2016 North American Proficiency Testing Program
1st Quarter Report - April 11, 2016

Laboratory ID
General

Soil			Soil 2016-101			Soil 2016-102			Soil 2016-103			Soil 2016-104			Soil 2016-105		
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	%	22	**52.8**	*2.11*		**44.4**	*2.15*		**61.2**	*5.50*		**53.7**	*2.92*		**37.4**	*2.18*	
pH - sp	Unit	30	**6.41**	*0.175*		**6.99**	*0.090*		**7.60**	*0.100*		**5.20**	*0.110*		**6.90**	*0.100*	
ECe - sp	dS/m	29	**0.310**	*0.050*		**1.16**	*0.130*		**0.610**	*0.084*		**0.070**	*0.003*		**0.530**	*0.060*	
HCO3 - sp	mmolc/L	14	**0.790**	*0.108*		**4.18**	*0.495*		**4.10**	*0.458*		**0.400**	*0.040*		**1.58**	*0.170*	
Ca - sp	mmolc/L	26	**2.26**	*0.451*		**5.85**	*0.535*		**4.73**	*0.711*		**0.215**	*0.029*		**1.53**	*0.262*	
Mg - sp	mmolc/L	26	**0.440**	*0.051*		**2.42**	*0.185*		**0.790**	*0.110*		**0.144**	*0.016*		**2.74**	*0.550*	
Na - sp	mmolc/L	26	**0.267**	*0.047*		**0.148**	*0.018*		**1.01**	*0.112*		**0.240**	*0.060*		**0.502**	*0.047*	
SAR - sp	value	24	**0.220**	*0.045*		**0.090**	*0.020*		**0.620**	*0.030*		**0.510**	*0.090*		**0.329**	*0.040*	
Cl - sp	mmolc/L	16	**0.200**	*0.030*		**0.215**	*0.040*		**1.48**	*0.315*		**0.230**	*0.032*		**0.210**	*0.026*	
SO4 - sp	mmolc/L	18	**0.224**	*0.052*		**1.67**	*0.155*		**0.414**	*0.065*		**0.080**	*0.011*		**0.561**	*0.059*	
NO_3 - sp	mmolc/L	11	**1.08**	*0.203*		**4.31**	*0.834*		**0.091**	*0.020*		**0.055**	*0.012*		**2.46**	*0.458*	
B - sp	mg/L	14	**0.048**	*0.012*		**0.080**	*0.012*		**0.066**	*0.005*		**0.037**	*0.004*		**0.180**	*0.040*	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	43	**0.140**	*0.024*		**0.560**	*0.060*		**0.540**	*0.050*		**0.040**	*0.005*		**0.259**	*0.039*	
Soil EC (1:2)	(dS/m)	49	**0.107**	*0.017*		**0.377**	*0.036*		**0.280**	*0.058*		**0.030**	*0.002*		**0.130**	*0.029*	
pH (1:1) Water	Unit	96	**6.46**	*0.065*		**7.20**	*0.054*		**8.00**	*0.100*		**5.30**	*0.125*		**7.20**	*0.100*	
pH (1:2) Water	Unit	32	**6.50**	*0.145*		**7.30**	*0.100*		**8.10**	*0.130*		**5.27**	*0.131*		**7.20**	*0.150*	
pH (1:1) 0.01M CaCl2	Unit	26	**5.98**	*0.035*		**6.85**	*0.035*		**7.59**	*0.055*		**4.49**	*0.055*		**6.73**	*0.055*	
pH (1:2) 0.01M CaCl2	Unit	10	**6.09**	*0.040*		**6.95**	*0.110*		**7.61**	*0.075*		**4.38**	*0.095*		**6.67**	*0.110*	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	32	**6.78**	*0.080*		**7.12**	*0.080*		**7.47**	*0.050*		**6.23**	*0.125*		**7.30**	*0.060*	
Adams-Evans Buf pH	Unit	8	**7.48**	*0.075*		**7.61**	*0.015*		**7.69**	*0.030*		**7.20**	*0.135*		**7.72**	*0.025*	
Woodruff Buf. pH	Unit	23	**6.70**	*0.040*		**6.96**	*0.038*		**7.15**	*0.021*		**6.35**	*0.080*		**7.00**	*0.030*	
