



Method PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Methods: 49

Sample # 240851

Potassium Select PT Scheme

Labs Reporting: 17

K-Mg-SO4

Statistical Summary

Issue Date : 09/30/2024

Method Code	Analyte & Method Sample # 240851	# 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
050.00	Soluble K2O, STPB Oxalate (21.5%)	6	6	22.26	0.3024	22.26	1.1578	0.3429	0.1750	1.54%	0.69	0.0870	2.12%
050.30	Soluble K2O, AA (Oxalate) (21.5%)	1		23.00									
050.32	Soluble K2O, AA (Citrate-EDTA) (21.5%)	1		22.29									
050.50	Soluble K2O, ICP (Oxalate) (21.5%)	1		21.24									
050.51	Soluble K2O, ICP (Citrate) (21.5%)	1		21.35									
050.52	Soluble K2O, ICP (Citrate-EDTA) (21.5%)	2	2	22.33	1.165								
050.60	Soluble K2O, Flame Photometric (Oxalate) (21.5%)	1		21.85									
050.99	Soluble K2O, Other (21.5%)	5	5	21.34	0.9133	21.34	1.1270	0.9133	0.5105	4.28%	1.89	0.2300	2.16%
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	1		0.1043									
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.8%)	1		11.30									
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (10.8%)	1		11.20									
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.8%)	1		10.95									
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	4	4	11.40	0.4136	11.40	0.7698	0.4136	0.2585	3.63%	1.25	0.2758	2.77%
121.70	Acid Soluble Mg, Titrimetric (EDTA) (10.8%)	1		10.86									
121.99	Acid Soluble Mg, Other (10.8%)	4	4	10.94	0.4723	10.94	0.7468	0.4723	0.2952	4.32%	1.47	0.3150	2.79%
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfu	2	2	11.06	15.54								
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	2	2	22.97	0.2970								
148.00	Total S, Combustion (22%)	1		22.32									
148.01	Total S, Gravimetric - sulfate and elemental (22%)	2	2	22.94	0.1573								
148.07	Total S, ICP, test portion as in 2017.02 (22%)	3	3	23.63	0.1601	23.63	1.0000	0.1601	0.1155	0.68%	0.37	0.3815	2.06%
148.99	Total S, Other (22%)	3	3	22.49	1.508	22.49	1.0000	1.508	1.089	6.71%	3.51	0.1167	2.11%
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	2	0	1.750	1.768								
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	1		0.4300									
151.99	Acid Soluble As, Other (ppm)	1		0.5000									
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	2	0	0.5500	0.6364								
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	1		0.0520									
181.99	Acid Soluble Cd, Other (ppm)	1		0.1000									
190.00	Water Soluble Cl, Titrimetric (1.5%)	4	4	0.7728	0.0991	0.7728	0.0823	0.0991	0.0619	12.82%	2.81	0.0280	4.16%
190.99	Water Soluble Cl, Other (1.5%)	2	2	0.7775	0.0177								

Method Code	Analyte & Method Sample # 240851	# 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
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	2	1	0.7500	0.3536								
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	1		0.2800									
191.99	Acid Soluble Cr, Other (ppm)	1		0.4500									
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	2	0	0.5500	0.6364								
202.99	Acid Soluble Co, Other (ppm)	1		0.1000									
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	1		0.0002									
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	2	0	2.350	2.333								
251.99	Acid Soluble Pb, Other (ppm)	1		0.7000									
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)	2	1	0.5625	0.6187								
289.33	Acid Soluble Mo, ICP, 2017.02 (ppm)	1		0.4725									
289.99	Acid Soluble Mo, Other (ppm)	1		0.1450									
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	2	1	0.6575	0.4844								
291.99	Acid Soluble Ni, Other (ppm)	1		0.3000									
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	2	1	5.300	6.647								
301.99	Acid Soluble Se, Other (ppm)	1		0.6000									
311.33	Sodium, ICP, test portion as in 2017.02 (%)	1		0.4852									
311.99	Sodium, Other (%)	1		0.8950									
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	1		0.0003									

