

# magruder fertilizer

## check sample program



STRIVING FOR EXCELLENCE IN ANALYSIS

Analyte Proficiency From All Labs

Sample # 171111

Grade 12-0-0-26S

### Statistical Summary

# Analytes: 29

# Labs Reporting: 93

Issue Date : 12/31/2017

Analyte Code	Analyte	# 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	IA %RSD	Average Range (R-bar)	Horwitz %RSD
001	Ammoniacal Nitrogen (%)	44	42	12.16	0.2667	12.13		0.1518	0.0293	1.25%		0.0709	2.75%
009	Ammoniacal Plus Nitrate Nitrogen (%)	1		11.50									
010	Total Nitrogen (12%)	72	69	12.14	0.3113	12.12	0.6112	0.2238	0.0337	1.85%	2.52%	0.0863	2.75%
020	Total Phosphorus as P2O5 (%)	4	3	0.0189	0.0313	0.0189		0.0313	0.0226	165.67%		0.0036	7.27%
041	Direct Available Phosphorus as P2O5 (%)	2	2	0.0515	0.0686								
050	Soluble Potassium as K2O (%)	6	5	0.0776	0.1208	0.0776		0.1208	0.0675	155.65%		0.0125	5.88%
101	Acid Soluble Calcium (%)	3	3	0.0738	0.0764	0.0738		0.0764	0.0552	103.63%		0.0125	5.92%
121	Acid Soluble Magnesium (%)	6	5	0.0083	0.0119	0.0083		0.0119	0.0067	143.88%		0.0011	8.23%
143	Elemental Sulfur (%)	4	4	26.51	1.861	26.51		1.861	1.163	7.02%		0.3625	2.44%
145	Sulfate Sulfur, HCl soluble (%)	4	4	26.23	0.1440	26.23		0.1440	0.0900	0.55%		0.2450	2.45%
146	Total Sulfur in Liquid (%)	8	8	30.37	9.005	27.90		2.991	1.322	10.72%		0.2075	2.42%
147	Total Sulfur in Urea/Formulations (%)	1		16.11									
148	Total Sulfur (26%)	40	38	26.51	1.092	26.40	1.0000	0.8319	0.1687	3.15%	1.89%	0.5771	2.44%
149	Sulfur - HNO3 soluble (%)	4	4	25.76	0.8539	25.76		0.8539	0.5337	3.32%		0.0390	2.45%
151	Acid Soluble Arsenic (ppm)	3	2	0.0353	0.0491	0.0353		0.0491	0.0434	139.42%		0.0001	26.47%
165	Acid Soluble Boron (%)	3	2	8.234	11.62	8.234		11.62	10.27	141.11%		4.658	2.91%
181	Acid Soluble Cadmium (ppm)	4	2	0.0101	0.0001	0.0101		0.0001	0.0001	0.70%		0.0030	31.97%
191	Acid Soluble Chromium (ppm)	3	3	0.2074	0.0760	0.2074		0.0760	0.0548	36.63%		0.0581	20.27%
202	Acid Soluble Cobalt (ppm)	4	2	0.0206	0.0150	0.0206		0.0150	0.0133	72.77%		0.0012	28.69%
221	Acid Soluble Copper (%)	5	3	0.7269	1.254	0.7269		1.254	0.9051	172.54%		0.0303	4.20%
241	Acid Soluble Iron (%)	4	3	0.0015	0.0018	0.0015		0.0018	0.0013	118.51%		0.0003	10.64%
251	Acid Soluble Lead (ppm)	3	2	0.2577	0.2089	0.2577		0.2089	0.1847	81.06%		0.2450	19.62%
261	Acid Soluble Manganese (%)	4	2	0.0006	0.0006	0.0006		0.0006	0.0006	115.71%		0.0000	12.38%
281	Acid Soluble Mercury (ppm)	3	3	0.0306	0.0392	0.0306		0.0392	0.0283	127.83%		0.0063	27.03%
289	Acid Soluble Molybdenum (ppm)	2	1	0.0363									
291	Acid Soluble Nickel (ppm)	4	4	0.1084	0.0439	0.1084		0.0439	0.0274	40.48%		0.0589	22.35%
301	Acid Soluble Selenium (ppm)	4	4	0.1642	0.1289	0.1642		0.1289	0.0805	78.47%		0.0893	20.99%
311	Sodium (%)	1		0.1135									
321	Acid Soluble Zinc (%)	4	3	0.0012	0.0020	0.0012		0.0020	0.0014	159.16%		0.0017	10.96%

