



2010 North American Proficiency Testing Program 2nd Quarter Report - July 16, 2010

Laboratory ID

Soil Analysis	Units	n	Soil 2010-106			Soil 2010-107			Soil 2010-108			Soil 2010-109			Soil 2010-110		
			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	41.0	2.28		32.5	2.20		26.7	1.65		40.0	2.50		42.3	2.26	
pH - sp	Unit	30	7.75	0.085		6.02	0.16		7.60	0.095		7.00	0.100		4.72	0.140	
ECe - sp	dS/m	30	0.643	0.044		2.33	0.17		4.86	0.405		0.694	0.039		0.334	0.043	
HCO3 - sp	mmol/L	11	2.25	0.540		2.06	1.40		1.72	0.721		1.50	0.522		0.588	0.344	
Ca - sp	mmol/L	25	4.22	0.420		4.25	0.36		27.1	2.00		3.18	0.310		1.85	0.280	
Mg - sp	mmol/L	25	0.890	0.070		3.86	0.46		17.5	1.32		1.76	0.195		0.666	0.086	
Na - sp	mmol/L	25	0.570	0.140		3.68	0.21		16.9	0.92		0.910	0.127		0.480	0.220	
SAR - sp	value	22	0.364	0.121		1.81	0.15		3.50	0.260		0.555	0.084		0.385	0.181	
Cl - sp	mmol/L	14	0.280	0.038		11.7	0.80		4.99	0.423		0.405	0.127		0.295	0.056	
SO4 - sp	mmol/L	15	0.630	0.050		5.30	0.47		51.9	3.38		1.31	0.160		0.566	0.084	
NO ₃ - sp	mmol/L	11	0.530	0.470		0.040	0.04		4.72	1.51		2.69	0.881		0.787	0.598	
B - sp	mg/L	10	0.145	0.030		0.090	0.01		0.419	0.030		0.130	0.015		0.060	0.020	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	28	0.390	0.048		0.720	0.17		1.67	0.340		0.250	0.060		0.159	0.017	
Soil EC (1:2)	(dS/m)	43	0.220	0.020		0.489	0.08		1.61	0.380		0.182	0.028		0.105	0.009	
pH (1:1) Water	Unit	70	8.06	0.103		6.12	0.04		7.72	0.065		7.11	0.075		4.83	0.075	
pH (1:2) Water	Unit	28	8.22	0.115		6.26	0.14		7.72	0.125		7.22	0.100		4.90	0.100	
pH (1:1) 0.01M CaCl ₂	Unit	22	7.60	0.060		5.70	0.06		7.59	0.055		6.63	0.070		4.25	0.065	
pH (1:2) 0.01M CaCl ₂	Unit	11	7.60	0.038		5.69	0.08		7.58	0.080		6.70	0.050		4.25	0.050	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	39	7.48	0.040		7.04	0.04		7.54	0.050		7.30	0.060		5.96	0.083	
Adams-Evans Buf pH	Unit	8	7.72	0.050		7.76	0.04		7.93	0.035		7.85	0.025		7.19	0.100	
Woodruff Buf. pH	Unit	21	7.14	0.040		6.80	0.02		7.10	0.040		6.99	0.020		6.02	0.120	
Mehlich Buffer pH	Unit	3	6.80	0.000		6.34	0.04		6.74	0.050		6.57	0.020		5.50	0.038	
Sikora Buffer pH	Unit	14	7.47	0.035		7.05	0.07		7.50	0.080		7.30	0.045		5.90	0.200	
Titrateable Acidity	cmol/kg	0															