Mehlich Buffer pH	Unit	11	**6.28**	*0.020*		**6.60**	*0.060*		**6.88**	*0.040*		**5.69**	*0.110*		**6.50**	*0.010*	
Sikora Buffer pH	Unit	28	**6.80**	*0.055*		**7.17**	*0.040*		**7.41**	*0.050*		**6.19**	*0.145*		**7.24**	*0.060*	
Titratable Acidity	cmol/kg																

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Inorganic Nitrogen (NO3-N & NH4-N)													
NO3-N Cd. Rd.	mg/kg	69	**17.1**	*1.36*	**46.1**	*1.90*	**2.18**	*0.476*	**0.800**	*0.099*	**17.1**	*1.03*	
NO3-N ISE	mg/kg	14	**17.3**	*1.59*	**47.8**	*3.60*	**3.53**	*0.394*	**1.00**	*0.179*	**16.3**	*1.69*	
NO3-N CTA	mg/kg	2	**18.1**	*1.84*	**43.7**	*5.98*	**2.36**	*0.383*	**2.23**	*0.875*	**16.2**	*0.438*	
NO3-N Ion Chr.	mg/kg	2	**14.2**	*4.26*	**46.6**	*1.94*	**1.07**	*0.948*	**0.429**	*0.304*	**20.3**	*3.78*	
NO3-N Other _____	mg/kg	7	**16.3**	*1.30*	**45.9**	*6.10*	**2.51**	*0.510*	**1.38**	*0.350*	**17.0**	*1.50*	
NH4 - N (KCl Extr.)	mg/kg	58	**5.81**	*0.808*	**174**	*13.7*	**6.84**	*0.810*	**7.42**	*1.22*	**2.94**	*0.465*	
Phosphorus and Sulfur													
PO4-P Bray P (1:10)	mg/kg	52	**88.7**	*12.20*	**142**	*7.55*	**7.25**	*1.34*	**10.1**	*2.13*	**18.6**	*1.60*	
PO4-P Bray P1 (1:7)	mg/kg	6	**45.4**	*6.33*	**106**	*7.35*	**16.6**	*7.70*	**5.77**	*0.875*	**14.9**	*1.30*	
PO4-P Olsen/Bicarb	mg/kg	57	**29.4**	*3.40*	**84.2**	*8.80*	**15.0**	*1.00*	**5.50**	*0.625*	**13.8**	*1.71*	
PO4-P AB-DTPA	mg/kg	2	**14.3**	*0.642*	**43.5**	*0.838*	**9.05**	*2.35*	**7.91**	*2.91*	**7.33**	*0.516*	
PO4-P Modified Morgan	mg/kg	7	**4.93**	*0.200*	**25.8**	*2.30*	**6.63**	*2.13*	**1.28**	*0.320*	**5.57**	*0.350*	
PO4-P True Morgan	mg/kg	7	**5.90**	*0.540*	**30.9**	*1.50*	**8.00**	*0.700*	**1.00**	*0.080*	**6.50**	*0.420*	
PO4-P Mod. Kewlona	mg/kg	2	**56.5**	*10.5*	**113**	*7.00*	**28.5**	*3.50*	**5.50**	*0.000*	**16.5**	*0.500*	
PO4-P Stong Bray (1:10)	mg/kg	9	**178**	*3.50*	**246**	*19.70*	**89.8**	*6.16*	**18.0**	*3.25*	**113**	*14.0*	
PO4-P Water Soluble	mg/kg												
SO4 - S (PO4 Extr.)	mg/kg	34	**5.04**	*0.879*	**12.6**	*1.65*	**5.18**	*0.781*	**11.6**	*2.50*	**4.00**	*0.900*	
Bases													
K Ammonium Acetate	mg/kg	80	**67.2**	*9.73*	**645**	*34.5*	**554**	*35.9*	**81.9**	*14.3*	**341**	*23.3*	
Ca Ammonium Acetate	mg/kg	77	**1040**	*75.9*	**3000**	*196*	**6750**	*799*	**116**	*14.7*	**1340**	*84.0*	
Mg Ammonium Acetate	mg/kg	77	**51.0**	*4.50*	**424**	*22.0*	**386**	*27.5*	**24.9**	*4.53*	**1200**	*99.5*	
Na Ammonium Acetate	mg/kg	64	**16.2**	*3.17*	**10.1**	*1.28*	**59.1**	*6.05*	**14.3**	*3.40*	**24.0**	*4.00*	
Bray Extractable K	mg/kg	5	**52.0**	*2.20*	**464**	*24.4*	**316**	*8.00*	**57.3**	*2.80*	**261**	*13.1*	
K- Olsen/Bicarb.	mg/kg	7	**80.0**	*11.6*	**493**	*13.0*	**341**	*6.06*	**75.8**	*4.30*	**321**	*7.00*	
