2015 North American Proficiency Testing Program
2nd Quarter Report - July 13, 2015

Laboratory ID
General

Soil			Soil 2015-106			Soil 2015-107			Soil 2015-108			Soil 2015-109			Soil 2015-110		
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	**31.3**	*1.64*		**35.7**	*2.18*		**54.9**	*3.22*		**24.0**	*0.990*		**38.0**	*2.50*	
pH - sp	Unit	36	**7.85**	*0.150*		**5.46**	*0.145*		**6.34**	*0.090*		**6.38**	*0.290*		**6.80**	*0.110*	
ECe - sp	dS/m	34	**0.715**	*0.068*		**0.695**	*0.080*		**0.900**	*0.119*		**0.449**	*0.064*		**1.28**	*0.210*	
HCO3 - sp	mmolc/L	17	**3.52**	*0.770*		**1.21**	*0.115*		**1.13**	*0.174*		**2.24**	*0.430*		**3.40**	*0.635*	
Ca - sp	mmolc/L	31	**4.39**	*0.500*		**2.85**	*0.440*		**5.17**	*0.595*		**2.90**	*0.545*		**6.54**	*0.880*	
Mg - sp	mmolc/L	31	**1.80**	*0.198*		**1.84**	*0.320*		**2.04**	*0.240*		**1.26**	*0.188*		**3.34**	*0.565*	
Na - sp	mmolc/L	31	**0.970**	*0.130*		**0.870**	*0.080*		**0.990**	*0.120*		**0.210**	*0.050*		**0.665**	*0.100*	
SAR - sp	value	25	**0.530**	*0.070*		**0.530**	*0.063*		**0.500**	*0.045*		**0.130**	*0.010*		**0.300**	*0.030*	
Cl - sp	mmolc/L	19	**1.13**	*0.170*		**0.610**	*0.106*		**0.455**	*0.046*		**0.250**	*0.038*		**0.470**	*0.051*	
SO4 - sp	mmolc/L	21	**1.52**	*0.258*		**1.66**	*0.260*		**0.800**	*0.080*		**0.670**	*0.135*		**1.51**	*0.132*	
NO_3 - sp	mmolc/L	13	**0.170**	*0.039*		**2.23**	*0.455*		**5.60**	*0.860*		**0.620**	*0.141*		**5.85**	*1.25*	
B - sp	mg/L	16	**0.107**	*0.024*		**0.770**	*0.130*		**0.043**	*0.005*		**0.040**	*0.007*		**0.081**	*0.010*	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	40	**0.334**	*0.035*		**0.267**	*0.037*		**0.535**	*0.035*		**0.134**	*0.024*		**0.452**	*0.063*	
Soil EC (1:2)	(dS/m)	49	**0.212**	*0.022*		**0.181**	*0.019*		**0.299**	*0.031*		**0.086**	*0.011*		**0.304**	*0.034*	
pH (1:1) Water	Unit	90	**8.16**	*0.080*		**5.60**	*0.086*		**6.43**	*0.075*		**6.17**	*0.095*		**6.85**	*0.060*	
pH (1:2) Water	Unit	34	**8.20**	*0.150*		**5.70**	*0.100*		**6.50**	*0.105*		**6.26**	*0.145*		**6.88**	*0.145*	
pH (1:1) 0.01M CaCl2	Unit	26	**7.71**	*0.070*		**5.15**	*0.050*		**6.14**	*0.035*		**5.70**	*0.080*		**6.57**	*0.025*	
pH (1:2) 0.01M CaCl2	Unit	12	**7.69**	*0.040*		**5.11**	*0.030*		**6.12**	*0.035*		**5.69**	*0.075*		**6.58**	*0.045*	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	25	**7.53**	*0.050*		**6.81**	*0.110*		**6.98**	*0.080*		**7.13**	*0.090*		**7.26**	*0.060*	
Adams-Evans Buf pH	Unit	10	**7.82**	*0.050*		**7.61**	*0.095*		**7.59**	*0.090*		**7.85**	*0.050*		**7.81**	*0.060*	
Woodruff Buf. pH	Unit	23	**7.16**	*0.050*		**6.68**	*0.070*		**6.80**	*0.020*		**6.85**	*0.050*		**6.96**	*0.030*	
Mehlich Buffer pH	Unit	6	**6.88**	*0.025*		**6.10**	*0.040*		**6.28**	*0.020*		**6.38**	*0.020*		**6.49**	*0.025*	
