**Method Proficiency For All Labs****Magruder Fertilizer PT Program**

Methods: 57

Sample # 220451

Potassium Select PT Scheme

Labs Reporting: 17

K-Mg-SO4

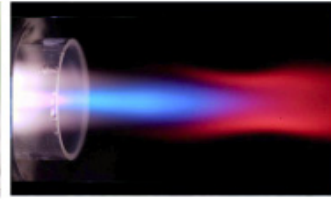
Statistical Summary

Issue Date : 05/31/2022

Method Code	Analyte & Method Sample # 220451	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Method Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Method IA Ratio	Average Range (R-bar)	Horwitz %RSD
010.60	Total N, Combustion (%)	1		0.0120									
020.50	Total P2O5, ICP (%)	1		0.0750									
041.21	Direct Available P2O5, Spectrophotometric, Citrate-EDTA Ext.	1		0.0400									
048.20	Water Soluble P2O5, Spectrophotometric (%)	1		0.0250									
050.00	Soluble K2O, STPB Oxalate (21.5%)	4	4	22.15	0.0698	22.15	1.1545	0.0698	0.0436	0.32%	0.14	0.0525	2.12%
050.30	Soluble K2O, AA (Oxalate) (21.5%)	2	2	21.94	0.2934								
050.32	Soluble K2O, AA (Citrate-EDTA) (21.5%)	1		20.86									
050.50	Soluble K2O, ICP (Oxalate) (21.5%)	1		21.32									
050.51	Soluble K2O, ICP (Citrate) (21.5%)	1		18.68									
050.99	Soluble K2O, Other (21.5%)	5	5	21.80	0.6417	21.80	1.1430	0.6417	0.3587	2.94%	1.31	1.920	2.14%
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	2	2	0.1155	0.0715								
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.5%)	1		10.84									
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.5%)	3	3	11.27	0.3127	11.27	0.7633	0.3127	0.2257	2.78%	0.95	0.0867	2.78%
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	5	5	11.69	1.017	11.69	0.7845	1.017	0.5686	8.70%	3.02	0.2152	2.76%
121.99	Acid Soluble Mg, Other (10.5%)	3	3	12.24	1.237	12.24	0.8119	1.237	0.8929	10.11%	3.55	0.3433	2.74%
131.70	Water Soluble Mg, Titrimetric (EDTA) (%)	1		11.18									
131.99	Water Soluble Mg, Other (%)	1		10.42									
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfu	1		0.0300									
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	2	2	22.83	0.0601								
148.00	Total S, Combustion (21%)	2	2	22.49	0.8077								
148.01	Total S, Gravimetric - sulfate and elemental (21%)	3	3	22.40	0.4859	22.40	1.0000	0.4859	0.3506	2.17%	1.13	0.0300	2.11%
148.07	Total S, ICP, test portion as in 2017.02 (21%)	4	4	22.62	1.388	22.62	1.0000	1.388	0.8678	6.14%	3.24	0.4199	2.10%
148.99	Total S, Other (21%)	2	2	23.25	1.064								
151.30	Acid Soluble As, ICP (ppm)	1		3.000									
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	1		1.520									
151.99	Acid Soluble As, Other (ppm)	1		1.750									
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	1		1.000									
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	1		0.5600									
181.99	Acid Soluble Cd, Other (ppm)	1		0.1000									

