



2011 North American Proficiency Testing Program
2nd Quarter Report - October 11, 2011

Laboratory ID
General

Soil Analysis	Units	n	Soil 2011-106			Soil 2011-107			Soil 2011-108			Soil 2011-109			Soil 2011-110		
			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	%	28	63.2	4.00		40.4	2.90		43.0	2.92		53.0	2.80		30.2	1.40	
pH - sp	Unit	39	7.40	0.100		7.70	0.110		5.30	0.105		6.93	0.070		5.82	0.120	
ECe - sp	dS/m	39	0.770	0.070		3.46	0.320		0.366	0.064		0.700	0.060		1.60	0.125	
HCO ₃ - sp	mmol/L	15	4.85	0.485		4.13	0.906		1.12	0.112		2.62	0.680		0.505	0.051	
Ca - sp	mmol/L	32	7.20	0.560		17.9	1.53		2.20	0.400		3.28	0.390		6.20	0.700	
Mg - sp	mmol/L	32	0.535	0.065		9.25	0.820		1.31	0.190		1.40	0.160		4.31	0.540	
Na - sp	mmol/L	32	0.350	0.130		7.31	0.480		0.300	0.030		0.940	0.145		3.20	0.270	
SAR - sp	value	30	0.180	0.070		1.97	0.100		0.220	0.022		0.600	0.080		1.38	0.070	
Cl - sp	mmol/L	24	0.560	0.060		10.1	1.32		0.260	0.090		1.49	0.185		1.24	0.240	
SO ₄ - sp	mmol/L	24	0.480	0.075		7.43	0.870		0.685	0.085		1.88	0.190		2.21	0.290	
NO ₃ - sp	mmol/L	14	1.87	0.187		13.3	1.82		1.14	0.114		0.330	0.033		9.64	2.40	
B - sp	mg/L	14	0.070	0.018		1.20	0.140		0.160	0.030		0.076	0.010		0.220	0.020	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	33	0.610	0.070		1.10	0.240		0.210	0.030		0.390	0.020		0.515	0.091	
Soil EC (1:2)	(dS/m)	51	0.349	0.049		0.779	0.102		0.127	0.017		0.240	0.031		0.310	0.030	
pH (1:1) Water	Unit	80	7.63	0.085		7.92	0.080		5.43	0.070		7.10	0.080		5.98	0.080	
pH (1:2) Water	Unit	30	7.73	0.100		8.02	0.115		5.54	0.091		7.22	0.080		6.12	0.085	
pH (1:1) 0.01M CaCl ₂	Unit	27	7.32	0.070		7.73	0.070		4.90	0.050		6.70	0.040		5.60	0.080	
pH (1:2) 0.01M CaCl ₂	Unit	11	7.33	0.110		7.67	0.090		4.88	0.060		6.65	0.080		5.65	0.050	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	36	7.43	0.065		7.58	0.102		6.19	0.120		7.13	0.070		7.11	0.090	
Adams-Evans Buf pH	Unit	8	7.76	0.070		7.82	0.064		7.30	0.100		7.66	0.060		7.75	0.065	
Woodruff Buf. pH	Unit	26	7.13	0.030		7.17	0.046		6.18	0.160		6.94	0.025		6.81	0.030	
Mehlich Buffer pH	Unit	5	6.73	0.060		6.85	0.055		5.81	0.110		6.52	0.030		6.29	0.025	
Sikora Buffer pH	Unit	17	7.48	0.030		7.55	0.078		6.35	0.150		7.16	0.060		7.11	0.100	
Titrateable Acidity	cmol/kg	1	1.94	0.000		3.04	0.000		1.12	0.000		1.52	0.000		2.65	0.000	
Inorganic Nitrogen (NO₃-N & NH₄-N)																	
NO ₃ -N Cd. Rd.	mg/kg	59	32.7	2.40		89.4	4.96		14.9	1.05		12.0	0.95		54.5	4.00	
NO ₃ -N ISE	mg/kg	14	32.3	5.50		87.8	19.7		16.0	2.37		14.0	2.00		59.0	8.65	
NO ₃ -N CTA	mg/kg	3	37.0	6.37		77.0	7.50		17.0	1.24		13.0	0.769		55.0	1.00	

NO3-N Ion Chr.	mg/kg	1	0.460	0.000	250	0.000	11.5	1.15	0.300	0.000	123	12.3
NO3-N Other _____	mg/kg	14	32.9	3.51	88.0	7.05	15.2	1.75	12.5	1.39	54.7	5.50
NH4 - N (KCl Extr.)	mg/kg	56	15.4	1.21	3.63	0.63	4.20	0.600	28.4	2.20	2.60	0.670