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Lab Values

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Issue Date : 12/31/2017

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				
001	Ammoniacal Nitrogen (%)	0501	11.62	0.0675	12.13	0.1518	0.0709	42	-3.35	001.99	0
001	Ammoniacal Nitrogen (%)	0309	11.82	0.0200	12.13	0.1518	0.0709	42	-2.05	001.10	0
001	Ammoniacal Nitrogen (%)	0451	11.85	0.3900	12.13	0.1518	0.0709	42	-1.89	001.99	0
001	Ammoniacal Nitrogen (%)	0027	11.87	0.0300	12.13	0.1518	0.0709	42	-1.76	001.99	0
001	Ammoniacal Nitrogen (%)	0368	11.91	0.0400	12.13	0.1518	0.0709	42	-1.46	001.99	0
001	Ammoniacal Nitrogen (%)	0486	11.97	0.0200	12.13	0.1518	0.0709	42	-1.07	001.10	0
001	Ammoniacal Nitrogen (%)	0537	12.01	0.0126	12.13	0.1518	0.0709	42	-0.81	001.99	0
001	Ammoniacal Nitrogen (%)	0532	12.01	0.0600	12.13	0.1518	0.0709	42	-0.80	001.99	0
001	Ammoniacal Nitrogen (%)	0234	12.02	0.0500	12.13	0.1518	0.0709	42	-0.77	001.10	0
001	Ammoniacal Nitrogen (%)	0444	12.02	0.0600	12.13	0.1518	0.0709	42	-0.74	001.10	0
001	Ammoniacal Nitrogen (%)	0029	12.03	0.2000	12.13	0.1518	0.0709	42	-0.67	001.99	0
001	Ammoniacal Nitrogen (%)	0493	12.05	0.1000	12.13	0.1518	0.0709	42	-0.54	001.99	0
001	Ammoniacal Nitrogen (%)	0476	12.05	0.3009	12.13	0.1518	0.0709	42	-0.51	001.99	0
001	Ammoniacal Nitrogen (%)	0540	12.06	0.0200	12.13	0.1518	0.0709	42	-0.47	001.99	0
001	Ammoniacal Nitrogen (%)	0536	12.11	0.0200	12.13	0.1518	0.0709	42	-0.14	001.10	0
001	Ammoniacal Nitrogen (%)	0533	12.11	0.0200	12.13	0.1518	0.0709	42	-0.14	001.99	0
001	Ammoniacal Nitrogen (%)	0536	12.11	0.0200	12.13	0.1518	0.0709	42	-0.14	001.99	0
001	Ammoniacal Nitrogen (%)	0389	12.12	0.1200	12.13	0.1518	0.0709	42	-0.08	001.10	0
001	Ammoniacal Nitrogen (%)	0531	12.13	0.0400	12.13	0.1518	0.0709	42	-0.01	001.10	0
001	Ammoniacal Nitrogen (%)	0535	12.13	0.0600	12.13	0.1518	0.0709	42	-0.01	001.10	0
001	Ammoniacal Nitrogen (%)	0531	12.13	0.0200	12.13	0.1518	0.0709	42	-0.01	001.99	0
001	Ammoniacal Nitrogen (%)	0535	12.14	0.0600	12.13	0.1518	0.0709	42	0.05	001.99	0
001	Ammoniacal Nitrogen (%)	0513	12.15	0.0700	12.13	0.1518	0.0709	42	0.09	001.99	0
001	Ammoniacal Nitrogen (%)	0177	12.15	0.0155	12.13	0.1518	0.0709	42	0.09	001.10	0
001	Ammoniacal Nitrogen (%)	0169	12.16	0.0300	12.13	0.1518	0.0709	42	0.15	001.10	0
001	Ammoniacal Nitrogen (%)	0090	12.16	0.1400	12.13	0.1518	0.0709	42	0.19	001.10	0
001	Ammoniacal Nitrogen (%)	0405	12.17	0.0030	12.13	0.1518	0.0709	42	0.23	001.10	0
001	Ammoniacal Nitrogen (%)	0255	12.18	0.3600	12.13	0.1518	0.0709	42	0.32	001.99	0
001	Ammoniacal Nitrogen (%)	0539	12.18	0.0200	12.13	0.1518	0.0709	42	0.32	001.99	0
001	Ammoniacal Nitrogen (%)	0416	12.20	0.0300	12.13	0.1518	0.0709	42	0.42	001.99	0
001	Ammoniacal Nitrogen (%)	0498	12.20	0.2000	12.13	0.1518	0.0709	42	0.45	001.10	0
001	Ammoniacal Nitrogen (%)	0371	12.20	0.0000	12.13	0.1518	0.0709	42	0.45	001.99	0
