



Analyte PT For All Labs
 Sample # 241031
 Ammonium Sulfate

Magruder Fertilizer Proficiency Testing Program
Nitrogen Select PT Scheme
Statistical Summary

Analytes: 24
 # Labs Reporting: 18
 Issue Date : 11/30/2024

Analyte Code	Analyte Sample # 241031	# 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
001	Ammoniacal N (%)	6	6	5.782	0.8591	5.782		0.9743	0.4972	16.85%		0.1225	3.07%
005	Urea N (%)	4	4	35.39	0.5376	35.39		0.5376	0.3360	1.52%		0.4875	1.68%
010	Total N (40%)	17	17	40.42	0.3198	40.41	0.8800	0.3308	0.1003	0.82%	0.88	0.2925	1.57%
101	Acid Soluble Ca (%)	1		0.0072									
121	Acid Soluble Mg (%)	2	0	0.0002	0.0002								
143	Elemental S (%)	1		0.1200									
145	Sulfate S, HCl soluble (%)	6	5	5.613	0.7259	5.343		0.3379	0.1889	6.32%		0.1305	3.11%
148	Total S (5.5%)	11	10	5.366	0.2231	5.419	0.4709	0.1788	0.0707	3.30%	0.88	0.0885	3.10%
149	S - HNO3 soluble (%)	1		5.380									
151	Acid Soluble As (ppm)	8	1	0.7613	1.023	5.419		0.1788	0.2236	3.30%		0.0000	12.40%
165	Acid Soluble B (%)	1		0.0000									
181	Acid Soluble Cd (ppm)	7	1	0.3029	0.3625	5.419		0.1788	0.2236	3.30%		0.0000	12.40%
191	Acid Soluble Cr (ppm)	8	4	0.5550	0.3574	0.6402		0.3060	0.1913	47.80%		0.0860	17.11%
202	Acid Soluble Co (ppm)	7	1	0.3314	0.3789	0.6402	1.1921	0.3060	0.3825	47.80%	0.60	0.0000	17.11%
221	Acid Soluble Cu (%)	5	0	0.0003	0.0004	0.6402	0.0690	0.3060		47.80%	10.33	0.0000	4.28%
241	Acid Soluble Fe (%)	1		0.0000									
251	Acid Soluble Pb (ppm)	7	3	0.9871	1.406	0.2367		0.1963	0.1417	82.94%		0.2000	19.87%
261	Acid Soluble Mn (%)	1		0.0000									
281	Acid Soluble Hg (ppm)	3	0	0.7133	1.116	0.2367		0.1963		82.94%		0.0500	19.87%
289	Acid Soluble Mo (ppm)	7	3	0.3697	0.3477	0.1383	1.0415	0.0683	0.0493	49.34%	0.15	0.0550	21.54%
291	Acid Soluble Ni (ppm)	7	3	0.4193	0.3434	0.2450		0.0953	0.0688	38.88%		0.0100	19.77%
301	Acid Soluble Se (ppm)	6	3	1.803	4.018	0.2267		0.1721	0.1242	75.95%		0.0600	20.00%
311	Sodium (%)	1		0.0041									
321	Acid Soluble Zn (%)	6	4	1.150	2.817	1.725	0.1775	3.450	2.156	199.94%	45.27	0.2001	3.68%

