



Method PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Methods: 55

Sample # 250851

Potassium Select PT Scheme

Labs Reporting: 11

K-Mg-SO4

Statistical Summary

Issue Date : 09/30/2025

Method Code	Analyte & Method Sample # 250851	# 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%)	4	4	22.37	0.2827	22.37	1.1610	0.2827	0.1767	1.26%	0.57	0.7100	2.11%
050.30	Soluble K2O, AA (Oxalate) (21.5%)	1		22.95									
050.51	Soluble K2O, ICP (Citrate) (21.5%)	1		22.65									
050.52	Soluble K2O, ICP (Citrate-EDTA) (21.5%)	2	2	22.53	2.032								
050.62	Soluble K2O, Flame Photometric (Citrate-EDTA) (21.5%)	2	2	21.28	0.1768								
050.99	Soluble K2O, Other (21.5%)	4	4	21.83	0.9000	21.83	1.1440	0.9000	0.5625	4.12%	1.83	0.2000	2.14%
101.00	Acid Soluble Ca, AA, inorganic 965.09 (%)	2	2	0.4950	0.0424								
101.01	Acid Soluble Ca, AA, organic 965.09 (%)	1		0.4300									
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	1		0.1050									
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.8%)	2	2	10.33	0.3889								
121.01	Acid Soluble Mg, AA, organic 965.09 (10.8%)	1		9.800									
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (10.8%)	1		11.39									
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.8%)	1		11.00									
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	4	4	11.43	0.4869	11.43	0.7714	0.4869	0.3043	4.26%	1.47	0.0550	2.77%
131.99	Water Soluble Mg, Other (%)	3	3	12.77	4.619	12.77		4.619	3.334	36.18%		0.3000	2.73%
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfu	1		0.1250									
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	4	4	22.43	0.7077	22.43		0.7077	0.4423	3.16%		0.0975	2.11%
145.99	Sulfate S, HCl soluble, Other (%)	1		21.70									
148.00	Total S, Combustion (22%)	2	2	22.76	0.9122								
148.01	Total S, Gravimetric - sulfate and elemental (22%)	4	4	22.39	0.6245	22.39	1.0000	0.6245	0.3903	2.79%	1.46	0.0825	2.11%
148.07	Total S, ICP, test portion as in 2017.02 (22%)	3	3	23.12	0.3403	23.12	1.0000	0.3403	0.2456	1.47%	0.79	0.5190	2.08%
148.99	Total S, Other (22%)	4	4	22.22	0.4639	22.22	1.0000	0.4639	0.2900	2.09%	1.08	0.1300	2.12%
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	2	0	1.750	1.768								
151.99	Acid Soluble As, Other (ppm)	1		0.5000									
181.00	Acid Soluble Cd, AA, test portion 2006.03 modified w/dual acic	2	2	1.425	0.1061								
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	2	1	0.5250	0.6718								
181.99	Acid Soluble Cd, Other (ppm)	1		0.0500									
190.00	Water Soluble Cl, Titrimetric (1.5%)	5	5	0.9400	0.2851	0.9400	0.0990	0.2851	0.1594	30.33%	6.71	0.0733	4.04%
190.99	Water Soluble Cl, Other (1.5%)	2	2	1.250	0.0000								

