



**2012 North American Proficiency Testing Program  
3rd Quarter Report - October 16, 2012**

**Laboratory ID  
General**

Soil Analysis	Units	n	Soil 2012-111			Soil 2012-112			Soil 2012-113			Soil 2012-114			Soil 2012-115		
			Median	MAD	Lab <sup>1,2</sup>	Median	MAD	Lab <sup>1,2</sup>	Median	MAD	Lab <sup>1,2</sup>	Median	MAD	Lab <sup>1,2</sup>	Median	MAD	Lab <sup>1,2</sup>
<b>Salinity</b>																	
Sat. Paste Moisture	%	30	41.6	2.04		41.3	3.24		54.5	2.74		24.2	1.75		32.9	1.88	
pH - sp	Unit	41	5.37	0.130		7.46	0.100		5.80	0.110		6.28	0.270		6.95	0.120	
ECe - sp	dS/m	37	1.58	0.090		2.86	0.320		0.554	0.122		0.420	0.040		1.26	0.110	
HCO <sub>3</sub> - sp	mmolc/L	11	0.510	0.076		3.21	0.553		1.25	0.215		3.00	0.618		2.19	0.326	
Ca - sp	mmolc/L	31	5.40	0.410		21.4	1.40		2.74	0.380		2.59	0.310		6.25	0.497	
Mg - sp	mmolc/L	31	3.21	0.230		10.1	0.730		1.93	0.337		1.10	0.160		6.00	0.643	
Na - sp	mmolc/L	31	3.20	0.130		2.97	0.230		0.198	0.017		0.200	0.018		0.650	0.063	
SAR - sp	value	31	1.55	0.060		0.730	0.050		0.170	0.018		0.180	0.020		0.260	0.020	
Cl - sp	mmolc/L	21	0.565	0.060		6.44	0.775		0.210	0.024		0.200	0.016		0.390	0.072	
SO <sub>4</sub> - sp	mmolc/L	23	0.580	0.070		17.3	2.21		0.790	0.114		0.520	0.066		6.25	0.731	
NO <sub>3</sub> - sp	mmolc/L	16	11.3	1.77		6.88	1.42		2.25	0.516		0.530	0.119		3.94	0.756	
B - sp	mg/L	10	0.100	0.011		0.098	0.008		0.118	0.018		0.036	0.006		0.230	0.030	
<b>Soil pH &amp; EC</b>																	
Soil EC (1:1)	(dS/m)	33	0.560	0.040		1.10	0.100		0.400	0.040		0.120	0.014		0.360	0.045	
Soil EC (1:2)	(dS/m)	55	0.366	0.044		0.760	0.075		0.190	0.029		0.082	0.012		0.298	0.030	
pH (1:1) Water	Unit	92	5.55	0.070		7.74	0.120		5.95	0.095		6.20	0.100		7.10	0.100	
pH (1:2) Water	Unit	35	5.64	0.100		7.87	0.090		6.04	0.140		6.31	0.080		7.16	0.120	
pH (1:1) 0.01M CaCl <sub>2</sub>	Unit	23	5.21	0.090		7.47	0.060		5.62	0.070		5.67	0.120		6.79	0.115	
pH (1:2) 0.01M CaCl <sub>2</sub>	Unit	13	5.20	0.050		7.60	0.040		5.50	0.040		5.62	0.030		6.81	0.090	
<b>Buffer pH, Lime Req.</b>																	
SMP Buffer pH	Unit	36	6.71	0.085		7.54	0.109		6.68	0.070		7.16	0.095		7.50	0.104	
Adams-Evans Buf pH	Unit	10	7.55	0.115		7.85	0.055		7.51	0.090		7.87	0.030		7.94	0.050	
Woodruff Buf. pH	Unit	22	6.60	0.065		7.16	0.055		6.60	0.080		6.86	0.060		7.05	0.050	
Mehlich Buffer pH	Unit	8	6.01	0.110		6.80	0.030		6.03	0.065		6.37	0.050		6.67	0.055	
Sikora Buffer pH	Unit	29	6.70	0.060		7.55	0.050		6.70	0.100		7.27	0.060		7.52	0.050	
Titrateable Acidity	cmol/kg																

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

NO3-N Cd. Rd.	mg/kg	61	72.5	4.50	52.2	4.15	28.0	2.50	10.0	1.00	29.0	2.32
NO3-N ISE	mg/kg	16	70.5	3.20	54.8	4.55	26.5	2.65	12.0	1.95	34.0	6.95
NO3-N CTA	mg/kg	2	57.4	1.60	46.4	5.67	29.0	6.80	11.5	2.50	26.5	1.37
NO3-N Ion Chr.	mg/kg	1	177	0.000	73.1	0.000	13.3	0.000	0.350	0.000	0.000	0.000
NO3-N Other _____	mg/kg	10	74.7	5.15	50.4	4.85	30.7	3.18	10.8	1.21	30.5	4.62
NH4 - N (KCl Extr.)	mg/kg	54	4.14	0.617	3.57	0.570	4.48	0.657	2.00	0.410	1.38	0.190

