2014 North American Proficiency Testing Program
2nd Quarter Report - July 15, 2014

Laboratory ID
General

Soil			Soil 2014-106			Soil 2014-107			Soil 2014-108			Soil 2014-109			Soil 2014-110		
Analysis	**Units**	***n***	**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	**39.6**	*3.25*		**33.2**	*2.70*		**44.9**	*3.10*		**47.5**	*2.82*		**36.3**	*1.70*	
pH - sp	Unit	29	**7.60**	*0.160*		**6.95**	*0.140*		**4.89**	*0.110*		**6.30**	*0.100*		**5.41**	*0.180*	
ECe - sp	dS/m	27	**0.750**	*0.060*		**1.30**	*0.200*		**2.12**	*0.240*		**0.330**	*0.060*		**1.16**	*0.160*	
HCO3 - sp	mmolc/L	11	**4.23**	*0.683*		**7.78**	*1.24*		**1.20**	*0.175*		**1.72**	*0.400*		**0.450**	*0.044*	
Ca - sp	mmolc/L	26	**3.76**	*0.500*		**4.39**	*0.690*		**9.73**	*1.080*		**1.92**	*0.285*		**5.61**	*1.06*	
Mg - sp	mmolc/L	26	**2.69**	*0.255*		**7.00**	*1.24*		**4.71**	*0.625*		**0.730**	*0.094*		**2.72**	*0.410*	
Na - sp	mmolc/L	26	**1.09**	*0.130*		**3.72**	*0.520*		**6.23**	*0.520*		**0.170**	*0.025*		**0.900**	*0.130*	
SAR - sp	value	23	**0.580**	*0.080*		**1.54**	*0.100*		**2.30**	*0.130*		**0.205**	*0.034*		**0.405**	*0.025*	
Cl - sp	mmolc/L	16	**0.695**	*0.100*		**2.66**	*0.360*		**6.88**	*1.03*		**0.215**	*0.035*		**0.515**	*0.069*	
SO4 - sp	mmolc/L	15	**1.77**	*0.140*		**1.88**	*0.250*		**10.50**	*1.60*		**0.715**	*0.090*		**0.770**	*0.070*	
NO_3 - sp	mmolc/L	9	**0.960**	*0.211*		**2.35**	*0.540*		**0.730**	*0.141*		**0.23**	*0.220*		**7.37**	*1.14*	
B - sp	mg/L	11	**0.330**	*0.060*		**0.050**	*0.010*		**0.220**	*0.050*		**0.080**	*0.005*		**0.060**	*0.003*	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	33	**0.350**	*0.037*		**0.460**	*0.070*		**0.579**	*0.069*		**0.190**	*0.020*		**0.375**	*0.045*	
Soil EC (1:2)	(dS/m)	45	**0.244**	*0.036*		**0.282**	*0.044*		**0.414**	*0.063*		**0.110**	*0.011*		**0.260**	*0.035*	
pH (1:1) Water	Unit	86	**7.84**	*0.100*		**7.05**	*0.080*		**4.98**	*0.080*		**6.47**	*0.100*		**5.57**	*0.070*	
pH (1:2) Water	Unit	32	**7.99**	*0.155*		**7.16**	*0.099*		**5.09**	*0.070*		**6.60**	*0.130*		**5.70**	*0.090*	
pH (1:1) 0.01M CaCl2	Unit	23	**7.47**	*0.070*		**6.70**	*0.070*		**4.70**	*0.050*		**6.00**	*0.050*		**5.25**	*0.050*	
pH (1:2) 0.01M CaCl2	Unit	10	**7.46**	*0.065*		**6.69**	*0.020*		**4.67**	*0.080*		**5.97**	*0.035*		**5.29**	*0.075*	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	26	**7.47**	*0.054*		**7.31**	*0.050*		**5.69**	*0.140*		**6.96**	*0.100*		**6.77**	*0.080*	
Adams-Evans Buf pH	Unit	8	**7.83**	*0.025*		**7.84**	*0.060*		**6.85**	*0.110*		**7.60**	*0.040*		**7.59**	*0.020*	
Woodruff Buf. pH	Unit	21	**7.11**	*0.040*		**6.99**	*0.070*		**5.73**	*0.160*		**6.75**	*0.060*		**6.60**	*0.090*	
Mehlich Buffer pH	Unit	5	**6.72**	*0.090*		**6.52**	*0.050*		**5.37**	*0.060*		**6.28**	*0.030*		**6.12**	*0.040*	
