



2013 North American Proficiency Testing Program  
1st Quarter Report - April 18, 2013

Laboratory ID  
General

Soil Analysis	Units	n	Soil 2013-101		Soil 2013-102		Soil 2013-103		Soil 2013-104		Soil 2013-105	
			Median	MAD	Median	MAD	Median	MAD	Median	MAD	Median	MAD
<b>Salinity</b>												
Sat. Paste Moisture	%	29	51.8	2.30	57.3	2.85	42.3	2.95	53.0	2.96	36.7	2.48
pH - sp	Unit	35	6.15	0.090	7.28	0.100	6.41	0.060	6.88	0.060	7.68	0.095
ECe - sp	dS/m	35	0.736	0.106	1.34	0.140	0.760	0.070	0.760	0.062	1.42	0.120
HCO <sub>3</sub> - sp	mmolc/L	11	1.40	0.238	3.66	0.390	1.21	0.128	3.42	0.610	3.31	0.710
Ca - sp	mmolc/L	31	3.51	0.410	11.2	1.03	5.20	0.400	3.90	0.210	8.42	0.730
Mg - sp	mmolc/L	31	1.89	0.220	1.69	0.131	0.780	0.080	1.56	0.090	1.90	0.200
Na - sp	mmolc/L	29	0.235	0.021	0.743	0.063	0.155	0.016	0.960	0.090	3.56	0.318
SAR - sp	value	26	0.160	0.015	0.290	0.020	0.100	0.010	0.585	0.055	1.56	0.110
Cl - sp	mmolc/L	20	0.310	0.060	0.696	0.100	0.350	0.075	1.43	0.114	2.64	0.415
SO <sub>4</sub> - sp	mmolc/L	23	1.01	0.080	0.810	0.119	0.740	0.080	2.08	0.220	4.30	0.460
NO <sub>3</sub> - sp	mmolc/L	14	3.66	0.495	8.00	1.74	4.23	0.475	0.311	0.073	4.23	0.970
B - sp	mg/L	13	0.110	0.011	0.079	0.008	0.050	0.012	0.060	0.011	0.200	0.040
<b>Soil pH &amp; EC</b>												
Soil EC (1:1)	(dS/m)	33	0.310	0.050	0.780	0.080	0.320	0.040	0.410	0.045	0.590	0.057
Soil EC (1:2)	(dS/m)	47	0.210	0.036	0.453	0.067	0.200	0.025	0.255	0.032	0.403	0.047
pH (1:1) Water	Unit	87	6.22	0.060	7.60	0.100	6.57	0.070	7.10	0.070	8.02	0.090
pH (1:2) Water	Unit	32	6.25	0.095	7.70	0.117	6.61	0.060	7.16	0.100	8.16	0.140
pH (1:1) 0.01M CaCl <sub>2</sub>	Unit	25	5.85	0.050	7.32	0.110	6.20	0.045	6.70	0.050	7.70	0.090
pH (1:2) 0.01M CaCl <sub>2</sub>	Unit	11	5.83	0.050	7.36	0.110	6.19	0.070	6.68	0.050	7.63	0.090
<b>Buffer pH, Lime Req.</b>												
SMP Buffer pH	Unit	38	6.87	0.085	7.40	0.085	7.08	0.080	7.15	0.070	7.56	0.075
Adams-Evans Buf pH	Unit	8	7.67	0.030	7.71	0.030	7.70	0.020	7.70	0.040	7.75	0.030
Woodruff Buf. pH	Unit	22	6.79	0.050	7.13	0.040	6.89	0.030	6.95	0.050	7.16	0.040
Mehlich Buffer pH	Unit	10	6.18	0.065	6.80	0.000	6.40	0.040	6.51	0.020	6.84	0.030
Sikora Buffer pH	Unit	28	6.90	0.050	7.39	0.035	7.12	0.050	7.17	0.050	7.52	0.015
Titrateable Acidity	cmol/kg											

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### Inorganic Nitrogen (NO3-N & NH4-N)

NO3-N Cd. Rd.	mg/kg	62	39.4	3.30	69.4	4.25	33.8	1.60	11.3	0.700	29.0	1.62
NO3-N ISE	mg/kg	15	38.3	5.43	70.3	13.3	34.0	4.00	11.5	1.45	31.3	3.10
NO3-N CTA	mg/kg	2	38.5	2.82	64.3	7.17	31.4	1.78	12.0	0.662	26.3	2.17
NO3-N Ion Chr.	mg/kg	3	44.6	4.60	73.3	1.45	44.7	4.34	10.3	3.69	26.8	1.33
NO3-N Other _____	mg/kg	9	41.5	2.20	70.0	5.00	33.3	1.51	11.6	0.400	28.2	1.10
NH4 - N (KCl Extr.)	mg/kg	53	2.73	0.620	6.24	1.08	15.9	2.15	31.5	2.85	5.40	1.09