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Inorganic Nitrogen (NO3-N & NH4-N)																	
NO3-N Cd. Rd.	mg/kg	52	16.5	0.92		8.52	0.97		25.5	2.05		21.9	1.03		12.3	0.70	
NO3-N ISE	mg/kg	18	14.9	2.20		9.20	1.82		26.1	4.05		23.2	1.95		11.7	1.87	
NO3-N CTA	mg/kg	3	15.4	0.93		8.66	0.66		24.0	1.52		22.0	1.35		15.0	2.36	
NO3-N Ion Chr.	mg/kg	1	7.47	0.000		4.49	0.518		14.5	0.00		13.9	0.25		11.0	3.31	
NO3-N Other _____	mg/kg	11	16.8	0.90		8.02	0.62		23.2	2.20		21.6	1.26		12.2	0.850	
NH4 - N (KCl Extr.)	mg/kg	40	3.21	0.410		29.6	2.27		2.35	0.533		17.8	1.40		8.64	0.691	
Phosphorus and Sulfur																	
PO4-P Bray P (1:10)	mg/kg	43	23.5	3.33		36.0	2.51		75.3	5.33		71.0	4.18		24.2	1.50	
PO4-P Bray P1 (1:7)	mg/kg	5	16.4	1.60		28.2	0.81		64.0	2.00		57.5	1.12		20.0	2.91	
PO4-P Olsen/Bicarb	mg/kg	44	11.4	1.75		17.0	1.85		39.0	3.80		29.3	2.34		14.4	1.64	
PO4-P AB-DTPA	mg/kg	3	4.00	3.56		10.3	7.57		33.0	25.4		22.2	19.5		3.10	1.68	
PO4-P Modified Morgan	mg/kg	3	20.0	0.000		6.00	0.900		40.0	3.00		12.3	1.30		4.00	2.00	
PO4-P True Morgan	mg/kg	5	19.6	0.400		6.00	0.300		41.0	3.50		13.6	0.80		2.50	0.200	
PO4-P Mod. Kewlona	mg/kg	4	17.0	1.65		16.0	1.50		47.3	1.53		42.3	2.18		16.1	0.63	
PO4-P Stong Bray (1:10)	mg/kg	8	484	69.5		42.8	2.35		167	12.8		132	9.5		32.5	2.64	
PO4-P Water Soluble	mg/kg	3	4.60	3.28		5.16	1.45		6.80	0.700		4.81	2.27		3.54	3.45	
SO4 - S (PO4 Extr.)	mg/kg	35	5.98	1.82		30.7	3.65		556	233		10.4	2.39		7.80	2.22	
Bases																	
K Ammonium Acetate	mg/kg	71	1485	119		452	45.9		291	24.0		153	11.0		121	10.0	
Ca Ammonium Acetate	mg/kg	67	5093	479		576	85.3		1860	167		954	61.6		994	68.0	
Mg Ammonium Acetate	mg/kg	67	363	35.0		124	13.2		206	16.5		151	12.6		145	10.0	
Na Ammonium Acetate	mg/kg	51	33.0	5.41		52.5	8.16		163	17.0		23.9	4.10		15.1	5.10	
Bray Extractable K	mg/kg	3	888	55.0		458	28.0		314	15.0		157	2.0		92.0	1.00	
K- Olsen/Bicarb.	mg/kg	4	952	57.5		400	6.00		271	13.5		161	7.3		106	4.7	
K Modified Morgan	mg/kg	2	1441	58.5		422	57.0		290	38.0		159	18.0		136	16.0	
K True Morgan	mg/kg	5	747	3.0		376	3.00		246	4.0		141	11.0		82.1	2.10	
Ca Modified Morgan	mg/kg	3	10418	203		573	75.0		1771	51.0		990	48.0		999	40.0	
Aluminum KCL Extr.	mg/kg	5	0.900	0.510		2.00	1.630		0.780	0.780		1.00	1.00		167	9.1	

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Mehlich-1 Multi Element (scoop)																	
Scoop Soil Mass	g	4	4.82	0.180		5.33	0.325		5.30	0.300		5.08	0.075		5.00	0.005	
P	mg/kg	6	87.2	17.9		17.6	1.78		157	13.8		82.3	10.4		13.5	1.40	
K	mg/kg	6	369	42.7		462	56.3		311	59.4		160	18.4		89.4	8.15	
Ca	mg/kg	6	5016	391		676	20.0		2213	291		1253	11.7		926	69.0	
Mg	mg/kg	6	310	22.5		146	5.72		282	24.6		181	7.35		144	8.5	
Mn	mg/kg	6	3.85	1.09		29.4	1.25		31.7	1.81		63.9	1.08		52.1	1.55	
Zn	mg/kg	6	0.058	0.030		7.59	0.580		19.1	2.29		3.45	0.193		1.68	0.105	
Mehlich-3 Multi-Element (scoop)																	
Scoop Soil Mass	g	27	2.15	0.290		2.60	0.335		2.60	0.400		2.32	0.300		2.09	0.286	
Assumed Density	g/cm ³	16	1.18	0.018		1.22	0.085		1.21	0.095		1.18	0.056		1.18	0.015	
Volume of Scoop	cm ³	22	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	0.000		20.0	0.00		20.0	0.00		20.0	0.00		20.0	0.00	
P Colorimetric	mg/kg	19	40.5	2.55		34.3	3.67		84.5	8.08		80.5	6.00		26.1	3.14	
P ICP-AES	mg/kg	41	40.7	3.35		42.7	4.28		90.5	8.00		83.8	4.75		31.4	1.40	
K	mg/kg	46	1476	84.6		489	68.5		319	30.0		161	14.0		123	8.2	
Ca	mg/kg	44	6433	671		679	63.9		2042	194		1169	76.5		993	81.1	
Mg	mg/kg	43	471	25.6		150	13.5		310	24.2		190	10.8		160	10.0	
Na	mg/kg	34	32.3	7.32		57.2	8.00		177	19.3		26.2	5.21		16.0	6.20	
S	mg/kg	31	13.7	3.14		47.0	3.75		1039	95.3		18.9	3.91		19.8	1.80	
Al	mg/kg	26	572	47.0		402	34.5		236	20.4		514	39.4		1227	93.5	
Zn	mg/kg	38	2.40	0.204		7.70	0.700		22.2	1.77		3.70	0.326		1.81	0.188	
Mn	mg/kg	37	240	21.3		27.6	3.15		55.0	5.30		60.1	3.90		55.4	2.61	
Fe	mg/kg	35	45.2	6.18		417	29.5		167	18.0		383	19.7		200	23.5	
Cu	mg/kg	37	4.30	0.409		0.900	0.176		12.0	1.37		2.30	0.240		1.49	0.177	
B	mg/kg	30	1.89	0.208		0.640	0.170		1.24	0.162		0.674	0.199		0.355	0.150	

