2015 North American Proficiency Testing Program
1st Quarter Report - April 8, 2015

Laboratory ID
General

Soil			Soil 2015-101			Soil 2015-102			Soil 2015-103			Soil 2015-104			Soil 2015-105		
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	%	23	**57.0**	*3.30*		**34.3**	*2.40*		**67.8**	*5.40*		**38.6**	*2.77*		**30.3**	*2.90*	
pH - sp	Unit	35	**6.30**	*0.130*		**5.53**	*0.130*		**7.36**	*0.120*		**7.30**	*0.100*		**5.96**	*0.260*	
ECe - sp	dS/m	33	**0.895**	*0.119*		**0.780**	*0.121*		**0.740**	*0.130*		**1.00**	*0.106*		**0.373**	*0.047*	
HCO3 - sp	mmolc/L	17	**1.04**	*0.178*		**1.23**	*0.150*		**4.12**	*0.492*		**1.98**	*0.204*		**1.62**	*0.301*	
Ca - sp	mmolc/L	28	**5.68**	*0.765*		**4.21**	*0.745*		**6.08**	*0.705*		**8.48**	*0.960*		**2.58**	*0.445*	
Mg - sp	mmolc/L	28	**2.04**	*0.240*		**2.03**	*0.355*		**1.47**	*0.165*		**0.913**	*0.080*		**0.580**	*0.116*	
Na - sp	mmolc/L	27	**1.01**	*0.140*		**0.510**	*0.080*		**0.265**	*0.026*		**0.350**	*0.070*		**0.210**	*0.026*	
SAR - sp	value	24	**0.530**	*0.060*		**0.290**	*0.040*		**0.120**	*0.010*		**0.170**	*0.024*		**0.150**	*0.013*	
Cl - sp	mmolc/L	20	**0.515**	*0.090*		**1.19**	*0.190*		**0.335**	*0.050*		**0.340**	*0.067*		**0.469**	*0.095*	
SO4 - sp	mmolc/L	21	**0.780**	*0.107*		**1.12**	*0.170*		**0.560**	*0.100*		**1.33**	*0.230*		**0.576**	*0.106*	
NO_3 - sp	mmolc/L	13	**6.11**	*0.709*		**3.06**	*0.710*		**3.29**	*0.804*		**5.51**	*1.11*		**0.400**	*0.098*	
B - sp	mg/L	11	**0.050**	*0.009*		**0.090**	*0.010*		**0.050**	*0.010*		**0.045**	*0.006*		**0.050**	*0.008*	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	40	**0.550**	*0.053*		**0.311**	*0.050*		**0.720**	*0.080*		**0.424**	*0.065*		**0.130**	*0.030*	
Soil EC (1:2)	(dS/m)	43	**0.298**	*0.031*		**0.180**	*0.020*		**0.400**	*0.068*		**0.270**	*0.030*		**0.075**	*0.015*	
pH (1:1) Water	Unit	85	**6.46**	*0.080*		**5.78**	*0.080*		**7.59**	*0.090*		**7.50**	*0.070*		**5.98**	*0.100*	
pH (1:2) Water	Unit	31	**6.57**	*0.100*		**5.81**	*0.110*		**7.72**	*0.120*		**7.59**	*0.090*		**6.02**	*0.070*	
pH (1:1) 0.01M CaCl2	Unit	22	**6.10**	*0.065*		**5.33**	*0.040*		**7.27**	*0.065*		**7.17**	*0.070*		**5.40**	*0.055*	
pH (1:2) 0.01M CaCl2	Unit	9	**6.11**	*0.020*		**5.34**	*0.040*		**7.34**	*0.090*		**7.19**	*0.060*		**5.38**	*0.040*	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	32	**6.95**	*0.075*		**6.66**	*0.070*		**7.34**	*0.080*		**7.38**	*0.090*		**7.02**	*0.080*	
Adams-Evans Buf pH	Unit	8	**7.51**	*0.060*		**7.45**	*0.025*		**7.75**	*0.025*		**7.84**	*0.040*		**7.73**	*0.020*	
Woodruff Buf. pH	Unit	22	**6.80**	*0.035*		**6.57**	*0.065*		**7.12**	*0.045*		**7.04**	*0.035*		**6.79**	*0.040*	
Mehlich Buffer pH	Unit	8	**6.26**	*0.020*		**6.05**	*0.035*		**6.76**	*0.040*		**6.70**	*0.030*		**6.28**	*0.030*	