Sikora Buffer pH	Unit	28	**7.55**	*0.035*		**6.84**	*0.065*		**6.97**	*0.065*		**7.28**	*0.040*		**7.30**	*0.040*	
Titratable Acidity	cmol/kg																

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Inorganic Nitrogen (NO3-N & NH4-N)												
NO3-N Cd. Rd.	mg/kg	62	**4.78**	*0.435*	**16.4**	*0.900*	**51.9**	*3.09*	**10.0**	*0.900*	**58.3**	*2.69*
NO3-N ISE	mg/kg	16	**5.91**	*1.20*	**15.9**	*1.12*	**50.2**	*4.11*	**11.1**	*2.25*	**58.9**	*5.00*
NO3-N CTA	mg/kg	1	**4.85**	*0.000*	**15.8**	*0.000*	**47.5**	*0.000*	**9.35**	*0.000*	**49.6**	*0.000*
NO3-N Ion Chr.	mg/kg	2	**4.24**	*0.560*	**15.8**	*0.250*	**53.8**	*0.250*	**9.09**	*0.515*	**57.4**	*0.350*
NO3-N Other _____	mg/kg	9	**5.00**	*0.680*	**16.0**	*0.500*	**52.6**	*2.90*	**11.7**	*0.545*	**59.5**	*4.05*
NH4 - N (KCl Extr.)	mg/kg	53	**4.46**	*0.640*	**6.00**	*0.700*	**5.20**	*0.600*	**3.06**	*0.560*	**2.34**	*0.485*
Phosphorus and Sulfur												
PO4-P Bray P (1:10)	mg/kg	47	**27.7**	*2.37*	**109**	*6.19*	**11.8**	*1.20*	**226**	*27.0*	**165**	*11.0*
PO4-P Bray P1 (1:7)	mg/kg	12	**22.1**	*3.65*	**101**	*7.70*	**9.75**	*1.26*	**189**	*29.4*	**148**	*10.2*
PO4-P Olsen/Bicarb	mg/kg	58	**10.6**	*1.31*	**56.8**	*5.65*	**8.75**	*1.25*	**50.3**	*6.43*	**61.3**	*4.84*
PO4-P AB-DTPA	mg/kg	2	**4.36**	*0.359*	**27.1**	*4.29*	**3.64**	*2.04*	**42.1**	*5.60*	**38.8**	*2.97*
PO4-P Modified Morgan	mg/kg	7	**27.1**	*2.10*	**11.6**	*0.860*	**2.00**	*0.160*	**15.6**	*0.600*	**46.8**	*2.50*
PO4-P True Morgan	mg/kg	7	**25.8**	*1.40*	**14.1**	*0.900*	**2.10**	*0.140*	**15.9**	*3.20*	**46.2**	*5.60*
PO4-P Mod. Kewlona	mg/kg	3	**20.0**	*1.50*	**69.5**	*0.500*	**8.00**	*1.82*	**140**	*0.000*	**100**	*2.60*
PO4-P Stong Bray (1:10)	mg/kg	9	**130**	*7.00*	**301**	*29.3*	**35.3**	*1.43*	**262**	*24.2*	**233**	*19.8*
PO4-P Water Soluble	mg/kg											
SO4 - S (PO4 Extr.)	mg/kg	33	**10.0**	*2.00*	**12.1**	*1.90*	**7.89**	*1.11*	**3.85**	*0.462*	**11.0**	*1.50*
Bases												
K Ammonium Acetate	mg/kg	79	**363**	*25.0*	**425**	*24.3*	**111**	*7.00*	**59.0**	*6.66*	**277**	*16.0*
Ca Ammonium Acetate	mg/kg	73	**3990**	*500*	**1010**	*52.6*	**3400**	*178*	**477**	*62.0*	**1260**	*80.0*
Mg Ammonium Acetate	mg/kg	72	**386**	*32.5*	**268**	*19.0*	**511**	*25.0*	**55.0**	*9.00*	**221**	*14.4*
Na Ammonium Acetate	mg/kg	58	**29.7**	*4.43*	**24.5**	*3.49*	**45.8**	*5.55*	**6.90**	*1.08*	**16.8**	*3.50*
Bray Extractable K	mg/kg	4	**277**	*15.0*	**388**	*3.50*	**71.7**	*3.65*	**62.5**	*6.70*	**254**	*9.20*
K- Olsen/Bicarb.	mg/kg	8	**215**	*6.22*	**385**	*10.5*	**78.8**	*4.48*	**54.0**	*4.30*	**274**	*4.00*
K Modified Morgan	mg/kg	5	**318**	*15.0*	**388**	*37.2*	**104**	*3.40*	**51.8**	*3.20*	**261**	*10.4*
K True Morgan	mg/kg	6	**171**	*8.00*	**319**	*7.50*	**57.5**	*3.60*	**49.9**	*3.70*	**232**	*14.5*
Ca Modified Morgan	mg/kg	4	**6540**	*570*	**929**	*104*	**3500**	*51.5*	**605**	*68.3*	**1340**	*126*