Method Code	Analyte & Method Sample # 220451	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Method Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Method IA Ratio	Average Range (R-bar)	Horwitz %RSD
190.00	Water Soluble Cl, Titrimetric (2.5%)	4	4	1.141	0.1472	1.141	0.1191	0.1472	0.0920	12.91%	2.88	0.0215	3.92%
190.99	Water Soluble Cl, Other (2.5%)	2	2	1.930	1.061								
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	1		44.00									
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	1		41.45									
191.99	Acid Soluble Cr, Other (ppm)	1		36.50									
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	1		1.000									
202.33	Acid Soluble Co, ICP, 2017.02 (ppm)	1		0.9960									
202.99	Acid Soluble Co, Other (ppm)	1		0.9500									
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	1		0.0002									
221.99	Acid Soluble Cu, Other (%)	1		0.0003									
241.33	Acid Soluble Fe, ICP, 2017.02 (%)	2	2	0.0287	0.0123								
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	1		4.000									
251.33	Acid Soluble Pb, ICP, 2017.02 (ppm)	1		1.270									
251.99	Acid Soluble Pb, Other (ppm)	1		1.000									
281.30	Acid Soluble Hg, ICP (ppm)	1		2.000									
281.99	Acid Soluble Hg, Other (ppm)	1		0.0100									
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	1		4.000									
289.99	Acid Soluble Mo, Other (ppm)	1		1.950									
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	1		24.00									
291.33	Acid Soluble Ni, ICP, 2017.02 (ppm)	1		23.90									
291.99	Acid Soluble Ni, Other (ppm)	1		22.00									
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	1		10.00									
301.33	Acid Soluble Se, ICP, 2017.02 (ppm)	1		0.9500									
301.99	Acid Soluble Se, Other (ppm)	1		0.5000									
311.33	Sodium, ICP, test portion as in 2017.02 (%)	1		0.6440									
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	1		0.0003									
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	1		0.0007									
321.99	Acid Soluble Zn, Other (%)	1		0.0005									

The Method IA Ratio = 2.33 * Robust SD / IA at the Method Assigned Value. IA ratios of 1 and less indicate participant data dispersion is as good or less than the IA. Red indicates the IA ratio is significantly greater than 1, Orange indicates marginally greater than 1, Green indicates IA ratio is not significantly greater than 1 and Grey indicates < 6 labs reporting. The Horwitz %RSD is calculated using the Thompson Modification, Analyst,2000,125,385-386.



Method Proficiency For All Labs

Magruder Fertilizer PT Program

Sample # 220451

Potassium Select PT Scheme

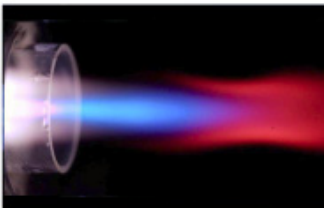
K-Mg-SO4

Method Precision Report

Issue Date : 05/31/2022

Method Code	Analyte & Method	# Tests Submitted	# Tests Used in Precision Calcs	Mean	SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	5	5	11.69	1.017	1.007	0.1989	1.027	8.62%	1.70%	8.78%	5.163

Notes: Precision data calculated when 5 or more Tests included.