### Phosphorus and Sulfur

PO4-P Bray P (1:10)	mg/kg	44	309	30.5	19.1	3.47	36.4	1.65	84.9	5.59	32.5	7.21
PO4-P Bray P1 (1:7)	mg/kg	7	250	36.0	16.7	4.48	28.0	1.10	60.9	8.35	22.0	6.00
PO4-P Olsen/Bicarb	mg/kg	53	113	13.9	33.5	2.60	20.0	1.90	68.9	5.67	13.0	1.00
PO4-P AB-DTPA	mg/kg	2	61.4	2.93	15.4	0.360	8.18	0.780	41.3	0.230	5.68	0.02
PO4-P Modified Morgan	mg/kg	5	51.5	2.50	38.0	6.85	3.8	0.445	21.7	1.65	31.8	3.73
PO4-P True Morgan	mg/kg	8	54.8	5.35	39.0	4.75	4.2	0.950	25.5	1.10	30.1	4.09
PO4-P Mod. Kewlona	mg/kg	3	216	16.0	53.6	2.60	24.4	0.100	53.7	1.30	28.5	4.90
PO4-P Stong Bray (1:10)	mg/kg	9	505	30.3	609	127	67	4.87	211	17.0	147	8.00
PO4-P Water Soluble	mg/kg											
SO4 - S (PO4 Extr.)	mg/kg	34	9.34	1.94	10.1	2.32	8.59	1.52	16.1	2.90	30.8	2.85

### Bases

K Ammonium Acetate	mg/kg	74	339	32.5	262	16.9	236	12.1	540	35.2	694	44.0
Ca Ammonium Acetate	mg/kg	68	1110	83.5	7380	739	1460	93.7	2780	146	4890	625
Mg Ammonium Acetate	mg/kg	68	196	15.7	377	18.0	83.1	7.03	409	20.6	337	23.0
Na Ammonium Acetate	mg/kg	55	11.7	1.50	37.1	6.10	9.74	3.71	40.6	4.60	101	8.56
Bray Extractable K	mg/kg	3	270	15.0	147	3.00	199	1.00	418	20.0	515	45.0
K- Olsen/Bicarb.	mg/kg	6	415	22.5	183	17.0	205	18.5	497	15.2	403	3.50
K Modified Morgan	mg/kg	4	302	36.5	271	49.8	193	30.1	482	43.1	590	53.0
K True Morgan	mg/kg	6	362	20.5	142	8.50	180	6.25	427	11.5	338	30.0
Ca Modified Morgan	mg/kg	4	1180	86.5	24000	712	1510	102	3030	86.5	14600	1370
Aluminum KCL Extr.	mg/kg	3	1.00	0.580	0.100	0.090	3.00	2.00	1.00	0.570	2.00	0.000

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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	6	337	25.0	207	42.8	27.2	2.88	37.7	3.12	12.6	1.34
K	mg/kg	6	294	18.5	70.5	4.89	159	2.35	352	2.59	208	14.4
Ca	mg/kg	6	1550	110	5030	176	1470	25.8	2670	30.6	5030	349
Mg	mg/kg	6	214	25.8	220	11.2	77.4	2.98	356	15.3	251	18.4
Mn	mg/kg	5	39.7	3.13	1.70	0.550	204	12.8	124	6.05	2.84	0.560
Zn	mg/kg	5	15.4	0.480	0.333	0.193	1.37	0.149	7.43	0.430	0.100	0.003
Mehlich-3 Multi-Element (scoop)												
Scoop Soil Mass	g	25	2.00	0.190	2.00	0.090	2.00	0.050	2.00	0.100	2.25	0.230
Assumed Density	g/cm <sup>3</sup>	11	1.18	0.140	1.10	0.080	1.18	0.010	1.12	0.060	1.18	0.050
Volume of Scoop	cm <sup>3</sup>	19	2.00	0.000	2.00	0.000	2.00	0.000	2.00	0.000	2.00	0.000
Extractant Volume mL	mL	24	20.0	0.000	20.0	0.000	20.0	0.000	20.0	0.000	20.0	0.000
P Colorimetric	mg/kg	19	371	47.0	133	13.0	38.7	2.57	106	8.00	50.8	3.11
P ICP-AES	mg/kg	43	412	32.0	143	8.6	42.8	3.73	119	8.88	54.0	4.75
K	mg/kg	48	328	23.9	259	17.3	245	12.7	551	42.0	730	53.1
Ca	mg/kg	46	1330	105	10500	727	1560	117	3080	128	6430	430
Mg	mg/kg	46	216	18.8	427	24.1	87.4	7.79	449	22.7	448	32.3
Na	mg/kg	36	14.9	3.71	37.5	6.50	12.8	2.28	40.9	6.09	109	13.4
S	mg/kg	35	17.4	2.30	20.9	2.43	14.0	2.05	23.0	2.89	66.3	6.33
Al	mg/kg	25	897	57.5	161	25.3	869	60.5	453	33.0	292	46.5
Zn	mg/kg	41	17.3	1.46	5.70	0.540	1.69	0.200	6.50	0.500	2.87	0.270
Mn	mg/kg	41	154	15.0	51.4	8.25	376	25.2	120	9.80	136	11.7
Fe	mg/kg	39	193	19.3	43.0	5.74	161	18.6	484	70.1	42.8	5.53
Cu	mg/kg	40	4.15	0.300	6.79	0.790	1.72	0.215	1.77	0.300	2.50	0.300
B	mg/kg	33	0.670	0.083	1.19	0.190	0.480	0.120	1.06	0.135	2.37	0.270