### Phosphorus and Sulfur

PO4-P Bray P (1:10)	mg/kg	48	75.0	5.30	2.00	0.458	16.0	2.00	230	20.2	67.8	7.18
PO4-P Bray P1 (1:7)	mg/kg	6	68.5	1.63	2.31	0.900	15.0	1.60	179	22.0	57.4	8.38
PO4-P Olsen/Bicarb	mg/kg	54	42.3	2.75	7.00	0.638	10.1	1.65	51.0	5.00	22.0	2.00
PO4-P AB-DTPA	mg/kg	2	16.3	0.680	2.50	0.605	3.45	0.900	38.4	0.985	19.9	0.160
PO4-P Modified Morgan	mg/kg	4	8.90	0.200	7.00	0.200	2.82	0.430	17.0	0.580	27.6	2.40
PO4-P True Morgan	mg/kg	6	12.0	0.800	7.20	0.300	2.98	0.020	18.0	1.60	27.2	1.80
PO4-P Mod. Kewlona	mg/kg	4	55.4	3.05	6.10	1.25	11.6	1.00	156	11.5	41.0	6.40
PO4-P Stong Bray (1:10)	mg/kg	8	180	5.50	23.5	4.85	30.5	2.80	266	28.5	78.5	3.50
PO4-P Water Soluble	mg/kg	2	6.33	2.05	0.412	0.192	1.76	1.03	6.60	4.47	4.03	2.82
SO4 - S (PO4 Extr.)	mg/kg	35	5.49	0.916	100	9.66	7.10	1.30	3.88	0.705	36.0	5.10

### Bases

K Ammonium Acetate	mg/kg	78	706	35.0	255	13.5	381	25.1	59.0	8.00	41.2	6.12
Ca Ammonium Acetate	mg/kg	74	1490	78.5	4440	597	2750	162	470	70.0	523	60.5
Mg Ammonium Acetate	mg/kg	74	350	19.0	495	32.2	731	58.1	52.5	9.54	125	14.5
Na Ammonium Acetate	mg/kg	64	81.3	7.80	61.4	7.18	19.4	2.12	9.00	1.68	13.7	2.20
Bray Extractable K	mg/kg	4	509	20.1	195	10.1	261	7.42	71.4	1.77	49.3	3.50
K- Olsen/Bicarb.	mg/kg	5	597	8.55	199	6.77	281	11.9	56.3	1.59	41.0	5.90
K Modified Morgan	mg/kg	3	582	14.5	237	17.0	339	34.0	46.0	1.00	36.0	1.00
K True Morgan	mg/kg	4	496	15.5	154	5.00	226	12.5	47.0	0.550	36.3	2.40
Ca Modified Morgan	mg/kg	3	1440	101	17400	2250	2450	432	564	3.23	587	65.0
Aluminum KCL Extr.	mg/kg	3	0.010	0.010	0.010	0.010	0.010	0.010	0.100	0.100	0.780	0.096

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Mehlich-1 Multi Element (scoop)												
Scoop Soil Mass	g	4	5.00	0.000	5.00	0.000	5.00	0.000	5.00	0.000	5.00	0.000
P	mg/kg	5	132	18.9	1.75	1.04	18.7	2.36	104	9.30	58.9	3.27
K	mg/kg	5	441	1.77	97.4	7.92	182	7.27	48.2	7.13	34.8	3.96
Ca	mg/kg	5	1580	38.3	4830	425	2180	26.9	734	116	676	68.3
Mg	mg/kg	5	314	15.5	379	4.61	575	10.8	51.2	2.30	122	9.13
Mn	mg/kg	5	48.3	1.68	11.7	1.76	81.6	5.84	14.4	2.79	13.5	3.27
Zn	mg/kg	5	1.46	0.140	0.005	0.005	1.62	0.139	6.01	0.360	12.4	0.210
Mehlich-3 Multi-Element (scoop)												
Scoop Soil Mass	g	25	2.00	0.100	2.24	0.180	2.00	0.140	2.62	0.420	2.57	0.270
Assumed Density	g/cm <sup>3</sup>	12	1.16	0.040	1.18	0.060	1.15	0.075	1.33	0.148	1.30	0.123
Volume of Scoop	cm <sup>3</sup>	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	26	20.0	0.000	20.0	0.000	20.0	0.000	20.0	0.000	20.0	0.000
P Colorimetric	mg/kg	22	74.1	3.00	13.1	1.07	14.9	0.850	230	30.8	68.9	5.83
P ICP-AES	mg/kg	48	80.6	4.01	13.6	1.49	21.0	1.05	290	27.0	76.7	8.28
K	mg/kg	53	710	42.0	278	18.5	373	22.2	67.4	7.17	45.0	6.32
Ca	mg/kg	49	1600	116	7260	775	2900	194	673	100	735	102
Mg	mg/kg	49	371	27.0	615	34.1	756	51.0	67.0	10.0	162	22.5
Na	mg/kg	36	79.4	9.62	60.4	7.14	15.5	1.82	10.0	2.01	14.0	2.14
S	mg/kg	37	8.49	1.51	145	20.2	11.6	1.81	11.2	1.86	48.3	6.21
Al	mg/kg	25	769	43.6	84.1	16.9	621	38.7	668	87.0	146	23.5
Zn	mg/kg	43	2.16	0.260	2.50	0.300	3.10	0.370	8.60	1.10	14.7	1.83
Mn	mg/kg	43	79.3	5.58	164	18.8	193	17.4	28.8	3.11	47.5	5.35
Fe	mg/kg	41	179	13.7	75.1	10.1	135	16.2	201	21.3	169	25.5
Cu	mg/kg	43	2.37	0.270	2.20	0.306	2.20	0.200	2.77	0.380	2.10	0.400
B	mg/kg	36	0.410	0.067	1.36	0.248	0.853	0.143	0.395	0.065	0.800	0.180