Method Proficiency For All Labs

Magruder Fertilizer PT Program

Methods: 57

Sample # 220451

Potassium Select PT Scheme

Labs Reporting: 17

K-Mg-SO4

Lab Values

Issue Date : 05/31/2022

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
010.60	Total N, Combustion (%)	0472	0.0120	0.0020				1			0
020.50	Total P2O5, ICP (%)	0472	0.0750	0.0100				1			0
041.21	Direct Available P2O5, Spectrophotometric, Citrate-EDTA Ext.	0472	0.0400	0.0000				1			0
048.20	Water Soluble P2O5, Spectrophotometric (%)	0472	0.0250	0.0100				1			0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0220	22.10	0.0700	22.15	0.0698	0.0525	4	-0.81		0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0561	22.11	0.1000	22.15	0.0698	0.0525	4	-0.59		0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0589	22.15	0.0200	22.15	0.0698	0.0525	4	-0.02		0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0405	22.25	0.0200	22.15	0.0698	0.0525	4	1.41		0
050.30	Soluble K2O, AA (Oxalate) (21.5%)	0073	21.74	0.6700				2			0
050.30	Soluble K2O, AA (Oxalate) (21.5%)	0040	22.15	0.1000				2			0
050.32	Soluble K2O, AA (Citrate-EDTA) (21.5%)	0472	20.86	0.1000				1			0
050.50	Soluble K2O, ICP (Oxalate) (21.5%)	0603	21.32	0.0600				1			0
050.51	Soluble K2O, ICP (Citrate) (21.5%)	0131	18.68	2.400				1			0
050.99	Soluble K2O, Other (21.5%)	0025	21.05	2.500	21.80	0.6417	1.920	5	-1.17		0
050.99	Soluble K2O, Other (21.5%)	0576	21.50	6.400	21.80	0.6417	1.920	5	-0.47		0
050.99	Soluble K2O, Other (21.5%)	0027	21.59	0.1900	21.80	0.6417	1.920	5	-0.34		0
050.99	Soluble K2O, Other (21.5%)	0590	22.16	0.0000	21.80	0.6417	1.920	5	0.56		0
050.99	Soluble K2O, Other (21.5%)	0421	22.71	0.5100	21.80	0.6417	1.920	5	1.41		0
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	0472	0.0650	0.0100				2			0
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	0494	0.1661	0.0019				2			0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.5%)	0040	10.84	0.4200				1			0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.5%)	0405	11.01	0.2000	11.27	0.3127	0.0867	3	-0.82		0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.5%)	0220	11.18	0.0500	11.27	0.3127	0.0867	3	-0.29		0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.5%)	0073	11.62	0.0100	11.27	0.3127	0.0867	3	1.11		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	0561	10.77	0.0100	11.69	1.017	0.2152	5	-0.91		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	0421	11.20	0.2900	11.69	1.017	0.2152	5	-0.49		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	0025	11.45	0.5000	11.69	1.017	0.2152	5	-0.24		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	0494	11.62	0.2459	11.69	1.017	0.2152	5	-0.07		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.5%)	0472	13.42	0.0300	11.69	1.017	0.2152	5	1.70		0
121.99	Acid Soluble Mg, Other (10.5%)	0590	11.37	0.1000	12.24	1.237	0.3433	3	-0.70		0
121.99	Acid Soluble Mg, Other (10.5%)	0027	11.69	0.4600	12.24	1.237	0.3433	3	-0.44		0
121.99	Acid Soluble Mg, Other (10.5%)	0042	13.66	0.4700	12.24	1.237	0.3433	3	1.15		0