001	Ammoniacal Nitrogen (%)	0482	12.20	0.0000	12.13	0.1518	0.0709	42	0.45	001.99	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				
001	Ammoniacal Nitrogen (%)	0220	12.22	0.0200	12.13	0.1518	0.0709	42	0.58	001.99	0
001	Ammoniacal Nitrogen (%)	0519	12.26	0.0200	12.13	0.1518	0.0709	42	0.84	001.99	0
001	Ammoniacal Nitrogen (%)	0538	12.30	0.0400	12.13	0.1518	0.0709	42	1.11	001.99	0
001	Ammoniacal Nitrogen (%)	0510	12.32	0.0000	12.13	0.1518	0.0709	42	1.24	001.99	0
001	Ammoniacal Nitrogen (%)	0394	12.35	0.1100	12.13	0.1518	0.0709	42	1.40	001.99	0
001	Ammoniacal Nitrogen (%)	0522	12.38	0.0300	12.13	0.1518	0.0709	42	1.60	001.99	0
001	Ammoniacal Nitrogen (%)	0096	12.43	0.0300	12.13	0.1518	0.0709	42	1.93	001.99	0
001	Ammoniacal Nitrogen (%)	0526	13.04	0.1262	12.13	0.1518	0.0709	42	6.01	001.10	0
001	Ammoniacal Nitrogen (%)	0230	13.20	0.0000	12.13	0.1518	0.0709	42	7.04	001.10	0
001	Ammoniacal Nitrogen (%)	0506	12.55	0.5000	12.13	0.1518	0.0709	42	2.75	001.99	1
001	Ammoniacal Nitrogen (%)	0524	9.220	0.5800	12.13	0.1518	0.0709	42	-19.18	001.99	2
009	Ammoniacal Plus Nitrate Nitrogen (%)	0481	11.50	0.2000				1		009.10	0
010	Total Nitrogen (12%)	0530	11.50*	0.0000	12.12	0.2238	0.0863	69	-2.78	010.99	0
010	Total Nitrogen (12%)	0255	11.53	0.2970	12.12	0.2238	0.0863	69	-2.65	010.60	0
010	Total Nitrogen (12%)	0472	11.57	0.0600	12.12	0.2238	0.0863	69	-2.47	010.60	0
010	Total Nitrogen (12%)	0102	11.59	0.1500	12.12	0.2238	0.0863	69	-2.40	010.60	0
010	Total Nitrogen (12%)	0027	11.62	0.1200	12.12	0.2238	0.0863	69	-2.24	010.60	0
010	Total Nitrogen (12%)	0523	11.80	0.0000	12.12	0.2238	0.0863	69	-1.44	010.60	0
010	Total Nitrogen (12%)	0483	11.85	0.0500	12.12	0.2238	0.0863	69	-1.24	010.60	0
010	Total Nitrogen (12%)	0114	11.88	0.3900	12.12	0.2238	0.0863	69	-1.11	010.11	0
010	Total Nitrogen (12%)	0292	11.88	0.0100	12.12	0.2238	0.0863	69	-1.11	010.60	0
010	Total Nitrogen (12%)	0494	11.92	0.0600	12.12	0.2238	0.0863	69	-0.90	010.60	0
010	Total Nitrogen (12%)	0390	11.93	0.0500	12.12	0.2238	0.0863	69	-0.88	010.60	0
010	Total Nitrogen (12%)	0073	11.93	0.0200	12.12	0.2238	0.0863	69	-0.86	010.60	0
010	Total Nitrogen (12%)	0043	11.94	0.0100	12.12	0.2238	0.0863	69	-0.84	010.60	0
010	Total Nitrogen (12%)	0105	11.94	0.1800	12.12	0.2238	0.0863	69	-0.82	010.60	0
010	Total Nitrogen (12%)	0035	11.95	0.0100	12.12	0.2238	0.0863	69	-0.79	010.60	0
010	Total Nitrogen (12%)	0041	11.95	0.0000	12.12	0.2238	0.0863	69	-0.77	010.60	0
010	Total Nitrogen (12%)	0389	11.96	0.0400	12.12	0.2238	0.0863	69	-0.73	010.60	0
010	Total Nitrogen (12%)	0042	11.98	0.0900	12.12	0.2238	0.0863	69	-0.66	010.60	0
010	Total Nitrogen (12%)	0423	11.99	0.1700	12.12	0.2238	0.0863	69	-0.61	010.60	0
010	Total Nitrogen (12%)	0157	12.00	0.0000	12.12	0.2238	0.0863	69	-0.55	010.60	0
010	Total Nitrogen (12%)	0516	12.00	0.0000	12.12	0.2238	0.0863	69	-0.55	010.60	0