Sikora Buffer pH	Unit	26	**6.93**	*0.080*		**6.65**	*0.105*		**7.40**	*0.053*		**7.42**	*0.070*		**7.08**	*0.075*	
Titratable Acidity	cmol/kg																

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Inorganic Nitrogen (NO3-N & NH4-N)														
NO3-N Cd. Rd.	mg/kg	61	**52.0**	*2.00*	**19.8**	*1.19*	**39.0**	*1.80*	**39.4**	*2.33*	**6.39**	*0.610*		
NO3-N ISE	mg/kg	14	**49.6**	*3.01*	**21.3**	*1.59*	**40.2**	*5.06*	**40.0**	*3.25*	**7.60**	*0.900*		
NO3-N CTA	mg/kg	2	**51.1**	*5.62*	**20.9**	*2.40*	**38.6**	*3.86*	**37.4**	*3.29*	**8.62**	*0.843*		
NO3-N Ion Chr.	mg/kg	4	**56.1**	*5.36*	**21.2**	*3.31*	**39.4**	*8.63*	**40.2**	*5.30*	**5.23**	*0.960*		
NO3-N Other _____	mg/kg	8	**51.7**	*2.50*	**19.6**	*0.900*	**38.5**	*2.10*	**39.6**	*2.00*	**6.22**	*0.470*		
NH4 - N (KCl Extr.)	mg/kg	50	**5.03**	*0.750*	**19.2**	*1.37*	**17.8**	*2.10*	**1.78**	*0.116*	**4.44**	*0.655*		
Phosphorus and Sulfur														
PO4-P Bray P (1:10)	mg/kg	47	**11.6**	*1.07*	**54.0**	*4.00*	**14.1**	*2.53*	**45.0**	*3.00*	**12.7**	*1.70*		
PO4-P Bray P1 (1:7)	mg/kg	9	**9.00**	*0.220*	**43.1**	*3.08*	**14.3**	*2.72*	**32.0**	*3.96*	**11.6**	*1.60*		
PO4-P Olsen/Bicarb	mg/kg	53	**8.52**	*1.03*	**20.7**	*1.93*	**31.0**	*3.95*	**30.6**	*3.62*	**6.54**	*1.50*		
PO4-P AB-DTPA	mg/kg	1	**6.77**	*0.000*	**11.5**	*0.000*	**24.5**	*0.000*	**23.3**	*0.000*	**8.08**	*0.000*		
PO4-P Modified Morgan	mg/kg	6	**2.57**	*0.700*	**3.67**	*0.650*	**27.8**	*6.76*	**25.0**	*3.00*	**2.14**	*0.150*		
PO4-P True Morgan	mg/kg	7	**2.08**	*0.080*	**3.93**	*0.330*	**21.0**	*2.50*	**25.1**	*2.60*	**2.20**	*0.260*		
PO4-P Mod. Kewlona	mg/kg	1	**5.85**	*0.000*	**30.4**	*0.000*	**34.5**	*0.000*	**23.5**	*0.000*	**6.49**	*0.000*		
PO4-P Stong Bray (1:10)	mg/kg	9	**35.1**	*2.10*	**112**	*7.43*	**399**	*70.9*	**234**	*8.16*	**20.2**	*1.80*		
PO4-P Water Soluble	mg/kg													
SO4 - S (PO4 Extr.)	mg/kg	30	**7.99**	*1.10*	**10.3**	*2.34*	**6.95**	*1.01*	**9.45**	*1.65*	**4.46**	*1.11*		
Bases														
K Ammonium Acetate	mg/kg	74	**112**	*8.00*	**303**	*21.7*	**371**	*24.2*	**163**	*9.86*	**93.5**	*7.00*		
Ca Ammonium Acetate	mg/kg	70	**3400**	*170*	**1500**	*102*	**7610**	*790*	**2490**	*204*	**682**	*64.2*		
Mg Ammonium Acetate	mg/kg	70	**516**	*27.0*	**287**	*21.0*	**612**	*41.0*	**93.0**	*9.00*	**57.0**	*8.00*		
Na Ammonium Acetate	mg/kg	57	**46.0**	*4.00*	**16.9**	*3.10*	**16.9**	*3.07*	**13.2**	*2.80*	**9.00**	*1.51*		
Bray Extractable K	mg/kg	4	**68.7**	*0.445*	**232**	*9.35*	**222**	*8.50*	**136**	*3.00*	**90.8**	*3.00*		
K- Olsen/Bicarb.	mg/kg	7	**78.4**	*2.70*	**270**	*6.00*	**318**	*5.00*	**152**	*4.00*	**96.0**	*9.70*		
K Modified Morgan	mg/kg	4	**105**	*5.00*	**278**	*11.5*	**342**	*5.50*	**155**	*7.00*	**79.5**	*5.00*		
K True Morgan	mg/kg	6	**61.7**	*3.70*	**214**	*8.50*	**230**	*6.00*	**126**	*6.50*	**77.0**	*2.85*		