Phosphorus and Sulfur

PO4-P Bray P (1:10)	mg/kg	47	6.51	0.651	44.0	4.00	32.0	2.44	79.2	4.84	49.9	2.54
PO4-P Bray P1 (1:7)	mg/kg	7	7.30	0.730	34.0	0.690	28.0	1.60	60.0	5.20	41.0	0.90
PO4-P Olsen/Bicarb	mg/kg	55	33.5	4.54	21.5	2.45	14.0	1.50	73.0	7.84	28.8	2.80
PO4-P AB-DTPA	mg/kg	2	16.7	2.24	11.7	0.20	6.27	0.627	45.7	5.45	18.0	2.58
PO4-P Modified Morgan	mg/kg	3	14.0	2.20	64.0	15.0	2.00	0.300	18.0	0.500	8.10	2.90
PO4-P True Morgan	mg/kg	6	11.4	0.350	74.9	8.85	2.85	0.295	22.2	0.900	10.1	0.800
PO4-P Mod. Kewlona	mg/kg	5	35.1	0.500	51.0	10.6	21.9	1.20	49.2	7.00	29.4	1.60
PO4-P Stong Bray (1:10)	mg/kg	9	326	32.60	281	27.0	51.0	6.28	217	28.7	305	24.7
PO4-P Water Soluble	mg/kg	1	1.97	0.000	1.86	0.773	1.30	0.055	1.43	0.092	2.67	0.000
SO4 - S (PO4 Extr.)	mg/kg	33	6.30	0.630	49.2	7.50	6.75	1.62	15.2	3.43	13.8	2.25

Bases

K Ammonium Acetate	mg/kg	78	293	31.0	885	55.9	183	13.0	541	41.00	345	34.0
Ca Ammonium Acetate	mg/kg	73	6560	664	3410	477	2010	167	2760	224	1040	133
Mg Ammonium Acetate	mg/kg	74	156	12.0	462	36.1	410	26.0	413	28.6	278	32.6
Na Ammonium Acetate	mg/kg	60	18.9	1.89	142	12.2	15.8	1.58	42.0	7.81	59.9	8.00
Bray Extractable K	mg/kg	4	191	3.06	731	26.5	149	1.50	425	1.00	337	14.0
K- Olsen/Bicarb.	mg/kg	5	249	5.00	657	26.0	152	4.00	490	18.0	287	17.0
K Modified Morgan	mg/kg	2	256	4.50	811	62.5	167	5.500	518	23.0	235	60.5
K True Morgan	mg/kg	6	200	14.5	563	36.0	110	3.250	399	15.5	234	19.5
Ca Modified Morgan	mg/kg	3	46800	869	12600	209	1800	60.0	3220	161	865	216
Aluminum KCL Extr.	mg/kg	5	0.104	0.010	0.010	0.001	2.00	0.200	0.010	0.001	1.00	0.100

Mehlich-1 Multi Element (scoop)

Scoop Soil Mass	g	5	5.00	0.000	5.00	0.000	5.00	0.000	5.00	0.000	5.00	0.000
P	mg/kg	5	31.8	5.62	73.4	2.39	21.8	0.870	32.7	1.14	246	5.70
K	mg/kg	5	117	3.95	388	12.3	115	4.27	374	28.7	264	24.5
Ca	mg/kg	5	5470	154	4660	244	2070	83.5	2750	175	1400	53.8
Mg	mg/kg	5	107	5.30	571	26.9	397	12.9	397	43.6	253	4.80
Mn	mg/kg	5	1.92	0.030	5.84	0.220	18.5	0.381	111	23.0	19.3	0.610
Zn	mg/kg	5	0.100	0.027	0.233	0.023	1.46	0.141	6.63	0.663	3.05	0.110

Mehlich-3 Multi-Element (scoop)

Scoop Soil Mass	g	27	1.82	0.180	2.00	0.140	2.20	0.200	2.00	0.160	2.55	0.130
Assumed Density	g/cm3	15	1.18	0.080	1.18	0.020	1.18	0.020	1.18	0.010	1.18	0.020
Volume of Scoop	cm3	27	2.00	0.300	2.00	0.300	2.00	0.300	2.00	0.300	2.00	0.300
Extractant Volume mL	mL	33	20.0	0.000	20.0	0.000	20.0	0.00	20.0	0.000	20.0	0.000