Method Code	Analyte & Method Sample # 250851	# 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
191.00	Acid Soluble Cr, AA, test portion 2006.03 modified w/dual acid	1		5.750									
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	2	1	0.7850	0.3041								
191.99	Acid Soluble Cr, Other (ppm)	1		0.5250									
202.00	Acid Soluble Co, AA, test portion 2006.03 modified w/dual acid	2	2	12.90	0.1414								
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									
221.00	Acid Soluble Cu, AA, inorganic 965.09 (%)	2	2	0.0002	0.0000								
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	1		0.0002									
241.00	Acid Soluble Fe, AA, inorganic 965.09 (%)	2	2	0.0048	0.0000								
251.00	Acid Soluble Pb, AA, test portion 2006.03 modified w/dual acid	2	2	15.43	0.1061								
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	2	1	2.210	2.531								
251.99	Acid Soluble Pb, Other (ppm)	1		0.4750									
261.12	Acid Soluble Mn, AA, inorganic 965.09 (%)	2	2	0.0006	0.0000								
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	0	0.6500	0.4950								
289.99	Acid Soluble Mo, Other (ppm)	1		0.3000									
291.00	Acid Soluble Ni, AA, test portion 2006.03 modified w/dual acid	2	2	5.725	0.3182								
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	2	2	1.810	2.390								
291.99	Acid Soluble Ni, Other (ppm)	1		0.2100									
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	2	0	5.150	6.859								
301.99	Acid Soluble Se, Other (ppm)	1		0.3000									
311.30	Sodium, Flame Photometric (%)	2	2	0.5500	0.0000								
311.99	Sodium, Other (%)	3	3	0.5983	0.0837	0.5983	0.0648	0.0837	0.0604	13.99%	3.01	0.0767	4.32%
321.00	Acid Soluble Zn, AA, inorganic 965.09 (%)	2	2	0.0003	0.0000								
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	1		0.0003									

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 PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Sample # 250851

Potassium Select PT Scheme

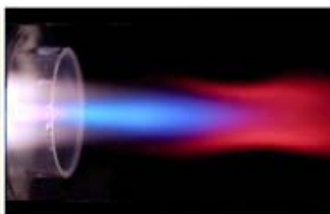
K-Mg-SO4

Method Precision Report

Issue Date : 09/30/2025

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
190.00	Water Soluble Cl, Titrimetric (1.5%)	5	5	0.9400	0.2851	0.2833	0.0452	0.2869	30.14%	4.80%	30.52%	6.352