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Micronutrients																	
Zn - DTPA	mg/kg	61	0.859	0.091		5.43	0.373		8.07	0.570		1.70	0.140		1.37	0.130	
Mn - DTPA	mg/kg	46	8.02	1.91		21.9	2.01		8.41	1.10		31.9	2.00		44.5	4.33	
Fe - DTPA	mg/kg	49	4.00	0.500		154	16.3		18.4	2.62		76.2	10.6		82.0	7.86	
Cu - DTPA	mg/kg	50	1.70	0.145		0.530	0.070		5.50	0.467		1.30	0.114		1.39	0.108	
Zn - HCl	mg/kg	4	2.24	0.075		7.11	0.675		19.8	2.10		3.91	0.300		1.88	0.125	
Mn-H3PO4	mg/kg	9	4.58	1.05		22.0	1.40		22.5	2.10		50.4	2.34		36.9	2.00	
Cl - Ca(NO3)2 Extr.	mg/kg	18	4.80	1.33		140	13.1		59.0	8.45		5.22	1.33		3.88	1.38	
B - Hot Wat.	mg/kg	35	0.700	0.200		0.341	0.095		0.720	0.126		0.360	0.115		0.260	0.060	
B-DTPA/Sorbitol	mg/kg	12	0.863	0.203		0.223	0.082		0.555	0.105		0.218	0.026		0.118	0.039	
Soil Organic Matter																	
Soil Kjeldahl N	%	15	0.123	0.015		0.115	0.012		0.040	0.010		0.080	0.006		0.129	0.014	
Soil TN (combustion)	%	28	0.142	0.013		0.115	0.009		0.040	0.010		0.082	0.010		0.143	0.013	
Soil TOC (Combustion)	%	7	1.48	0.220		1.30	0.050		0.324	0.016		0.900	0.030		1.38	0.055	
Soil Total C (Combustion)	%	25	1.67	0.066		1.30	0.051		0.330	0.011		0.950	0.034		1.35	0.165	
SOM - Walkley-Black	%	32	2.39	0.181		2.48	0.240		0.700	0.100		1.68	0.120		2.34	0.245	
SOM - LOI (% Wt loss)	%	59	3.20	0.260		2.37	0.150		0.700	0.080		1.76	0.090		3.16	0.130	
CaCO3 Content	%	13	2.90	0.700		0.155	0.129		0.300	0.100		0.270	0.207		0.200	0.200	
CEC - Cation Displacement	cmol/kg	14	28.3	3.63		5.10	0.979		3.91	0.710		6.35	0.610		14.3	1.52	
CEC - Estimation	cmol/kg	11	32.8	2.20		8.00	1.00		13.3	0.85		7.30	0.994		15.8	3.25	
Soil Density (Scoop)	g/cc	9	1.14	0.070		1.40	0.040		1.35	0.040		1.31	0.050		1.05	0.057	
Particle Size Analysis																	
Sand 2000 - 50 um	%	37	15.0	5.00		73.3	2.93		57.5	3.04		74.2	4.00		22.0	3.20	
Silt 50 - 2 um	%	37	51.3	5.75		18.6	2.49		34.6	2.60		20.0	3.70		43.2	5.70	
Clay 2 - 0 um	%	37	31.1	7.33		7.20	1.80		7.00	2.00		6.30	1.95		33.4	4.40	

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