010	Total Nitrogen (12%)	0476	12.00	0.0687	12.12	0.2238	0.0863	69	-0.53	010.99	0
010	Total Nitrogen (12%)	0309	12.01	0.1000	12.12	0.2238	0.0863	69	-0.50	010.11	0
010	Total Nitrogen (12%)	0234	12.02	0.0400	12.12	0.2238	0.0863	69	-0.46	010.60	0
010	Total Nitrogen (12%)	0486	12.04	0.0500	12.12	0.2238	0.0863	69	-0.39	010.60	0
010	Total Nitrogen (12%)	0231	12.06	0.0300	12.12	0.2238	0.0863	69	-0.30	010.60	0
010	Total Nitrogen (12%)	0500	12.08	0.0400	12.12	0.2238	0.0863	69	-0.19	010.11	0
010	Total Nitrogen (12%)	0452	12.08	0.0200	12.12	0.2238	0.0863	69	-0.19	010.60	0
010	Total Nitrogen (12%)	0105	12.09	0.0200	12.12	0.2238	0.0863	69	-0.15	010.11	0
010	Total Nitrogen (12%)	0540	12.10	0.0100	12.12	0.2238	0.0863	69	-0.12	010.11	0
010	Total Nitrogen (12%)	0541	12.10	0.0100	12.12	0.2238	0.0863	69	-0.12	010.60	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				
010	Total Nitrogen (12%)	0356	12.10	0.2300	12.12	0.2238	0.0863	69	-0.12	010.60	0
010	Total Nitrogen (12%)	0230	12.10	0.0000	12.12	0.2238	0.0863	69	-0.10	010.60	0
010	Total Nitrogen (12%)	0072	12.10	0.2200	12.12	0.2238	0.0863	69	-0.10	010.60	0
010	Total Nitrogen (12%)	0096	12.12	0.0200	12.12	0.2238	0.0863	69	-0.01	010.60	0
010	Total Nitrogen (12%)	0037	12.12	0.1000	12.12	0.2238	0.0863	69	0.01	010.60	0
010	Total Nitrogen (12%)	0034	12.13	0.2800	12.12	0.2238	0.0863	69	0.03	010.60	0
010	Total Nitrogen (12%)	0106	12.13	0.1200	12.12	0.2238	0.0863	69	0.03	010.60	0
010	Total Nitrogen (12%)	0136	12.14	0.1500	12.12	0.2238	0.0863	69	0.06	010.60	0
010	Total Nitrogen (12%)	0501	12.15	0.1000	12.12	0.2238	0.0863	69	0.12	010.60	0
010	Total Nitrogen (12%)	0177	12.16	0.0900	12.12	0.2238	0.0863	69	0.15	010.60	0
010	Total Nitrogen (12%)	0086	12.17	0.0570	12.12	0.2238	0.0863	69	0.23	010.60	0
010	Total Nitrogen (12%)	0049	12.19	0.0500	12.12	0.2238	0.0863	69	0.28	010.60	0
010	Total Nitrogen (12%)	0291	12.20	0.0100	12.12	0.2238	0.0863	69	0.32	010.60	0
010	Total Nitrogen (12%)	0300	12.20	0.0100	12.12	0.2238	0.0863	69	0.32	010.99	0
010	Total Nitrogen (12%)	0040	12.20	0.0000	12.12	0.2238	0.0863	69	0.35	010.60	0
010	Total Nitrogen (12%)	0233	12.20	0.0400	12.12	0.2238	0.0863	69	0.35	010.60	0
010	Total Nitrogen (12%)	0220	12.21	0.0400	12.12	0.2238	0.0863	69	0.39	010.11	0
010	Total Nitrogen (12%)	0405	12.21	0.0360	12.12	0.2238	0.0863	69	0.39	010.60	0
010	Total Nitrogen (12%)	0377	12.23	0.3600	12.12	0.2238	0.0863	69	0.48	010.60	0
010	Total Nitrogen (12%)	0524	12.24	0.1088	12.12	0.2238	0.0863	69	0.51	010.99	0
010	Total Nitrogen (12%)	0519	12.25	0.0500	12.12	0.2238	0.0863	69	0.55	010.99	0
010	Total Nitrogen (12%)	0371	12.25	0.1000	12.12	0.2238	0.0863	69	0.57	010.11	0
010	Total Nitrogen (12%)	0535	12.25	0.1000	12.12	0.2238	0.0863	69	0.57	010.11	0
010	Total Nitrogen (12%)	0029	12.28	0.0400	12.12	0.2238	0.0863	69	0.70	010.60	0
010	Total Nitrogen (12%)	0324	12.30	0.0000	12.12	0.2238	0.0863	69	0.79	010.60	0