Aluminum KCL Extr.	mg/kg	5	**0.268**	*0.132*	**3.20**	*0.571*	**0.100**	*0.011*	**1.93**	*0.450*	**0.071**	*0.071*

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Mehlich-1 Multi Element (scoop)														
Scoop Soil Mass	g	6	**5.00**	*0.000*	**5.00**	*0.000*	**5.00**	*0.000*	**5.00**	*0.000*	**5.00**	*0.000*		
P	mg/kg	6	**26.8**	*9.46*	**208**	*39.0*	**17.4**	*2.68*	**116**	*8.85*	**144**	*8.58*		
K	mg/kg	6	**134**	*3.44*	**301**	*8.74*	**54.4**	*2.19*	**52.5**	*4.74*	**246**	*8.07*		
Ca	mg/kg	6	**4430**	*171*	**1200**	*61.9*	**2470**	*131*	**749**	*47.1*	**1550**	*26.0*		
Mg	mg/kg	6	**350**	*14.4*	**231**	*8.99*	**378**	*11.6*	**51.4**	*5.86*	**251**	*6.72*		
Mn	mg/kg	5	**11.6**	*3.22*	**48.7**	*3.05*	**28.4**	*1.65*	**16.3**	*2.70*	**42.0**	*1.20*		
Zn	mg/kg	5	**0.184**	*0.044*	**9.17**	*0.714*	**1.60**	*0.043*	**6.03**	*0.678*	**8.16**	*0.785*		
Mehlich-3 Mult-Element (scoop)														
Scoop Soil Mass	g	24	**2.40**	*0.108*	**2.23**	*0.100*	**2.00**	*0.120*	**2.59**	*0.140*	**2.11**	*0.110*		
Assumed Density	g/cm3	15	**1.23**	*0.050*	**1.18**	*0.058*	**1.04**	*0.094*	**1.32**	*0.105*	**1.18**	*0.070*		
Volume of Scoop	cm3	23	**2.00**	*0.000*	**2.00**	*0.000*	**2.00**	*0.000*	**2.00**	*0.000*	**2.00**	*0.000*		
Extractrant Volume mL	mL	25	**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	**36.0**	*1.20*	**124**	*3.45*	**11.6**	*0.750*	**236**	*17.6*	**183**	*7.89*		
P ICP-AES	mg/kg	50	**41.1**	*2.94*	**135**	*7.40*	**18.6**	*1.47*	**283**	*29.1*	**199**	*7.21*		
K	mg/kg	57	**400**	*30.7*	**440**	*28.0*	**109**	*7.00*	**67.5**	*7.48*	**289**	*19.7*		
Ca	mg/kg	55	**5410**	*363*	**1100**	*90.0*	**3460**	*199*	**700**	*70.1*	**1510**	*104*		
Mg	mg/kg	55	**507**	*38.5*	**288**	*18.9*	**526**	*27.8*	**68.0**	*7.42*	**256**	*15.5*		
Na	mg/kg	41	**31.1**	*3.60*	**24.3**	*3.79*	**45.1**	*4.90*	**8.00**	*1.20*	**17.8**	*2.81*		
S	mg/kg	45	**21.0**	*1.40*	**17.8**	*1.50*	**13.5**	*1.50*	**11.4**	*2.00*	**20.0**	*1.91*		
Al	mg/kg	33	**410**	*44.0*	**586**	*48.0*	**710**	*48.0*	**659**	*56.6*	**657**	*40.6*		
Zn	mg/kg	51	**2.20**	*0.200*	**11.2**	*0.900*	**2.33**	*0.230*	**7.80**	*0.900*	**9.60**	*0.640*		
Mn	mg/kg	51	**127**	*10.3*	**65.3**	*4.33*	**68.0**	*6.15*	**27.0**	*3.00*	**166**	*12.0*		
Fe	mg/kg	49	**47.5**	*4.74*	**267**	*18.0*	**212**	*17.0*	**197**	*22.4*	**194**	*14.4*		
Cu	mg/kg	51	**3.40**	*0.300*	**2.85**	*0.250*	**3.26**	*0.240*	**2.79**	*0.260*	**4.25**	*0.250*		
B	mg/kg	38	**1.98**	*0.325*	**0.960**	*0.165*	**0.590**	*0.140*	**0.370**	*0.061*	**0.920**	*0.120*		

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Micronutrients												
Zn - DTPA	mg/kg	70	**0.800**	*0.090*	**6.69**	*0.555*	**1.53**	*0.085*	**2.94**	*0.340*	**3.75**	*0.325*
