

Analyte Proficiency From All Labs
 Sample # 220451
 K-Mg-SO4

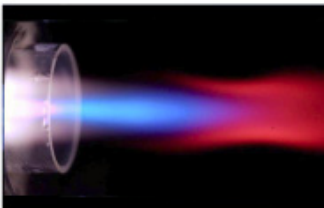
Magruder Fertilizer PT Program
Potassium Select PT Scheme
Statistical Summary

Analytes: 25
 # Labs Reporting: 17
 Issue Date : 05/31/2022

Analyte Code	Analyte Sample # 220451	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Analyte Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Analyte IA Ratio	Average Range (R-bar)	Horwitz %RSD
010	Total N (%)	1		0.0120									
020	Total P2O5 (%)	1		0.0750									
041	Direct Available P2O5 (%)	1		0.0400									
048	Water Soluble P2O5 (%)	1		0.0250									
050	Soluble K2O (21.5%)	14	13	21.60	0.9826	21.76	1.1416	0.6897	0.2391	3.17%	1.41	0.5185	2.14%
101	Acid Soluble Ca (%)	2	2	0.1155	0.0715								
121	Acid Soluble Mg (10.5%)	12	12	11.65	0.9312	11.44	0.7720	0.5585	0.2015	4.88%	1.69	0.2322	2.77%
131	Water Soluble Mg (%)	2	2	10.80	0.5409								
143	Elemental S (%)	1		0.0300									
145	Sulfate S, HCl soluble (%)	2	2	22.83	0.0601								
148	Total S (21%)	11	10	22.65	0.9486	22.45	1.0000	0.8347	0.3300	3.72%	1.94	0.1158	2.11%
151	Acid Soluble As (ppm)	3	2	2.090	0.7964	1.635		0.1626	0.1438	9.95%		0.0900	14.86%
181	Acid Soluble Cd (ppm)	3	0	0.5533	0.4500	1.635		0.1626		9.95%		0.0000	14.86%
190	Water Soluble Cl (2.5%)	6	5	1.404	0.6358	1.148	0.1198	0.1287	0.0719	11.21%	2.50	0.0212	3.92%
191	Acid Soluble Cr (ppm)	3	3	40.65	3.813	40.65		3.813	2.752	9.38%		4.700	9.16%
202	Acid Soluble Co (ppm)	3	2	0.9820	0.0278	0.9730	1.2919	0.0325	0.0288	3.34%	0.06	0.2340	16.06%
221	Acid Soluble Cu (%)	2	1	0.0002	0.0000								
241	Acid Soluble Fe (%)	2	2	0.0287	0.0123								
251	Acid Soluble Pb (ppm)	3	0	2.090	1.660	0.0287		0.0123		42.78%		0.0000	22.00%
281	Acid Soluble Hg (ppm)	2	0	1.005	1.407								
289	Acid Soluble Mo (ppm)	2	2	2.975	1.450								
291	Acid Soluble Ni (ppm)	3	3	23.30	1.127	23.30		1.127	0.8133	4.84%		3.267	9.96%
301	Acid Soluble Se (ppm)	3	1	3.817	5.360	23.30		1.127	1.409	4.84%		0.0000	9.96%
311	Sodium (%)	1		0.6440									
321	Acid Soluble Zn (%)	3	2	0.0005	0.0002	0.0006	0.0051	0.0001	0.0001	18.45%	0.05	0.0002	12.29%

The Analyte IA Ratio = 2.33 * Robust SD / IA at the Analyte 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.

Horwitz %RSD
Average Range (R-bar)
Analyte IA Ratio
Robust % RSD
Robust Uncertainty (U)
Robust sd
IA at Analyte Value
Assigned Value Robust Mean
Raw SD
Raw Mean
Tests in Robust Calculations
Tests Submitted
Analyte Sample # 220451
Analyte Code