Sikora Buffer pH	Unit	25	**7.50**	*0.060*		**7.37**	*0.050*		**5.70**	*0.080*		**6.97**	*0.110*		**6.80**	*0.070*	
Titratable Acidity	cmol/kg																

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Inorganic Nitrogen (NO3-N & NH4-N)														
NO3-N Cd. Rd.	mg/kg	57	**13.6**	*0.900*	**28.6**	*1.75*	**6.90**	*0.600*	**4.90**	*0.300*	**51.0**	*3.000*		
NO3-N ISE	mg/kg	18	**15.1**	*2.03*	**27.4**	*3.60*	**6.48**	*1.33*	**5.12**	*1.00*	**49.3**	*4.80*		
NO3-N CTA	mg/kg	1	**12.6**	*0.000*	**25.9**	*0.000*	**9.34**	*0.000*	**5.09**	*0.000*	**40.4**	*0.00*		
NO3-N Ion Chr.	mg/kg	2	**13.7**	*0.530*	**27.9**	*0.095*	**7.17**	*0.130*	**4.75**	*0.250*	**51.0**	*0.745*		
NO3-N Other _____	mg/kg	8	**13.2**	*1.00*	**26.6**	*2.70*	**6.92**	*0.855*	**4.75**	*0.365*	**48.7**	*4.10*		
NH4 - N (KCl Extr.)	mg/kg	50	**3.78**	*0.725*	**5.21**	*0.690*	**40.6**	*3.08*	**26.1**	*1.84*	**2.48**	*0.535*		
Phosphorus and Sulfur														
PO4-P Bray P (1:10)	mg/kg	47	**16.0**	*2.00*	**22.8**	*2.20*	**157**	*12.9*	**31.0**	*2.00*	**216**	*18.0*		
PO4-P Bray P1 (1:7)	mg/kg	6	**13.5**	*1.06*	**18.2**	*1.94*	**108**	*6.98*	**28.2**	*1.71*	**173**	*19.5*		
PO4-P Olsen/Bicarb	mg/kg	51	**10.0**	*1.00*	**9.80**	*1.20*	**81.4**	*11.0*	**18.1**	*2.05*	**67.1**	*4.05*		
PO4-P AB-DTPA	mg/kg	2	**3.88**	*0.925*	**4.80**	*0.200*	**22.2**	*6.40*	**6.24**	*0.065*	**30.1**	*0.310*		
PO4-P Modified Morgan	mg/kg	6	**5.82**	*0.715*	**12.4**	*0.700*	**7.10**	*0.515*	**3.81**	*0.700*	**14.3**	*1.66*		
PO4-P True Morgan	mg/kg	7	**6.30**	*0.600*	**11.4**	*0.770*	**7.50**	*1.21*	**4.77**	*0.230*	**17.0**	*0.300*		
PO4-P Mod. Kewlona	mg/kg	2	**12.5**	*1.50*	**14.0**	*2.00*	**85.5**	*12.5*	**21.0**	*0.000*	**145**	*5.00*		
PO4-P Stong Bray (1:10)	mg/kg	9	**65.0**	*4.05*	**72.0**	*8.00*	**230**	*23.0*	**59.2**	*6.23*	**302**	*22.0*		
PO4-P Water Soluble	mg/kg													
SO4 - S (PO4 Extr.)	mg/kg	32	**14.3**	*3.47*	**12.1**	*2.90*	**80.35**	*9.50*	**6.0**	*1.75*	**8.12**	*1.110*		
Bases														
K Ammonium Acetate	mg/kg	72	**253**	*15.8*	**257**	*19.1*	**209**	*17.5*	**279**	*16.6*	**211**	*11.5*		
Ca Ammonium Acetate	mg/kg	67	**2580**	*221*	**1020**	*82.0*	**1370**	*138*	**2070**	*140*	**693**	*56.0*		
Mg Ammonium Acetate	mg/kg	67	**509**	*33.0*	**516**	*42.0*	**213**	*19.3*	**291**	*17.0*	**113**	*7.10*		
Na Ammonium Acetate	mg/kg	53	**32.8**	*4.70*	**63.8**	*6.39*	**150**	*23.0*	**10.4**	*1.33*	**19.9**	*4.61*		
Bray Extractable K	mg/kg	4	**199**	*12.6*	**227**	*4.03*	**158**	*14.0*	**220**	*12.0*	**187**	*12.5*		
K- Olsen/Bicarb.	mg/kg	5	**188**	*5.00*	**235**	*7.00*	**197**	*7.00*	**210**	*7.00*	**211**	*12.0*		
K Modified Morgan	mg/kg	4	**207**	*5.50*	**214**	*12.0*	**194**	*7.50*	**249**	*7.00*	**183**	*11.5*		