Ca Modified Morgan	mg/kg	3	**3440**	*143*	**1450**	*207*	**25700**	*3010*	**3070**	*26.0*	**647**	*62.0*		
Aluminum KCL Extr.	mg/kg	5	**0.700**	*0.160*	**1.12**	*0.527*	**0.300**	*0.060*	**0.300**	*0.200*	**1.40**	*0.446*		

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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	**16.7**	*1.28*		**51.4**	*3.16*		**76.4**	*19.2*		**84.3**	*4.50*		**10.8**	*0.620*
K	mg/kg	5	**52.1**	*3.17*		**211**	*5.60*		**130**	*1.54*		**109**	*2.84*		**70.9**	*2.37*
Ca	mg/kg	5	**2380**	*94.9*		**1470**	*48.0*		**4760**	*148*		**3390**	*295*		**670**	*49.9*
Mg	mg/kg	5	**384**	*28.8*		**279**	*2.33*		**334**	*30.0*		**108**	*1.05*		**52.5**	*2.23*
Mn	mg/kg	5	**24.8**	*2.90*		**92.3**	*6.19*		**1.76**	*0.240*		**54.0**	*6.15*		**129**	*6.47*
Zn	mg/kg	5	**1.56**	*0.040*		**1.99**	*0.103*		**0.032**	*0.032*		**2.85**	*0.197*		**1.13**	*0.085*
Mehlich-3 Mult-Element (scoop)														
Scoop Soil Mass	g	26	**2.04**	*0.130*		**2.45**	*0.175*		**2.00**	*0.135*		**2.29**	*0.180*		**2.47**	*0.205*
Assumed Density	g/cm3	14	**1.09**	*0.095*		**1.24**	*0.064*		**1.07**	*0.095*		**1.20**	*0.025*		**1.24**	*0.068*
Volume of Scoop	cm3	19	**2.00**	*0.000*		**2.00**	*0.000*		**2.00**	*0.000*		**2.00**	*0.000*		**2.00**	*0.000*
Extractrant Volume mL	mL	23	**20.0**	*0.000*		**20.0**	*0.000*		**20.0**	*0.000*		**20.0**	*0.000*		**20.0**	*0.000*
P Colorimetric	mg/kg	17	**12.1**	*0.900*		**54.6**	*2.40*		**88.9**	*6.10*		**68.2**	*3.20*		**12.9**	*1.04*
P ICP-AES	mg/kg	50	**18.0**	*1.00*		**60.0**	*3.80*		**94.0**	*7.70*		**74.0**	*4.15*		**20.7**	*1.24*
K	mg/kg	59	**112**	*6.83*		**315**	*23.0*		**369**	*20.4*		**170**	*10.8*		**100**	*10.9*
Ca	mg/kg	55	**3480**	*212*		**1640**	*139*		**10000**	*804*		**3300**	*231*		**732**	*75.0*
Mg	mg/kg	55	**528**	*33.0*		**310**	*27.1*		**667**	*44.5*		**111**	*7.75*		**59.2**	*7.03*
Na	mg/kg	40	**46.8**	*4.60*		**16.0**	*3.79*		**16.2**	*3.54*		**13.0**	*2.68*		**7.85**	*1.35*
S	mg/kg	45	**13.3**	*1.48*		**19.0**	*1.66*		**13.0**	*1.30*		**15.5**	*1.80*		**10.8**	*1.21*
Al	mg/kg	36	**681**	*22.0*		**1130**	*72.5*		**226**	*36.0*		**377**	*35.8*		**583**	*34.6*
Zn	mg/kg	50	**2.48**	*0.250*		**2.60**	*0.290*		**4.50**	*0.420*		**2.92**	*0.320*		**1.43**	*0.190*
Mn	mg/kg	50	**60.6**	*6.55*		**111**	*8.19*		**76.2**	*10.6*		**98.3**	*10.6*		**289**	*28.4*
Fe	mg/kg	48	**210**	*20.7*		**202**	*27.0*		**63.5**	*6.94*		**390**	*43.8*		**82.6**	*9.47*
Cu	mg/kg	47	**3.33**	*0.360*		**1.86**	*0.140*		**7.96**	*0.660*		**1.48**	*0.320*		**1.82**	*0.160*
B	mg/kg	38	**0.555**	*0.078*		**0.460**	*0.073*		**1.11**	*0.155*		**0.795**	*0.132*		**0.200**	*0.028*

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Micronutrients												
Zn - DTPA	mg/kg	67	**1.51**	*0.090*	**1.49**	*0.130*	**1.70**	*0.100*	**1.49**	*0.110*	**0.860**	*0.090*