Analyte Proficiency From All Labs

Magruder Fertilizer PT Program

Analytes: 25

Sample # 220451

Potassium Select PT Scheme

Labs Reporting: 17

K-Mg-SO4

Lab Values

Issue Date : 05/31/2022

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
010	Total N (%)	0472	0.0120	0.0020				1		010.60	0
020	Total P2O5 (%)	0472	0.0750	0.0100				1		020.50	0
041	Direct Available P2O5 (%)	0472	0.0400	0.0000				1		041.21	0
048	Water Soluble P2O5 (%)	0472	0.0250	0.0100				1		048.20	0
050	Soluble K2O (21.5%)	0131	18.68†	2.400	21.76	0.6897	0.5185	13	-4.47	050.51	0
050	Soluble K2O (21.5%)	0472	20.86	0.1000	21.76	0.6897	0.5185	13	-1.31	050.32	0
050	Soluble K2O (21.5%)	0025	21.05	2.500	21.76	0.6897	0.5185	13	-1.03	050.99	0
050	Soluble K2O (21.5%)	0603	21.32	0.0600	21.76	0.6897	0.5185	13	-0.64	050.50	0
050	Soluble K2O (21.5%)	0027	21.59	0.1900	21.76	0.6897	0.5185	13	-0.26	050.99	0
050	Soluble K2O (21.5%)	0073	21.74	0.6700	21.76	0.6897	0.5185	13	-0.04	050.30	0
050	Soluble K2O (21.5%)	0220	22.10	0.0700	21.76	0.6897	0.5185	13	0.48	050.00	0
050	Soluble K2O (21.5%)	0561	22.11	0.1000	21.76	0.6897	0.5185	13	0.51	050.00	0
050	Soluble K2O (21.5%)	0589	22.15	0.0200	21.76	0.6897	0.5185	13	0.56	050.00	0
050	Soluble K2O (21.5%)	0040	22.15	0.1000	21.76	0.6897	0.5185	13	0.56	050.30	0
050	Soluble K2O (21.5%)	0590	22.16	0.0000	21.76	0.6897	0.5185	13	0.58	050.99	0
050	Soluble K2O (21.5%)	0405	22.25	0.0200	21.76	0.6897	0.5185	13	0.71	050.00	0
050	Soluble K2O (21.5%)	0421	22.71	0.5100	21.76	0.6897	0.5185	13	1.37	050.99	0
050	Soluble K2O (21.5%)	0576	21.50	6.400	21.76	0.6897	0.5185	13	-0.38	050.99	1
101	Acid Soluble Ca (%)	0472	0.0650	0.0100				2		101.33	0
101	Acid Soluble Ca (%)	0494	0.1661	0.0019				2		101.33	0
121	Acid Soluble Mg (10.5%)	0561	10.77	0.0100	11.44	0.5585	0.2322	12	-1.21	121.33	0
121	Acid Soluble Mg (10.5%)	0040	10.84	0.4200	11.44	0.5585	0.2322	12	-1.08	121.00	0
121	Acid Soluble Mg (10.5%)	0405	11.01	0.2000	11.44	0.5585	0.2322	12	-0.77	121.32	0
121	Acid Soluble Mg (10.5%)	0220	11.18	0.0500	11.44	0.5585	0.2322	12	-0.48	121.32	0
121	Acid Soluble Mg (10.5%)	0421	11.20	0.2900	11.44	0.5585	0.2322	12	-0.44	121.33	0
121	Acid Soluble Mg (10.5%)	0590	11.37	0.1000	11.44	0.5585	0.2322	12	-0.13	121.99	0
121	Acid Soluble Mg (10.5%)	0025	11.45	0.5000	11.44	0.5585	0.2322	12	0.02	121.33	0
121	Acid Soluble Mg (10.5%)	0073	11.62	0.0100	11.44	0.5585	0.2322	12	0.31	121.32	0
121	Acid Soluble Mg (10.5%)	0494	11.62	0.2459	11.44	0.5585	0.2322	12	0.32	121.33	0
121	Acid Soluble Mg (10.5%)	0027	11.69	0.4600	11.44	0.5585	0.2322	12	0.45	121.99	0
121	Acid Soluble Mg (10.5%)	0472	13.42‡	0.0300	11.44	0.5585	0.2322	12	3.53	121.33	0
121	Acid Soluble Mg (10.5%)	0042	13.66‡	0.4700	11.44	0.5585	0.2322	12	3.96	121.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
131	Water Soluble Mg (%)	0576	10.42	1.230				2		131.99	0
131	Water Soluble Mg (%)	0589	11.18	0.0200				2		131.70	0
143	Elemental S (%)	0405	0.0300	0.0000				1		143.00	0
145	Sulfate S, HCl soluble (%)	0561	22.79	0.0900				2		145.00	0
145	Sulfate S, HCl soluble (%)	0405	22.87	0.0600				2		145.00	0
148	Total S (21%)	0472	21.30†	0.2000	22.45	0.8347	0.1158	10	-1.28	148.07	0
148	Total S (21%)	0421	21.75	0.3100	22.45	0.8347	0.1158	10	-0.78	148.07	0
148	Total S (21%)	0547	21.92	0.0000	22.45	0.8347	0.1158	10	-0.59	148.00	0
148	Total S (21%)	0589	21.93	0.0200	22.45	0.8347	0.1158	10	-0.58	148.01	0
148	Total S (21%)	0073	22.37	0.0100	22.45	0.8347	0.1158	10	-0.09	148.01	0
148	Total S (21%)	0590	22.50	0.0300	22.45	0.8347	0.1158	10	0.05	148.99	0
148	Total S (21%)	0405	22.90	0.0600	22.45	0.8347	0.1158	10	0.51	148.01	0
148	Total S (21%)	0040	23.05	0.1000	22.45	0.8347	0.1158	10	0.67	148.07	0
148	Total S (21%)	0131	23.06	0.4284	22.45	0.8347	0.1158	10	0.69	148.00	0
148	Total S (21%)	0220	24.00‡	0.0000	22.45	0.8347	0.1158	10	1.73	148.99	0
148	Total S (21%)	0494	24.38‡	1.070	22.45	0.8347	0.1158	10	2.15	148.07	1
151	Acid Soluble As (ppm)	0494	1.520	0.0800				2		151.33	0
151	Acid Soluble As (ppm)	0220	1.750	0.1000				2		151.99	0
151	Acid Soluble As (ppm)	0405	< 3					2		151.30	5
181	Acid Soluble Cd (ppm)	0220	< 0.1					0		181.99	5
181	Acid Soluble Cd (ppm)	0494	< 0.56					0		181.33	5
181	Acid Soluble Cd (ppm)	0405	< 1					0		181.32	5
190	Water Soluble Cl (2.5%)	0220	0.9650†	0.0300	1.148	0.1287	0.0212	5	-1.24	190.00	0
190	Water Soluble Cl (2.5%)	0494	1.107	0.0360	1.148	0.1287	0.0212	5	-0.28	190.00	0
190	Water Soluble Cl (2.5%)	0405	1.170	0.0200	1.148	0.1287	0.0212	5	0.15	190.00	0
190	Water Soluble Cl (2.5%)	0589	1.180	0.0200	1.148	0.1287	0.0212	5	0.21	190.99	0
190	Water Soluble Cl (2.5%)	0561	1.320‡	0.0000	1.148	0.1287	0.0212	5	1.16	190.00	0
190	Water Soluble Cl (2.5%)	0576	2.680‡	1.200	1.148	0.1287	0.0212	5	10.39	190.99	1
191	Acid Soluble Cr (ppm)	0220	36.50	11.00	40.65	3.813	4.700	3	-1.09	191.99	0
191	Acid Soluble Cr (ppm)	0494	41.45	3.100	40.65	3.813	4.700	3	0.21	191.33	0
191	Acid Soluble Cr (ppm)	0405	44.00	0.0000	40.65	3.813	4.700	3	0.88	191.32	0
202	Acid Soluble Co (ppm)	0220	0.9500	0.3000				2		202.99	0
202	Acid Soluble Co (ppm)	0494	0.9960	0.1680				2		202.33	0
202	Acid Soluble Co (ppm)	0405	< 1					2		202.32	5
221	Acid Soluble Cu (%)	0220	0.0003	0.0001				1		221.99	0
221	Acid Soluble Cu (%)	0405	< 0.0002					1		221.32	5
241	Acid Soluble Fe (%)	0472	0.0200	0.0000				2		241.33	0
241	Acid Soluble Fe (%)	0494	0.0374	0.0015				2		241.33	0
251	Acid Soluble Pb (ppm)	0220	< 1					0		251.99	5
251	Acid Soluble Pb (ppm)	0494	< 1.27					0		251.33	5
251	Acid Soluble Pb (ppm)	0405	< 4					0		251.32	5
281	Acid Soluble Hg (ppm)	0220	< 0.01					0		281.99	5
281	Acid Soluble Hg (ppm)	0405	< 2					0		281.30	5