K Modified Morgan	mg/kg	5	**58.0**	*10.0*	**595**	*66.0*	**490**	*18.0*	**80.0**	*6.00*	**304**	*6.00*	
K True Morgan	mg/kg	6	**55.4**	*2.10*	**401**	*32.0*	**245**	*22.0*	**61.3**	*2.45*	**241**	*7.00*	
Ca Modified Morgan	mg/kg	3	**1060**	*223*	**3130**	*280*	**26000**	*11300*	**89.0**	*9.00*	**1200**	*105*	
Aluminum KCL Extr.	mg/kg	4	**1.85**	*0.358*	**1.15**	*0.350*	**3.80**	*3.30*	**131**	*14.0*	**0.840**	*0.250*	

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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*	
P	mg/kg	9	**52.9**	*6.71*		**61.9**	*6.15*		**4.14**	*0.475*		**6.35**	*0.520*	
K	mg/kg	9	**40.7**	*3.59*		**371**	*31.4*		**138**	*5.50*		**52.1**	*6.04*	
Ca	mg/kg	9	**1310**	*13.0*		**2930**	*215*		**5210**	*359*		**128**	*31.6*	
Mg	mg/kg	9	**54.5**	*2.08*		**402**	*21.4*		**243**	*19.2*		**21.9**	*3.22*	
Mn	mg/kg	7	**29.9**	*0.535*		**272**	*34.86*		**2.71**	*0.408*		**35.4**	*2.33*	
Zn	mg/kg	7	**2.48**	*0.200*		**3.10**	*0.270*		**0.090**	*0.080*		**0.730**	*0.066*	
Mehlich-3 Mult-Element (scoop)														
Scoop Soil Mass	g	27	**1.89**	*0.110*		**2.05**	*0.078*		**2.00**	*0.109*		**1.58**	*0.117*	
Assumed Density	g/cm3	18	**0.975**	*0.068*		**1.12**	*0.060*		**1.06**	*0.110*		**0.840**	*0.120*	
Volume of Scoop	cm3	22	**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*	
P Colorimetric	mg/kg	15	**84.0**	*2.400*		**178**	*16.9*		**48.1**	*2.88*		**9.28**	*0.860*	
P ICP-AES	mg/kg	54	**88.6**	*5.60*		**194**	*12.7*		**49.0**	*3.92*		**10.7**	*1.06*	
K	mg/kg	58	**59.2**	*5.84*		**656**	*31.0*		**557**	*35.9*		**72.3**	*9.20*	
Ca	mg/kg	55	**1190**	*96.2*		**3340**	*207*		**9780**	*817*		**111**	*16.7*	
Mg	mg/kg	55	**55.4**	*5.46*		**459**	*21.4*		**464**	*25.4*		**24.7**	*4.80*	
Na	mg/kg	41	**16.0**	*3.90*		**10.7**	*1.55*		**61.0**	*7.00*		**14.0**	*3.26*	
S	mg/kg	46	**13.0**	*1.00*		**21.3**	*1.55*		**14.0**	*1.67*		**13.9**	*1.08*	
Al	mg/kg	34	**1610**	*101*		**775**	*63.8*		**319**	*38.9*		**1640**	*166*	
Zn	mg/kg	49	**2.70**	*0.300*		**3.67**	*0.350*		**1.72**	*0.225*		**0.860**	*0.140*	
Mn	mg/kg	49	**44.6**	*2.60*		**315**	*18.6*		**119**	*10.7*		**37.8**	*3.30*	
Fe	mg/kg	47	**151**	*13.0*		**376**	*50.6*		**66.5**	*5.66*		**197**	*16.0*	
Cu	mg/kg	48	**2.36**	*0.235*		**2.95**	*0.355*		**3.20**	*0.300*		**0.495**	*0.115*	
B	mg/kg	37	**0.380**	*0.080*		**1.05**	*0.145*		**1.72**	*0.220*		**0.200**	*0.034*	

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Micronutrients												
Zn - DTPA	mg/kg	68	**1.10**	*0.100*	**1.79**	*0.130*	**0.676**	*0.076*	**0.520**	*0.100*	**0.800**	*0.086*
Mn - DTPA	mg/kg	53	**13.0**	*1.30*	**218**	*21.8*	**10.4**	*1.79*	**21.8**	*3.02*	**15.7**	*2.40*