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 # 241031
Analyte Code



Analyte PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Analytes: 24

Sample # 241031

Nitrogen Select PT Scheme

Labs Reporting: 18

Ammonium Sulfate

Lab Values

Issue Date : 11/30/2024

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
001	Ammoniacal N (%)	0547	4.889	0.0050	5.782	0.9743	0.1225	6	-0.82	001.10	0
001	Ammoniacal N (%)	0584	5.065	0.2500	5.782	0.9743	0.1225	6	-0.66	001.99	0
001	Ammoniacal N (%)	0593	5.110	0.2000	5.782	0.9743	0.1225	6	-0.61	001.99	0
001	Ammoniacal N (%)	0220	6.255	0.0700	5.782	0.9743	0.1225	6	0.43	001.99	0
001	Ammoniacal N (%)	0586	6.510	0.2000	5.782	0.9743	0.1225	6	0.67	001.99	0
001	Ammoniacal N (%)	0405	6.865	0.0100	5.782	0.9743	0.1225	6	0.99	001.99	0
005	Urea N (%)	0547	34.85	0.2000	35.39	0.5376	0.4875	4	-1.01	005.99	0
005	Urea N (%)	0584	35.05	0.2200	35.39	0.5376	0.4875	4	-0.64	005.99	0
005	Urea N (%)	0405	35.67	0.1100	35.39	0.5376	0.4875	4	0.50	005.99	0
005	Urea N (%)	0593	36.01	1.420	35.39	0.5376	0.4875	4	1.15	005.99	0
010	Total N (40%)	0086	39.90	0.6120	40.41	0.3308	0.2925	17	-1.56	010.60	0
010	Total N (40%)	0494	40.02	1.490	40.41	0.3308	0.2925	17	-1.20	010.60	0
010	Total N (40%)	0513	40.03	0.0800	40.41	0.3308	0.2925	17	-1.15	010.99	0
010	Total N (40%)	0220	40.19	0.0200	40.41	0.3308	0.2925	17	-0.67	010.60	0
010	Total N (40%)	0185	40.21	0.1960	40.41	0.3308	0.2925	17	-0.62	010.60	0
010	Total N (40%)	0602	40.25	0.1000	40.41	0.3308	0.2925	17	-0.49	010.12	0
010	Total N (40%)	0602	40.25	0.1000	40.41	0.3308	0.2925	17	-0.49	010.99	0
010	Total N (40%)	0371	40.30	0.0000	40.41	0.3308	0.2925	17	-0.33	010.60	0
010	Total N (40%)	0131	40.50	0.1870	40.41	0.3308	0.2925	17	0.27	010.60	0
010	Total N (40%)	0055	40.51	1.065	40.41	0.3308	0.2925	17	0.31	010.60	0
010	Total N (40%)	0586	40.53	0.2900	40.41	0.3308	0.2925	17	0.35	010.60	0
010	Total N (40%)	0561	40.57	0.0600	40.41	0.3308	0.2925	17	0.48	010.60	0
010	Total N (40%)	0517	40.60	0.2000	40.41	0.3308	0.2925	17	0.57	010.99	0
010	Total N (40%)	0615	40.70	0.4000	40.41	0.3308	0.2925	17	0.87	010.99	0
010	Total N (40%)	0040	40.75	0.1000	40.41	0.3308	0.2925	17	1.03	010.60	0
010	Total N (40%)	0405	40.76	0.0200	40.41	0.3308	0.2925	17	1.06	010.60	0
010	Total N (40%)	0593	41.12	1.620	40.41	0.3308	0.2925	17	2.14	010.60	0
101	Acid Soluble Ca (%)	0494	0.0072	0.0008				1		101.33	0
121	Acid Soluble Mg (%)	0371	0.0000	0.0000				0		121.30	4
121	Acid Soluble Mg (%)	0494	< 0.0003					0		121.33	5
143	Elemental S (%)	0405	0.1200	0.0000				1		143.00	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
145	Sulfate S, HCl soluble (%)	0220	4.775	0.0100	5.343	0.3379	0.1305	5	-1.47	145.00	0
145	Sulfate S, HCl soluble (%)	0405	5.370	0.0000	5.343	0.3379	0.1305	5	0.07	145.00	0
145	Sulfate S, HCl soluble (%)	0494	5.372	0.0520	5.343	0.3379	0.1305	5	0.07	145.00	0
145	Sulfate S, HCl soluble (%)	0584	5.585	0.3500	5.343	0.3379	0.1305	5	0.62	145.00	0
145	Sulfate S, HCl soluble (%)	0561	5.615	0.1100	5.343	0.3379	0.1305	5	0.70	145.00	0
145	Sulfate S, HCl soluble (%)	0593	6.960	2.900	5.343	0.3379	0.1305	5	4.18	145.99	1