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Micronutrients												
Zn - DTPA	mg/kg	67	6.60	0.800	1.95	0.170	0.690	0.070	5.11	0.540	1.10	0.100
Mn - DTPA	mg/kg	51	17.4	2.69	7.06	1.23	140	13.9	69.1	6.10	7.00	0.905
Fe - DTPA	mg/kg	54	27.0	3.75	7.69	1.03	29.0	4.36	164	23.0	3.95	0.650
Cu - DTPA	mg/kg	56	2.40	0.259	2.48	0.215	0.960	0.091	2.80	0.230	1.18	0.110
Zn - HCl	mg/kg	2	14.9	5.08	2.59	2.195	1.92	0.420	8.86	1.420	3.13	1.795
Mn-H3PO4	mg/kg	10	30.6	3.05	2.27	0.225	172	8.65	84.8	8.25	4.14	0.312
Cl - Ca(NO3)2 Extr.	mg/kg	16	4.96	0.551	11.5	1.63	4.60	0.300	26.7	3.30	35.5	4.20
B - Hot Wat.	mg/kg	42	0.595	0.090	0.485	0.072	0.290	0.048	0.550	0.083	0.980	0.141
B-DTPA/Sorbitol	mg/kg	17	0.260	0.040	0.700	0.050	0.180	0.040	0.460	0.040	1.50	0.100
Soil Organic Matter												
Soil Kjeldahl N	%	20	0.127	0.007	0.232	0.009	0.102	0.007	0.189	0.009	0.067	0.006
Soil TN (combustion)	%	41	0.140	0.010	0.320	0.020	0.112	0.010	0.200	0.011	0.076	0.011
Soil TOC (Combustion)	%	8	1.22	0.036	2.81	0.201	0.940	0.070	2.22	0.108	0.628	0.042
Soil Total C (Combustion)	%	31	1.25	0.023	3.94	0.117	0.978	0.022	2.19	0.080	1.02	0.049
SOM - Walkley-Black	%	33	1.90	0.200	4.17	0.371	1.50	0.114	3.53	0.331	1.05	0.104
SOM - LOI (% Wt loss)	%	73	3.00	0.200	5.14	0.400	2.24	0.155	3.96	0.250	1.43	0.165
Other												
CaCO3 Content	%	18	0.620	0.085	11.3	1.59	0.500	0.084	0.800	0.156	4.18	0.580
CEC - Cation Displacement	cmol/kg	21	12.9	2.46	35.1	4.70	12.5	2.41	23.0	3.94	17.4	2.16
CEC - Estimation	cmol/kg	15	9.85	1.15	43.4	4.45	9.20	0.850	19.0	1.20	31.8	2.85
Soil Density (Scoop)	g/cc	13	1.05	0.040	1.13	0.030	1.19	0.060	1.11	0.040	1.32	0.030
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	40	21.9	3.00	16.0	4.00	10.0	2.00	12.0	2.23	54.9	2.90
Silt 50 - 2 um	%	40	59.3	2.75	31.5	3.50	68.4	3.30	61.7	3.80	19.6	2.80
Clay 2 - 0 um	%	40	19.8	2.50	52.0	5.90	21.3	1.93	26.3	2.45	25.8	3.50
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	5	22.3	1.80	17.9	5.30	4.1	2.59	5.28	2.59	55.1	0.610
Silt 50 - 2 um	%	5	62.1	1.10	33.0	3.58	76.9	2.02	70.4	1.90	18.3	1.31
Clay 2 - 0 um	%	5	16.6	2.07	52.6	3.40	19.6	0.800	24.9	1.98	26.0	1.92

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