010	Total Nitrogen (12%)	0451	12.33	0.0500	12.12	0.2238	0.0863	69	0.90	010.60	0
010	Total Nitrogen (12%)	0025	12.33	0.1400	12.12	0.2238	0.0863	69	0.93	010.60	0
010	Total Nitrogen (12%)	0510	12.33	0.0000	12.12	0.2238	0.0863	69	0.95	010.11	0
010	Total Nitrogen (12%)	0007	12.40	0.2000	12.12	0.2238	0.0863	69	1.24	010.60	0
010	Total Nitrogen (12%)	0444	12.45	0.2300	12.12	0.2238	0.0863	69	1.44	010.60	0
010	Total Nitrogen (12%)	0325	12.45	0.1000	12.12	0.2238	0.0863	69	1.46	010.60	0
010	Total Nitrogen (12%)	0481	12.50	0.0000	12.12	0.2238	0.0863	69	1.69	010.12	0
010	Total Nitrogen (12%)	0527	12.50	0.0930	12.12	0.2238	0.0863	69	1.71	010.60	0
010	Total Nitrogen (12%)	0506	12.55	0.5000	12.12	0.2238	0.0863	69	1.91	010.99	0
010	Total Nitrogen (12%)	0534	12.58	0.0100	12.12	0.2238	0.0863	69	2.02	010.12	0
010	Total Nitrogen (12%)	0521	13.00	0.0000	12.12	0.2238	0.0863	69	3.92	010.60	0
010	Total Nitrogen (12%)	0055	13.17	0.0000	12.12	0.2238	0.0863	69	4.68	010.60	0
010	Total Nitrogen (12%)	0260	13.21	0.2230	12.12	0.2238	0.0863	69	4.86	010.60	0
010	Total Nitrogen (12%)	0307	11.92	1.170	12.12	0.2238	0.0863	69	-0.93	010.60	1
010	Total Nitrogen (12%)	0368	13.19	1.305	12.12	0.2238	0.0863	69	4.75	010.60	1
010	Total Nitrogen (12%)	0354	13.82	0.8220	12.12	0.2238	0.0863	69	7.57	010.60	1
020	Total Phosphorus as P2O5 (%)	0515	0.0002	0.0000	0.0189	0.0313	0.0036	3	-0.60	020.99	0
020	Total Phosphorus as P2O5 (%)	0389	0.0015	0.0007	0.0189	0.0313	0.0036	3	-0.56	020.50	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				
020	Total Phosphorus as P2O5 (%)	0483	0.0550	0.0100	0.0189	0.0313	0.0036	3	1.15	020.50	0
020	Total Phosphorus as P2O5 (%)	0255	0.0000	0.0000	0.0189	0.0313	0.0036	3		020.50	4
041	Direct Available Phosphorus as P2O5 (%)	0354	0.0030	0.0000				2		041.60	0
041	Direct Available Phosphorus as P2O5 (%)	0325	0.1000	0.0000				2		041.50	0
050	Soluble Potassium as K2O (%)	0354	0.0025	0.0010	0.0776	0.1208	0.0125	5	-0.54	050.52	0
050	Soluble Potassium as K2O (%)	0389	0.0027	0.0009	0.0776	0.1208	0.0125	5	-0.54	050.99	0
050	Soluble Potassium as K2O (%)	0524	0.0028	0.0005	0.0776	0.1208	0.0125	5	-0.54	050.99	0
050	Soluble Potassium as K2O (%)	0325	0.1000	0.0000	0.0776	0.1208	0.0125	5	0.16	050.99	0
050	Soluble Potassium as K2O (%)	0483	0.2800	0.0600	0.0776	0.1208	0.0125	5	1.46	050.51	0
050	Soluble Potassium as K2O (%)	0255	1.892	0.2870	0.0776	0.1208	0.0125	5	13.11	050.99	1
101	Acid Soluble Calcium (%)	0389	0.0088	0.0026	0.0738	0.0764	0.0125	3	-0.85	101.99	0
101	Acid Soluble Calcium (%)	0354	0.0545	0.0010	0.0738	0.0764	0.0125	3	-0.25	101.30	0
101	Acid Soluble Calcium (%)	0483	0.1580	0.0340	0.0738	0.0764	0.0125	3	1.10	101.30	0
121	Acid Soluble Magnesium (%)	0524	0.0002	0.0001	0.0083	0.0119	0.0011	5	-0.60	121.99	0
121	Acid Soluble Magnesium (%)	0515	0.0004	0.0002	0.0083	0.0119	0.0011	5	-0.58	121.33	0