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



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Methods: 55

Sample # 250851

Potassium Select PT Scheme

Labs Reporting: 11

K-Mg-SO4

Lab Values

Issue Date : 09/30/2025

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%)	0405	22.14	0.0000	22.37	0.2827	0.7100	4	-0.80		0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0494	22.26	1.350	22.37	0.2827	0.7100	4	-0.40		0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0220	22.30	0.0700	22.37	0.2827	0.7100	4	-0.26		0
050.00	Soluble K2O, STPB Oxalate (21.5%)	0561	22.78	0.0000	22.37	0.2827	0.7100	4	1.46		0
050.30	Soluble K2O, AA (Oxalate) (21.5%)	0040	22.95	0.5000				1			0
050.51	Soluble K2O, ICP (Citrate) (21.5%)	0131	22.65	0.0100				1			0
050.52	Soluble K2O, ICP (Citrate-EDTA) (21.5%)	0543	21.09	0.3430				2			0
050.52	Soluble K2O, ICP (Citrate-EDTA) (21.5%)	0494	23.97	1.930				2			0
050.62	Soluble K2O, Flame Photometric (Citrate-EDTA) (21.5%)	0531	21.15	0.1000				2			0
050.62	Soluble K2O, Flame Photometric (Citrate-EDTA) (21.5%)	0535	21.40	0.2000				2			0
050.99	Soluble K2O, Other (21.5%)	0531	21.15	0.1000	21.83	0.9000	0.2000	4	-0.75		0
050.99	Soluble K2O, Other (21.5%)	0535	21.15	0.3000	21.83	0.9000	0.2000	4	-0.75		0
050.99	Soluble K2O, Other (21.5%)	0549	21.96	0.3000	21.83	0.9000	0.2000	4	0.15		0
050.99	Soluble K2O, Other (21.5%)	0611	23.05	0.1000	21.83	0.9000	0.2000	4	1.36		0
101.00	Acid Soluble Ca, AA, inorganic 965.09 (%)	0531	0.4650	0.0500				2			0
101.00	Acid Soluble Ca, AA, inorganic 965.09 (%)	0535	0.5250	0.0500				2			0
101.01	Acid Soluble Ca, AA, organic 965.09 (%)	0531	0.4300	0.0200				1			0
101.33	Acid Soluble Ca, ICP, 2017.02 (%)	0494	0.1050	0.0041				1			0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.8%)	0531	10.05	0.3000				2			0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (10.8%)	0535	10.60	0.2000				2			0
121.01	Acid Soluble Mg, AA, organic 965.09 (10.8%)	0531	9.800	0.2000				1			0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (10.8%)	0220	11.39	0.0400				1			0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (10.8%)	0405	11.00	0.0000				1			0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0561	11.05	0.0900	11.43	0.4869	0.0550	4	-0.79		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0040	11.12	0.0500	11.43	0.4869	0.0550	4	-0.64		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0494	11.44	0.0200	11.43	0.4869	0.0550	4	0.03		0
121.33	Acid Soluble Mg, ICP, 2017.02 (10.8%)	0543	12.11	0.0600	11.43	0.4869	0.0550	4	1.40		0
131.99	Water Soluble Mg, Other (%)	0531	10.05	0.3000	12.77	4.619	0.3000	3	-0.59		0
131.99	Water Soluble Mg, Other (%)	0535	10.15	0.3000	12.77	4.619	0.3000	3	-0.57		0
131.99	Water Soluble Mg, Other (%)	0611	18.10	0.0000	12.77	4.619	0.3000	3	1.15		0
143.00	Elemental S, Gravimetric Sulfur - carbon disulfide soluble sulfur	0405	0.1250	0.0100				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				
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0531	21.70	0.2000	22.43	0.7077	0.0975	4	-1.03		0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0535	21.95	0.1000	22.43	0.7077	0.0975	4	-0.67		0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0405	22.92	0.0300	22.43	0.7077	0.0975	4	0.69		0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0561	23.14	0.0600	22.43	0.7077	0.0975	4	1.01		0
145.99	Sulfate S, HCl soluble, Other (%)	0531	21.70	0.2000				1			0
148.00	Total S, Combustion (22%)	0131	22.11	0.1400				2			0
148.00	Total S, Combustion (22%)	0405	23.40	0.0000				2			0
148.01	Total S, Gravimetric - sulfate and elemental (22%)	0531	21.70	0.2000	22.39	0.6245	0.0825	4	-1.11		0
148.01	Total S, Gravimetric - sulfate and elemental (22%)	0535	22.05	0.1000	22.39	0.6245	0.0825	4	-0.55		0
148.01	Total S, Gravimetric - sulfate and elemental (22%)	0220	22.79	0.0100	22.39	0.6245	0.0825	4	0.63		0
148.01	Total S, Gravimetric - sulfate and elemental (22%)	0405	23.04	0.0200	22.39	0.6245	0.0825	4	1.03		0
148.07	Total S, ICP, test portion as in 2017.02 (22%)	0543	22.91	0.6680	23.12	0.3403	0.5190	3	-0.64		0
148.07	Total S, ICP, test portion as in 2017.02 (22%)	0040	22.95	0.5000	23.12	0.3403	0.5190	3	-0.51		0
148.07	Total S, ICP, test portion as in 2017.02 (22%)	0494	23.52	0.3889	23.12	0.3403	0.5190	3	1.15		0
148.99	Total S, Other (22%)	0531	21.70	0.2000	22.22	0.4639	0.1300	4	-1.12		0