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
289	Acid Soluble Mo (ppm)	0220	1.950	0.5000				2		289.99	0
289	Acid Soluble Mo (ppm)	0405	4.000	0.0000				2		289.32	0
291	Acid Soluble Ni (ppm)	0220	22.00	8.000	23.30	1.127	3.267	3	-1.15	291.99	0
291	Acid Soluble Ni (ppm)	0494	23.90	1.800	23.30	1.127	3.267	3	0.53	291.33	0
291	Acid Soluble Ni (ppm)	0405	24.00	0.0000	23.30	1.127	3.267	3	0.62	291.32	0
301	Acid Soluble Se (ppm)	0220	0.5000	0.0000				1		301.99	0
301	Acid Soluble Se (ppm)	0494	< 0.95					1		301.33	5
301	Acid Soluble Se (ppm)	0405	< 10					1		301.32	5
311	Sodium (%)	0494	0.6440	0.0085				1		311.33	0
321	Acid Soluble Zn (%)	0220	0.0005	0.0002				2		321.99	0
321	Acid Soluble Zn (%)	0494	0.0007	0.0001				2		321.33	0
321	Acid Soluble Zn (%)	0405	< 0.0003					2		321.32	5

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. Your offset values are higher (‡) or lower (†) than the Robust Analyte value ± Investigational Allowance. Analyte 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.