P Colorimetric	mg/kg	21	71.0	6.00	92.0	9.33	29.6	2.60	108	8.07	59.0	4.90
P ICP-AES	mg/kg	43	77.4	5.65	101	6.96	44.0	2.03	119	6.80	65.4	4.98
K	mg/kg	49	292	27.0	990	68.0	185	10.3	558	38.0	369	36.0
Ca	mg/kg	47	12500	1010	5290	368	2200	138	3140	187	1130	135
Mg	mg/kg	47	195	16.4	849	69.6	454	29.8	455	26.1	321	36.6
Na	mg/kg	36	23.0	2.30	153	13.3	14.3	1.43	42.8	8.14	64.1	9.76
S	mg/kg	37	15.1	2.87	84.2	6.28	18.8	2.62	21.9	3.14	20.1	2.40
Al	mg/kg	27	89.1	9.45	396	49.0	920	70.8	475	40.0	392	46.0
Zn	mg/kg	40	5.44	0.455	8.79	0.545	1.85	0.200	5.70	0.380	3.63	0.457
Mn	mg/kg	39	30.1	4.94	150	13.3	35.5	3.98	105	10.0	45.0	4.37
Fe	mg/kg	37	31.8	2.52	70.1	6.45	190	15.2	506	39.0	224	22.3
Cu	mg/kg	40	9.02	0.835	7.92	0.420	2.53	0.250	1.29	0.129	1.40	0.220
B	mg/kg	32	1.38	0.210	7.62	0.620	0.940	0.170	1.05	0.251	0.535	0.180

Micronutrients

Zn - DTPA	mg/kg	72	1.98	0.183	2.72	0.236	1.30	0.101	4.85	0.430	1.90	0.218
Mn - DTPA	mg/kg	57	8.00	1.09	9.49	1.86	17.9	2.36	60.3	7.57	10.8	1.50
Fe - DTPA	mg/kg	60	8.00	1.10	6.14	0.770	100	10.3	195	28.5	59.0	8.00
Cu - DTPA	mg/kg	62	4.48	0.585	3.77	0.390	1.70	0.150	2.70	0.300	1.00	0.120
Zn - HCl	mg/kg	5	2.10	0.210	6.83	0.259	2.32	0.302	10.1	0.070	4.67	0.630
Mn-H3PO4	mg/kg	10	2.97	0.745	5.73	0.573	13.2	1.30	67.8	8.3	12.1	0.950
Cl - Ca(NO3)2 Extr.	mg/kg	16	10.1	1.43	132	14.0	3.00	1.00	25.4	3.04	15.7	2.30
B - Hot Wat.	mg/kg	41	0.457	0.046	2.98	0.773	0.890	0.210	0.540	0.120	0.380	0.079
B-DTPA/Sorbitol	mg/kg	14	0.677	0.145	3.98	0.430	0.295	0.030	0.455	0.075	0.250	0.045

Soil Organic Matter

Soil Kjeldahl N	%	17	0.216	0.014	0.122	0.007	0.201	0.009	0.19	0.010	0.06	0.008
Soil TN (combustion)	%	39	0.295	0.015	0.131	0.010	0.210	0.010	0.21	0.012	0.07	0.013
Soil TOC (Combustion)	%	7	2.23	0.278	1.21	0.120	2.31	0.140	2.21	0.110	0.48	0.019
Soil Total C (Combustion)	%	28	4.90	0.123	1.57	0.045	2.31	0.074	2.20	0.048	0.48	0.022
SOM - Walkley-Black	%	37	3.36	0.360	1.93	0.165	3.95	0.285	3.31	0.400	0.91	0.116
SOM - LOI (% Wt loss)	%	68	4.49	0.246	2.18	0.155	4.32	0.219	4.06	0.200	1.30	0.180

Other

CaCO3 Content	%	19	22.0	2.52	4.33	1.02	0.40	0.040	0.65	0.280	0.492	0.049
CEC - Cation Displacement	cmol/kg	24	28.5	5.04	13.8	2.04	18.2	2.60	22.1	2.19	8.90	1.65
CEC - Estimation	cmol/kg	14	36.9	5.95	24.6	4.30	18.6	2.60	18.0	1.45	10.0	1.00
Soil Density (Scoop)	g/cc	12	1.03	0.035	1.17	0.045	1.25	0.030	1.11	0.032	1.48	0.035

Particle Size Analysis-Hydrometer

Sand 2000 - 50 um	%	44	18.0	4.55	24.6	4.40	39.6	3.40	12.2	1.22	77.0	3.00
Silt 50 - 2 um	%	44	29.3	2.70	56.9	2.95	39.0	3.00	60.0	3.95	16.6	2.11

Clay 2 - 0 um	%	44	50.9	4.72	18.0	3.00	20.7	2.70	26.0	3.75	7.00	1.00
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	3	19.6	6.40	26.0	0.500	39.3	1.70	10.6	1.06	82.0	0.300
Silt 50 - 2 um	%	3	33.0	1.50	62.6	3.21	41.5	7.50	67.6	3.43	14.0	0.490
Clay 2 - 0 um	%	3	49.9	2.50	15.0	2.21	19.9	3.43	21.8	5.38	5.70	0.300