121	Acid Soluble Magnesium (%)	0389	0.0007	0.0003	0.0083	0.0119	0.0011	5	-0.56	121.99	0
121	Acid Soluble Magnesium (%)	0354	0.0130	0.0040	0.0083	0.0119	0.0011	5	0.34	121.30	0
121	Acid Soluble Magnesium (%)	0483	0.0273	0.0010	0.0083	0.0119	0.0011	5	1.39	121.30	0
121	Acid Soluble Magnesium (%)	0515	0.0000	0.0000	0.0083	0.0119	0.0011	5		121.99	4
143	Elemental Sulfur (%)	0472	24.71	0.3600	26.51	1.861	0.3625	4	-0.97	143.99	0
143	Elemental Sulfur (%)	0389	25.84	0.7500	26.51	1.861	0.3625	4	-0.36	143.99	0
143	Elemental Sulfur (%)	0291	26.40	0.0100	26.51	1.861	0.3625	4	-0.06	143.99	0
143	Elemental Sulfur (%)	0255	29.10	0.3300	26.51	1.861	0.3625	4	1.39	143.99	0
145	Sulfate Sulfur, HCl soluble (%)	0027	26.10	0.2800	26.23	0.1440	0.2450	4	-0.89	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0043	26.12	0.3300	26.23	0.1440	0.2450	4	-0.78	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0106	26.30	0.0400	26.23	0.1440	0.2450	4	0.50	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0444	26.40	0.3300	26.23	0.1440	0.2450	4	1.16	145.00	0
146	Total Sulfur in Liquid (%)	0073	25.33	0.0900	27.90	2.991	0.2075	8	-0.79	146.00	0
146	Total Sulfur in Liquid (%)	0498	26.00	0.2000	27.90	2.991	0.2075	8	-0.58	146.00	0
146	Total Sulfur in Liquid (%)	0220	26.11	0.0200	27.90	2.991	0.2075	8	-0.55	146.00	0
146	Total Sulfur in Liquid (%)	0522	26.45	0.0600	27.90	2.991	0.2075	8	-0.44	146.00	0
146	Total Sulfur in Liquid (%)	0324	27.30	0.4000	27.90	2.991	0.2075	8	-0.18	146.00	0
146	Total Sulfur in Liquid (%)	0416	28.22	0.2300	27.90	2.991	0.2075	8	0.10	146.00	0
146	Total Sulfur in Liquid (%)	0055	31.44	0.1600	27.90	2.991	0.2075	8	1.08	146.00	0
146	Total Sulfur in Liquid (%)	0390	52.15	0.5000	27.90	2.991	0.2075	8	7.41	146.99	0
147	Total Sulfur in Urea/Formulations (%)	0072	16.11	10.29				1		147.00	0
148	Total Sulfur (26%)	0483	24.60*	2.800	26.40	0.8319	0.5771	38	-2.16	148.07	0
148	Total Sulfur (26%)	0307	25.08*	0.6800	26.40	0.8319	0.5771	38	-1.58	148.99	0
148	Total Sulfur (26%)	0157	25.20*	0.0000	26.40	0.8319	0.5771	38	-1.44	148.00	0
148	Total Sulfur (26%)	0102	25.20*	0.0000	26.40	0.8319	0.5771	38	-1.44	148.07	0
148	Total Sulfur (26%)	0482	25.30*	0.2000	26.40	0.8319	0.5771	38	-1.32	148.99	0
148	Total Sulfur (26%)	0500	25.30*	0.0000	26.40	0.8319	0.5771	38	-1.32	148.01	0
148	Total Sulfur (26%)	0230	25.55	2.500	26.40	0.8319	0.5771	38	-1.02	148.01	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				
148	Total Sulfur (26%)	0534	25.59	0.2800	26.40	0.8319	0.5771	38	-0.97	148.01	0
148	Total Sulfur (26%)	0486	25.72	0.3000	26.40	0.8319	0.5771	38	-0.81	148.07	0
148	Total Sulfur (26%)	0117	25.95	0.1100	26.40	0.8319	0.5771	38	-0.54	148.07	0
148	Total Sulfur (26%)	0040	26.05	0.1000	26.40	0.8319	0.5771	38	-0.42	148.01	0
148	Total Sulfur (26%)	0231	26.10	0.0000	26.40	0.8319	0.5771	38	-0.36	148.01	0
148	Total Sulfur (26%)	0513	26.18	0.1300	26.40	0.8319	0.5771	38	-0.27	148.01	0