148	Total S (5.5%)	0220	5.100	0.0000	5.419	0.1788	0.0885	10	-1.66	148.99	0
148	Total S (5.5%)	0086	5.175	0.1165	5.419	0.1788	0.0885	10	-1.27	148.07	0
148	Total S (5.5%)	0405	5.370	0.0600	5.419	0.1788	0.0885	10	-0.25	148.00	0
148	Total S (5.5%)	0371	5.400	0.0000	5.419	0.1788	0.0885	10	-0.10	148.00	0
148	Total S (5.5%)	0040	5.400	0.0000	5.419	0.1788	0.0885	10	-0.10	148.07	0
148	Total S (5.5%)	0055	5.470	0.0700	5.419	0.1788	0.0885	10	0.27	148.01	0
148	Total S (5.5%)	0405	5.490	0.0000	5.419	0.1788	0.0885	10	0.37	148.01	0
148	Total S (5.5%)	0131	5.510	0.0200	5.419	0.1788	0.0885	10	0.48	148.00	0
148	Total S (5.5%)	0513	5.600	0.0800	5.419	0.1788	0.0885	10	0.94	148.07	0
148	Total S (5.5%)	0494	5.620	0.4764	5.419	0.1788	0.0885	10	1.05	148.07	0
148	Total S (5.5%)	0593	4.895†	1.530	5.419	0.1788	0.0885	10	-2.72	148.00	1
149	S - HNO3 soluble (%)	0586	5.380	0.4000				1		149.04	0
151	Acid Soluble As (ppm)	0593	0.0200	0.0000				1		151.30	0
151	Acid Soluble As (ppm)	0371	0.0000	0.0000				1		151.30	4
151	Acid Soluble As (ppm)	0086	< 0.14					1		151.32	5
151	Acid Soluble As (ppm)	0494	< 0.43					1		151.33	5
151	Acid Soluble As (ppm)	0220	< 0.5					1		151.32	5
151	Acid Soluble As (ppm)	0220	< 0.5					1		151.99	5
151	Acid Soluble As (ppm)	0586	< 1.5					1		151.30	5
151	Acid Soluble As (ppm)	0405	< 3					1		151.32	5
165	Acid Soluble B (%)	0371	0.0000	0.0000				0		165.30	4
181	Acid Soluble Cd (ppm)	0593	0.0200	0.0000				1		181.30	0
181	Acid Soluble Cd (ppm)	0371	0.0000	0.0000				1		181.30	4
181	Acid Soluble Cd (ppm)	0220	< 0.1					1		181.32	5
181	Acid Soluble Cd (ppm)	0220	< 0.1					1		181.99	5
181	Acid Soluble Cd (ppm)	0586	< 0.4					1		181.30	5
181	Acid Soluble Cd (ppm)	0086	< 0.5					1		181.33	5
181	Acid Soluble Cd (ppm)	0405	< 1					1		181.32	5
191	Acid Soluble Cr (ppm)	0593	0.3100	0.0200	0.6402	0.3060	0.0860	4	-0.92	191.30	0
191	Acid Soluble Cr (ppm)	0220	0.6000	0.0000	0.6402	0.3060	0.0860	4	-0.11	191.32	0
191	Acid Soluble Cr (ppm)	0220	0.6000	0.0000	0.6402	0.3060	0.0860	4	-0.11	191.99	0
191	Acid Soluble Cr (ppm)	0086	1.051	0.1519	0.6402	0.3060	0.0860	4	1.14	191.33	0
191	Acid Soluble Cr (ppm)	0371	0.0000	0.0000	0.6402	0.3060	0.0860	4		191.30	4
191	Acid Soluble Cr (ppm)	0494	< 0.279		0.6402	0.3060	0.0860	4		191.33	5
191	Acid Soluble Cr (ppm)	0586	< 0.6		0.6402	0.3060	0.0860	4		191.30	5
191	Acid Soluble Cr (ppm)	0405	< 1		0.6402	0.3060	0.0860	4		191.32	5
202	Acid Soluble Co (ppm)	0593	0.0200	0.0000				1		202.30	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
202	Acid Soluble Co (ppm)	0371	0.0000	0.0000				1		202.30	4
202	Acid Soluble Co (ppm)	0220	< 0.1					1		202.32	5
202	Acid Soluble Co (ppm)	0220	< 0.1					1		202.99	5
202	Acid Soluble Co (ppm)	0086	< 0.5					1		202.33	5
202	Acid Soluble Co (ppm)	0586	< 0.6					1		202.30	5
202	Acid Soluble Co (ppm)	0405	< 1					1		202.32	5
221	Acid Soluble Cu (%)	0371	0.0000	0.0000				0		221.30	4
221	Acid Soluble Cu (%)	0586	0.0000	0.0000				0		221.99	4
221	Acid Soluble Cu (%)	0086	< 0.0001					0		221.33	5
221	Acid Soluble Cu (%)	0405	< 0.0002					0		221.32	5