Fe - DTPA	mg/kg	56	**40.2**	*5.59*	**134**	*15.1*	**8.78**	*1.22*	**76.2**	*14.2*	**18.0**	*2.00*
Cu - DTPA	mg/kg	57	**1.33**	*0.100*	**2.14**	*0.160*	**1.60**	*0.100*	**0.400**	*0.060*	**2.47**	*0.190*
Zn - HCl	mg/kg	3	**2.76**	*0.010*	**4.37**	*0.370*	**0.300**	*0.200*	**0.900**	*0.100*	**3.10**	*0.100*
Mn-H3PO4	mg/kg	10	**24.5**	*3.20*	**240**	*22.2*	**4.30**	*1.02*	**28.4**	*4.20*	**20.0**	*2.20*
Cl - Ca(NO3)2 Extr.	mg/kg	20	**4.20**	*0.58*	**4.40**	*0.600*	**29.2**	*1.90*	**3.55**	*0.565*	**3.89**	*0.473*
B - Hot Wat.	mg/kg	36	**0.245**	*0.055*	**0.605**	*0.136*	**0.720**	*0.130*	**0.192**	*0.035*	**0.710**	*0.115*
B-DTPA/Sorbitol	mg/kg	17	**0.160**	*0.018*	**0.450**	*0.050*	**1.10**	*0.110*	**0.140**	*0.019*	**0.445**	*0.050*
Soil Organic Matter												
Soil Kjeldahl N	%	21	**0.157**	*0.011*	**0.240**	*0.018*	**0.104**	*0.014*	**0.141**	*0.011*	**0.067**	*0.007*
Soil TN (combustion)	%	42	**0.160**	*0.011*	**0.250**	*0.017*	**0.110**	*0.011*	**0.150**	*0.010*	**0.073**	*0.007*
Soil TOC (Combustion)	%	9	**1.73**	*0.070*	**2.47**	*0.090*	**1.17**	*0.140*	**1.92**	*0.040*	**0.573**	*0.025*
Soil Total C (Combustion)	%	35	**1.75**	*0.039*	**2.51**	*0.065*	**2.35**	*0.060*	**1.94**	*0.040*	**0.580**	*0.023*
SOM - Walkley-Black	%	32	**3.04**	*0.125*	**4.20**	*0.308*	**1.90**	*0.134*	**3.21**	*0.310*	**1.07**	*0.118*
SOM - LOI (% Wt loss)	%	75	**3.93**	*0.190*	**4.54**	*0.240*	**2.72**	*0.200*	**4.32**	*0.220*	**1.76**	*0.137*
Other												
CaCO3 Content	%	13	**0.640**	*0.135*	**0.800**	*0.110*	**12.2**	*0.843*	**0.500**	*0.070*	**1.08**	*0.165*
CEC - Cation Displacement	cmol/kg	21	**12.0**	*2.30*	**24.0**	*2.82*	**30.1**	*2.10*	**13.0**	*2.75*	**18.4**	*1.82*
CEC - Estimation	cmol/kg	14	**7.25**	*0.515*	**21.8**	*1.18*	**39.3**	*4.28*	**9.90**	*2.32*	**19.5**	*1.71*
Soil Density (Scoop)	g/cc	9	**1.06**	*0.020*	**1.17**	*0.030*	**1.12**	*0.030*	**0.904**	*0.034*	**1.32**	*0.040*
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	34	**31.5**	*3.20*	**31.2**	*2.69*	**9.00**	*2.00*	**17.5**	*1.88*	**41.7**	*2.27*
Silt 50 - 2 um	%	34	**56.9**	*4.90*	**45.3**	*2.50*	**41.4**	*5.00*	**55.0**	*5.00*	**35.5**	*3.35*
Clay 2 - 0 um	%	34	**10.1**	*2.05*	**24.2**	*3.20*	**49.5**	*3.00*	**23.5**	*3.40*	**21.3**	*2.25*
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	7	**31.0**	*1.23*	**24.9**	*2.3*	**3.68**	*0.59*	**13.1**	*3.2*	**40.8**	*0.945*
Silt 50 - 2 um	%	7	**61.7**	*0.620*	**48.2**	*4.99*	**46.3**	*3.34*	**65.9**	*2.59*	**39.3**	*0.785*
Clay 2 - 0 um	%	7	**8.80**	*1.52*	**25.6**	*2.43*	**48.9**	*2.57*	**23.2**	*1.07*	**20.0**	*1.07*
Solvita CO2	ppm	9	**36.0**	*18.5*	**52.3**	*10.7*	**48.0**	*27.0*	**49.1**	*26.7*	**18.7**	*8.70*

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