148	Total Sulfur (26%)	0025	26.26	0.0900	26.40	0.8319	0.5771	38	-0.17	148.00	0
148	Total Sulfur (26%)	0368	26.30	1.179	26.40	0.8319	0.5771	38	-0.12	148.99	0
148	Total Sulfur (26%)	0037	26.30	0.2090	26.40	0.8319	0.5771	38	-0.11	148.07	0
148	Total Sulfur (26%)	0136	26.38	0.1800	26.40	0.8319	0.5771	38	-0.02	148.00	0
148	Total Sulfur (26%)	0157	26.45	0.1000	26.40	0.8319	0.5771	38	0.06	148.01	0
148	Total Sulfur (26%)	0049	26.53	0.1500	26.40	0.8319	0.5771	38	0.15	148.00	0
148	Total Sulfur (26%)	0029	26.55	0.1700	26.40	0.8319	0.5771	38	0.18	148.01	0
148	Total Sulfur (26%)	0029	26.55	0.1200	26.40	0.8319	0.5771	38	0.18	148.00	0
148	Total Sulfur (26%)	0523	26.58	0.2000	26.40	0.8319	0.5771	38	0.22	148.99	0
148	Total Sulfur (26%)	0325	26.60	1.400	26.40	0.8319	0.5771	38	0.24	148.07	0
148	Total Sulfur (26%)	0177	26.61	0.0701	26.40	0.8319	0.5771	38	0.25	148.07	0
148	Total Sulfur (26%)	0481	26.65	0.1000	26.40	0.8319	0.5771	38	0.30	148.99	0
148	Total Sulfur (26%)	0485	26.71	0.0628	26.40	0.8319	0.5771	38	0.38	148.01	0
148	Total Sulfur (26%)	0105	26.76	0.5200	26.40	0.8319	0.5771	38	0.44	148.01	0
148	Total Sulfur (26%)	0114	26.77	0.4000	26.40	0.8319	0.5771	38	0.45	148.01	0
148	Total Sulfur (26%)	0494	26.83	0.7320	26.40	0.8319	0.5771	38	0.52	148.07	0
148	Total Sulfur (26%)	0095	26.85	0.1200	26.40	0.8319	0.5771	38	0.54	148.01	0
148	Total Sulfur (26%)	0292	26.93	0.0100	26.40	0.8319	0.5771	38	0.63	148.07	0
148	Total Sulfur (26%)	0476	27.04	0.1556	26.40	0.8319	0.5771	38	0.77	148.01	0
148	Total Sulfur (26%)	0527	27.26	0.0000	26.40	0.8319	0.5771	38	1.03	148.07	0
148	Total Sulfur (26%)	0452	27.38	0.1400	26.40	0.8319	0.5771	38	1.18	148.99	0
148	Total Sulfur (26%)	0354	27.45	0.0000	26.40	0.8319	0.5771	38	1.27	148.99	0
148	Total Sulfur (26%)	0451	28.10	0.4000	26.40	0.8319	0.5771	38	2.05	148.00	0
148	Total Sulfur (26%)	0394	29.20	0.0000	26.40	0.8319	0.5771	38	3.37	148.07	0
148	Total Sulfur (26%)	0541	30.49	8.320	26.40	0.8319	0.5771	38	4.92	148.07	0
148	Total Sulfur (26%)	0515	39.16	40.97	26.40	0.8319	0.5771	38	15.34	148.07	1
148	Total Sulfur (26%)	0530	2.600*	0.0000	26.40	0.8319	0.5771	38	-28.61	148.01	2
149	Sulfur - HNO3 soluble (%)	0521	24.52	0.0000	25.76	0.8539	0.0390	4	-1.45	149.04	0
149	Sulfur - HNO3 soluble (%)	0519	25.91	0.0100	25.76	0.8539	0.0390	4	0.18	149.04	0
149	Sulfur - HNO3 soluble (%)	0524	26.15	0.1460	25.76	0.8539	0.0390	4	0.46	149.04	0
149	Sulfur - HNO3 soluble (%)	0423	26.45	0.0000	25.76	0.8539	0.0390	4	0.81	149.04	0
151	Acid Soluble Arsenic (ppm)	0515	0.0005	0.0002				2		151.33	0
151	Acid Soluble Arsenic (ppm)	0519	0.0700	0.0000				2		151.99	0
151	Acid Soluble Arsenic (ppm)	0515	0.0317	0.0633				2		151.34	4
165	Acid Soluble Boron (%)	0354	0.0180	0.0160				2		165.30	0
165	Acid Soluble Boron (%)	0483	16.45	9.300				2		165.99	0
165	Acid Soluble Boron (%)	0515	0.0003	0.0005				2		165.99	4