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Micronutrients												
Zn - DTPA	mg/kg	68	1.16	0.085	0.965	0.085	1.82	0.190	2.95	0.340	7.12	0.900
Mn - DTPA	mg/kg	52	46.0	3.66	16.0	1.55	97.9	15.5	8.23	1.28	4.00	0.715
Fe - DTPA	mg/kg	55	52.4	5.38	13.0	1.50	58.8	6.60	29.0	4.80	23.0	3.17
Cu - DTPA	mg/kg	57	1.56	0.140	0.880	0.080	1.48	0.120	1.34	0.190	0.900	0.110
Zn - HCl	mg/kg	2	2.54	0.565	1.31	1.26	3.92	0.755	7.60	0.535	13.0	1.41
Mn-H3PO4	mg/kg	11	38.1	0.910	17.6	3.30	63.7	3.62	13.0	1.40	11.6	1.36
Cl - Ca(NO3)2 Extr.	mg/kg	18	7.35	1.30	95.1	13.0	3.20	0.445	2.00	0.405	5.15	1.15
B - Hot Wat.	mg/kg	40	0.380	0.080	0.560	0.067	0.700	0.140	0.120	0.024	0.430	0.100
B-DTPA/Sorbitol	mg/kg	17	0.210	0.030	0.840	0.040	0.400	0.040	0.095	0.017	0.320	0.060
Soil Organic Matter												
Soil Kjeldahl N	%	20	0.099	0.010	0.091	0.011	0.240	0.015	0.060	0.004	0.055	0.012
Soil TN (combustion)	%	38	0.102	0.009	0.097	0.009	0.250	0.011	0.061	0.009	0.060	0.010
Soil TOC (Combustion)	%	10	1.10	0.077	1.47	0.144	2.66	0.180	0.600	0.119	0.587	0.067
Soil Total C (Combustion)	%	31	1.07	0.026	1.98	0.072	2.65	0.084	0.590	0.020	0.548	0.058
SOM - Walkley-Black	%	33	1.78	0.170	1.64	0.127	4.04	0.395	1.10	0.113	0.970	0.170
SOM - LOI (% Wt loss)	%	79	2.52	0.220	1.91	0.148	5.10	0.300	1.08	0.075	0.900	0.110
Other												
CaCO3 Content	%	13	0.560	0.114	9.10	0.500	0.610	0.128	0.300	0.053	0.300	0.050
CEC - Cation Displacement	cmol/kg	22	17.6	1.67	16.0	2.83	28.0	2.18	3.15	0.365	2.17	0.340
CEC - Estimation	cmol/kg	16	16.0	2.40	29.4	2.64	22.9	2.50	3.80	0.930	4.00	0.200
Soil Density (Scoop)	g/cc	16	1.15	0.030	1.30	0.040	1.12	0.040	1.55	0.030	1.50	0.040
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	40	24.5	3.38	42.1	2.95	38.8	4.75	87.2	1.59	95.7	1.30
Silt 50 - 2 um	%	40	58.4	2.95	31.2	2.00	32.0	2.00	8.00	2.00	2.80	0.495
Clay 2 - 0 um	%	40	16.0	2.23	26.4	2.40	30.0	3.00	4.75	0.688	2.20	0.318
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	5	20.7	1.02	42.7	0.850	33.8	0.605	88.3	0.290	96.7	0.680
Silt 50 - 2 um	%	5	64.0	1.93	34.9	0.630	39.1	1.18	8.03	1.07	1.60	0.605
Clay 2 - 0 um	%	5	16.2	1.31	22.6	0.190	27.9	2.73	3.69	1.14	2.03	0.500

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