K True Morgan	mg/kg	6	**143**	*6.00*	**215**	*6.00*	**156**	*6.00*	**171**	*4.00*	**183**	*14.5*		
Ca Modified Morgan	mg/kg	3	**3530**	*124*	**947**	*128*	**1370**	*75.0*	**1910**	*72.0*	**561**	*72.0*		
Aluminum KCL Extr.	mg/kg	5	**1.25**	*1.15*	**1.59**	*0.630*	**38.0**	*3.70*	**1.20**	*0.300*	**1.75**	*0.750*		

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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	**30.4**	*2.08*	**49.6**	*3.35*	**46.3**	*4.87*	**27.8**	*3.54*	**110**	*6.08*		
K	mg/kg	6	**128**	*3.12*	**203**	*6.95*	**135**	*13.1*	**159**	*4.54*	**164**	*3.40*		
Ca	mg/kg	6	**3030**	*125*	**1130**	*62.8*	**1620**	*136*	**1760**	*77.7*	**754**	*28.0*		
Mg	mg/kg	6	**552**	*23.4*	**518**	*30.0*	**220**	*20.6*	**244**	*10.0*	**109**	*4.14*		
Mn	mg/kg	5	**36.8**	*2.54*	**44.8**	*0.685*	**86.2**	*22.5*	**93.6**	*7.85*	**32.1**	*1.24*		
Zn	mg/kg	5	**1.41**	*0.080*	**37.3**	*4.29*	**3.63**	*0.310*	**1.97**	*0.263*	**4.45**	*0.140*		
Mehlich-3 Mult-Element (scoop)														
Scoop Soil Mass	g	25	**2.21**	*0.181*	**2.39**	*0.100*	**1.92**	*0.160*	**2.01**	*0.065*	**2.14**	*0.130*		
Assumed Density	g/cm3	11	**1.18**	*0.020*	**1.18**	*0.000*	**1.03**	*0.150*	**1.18**	*0.040*	**1.18**	*0.040*		
Volume of Scoop	cm3	20	**2.00**	*0.000*	**2.00**	*0.000*	**2.00**	*0.000*	**2.00**	*0.000*	**2.00**	*0.000*		
Extractrant 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	16	**19.5**	*1.50*	**30.3**	*5.66*	**146**	*12.3*	**35.0**	*1.13*	**223**	*14.0*		
P ICP-AES	mg/kg	45	**21.4**	*1.56*	**34.7**	*3.04*	**160**	*10.5*	**43.0**	*2.91*	**240**	*13.1*		
K	mg/kg	49	**260**	*19.6*	**265**	*27.4*	**200**	*11.8*	**283**	*15.3*	**214**	*17.6*		
Ca	mg/kg	46	**3180**	*244*	**1240**	*130*	**1510**	*91.3*	**2190**	*111*	**810**	*86.5*		
Mg	mg/kg	46	**626**	*42.3*	**608**	*61.7*	**218**	*13.5*	**310**	*18.3*	**125**	*12.1*		
Na	mg/kg	37	**34.6**	*5.41*	**69.0**	*8.50*	**139**	*14.4*	**9.68**	*1.90*	**19.1**	*2.87*		
S	mg/kg	37	**25.9**	*1.34*	**20.3**	*1.48*	**111**	*7.10*	**12.6**	*1.26*	**16.8**	*1.20*		
Al	mg/kg	28	**375**	*29.5*	**313**	*28.5*	**1360**	*79.5*	**623**	*32.8*	**1050**	*49.2*		
Zn	mg/kg	39	**2.13**	*0.160*	**47.8**	*3.56*	**4.30**	*0.300*	**2.80**	*0.200*	**5.80**	*0.430*		
Mn	mg/kg	41	**132**	*7.76*	**59.0**	*5.10*	**84.0**	*6.00*	**134**	*8.00*	**102**	*10.6*		
Fe	mg/kg	40	**164**	*10.4*	**182**	*19.6*	**419**	*39.4*	**329**	*24.2*	**196**	*17.5*		
Cu	mg/kg	41	**1.83**	*0.130*	**12.3**	*1.13*	**2.00**	*0.310*	**2.70**	*0.300*	**3.95**	*0.300*		
B	mg/kg	34	**2.47**	*0.410*	**0.600**	*0.084*	**0.680**	*0.124*	**0.680**	*0.072*	**0.401**	*0.065*		

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Micronutrients												
Zn - DTPA	mg/kg	63	**1.14**	*0.130*	**28.4**	*3.00*	**3.14**	*0.290*	**1.80**	*0.100*	**2.90**	*0.260*