The Method IA Ratio = $2.33 * \text{Robust SD} / \text{IA at the Method Assigned Value}$. 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 PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Sample # 240851

Potassium Select PT Scheme

K-Mg-SO4

Method Precision Report

Issue Date : 09/30/2024

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
050.00	Soluble K2O, STPB Oxalate (21.5%)	6	6	22.26	0.3024	0.2990	0.0642	0.3058	1.34%	0.29%	1.37%	4.765
050.99	Soluble K2O, Other (21.5%)	5	5	21.34	0.9133	0.9045	0.1784	0.9219	4.24%	0.84%	4.32%	5.167

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



Method PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Methods: 49

Sample # 240851

Potassium Select PT Scheme

Labs Reporting: 17

K-Mg-SO4

Lab Values

Issue Date : 09/30/2024

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
050.00	Soluble K2O, STPB Oxalate (21.5%)	0602	21.85	0.1000	22.26	0.3429	0.0870	6	-1.06	OK	0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0405	21.92	0.0100	22.26	0.3429	0.0870	6	-0.89	OK	0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0220	22.35	0.0600	22.26	0.3429	0.0870	6	0.24	OK	0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0055	22.40	0.1150	22.26	0.3429	0.0870	6	0.37	OK	0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0597	22.45	0.0000	22.26	0.3429	0.0870	6	0.50	OK	0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0561	22.59	0.1500	22.26	0.3429	0.0870	6	0.85	OK	0
050.30	Soluble K2O, AA (Oxalate) (21.5%)	0040	23.00	0.8000				1			0
050.32	Soluble K2O, AA (Citrate-EDTA) (21.5%)	0185	22.29	0.0700				1			0
050.50	Soluble K2O, ICP (Oxalate) (21.5%)	0055	21.24	0.1250				1			0
050.51	Soluble K2O, ICP (Citrate) (21.5%)	0007	21.35	0.3000				1			0
050.52	Soluble K2O, ICP (Citrate-EDTA) (21.5%)	0543	21.51	0.1950				2			0
050.52	Soluble K2O, ICP (Citrate-EDTA) (21.5%)	0494	23.16	0.3100				2			0
050.60	Soluble K2O, Flame Photometric (Oxalate) (21.5%)	0602	21.85	0.1000				1			0
050.99	Soluble K2O, Other (21.5%)	0371	19.80	0.0000	21.34	0.9133	0.2300	5	-1.69		0
050.99	Soluble K2O, Other (21.5%)	0615	21.35	0.5000	21.34	0.9133	0.2300	5	0.01		0
050.99	Soluble K2O, Other (21.5%)	0584	21.56	0.2200	21.34	0.9133	0.2300	5	0.24		0
050.99	Soluble K2O, Other (21.5%)	0602	21.85	0.1000	21.34	0.9133	0.2300	5	0.56		0
050.99	Soluble K2O, Other (21.5%)	0611	22.15	0.1000	21.34	0.9133	0.2300	5	0.88		0
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	0494	0.1043	0.0041				1			0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.8%)	0029	11.30	0.2600				1			0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (10.8%)	0561	11.20	0.2000				1			0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.8%)	0405	10.95	0.0700				1			0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0040	10.84	0.2700	11.40	0.4136	0.2758	4	-1.36		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0055	11.35	0.6400	11.40	0.4136	0.2758	4	-0.12		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0494	11.64	0.1400	11.40	0.4136	0.2758	4	0.58		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0543	11.77	0.0530	11.40	0.4136	0.2758	4	0.90		0
121.70	Acid Soluble Mg, Titrimetric (EDTA) (10.8%)	0584	10.86	0.0900				1			0
121.99	Acid Soluble Mg, Other (10.8%)	0042	10.50	0.2500	10.94	0.4723	0.3150	4	-0.93		0
121.99	Acid Soluble Mg, Other (10.8%)	0611	10.60	0.2000	10.94	0.4723	0.3150	4	-0.71		0
121.99	Acid Soluble Mg, Other (10.8%)	0220	11.15	0.0100	10.94	0.4723	0.3150	4	0.44		0
121.99	Acid Soluble Mg, Other (10.8%)	0371	11.50	0.8000	10.94	0.4723	0.3150	4	1.20		0