Mn - DTPA	mg/kg	53	**17.5**	*2.76*	**78.6**	*6.98*	**11.5**	*1.10*	**10.3**	*2.41*	**96.8**	*8.42*
Fe - DTPA	mg/kg	56	**62.8**	*6.55*	**52.5**	*5.96*	**10.0**	*1.10*	**89.7**	*10.0*	**17.5**	*2.95*
Cu - DTPA	mg/kg	58	**2.57**	*0.135*	**1.20**	*0.100*	**3.76**	*0.355*	**1.11**	*0.105*	**1.35**	*0.150*
Zn - HCl	mg/kg	2	**2.46**	*0.140*	**2.79**	*0.195*	**0.595**	*0.465*	**3.96**	*0.300*	**1.24**	*0.195*
Mn-H3PO4	mg/kg	10	**15.5**	*1.51*	**74.2**	*4.43*	**2.87**	*0.165*	**35.8**	*5.15*	**108**	*8.58*
Cl - Ca(NO3)2 Extr.	mg/kg	16	**8.04**	*1.20*	**16.7**	*2.70*	**6.44**	*1.19*	**4.66**	*0.410*	**5.10**	*0.600*
B - Hot Wat.	mg/kg	33	**0.300**	*0.066*	**0.320**	*0.067*	**0.400**	*0.081*	**0.224**	*0.050*	**0.188**	*0.045*
B-DTPA/Sorbitol	mg/kg	16	**0.250**	*0.035*	**0.200**	*0.029*	**0.605**	*0.050*	**0.300**	*0.030*	**0.115**	*0.020*
Soil Organic Matter												
Soil Kjeldahl N	%	20	**0.187**	*0.009*	**0.126**	*0.008*	**0.233**	*0.012*	**0.120**	*0.009*	**0.070**	*0.004*
Soil TN (combustion)	%	39	**0.200**	*0.012*	**0.130**	*0.010*	**0.390**	*0.027*	**0.125**	*0.005*	**0.075**	*0.008*
Soil TOC (Combustion)	%	11	**2.10**	*0.060*	**1.48**	*0.080*	**2.60**	*0.123*	**1.25**	*0.041*	**0.670**	*0.030*
Soil Total C (Combustion)	%	30	**2.08**	*0.094*	**1.51**	*0.045*	**3.51**	*0.075*	**1.28**	*0.020*	**0.727**	*0.027*
SOM - Walkley-Black	%	33	**3.42**	*0.257*	**2.72**	*0.180*	**3.51**	*0.290*	**2.13**	*0.162*	**1.30**	*0.200*
SOM - LOI (% Wt loss)	%	76	**4.30**	*0.205*	**3.09**	*0.120*	**5.58**	*0.425*	**2.55**	*0.120*	**1.50**	*0.075*
Other												
CaCO3 Content	%	15	**0.620**	*0.093*	**0.545**	*0.103*	**9.70**	*0.835*	**0.900**	*0.161*	**0.294**	*0.061*
CEC - Cation Displacement	cmol/kg	22	**27.7**	*3.30*	**16.2**	*2.78*	**43.4**	*6.07*	**14.0**	*1.66*	**6.60**	*0.900*
CEC - Estimation	cmol/kg	12	**23.3**	*1.04*	**16.1**	*1.85*	**44.3**	*3.98*	**14.5**	*1.00*	**5.20**	*0.700*
Soil Density (Scoop)	g/cc	10	**1.14**	*0.055*	**1.34**	*0.050*	**1.13**	*0.049*	**1.28**	*0.035*	**1.36**	*0.060*
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	41	**14.3**	*2.04*	**48.8**	*2.77*	**18.0**	*1.74*	**32.2**	*2.20*	**40.0**	*4.00*
Silt 50 - 2 um	%	41	**55.7**	*4.70*	**33.3**	*3.74*	**31.0**	*4.54*	**53.4**	*3.40*	**47.5**	*4.50*
Clay 2 - 0 um	%	41	**29.7**	*3.57*	**17.5**	*2.50*	**50.4**	*4.60*	**13.8**	*2.20*	**12.0**	*2.00*
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	2	**2.34**	*1.260*	**24.9**	*23.5*	**6.09**	*5.02*	**13.0**	*11.7*	**18.9**	*17.6*
Silt 50 - 2 um	%	1	**64.2**	*0.000*	**42.3**	*0.000*	**57.4**	*0.000*	**61.9**	*0.000*	**54.0**	*0.000*
Clay 2 - 0 um	%	1	**32.1**	*0.000*	**9.30**	*0.000*	**31.6**	*0.000*	**13.4**	*0.000*	**9.50**	*0.000*
Solvita CO2	ppm	11	**35.0**	*7.51*	**27.8**	*5.92*	**68.7**	*12.2*	**13.7**	*2.49*	**47.8**	*11.9*

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