148.99	Total S, Other (22%)	0535	22.10	0.2000	22.22	0.4639	0.1300	4	-0.25		0
148.99	Total S, Other (22%)	0611	22.25	0.1000	22.22	0.4639	0.1300	4	0.07		0
148.99	Total S, Other (22%)	0220	22.82	0.0200	22.22	0.4639	0.1300	4	1.30		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
151.99	Acid Soluble As, Other (ppm)	0220	< 0.5					0			5
181.00	Acid Soluble Cd, AA, test portion 2006.03 modified w/dual acid	0531	1.350	0.1000				2			0
181.00	Acid Soluble Cd, AA, test portion 2006.03 modified w/dual acid	0535	1.500	1.000				2			0
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0220	0.0500	0.0000				1			0
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0405	< 1					1			5
181.99	Acid Soluble Cd, Other (ppm)	0220	0.0500	0.0000				1			0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0405	0.7000	0.0000	0.9400	0.2851	0.0733	5	-0.84		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0220	0.7100	0.0200	0.9400	0.2851	0.0733	5	-0.81		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0561	0.7900	0.0000	0.9400	0.2851	0.0733	5	-0.53		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0531	1.250	0.1000	0.9400	0.2851	0.0733	5	1.09		0
190.00	Water Soluble Cl, Titrimetric (1.5%)	0535	1.250	0.1000	0.9400	0.2851	0.0733	5	1.09		0
190.99	Water Soluble Cl, Other (1.5%)	0531	1.250	0.1000				2			0
190.99	Water Soluble Cl, Other (1.5%)	0535	1.250	0.1000				2			0
191.00	Acid Soluble Cr, AA, test portion 2006.03 modified w/dual acid	0531	5.750	1.100				1			0
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0220	0.5700	0.2000				1			0
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0405	< 1					1			5
191.99	Acid Soluble Cr, Other (ppm)	0220	0.5250	0.0100				1			0
202.00	Acid Soluble Co, AA, test portion 2006.03 modified w/dual acid	0531	12.80	0.8000				2			0
202.00	Acid Soluble Co, AA, test portion 2006.03 modified w/dual acid	0535	13.00	2.000				2			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
221.00	Acid Soluble Cu, AA, inorganic 965.09 (%)	0531	0.0002	0.0000				2			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				
221.00	Acid Soluble Cu, AA, inorganic 965.09 (%)	0535	0.0003	0.0001				2			0
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	0405	< 0.0002					0			5
241.00	Acid Soluble Fe, AA, inorganic 965.09 (%)	0531	0.0048	0.0005				2			0
241.00	Acid Soluble Fe, AA, inorganic 965.09 (%)	0535	0.0048	0.0004				2			0
251.00	Acid Soluble Pb, AA, test portion 2006.03 modified w/dual acid	0531	15.35	0.3000				2			0
251.00	Acid Soluble Pb, AA, test portion 2006.03 modified w/dual acid	0535	15.50	1.000				2			0
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0220	0.4200	0.1800				1			0
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0405	< 4					1			5
251.99	Acid Soluble Pb, Other (ppm)	0220	0.4750	0.0100				1			0
261.12	Acid Soluble Mn, AA, inorganic 965.09 (%)	0531	0.0006	0.0001				2			0
261.12	Acid Soluble Mn, AA, inorganic 965.09 (%)	0535	0.0006	0.0001				2			0
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	< 0.3					0			5
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	0405	< 1					0			5
289.99	Acid Soluble Mo, Other (ppm)	0220	< 0.3					0			5
291.00	Acid Soluble Ni, AA, test portion 2006.03 modified w/dual acid (	0535	5.500	1.000				2			0
291.00	Acid Soluble Ni, AA, test portion 2006.03 modified w/dual acid (	0531	5.950	0.5000				2			0
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	0220	0.1200	0.0400				2			0
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	0405	3.500	1.000				2			0
291.99	Acid Soluble Ni, Other (ppm)	0220	0.2100	0.0400				1			0
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0220	< 0.3					0			5
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0405	< 10					0			5
301.99	Acid Soluble Se, Other (ppm)	0220	< 0.3					0			5
311.30	Sodium, Flame Photometric (%)	0531	0.5500	0.1000				2			0
311.30	Sodium, Flame Photometric (%)	0535	0.5500	0.1000				2			0
311.99	Sodium, Other (%)	0531	0.5500	0.1000	0.5983	0.0837	0.0767	3	-0.58		0
311.99	Sodium, Other (%)	0535	0.5500	0.1000	0.5983	0.0837	0.0767	3	-0.58		0
311.99	Sodium, Other (%)	0611	0.6950	0.0300	0.5983	0.0837	0.0767	3	1.15		0
321.00	Acid Soluble Zn, AA, inorganic 965.09 (%)	0531	0.0003	0.0001				2			0
321.00	Acid Soluble Zn, AA, inorganic 965.09 (%)	0535	0.0003	0.0001				2			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 $\pm$ 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