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				
181	Acid Soluble Cadmium (ppm)	0519	0.0100	0.0000				2		181.99	0
181	Acid Soluble Cadmium (ppm)	0515	0.0101	0.0060				2		181.33	0
181	Acid Soluble Cadmium (ppm)	0524	0.0025	0.0050				2		181.30	4
181	Acid Soluble Cadmium (ppm)	0515	0.0035	0.0069				2		181.34	4
191	Acid Soluble Chromium (ppm)	0515	0.1605	0.1124	0.2074	0.0760	0.0581	3	-0.62	191.33	0
191	Acid Soluble Chromium (ppm)	0515	0.1666	0.0520	0.2074	0.0760	0.0581	3	-0.54	191.34	0
191	Acid Soluble Chromium (ppm)	0519	0.2950	0.0100	0.2074	0.0760	0.0581	3	1.15	191.99	0
202	Acid Soluble Cobalt (ppm)	0519	0.0100	0.0000				2		202.99	0
202	Acid Soluble Cobalt (ppm)	0524	0.0312	0.0024				2		202.30	0
202	Acid Soluble Cobalt (ppm)	0515	0.0020	0.0039				2		202.34	4
202	Acid Soluble Cobalt (ppm)	0515	0.0086	0.0172				2		202.33	4
221	Acid Soluble Copper (%)	0389	0.0001	0.0000	0.7269	1.254	0.0303	3	-0.58	221.99	0
221	Acid Soluble Copper (%)	0354	0.0055	0.0010	0.7269	1.254	0.0303	3	-0.58	221.30	0
221	Acid Soluble Copper (%)	0483	2.175	0.0900	0.7269	1.254	0.0303	3	1.15	221.30	0
221	Acid Soluble Copper (%)	0515	0.0000	0.0000	0.7269	1.254	0.0303	3		221.33	4
221	Acid Soluble Copper (%)	0515	0.0000	0.0000	0.7269	1.254	0.0303	3		221.99	4
241	Acid Soluble Iron (%)	0515	0.0001	0.0000	0.0015	0.0018	0.0003	3	-0.79	241.99	0
241	Acid Soluble Iron (%)	0389	0.0009	0.0000	0.0015	0.0018	0.0003	3	-0.34	241.99	0
241	Acid Soluble Iron (%)	0354	0.0035	0.0010	0.0015	0.0018	0.0003	3	1.13	241.30	0
241	Acid Soluble Iron (%)	0515	0.0002	0.0004	0.0015	0.0018	0.0003	3		241.33	4
251	Acid Soluble Lead (ppm)	0519	0.1100	0.0200				2		251.99	0
251	Acid Soluble Lead (ppm)	0515	0.4055	0.4699				2		251.33	0
251	Acid Soluble Lead (ppm)	0515	0.0194	0.0388				2		251.34	4
261	Acid Soluble Manganese (%)	0389	0.0001	0.0000				2		261.99	0
261	Acid Soluble Manganese (%)	0354	0.0010	0.0000				2		261.30	0
261	Acid Soluble Manganese (%)	0515	0.0000	0.0000				2		261.35	4
261	Acid Soluble Manganese (%)	0515	0.0000	0.0000				2		261.99	4
281	Acid Soluble Mercury (ppm)	0009	0.0009	0.0010	0.0306	0.0392	0.0063	3	-0.76	281.99	0
281	Acid Soluble Mercury (ppm)	0515	0.0160	0.0080	0.0306	0.0392	0.0063	3	-0.37	281.30	0
281	Acid Soluble Mercury (ppm)	0519	0.0750	0.0100	0.0306	0.0392	0.0063	3	1.13	281.99	0
289	Acid Soluble Molybdenum (ppm)	0515	0.0363	0.0113				1		289.34	0
289	Acid Soluble Molybdenum (ppm)	0515	0.0026	0.0051				1		289.33	4
291	Acid Soluble Nickel (ppm)	0515	0.0662	0.0127	0.1084	0.0439	0.0589	4	-0.96	291.34	0
291	Acid Soluble Nickel (ppm)	0524	0.0968	0.0834	0.1084	0.0439	0.0589	4	-0.26	291.30	0
291	Acid Soluble Nickel (ppm)	0515	0.1006	0.1194	0.1084	0.0439	0.0589	4	-0.18	291.33	0
291	Acid Soluble Nickel (ppm)	0519	0.1700	0.0200	0.1084	0.0439	0.0589	4	1.40	291.99	0
301	Acid Soluble Selenium (ppm)	0519	0.0100	0.0000	0.1642	0.1289	0.0893	4	-1.20	301.99	0
301	Acid Soluble Selenium (ppm)	0515	0.1107	0.0160	0.1642	0.1289	0.0893	4	-0.42	301.34	0
301	Acid Soluble Selenium (ppm)	0524	0.2400	0.0800	0.1642	0.1289	0.0893	4	0.59	301.30	0
301	Acid Soluble Selenium (ppm)	0515	0.2963	0.2613	0.1642	0.1289	0.0893	4	1.02	301.33	0
311	Sodium (%)	0354	0.1135	0.0330				1		311.99	0
321	Acid Soluble Zinc (%)	0515	0.0001	0.0000	0.0012	0.0020	0.0017	3	-0.58	321.33	0
321	Acid Soluble Zinc (%)	0389	0.0001	0.0000	0.0012	0.0020	0.0017	3	-0.58	321.99	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				
321	Acid Soluble Zinc (%)	0354	0.0035	0.0050	0.0012	0.0020	0.0017	3	1.15	321.30	0
321	Acid Soluble Zinc (%)	0515	0.0001	0.0001	0.0012	0.0020	0.0017	3		321.99	4

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 and a 4 flag indicates rejected due to 0 value submitted. A 9 flag indicates a data problem - scores not calculated. Robust statistics not used if < 6 labs used in calculations, in this case the Z Scores are included for information only (Grey). An offset lab value with an astrix indicates that the value is lower than the Analyte value less the IA. Method or 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.