0.089	0.007		0.069	0.007		0.223	0.011	
Soil TN (combustion)	%	32	0.120	0.009		0.220	0.011		0.091	0.008		0.067	0.007		0.224	0.010	
Soil TOC (Combustion)	%	11	1.29	0.100		2.14	0.109		0.760	0.060		0.640	0.070		2.76	0.416	
Soil Total C (Combustion)	%	23	1.30	0.060		2.18	0.087		0.810	0.060		0.790	0.041		4.07	0.165	
SOM - Walkley-Black	%	36	2.50	0.105		3.61	0.293		1.50	0.120		1.12	0.115		3.64	0.393	
SOM - LOI (% Wt loss)	%	69	2.38	0.130		4.38	0.180		1.70	0.100		1.26	0.130		3.62	0.230	
CaCO3 Content	%	13	0.200	0.150		0.200	0.200		0.277	0.223		1.65	0.315		11.0	3.35	
CEC - Cation Displacement	cmol/kg	24	5.81	0.801		18.5	2.15		8.55	1.77		9.00	0.953		14.3	1.91	
CEC - Estimation	cmol/kg	12	5.88	1.33		13.8	1.70		11.4	3.56		13.6	1.71		41.8	2.66	
Soil Density (Scoop)	g/cc	10	1.40	0.022		1.02	0.075		1.37	0.040		1.38	0.060		1.19	0.051	
Particle Size Analysis																	
Sand 2000 - 50 um	%	38	74.1	2.96		15.0	4.00		75.8	3.04		65.5	4.85		41.0	3.82	
Silt 50 - 2 um	%	38	19.4	2.55		63.2	3.20		15.0	1.21		27.0	3.68		40.0	3.75	
Clay 2 - 0 um	%	38	6.5	1.55		22.3	2.25		9.2	1.80		8.15	0.850		19.0	4.00	

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