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
131.70	Water Soluble Mg, Titrimetric (EDTA) (%)	0589	11.18	0.0200				1			0
131.99	Water Soluble Mg, Other (%)	0576	10.42	1.230				1			0
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfu	0405	0.0300	0.0000				1			0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0561	22.79	0.0900				2			0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0405	22.87	0.0600				2			0
148.00	Total S, Combustion (21%)	0547	21.92	0.0000				2			0
148.00	Total S, Combustion (21%)	0131	23.06	0.4284				2			0
148.01	Total S, Gravimetric - sulfate and elemental (21%)	0589	21.93	0.0200	22.40	0.4859	0.0300	3	-0.96		0
148.01	Total S, Gravimetric - sulfate and elemental (21%)	0073	22.37	0.0100	22.40	0.4859	0.0300	3	-0.07		0
148.01	Total S, Gravimetric - sulfate and elemental (21%)	0405	22.90	0.0600	22.40	0.4859	0.0300	3	1.03		0
148.07	Total S, ICP, test portion as in 2017.02 (21%)	0472	21.30	0.2000	22.62	1.388	0.4199	4	-0.95		0
148.07	Total S, ICP, test portion as in 2017.02 (21%)	0421	21.75	0.3100	22.62	1.388	0.4199	4	-0.63		0
148.07	Total S, ICP, test portion as in 2017.02 (21%)	0040	23.05	0.1000	22.62	1.388	0.4199	4	0.31		0
148.07	Total S, ICP, test portion as in 2017.02 (21%)	0494	24.38	1.070	22.62	1.388	0.4199	4	1.27		0
148.99	Total S, Other (21%)	0590	22.50	0.0300				2			0
148.99	Total S, Other (21%)	0220	24.00	0.0000				2			0
151.30	Acid Soluble As, ICP (ppm)	0405	< 3					0			5
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	0494	1.520	0.0800				1			0
151.99	Acid Soluble As, Other (ppm)	0220	1.750	0.1000				1			0
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0405	< 1					0			5
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	0494	< 0.56					0			5
181.99	Acid Soluble Cd, Other (ppm)	0220	< 0.1					0			5
190.00	Water Soluble Cl, Titrimetric (2.5%)	0220	0.9650	0.0300	1.141	0.1472	0.0215	4	-1.19		0
190.00	Water Soluble Cl, Titrimetric (2.5%)	0494	1.107	0.0360	1.141	0.1472	0.0215	4	-0.23		0
190.00	Water Soluble Cl, Titrimetric (2.5%)	0405	1.170	0.0200	1.141	0.1472	0.0215	4	0.20		0
190.00	Water Soluble Cl, Titrimetric (2.5%)	0561	1.320	0.0000	1.141	0.1472	0.0215	4	1.22		0
190.99	Water Soluble Cl, Other (2.5%)	0589	1.180	0.0200				2			0
190.99	Water Soluble Cl, Other (2.5%)	0576	2.680	1.200				2			0
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0405	44.00	0.0000				1			0
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	0494	41.45	3.100				1			0
191.99	Acid Soluble Cr, Other (ppm)	0220	36.50	11.00				1			0
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	0405	< 1					0			5
202.33	Acid Soluble Co, ICP, 2017.02 (ppm)	0494	0.9960	0.1680				1			0
202.99	Acid Soluble Co, Other (ppm)	0220	0.9500	0.3000				1			0
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	0405	< 0.0002					0			5
221.99	Acid Soluble Cu, Other (%)	0220	0.0003	0.0001				1			0
241.33	Acid Soluble Fe, ICP, 2017.02 (%)	0472	0.0200	0.0000				2			0
241.33	Acid Soluble Fe, ICP, 2017.02 (%)	0494	0.0374	0.0015				2			0
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0405	< 4					0			5
251.33	Acid Soluble Pb, ICP, 2017.02 (ppm)	0494	< 1.27					0			5
251.99	Acid Soluble Pb, Other (ppm)	0220	< 1					0			5
281.30	Acid Soluble Hg, ICP (ppm)	0405	< 2					0			5
281.99	Acid Soluble Hg, Other (ppm)	0220	< 0.01					0			5

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	0405	4.000	0.0000				1		0	
289.99	Acid Soluble Mo, Other (ppm)	0220	1.950	0.5000				1		0	
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	0405	24.00	0.0000				1		0	
291.33	Acid Soluble Ni, ICP, 2017.02 (ppm)	0494	23.90	1.800				1		0	
291.99	Acid Soluble Ni, Other (ppm)	0220	22.00	8.000				1		0	
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0405	< 10					0		5	
301.33	Acid Soluble Se, ICP, 2017.02 (ppm)	0494	< 0.95					0		5	
301.99	Acid Soluble Se, Other (ppm)	0220	0.5000	0.0000				1		0	
311.33	Sodium, ICP, test portion as in 2017.02 (%)	0494	0.6440	0.0085				1		0	
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	0405	< 0.0003					0		5	
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	0494	0.0007	0.0001				1		0	
321.99	Acid Soluble Zn, Other (%)	0220	0.0005	0.0002				1		0	

Interpreting Z Scores and Flags:

Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). Flags indicate data usage: 0 = Used, 1 = rejected for duplicates too far apart, 2 = rejected as extreme outlier, 3 = removed from stats, 4 = rejected due to 0s submitted and 5 = LOD. A 9 flag indicates a data problem - scores not calculated.

Notes:

Robust statistics not used if < 6 labs used in calculations, in this case Values and Z Scores are grayed out and should be interpreted with extreme caution. IA Status describes where your result is relative to the Assigned Value ± IA. Red indicates Higher or Lower and Green indicates within the IA range about the Robust mean. Method codes in light green indicate a guaranteed analyte. Individual lab values may be below detection limits but are reported solely for the purpose of this Proficiency Testing program.