Mn - DTPA	mg/kg	47	**11.0**	*2.10*	**28.6**	*3.12*	**83.7**	*8.70*	**84.5**	*5.90*	**17.9**	*2.40*
Fe - DTPA	mg/kg	51	**38.9**	*4.25*	**43.6**	*4.40*	**272**	*24.4*	**131**	*14.9*	**43.8**	*5.30*
Cu - DTPA	mg/kg	51	**0.900**	*0.100*	**6.36**	*0.660*	**1.70**	*0.200*	**2.18**	*0.180*	**2.30**	*0.290*
Zn - HCl	mg/kg	2	**2.21**	*0.165*	**48.0**	*4.53*	**5.46**	*0.075*	**2.88**	*0.075*	**5.46**	*0.280*
Mn-H3PO4	mg/kg	9	**26.6**	*2.34*	**37.8**	*4.19*	**74.9**	*9.53*	**71.5**	*4.49*	**27.5**	*1.71*
Cl - Ca(NO3)2 Extr.	mg/kg	18	**10.2**	*1.60*	**36.7**	*6.52*	**91.6**	*10.8*	**3.50**	*0.500*	**6.13**	*1.15*
B - Hot Wat.	mg/kg	35	**1.30**	*0.200*	**0.242**	*0.033*	**0.700**	*0.160*	**0.450**	*0.110*	**0.330**	*0.080*
B-DTPA/Sorbitol	mg/kg	16	**1.42**	*0.185*	**0.196**	*0.026*	**0.310**	*0.029*	**0.310**	*0.065*	**0.175**	*0.017*
Soil Organic Matter												
Soil Kjeldahl N	%	16	**0.080**	*0.006*	**0.108**	*0.007*	**0.360**	*0.016*	**0.157**	*0.007*	**0.092**	*0.004*
Soil TN (combustion)	%	36	**0.089**	*0.009*	**0.110**	*0.011*	**0.380**	*0.019*	**0.158**	*0.008*	**0.101**	*0.011*
Soil TOC (Combustion)	%	7	**0.920**	*0.075*	**1.59**	*0.154*	**6.60**	*0.112*	**1.69**	*0.088*	**1.01**	*0.050*
Soil Total C (Combustion)	%	28	**1.05**	*0.038*	**1.48**	*0.085*	**6.53**	*0.230*	**1.66**	*0.072*	**1.05**	*0.035*
SOM - Walkley-Black	%	28	**1.69**	*0.126*	**2.40**	*0.205*	**10.4**	*1.80*	**2.90**	*0.160*	**1.65**	*0.150*
SOM - LOI (% Wt loss)	%	77	**1.82**	*0.120*	**2.53**	*0.160*	**10.8**	*0.430*	**3.21**	*0.210*	**2.40**	*0.140*
Other												
CaCO3 Content	%	13	**1.76**	*0.160*	**0.800**	*0.410*	**0.520**	*0.125*	**0.635**	*0.124*	**0.490**	*0.050*
CEC - Cation Displacement	cmol/kg	17	**12.8**	*2.00*	**9.60**	*1.44*	**27.0**	*3.66*	**17.2**	*2.30*	**7.70**	*1.20*
CEC - Estimation	cmol/kg	11	**19.0**	*3.30*	**12.2**	*1.95*	**19.0**	*4.00*	**15.7**	*2.03*	**9.00**	*1.30*
Soil Density (Scoop)	g/cc	15	**1.30**	*0.050*	**1.36**	*0.040*	**1.04**	*0.050*	**1.18**	*0.030*	**1.26**	*0.040*
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	36	**36.5**	*3.12*	**79.1**	*1.90*	**46.4**	*3.18*	**14.6**	*1.68*	**36.7**	*3.30*
Silt 50 - 2 um	%	36	**40.9**	*2.85*	**13.0**	*2.15*	**35.0**	*3.12*	**63.1**	*3.80*	**48.0**	*2.65*
Clay 2 - 0 um	%	36	**22.0**	*2.04*	**8.95**	*1.87*	**18.3**	*2.21*	**21.4**	*2.55*	**15.6**	*2.40*
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	2	**40.1**	*3.05*	**79.8**	*0.800*	**45.9**	*0.900*	**13.3**	*1.70*	**29.1**	*3.10*
Silt 50 - 2 um	%	2	**40.4**	*1.60*	**13.7**	*1.350*	**38.1**	*3.05*	**68.9**	*2.90*	**56.7**	*0.300*
Clay 2 - 0 um	%	2	**19.1**	*0.950*	**6.60**	*0.500*	**16.1**	*3.90*	**17.8**	*1.20*	**14.2**	*2.80*
Solvita CO2	ppm	8	**17.2**	*8.54*	**39.1**	*13.2*	**135**	*32.5*	**28.4**	*16.5*	**21.3**	*16.9*

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