221	Acid Soluble Cu (%)	0593	< 0.001					0		221.99	5
241	Acid Soluble Fe (%)	0371	0.0000	0.0000				0		241.30	4
251	Acid Soluble Pb (ppm)	0593	0.0100	0.0000	0.2367	0.1963	0.2000	3	-0.94	251.99	0
251	Acid Soluble Pb (ppm)	0220	0.3500	0.1000	0.2367	0.1963	0.2000	3	0.47	251.32	0
251	Acid Soluble Pb (ppm)	0220	0.3500	0.3000	0.2367	0.1963	0.2000	3	0.47	251.99	0
251	Acid Soluble Pb (ppm)	0371	0.0000	0.0000	0.2367	0.1963	0.2000	3		251.30	4
251	Acid Soluble Pb (ppm)	0086	< 1		0.2367	0.1963	0.2000	3		251.33	5
251	Acid Soluble Pb (ppm)	0586	< 1.2		0.2367	0.1963	0.2000	3		251.30	5
251	Acid Soluble Pb (ppm)	0405	< 4		0.2367	0.1963	0.2000	3		251.32	5
261	Acid Soluble Mn (%)	0371	0.0000	0.0000				0		261.32	4
281	Acid Soluble Hg (ppm)	0371	0.0000	0.0000				0		281.30	4
281	Acid Soluble Hg (ppm)	0086	< 0.14					0		281.99	5
281	Acid Soluble Hg (ppm)	0405	< 2					0		281.30	5
289	Acid Soluble Mo (ppm)	0593	0.0650	0.0100	0.1383	0.0683	0.0550	3	-0.87	289.30	0
289	Acid Soluble Mo (ppm)	0220	0.1500	0.1000	0.1383	0.0683	0.0550	3	0.14	289.32	0
289	Acid Soluble Mo (ppm)	0220	0.2000	0.0000	0.1383	0.0683	0.0550	3	0.73	289.99	0
289	Acid Soluble Mo (ppm)	0494	< 0.0727		0.1383	0.0683	0.0550	3		289.33	5
289	Acid Soluble Mo (ppm)	0086	< 0.5		0.1383	0.0683	0.0550	3		289.33	5
289	Acid Soluble Mo (ppm)	0586	< 0.6		0.1383	0.0683	0.0550	3		289.30	5
289	Acid Soluble Mo (ppm)	0405	< 1		0.1383	0.0683	0.0550	3		289.32	5
291	Acid Soluble Ni (ppm)	0593	0.1350	0.0100	0.2450	0.0953	0.0100	3	-0.94	291.30	0
291	Acid Soluble Ni (ppm)	0220	0.3000	0.0000	0.2450	0.0953	0.0100	3	0.47	291.32	0
291	Acid Soluble Ni (ppm)	0220	0.3000	0.0000	0.2450	0.0953	0.0100	3	0.47	291.99	0
291	Acid Soluble Ni (ppm)	0371	0.0000	0.0000	0.2450	0.0953	0.0100	3		291.30	4
291	Acid Soluble Ni (ppm)	0086	< 0.5		0.2450	0.0953	0.0100	3		291.33	5
291	Acid Soluble Ni (ppm)	0586	< 0.7		0.2450	0.0953	0.0100	3		291.30	5
291	Acid Soluble Ni (ppm)	0405	< 1		0.2450	0.0953	0.0100	3		291.32	5
301	Acid Soluble Se (ppm)	0593	0.0300	0.0200	0.2267	0.1721	0.0600	3	-0.93	301.30	0
301	Acid Soluble Se (ppm)	0220	0.3000	0.0000	0.2267	0.1721	0.0600	3	0.35	301.32	0
301	Acid Soluble Se (ppm)	0220	0.3500	0.1000	0.2267	0.1721	0.0600	3	0.58	301.99	0
301	Acid Soluble Se (ppm)	0371	0.0000	0.0000	0.2267	0.1721	0.0600	3		301.30	4
301	Acid Soluble Se (ppm)	0086	< 0.14		0.2267	0.1721	0.0600	3		301.32	5
301	Acid Soluble Se (ppm)	0405	< 10		0.2267	0.1721	0.0600	3		301.32	5

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
311	Sodium (%)	0494	0.0041	0.0000				1		311.33	0
321	Acid Soluble Zn (%)	0405	0.0004	0.0001	1.725	3.450	0.2001	4	-0.42	321.32	0
321	Acid Soluble Zn (%)	0220	0.0006	0.0002	1.725	3.450	0.2001	4	-0.42	321.32	0
321	Acid Soluble Zn (%)	0086	0.0007	0.0002	1.725	3.450	0.2001	4	-0.42	321.33	0
321	Acid Soluble Zn (%)	0586	6.900	0.8000	1.725	3.450	0.2001	4	1.27	321.99	0
321	Acid Soluble Zn (%)	0371	0.0000	0.0000	1.725	3.450	0.2001	4		321.30	4
321	Acid Soluble Zn (%)	0593	< 0.001		1.725	3.450	0.2001	4		321.33	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. 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.