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfur	0405	0.0700	0.0000				2			0
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfur	0584	22.04	0.1200				2			0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0405	22.76	0.0000				2			0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0561	23.18	0.0800				2			0
148.00	Total S, Combustion (22%)	0029	22.32	0.1100				1			0
148.01	Total S, Gravimetric - sulfate and elemental (22%)	0405	22.83	0.0000				2			0
148.01	Total S, Gravimetric - sulfate and elemental (22%)	0055	23.05	0.0750				2			0
148.07	Total S, ICP, test portion as in 2017.02 (22%)	0543	23.46	0.0720	23.63	0.1601	0.3815	3	-1.06		0
148.07	Total S, ICP, test portion as in 2017.02 (22%)	0040	23.65	0.3000	23.63	0.1601	0.3815	3	0.14		0
148.07	Total S, ICP, test portion as in 2017.02 (22%)	0494	23.77	0.7725	23.63	0.1601	0.3815	3	0.92		0
148.99	Total S, Other (22%)	0611	21.60	0.2000	22.49	1.508	0.1167	3	-0.59		0
148.99	Total S, Other (22%)	0597	21.64	0.1300	22.49	1.508	0.1167	3	-0.57		0
148.99	Total S, Other (22%)	0220	24.23	0.0200	22.49	1.508	0.1167	3	1.15		0
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	0220	< 0.5					0			5
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	0405	< 3					0			5
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	0494	< 0.43					0			5
151.99	Acid Soluble As, Other (ppm)	0220	< 0.5					0			5
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0220	< 0.1					0			5
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0405	< 1					0			5
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	0494	< 0.052					0			5
181.99	Acid Soluble Cd, Other (ppm)	0220	< 0.1					0			5
190.00	Water Soluble Cl, Titrimetric (1.5%)	0220	0.7050	0.0500	0.7728	0.0991	0.0280	4	-0.68		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0055	0.7325	0.0250	0.7728	0.0991	0.0280	4	-0.41		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0029	0.7335	0.0090	0.7728	0.0991	0.0280	4	-0.40		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0561	0.9200	0.0000	0.7728	0.0991	0.0280	4	1.49		0
190.99	Water Soluble Cl, Other (1.5%)	0611	0.7650	0.0300				2			0
190.99	Water Soluble Cl, Other (1.5%)	0029	0.7900	0.0000				2			0
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0220	0.5000	0.0000				1			0
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0405	< 1					1			5
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	0494	< 0.28					0			5
191.99	Acid Soluble Cr, Other (ppm)	0220	0.4500	0.1000				1			0
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	0220	< 0.1					0			5
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	0405	< 1					0			5
202.99	Acid Soluble Co, Other (ppm)	0220	< 0.1					0			5
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	0405	< 0.0002					0			5
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0220	< 0.7					0			5
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0405	< 4					0			5
251.99	Acid Soluble Pb, Other (ppm)	0220	< 0.7					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
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	0220	0.1250	0.0300				1			0
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	0405	< 1					1			5
289.33	Acid Soluble Mo, ICP, 2017.02 (ppm)	0494	0.4725	0.0010				1			0

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
289.99	Acid Soluble Mo, Other (ppm)	0220	0.1450	0.0300				1			0
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	0220	0.3150	0.0100				1			0
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	0405	< 1					1			5
291.99	Acid Soluble Ni, Other (ppm)	0220	0.3000	0.0600				1			0
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0220	0.6000	0.0000				1			0
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0405	< 10					1			5
301.99	Acid Soluble Se, Other (ppm)	0220	0.6000	0.2000				1			0
311.33	Sodium, ICP, test portion as in 2017.02 (%)	0494	0.4852	0.0012				1			0
311.99	Sodium, Other (%)	0611	0.8950	0.0100				1			0
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	0405	< 0.0003					0			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. Identical duplicates not included in calculation of Rob R-bar. 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