Mn - DTPA	mg/kg	56	**12.2**	*2.04*	**39.5**	*4.02*	**21.7**	*3.66*	**10.0**	*1.41*	**14.9**	*2.67*
Fe - DTPA	mg/kg	58	**7.27**	*0.770*	**86.4**	*10.3*	**63.9**	*6.80*	**29.0**	*4.67*	**26.6**	*3.30*
Cu - DTPA	mg/kg	60	**1.30**	*0.155*	**2.98**	*0.260*	**2.53**	*0.171*	**1.35**	*0.160*	**2.10**	*0.200*
Zn - HCl	mg/kg	2	**2.85**	*0.755*	**12.0**	*1.87*	**2.88**	*0.325*	**6.03**	*0.930*	**8.31**	*1.11*
Mn-H3PO4	mg/kg	10	**11.0**	*1.54*	**40.8**	*2.30*	**19.8**	*3.00*	**16.7**	*2.13*	**33.9**	*2.10*
Cl - Ca(NO3)2 Extr.	mg/kg	18	**14.1**	*1.51*	**9.72**	*0.979*	**8.90**	*1.40*	**3.60**	*0.532*	**7.75**	*1.62*
B - Hot Wat.	mg/kg	32	**0.605**	*0.139*	**0.950**	*0.170*	**0.334**	*0.056*	**0.150**	*0.022*	**0.546**	*0.095*
B-DTPA/Sorbitol	mg/kg	16	**0.865**	*0.115*	**0.528**	*0.070*	**0.205**	*0.043*	**0.085**	*0.016*	**0.320**	*0.040*
Soil Organic Matter												
Soil Kjeldahl N	%	18	**0.097**	*0.010*	**0.080**	*0.006*	**0.188**	*0.011*	**0.059**	*0.007*	**0.123**	*0.008*
Soil TN (combustion)	%	40	**0.101**	*0.011*	**0.091**	*0.009*	**0.200**	*0.012*	**0.067**	*0.007*	**0.137**	*0.013*
Soil TOC (Combustion)	%	9	**0.960**	*0.040*	**0.780**	*0.042*	**2.10**	*0.100*	**0.580**	*0.050*	**1.22**	*0.020*
Soil Total C (Combustion)	%	32	**1.09**	*0.036*	**0.827**	*0.027*	**2.09**	*0.075*	**0.598**	*0.028*	**1.23**	*0.030*
SOM - Walkley-Black	%	31	**1.68**	*0.080*	**1.54**	*0.070*	**3.35**	*0.210*	**1.09**	*0.110*	**2.10**	*0.100*
SOM - LOI (% Wt loss)	%	76	**1.83**	*0.139*	**1.85**	*0.110*	**4.35**	*0.250*	**1.05**	*0.065*	**2.40**	*0.100*
Other												
CaCO3 Content	%	13	**2.00**	*0.295*	**0.455**	*0.200*	**0.500**	*0.300*	**0.250**	*0.038*	**0.710**	*0.162*
CEC - Cation Displacement	cmol/kg	19	**13.0**	*1.50*	**10.3**	*1.40*	**25.7**	*3.15*	**2.91**	*0.550*	**9.12**	*1.26*
CEC - Estimation	cmol/kg	14	**25.7**	*2.40*	**12.6**	*1.45*	**23.7**	*1.23*	**4.02**	*0.381*	**9.70**	*1.39*
Soil Density (Scoop)	g/cc	15	**1.41**	*0.050*	**1.28**	*0.050*	**1.13**	*0.050*	**1.53**	*0.060*	**1.23**	*0.060*
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	39	**58.3**	*2.70*	**51.5**	*3.60*	**15.0**	*2.32*	**88.0**	*2.00*	**51.8**	*3.20*
Silt 50 - 2 um	%	39	**23.3**	*3.30*	**39.0**	*4.10*	**56.0**	*3.00*	**7.30**	*1.50*	**34.4**	*2.60*
Clay 2 - 0 um	%	39	**19.0**	*2.40*	**10.0**	*2.00*	**29.9**	*3.66*	**4.80**	*0.606*	**14.4**	*1.90*
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	3	**57.3**	*0.300*	**54.1**	*3.90*	**6.65**	*2.95*	**89.0**	*0.250*	**50.6**	*0.150*
Silt 50 - 2 um	%	3	**26.6**	*1.20*	**36.6**	*4.900*	**66.5**	*1.70*	**7.45**	*0.650*	**37.9**	*1.15*
Clay 2 - 0 um	%	3	**17.4**	*2.00*	**8.40**	*0.100*	**26.9**	*4.60*	**3.60**	*0.400*	**11.6**	*1.25*
Solvita CO2	ppm	9	**18.0**	*5.76*	**31.9**	*5.90*	**39.8**	*6.69*	**39.8**	*6.39*	**47.8**	*16.0*

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