

# magruder fertilizer

## check sample program



STRIVING FOR EXCELLENCE IN ANALYSIS

Analyte Proficiency From All Labs

Sample # 150411

UAN

### Statistical Summary

# Analytes: 28

# Labs Reporting: 71

Issue Date : 05/31/2015

Analyte Code	Analyte	# Tests Submitted	# Tests in Robust	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 (%)	19	18	7.994	0.5062	7.936		0.4335	0.0722	5.46%		0.1617	2.93%
002	Nitrate Nitrogen (%)	12	11	9.448	3.035	8.307		0.5935	0.1265	7.15%		0.1950	2.91%
005	Urea Nitrogen (%)	3	3	15.99	0.9501	15.99		0.9501	0.3879	5.94%		0.1400	2.64%
006	Biuret Nitrogen (%)	2	2	0.4453	0.6219								
007	Urea (%)	1		34.74									
008	Biuret (%)	8	8	0.6925	0.3601	0.7657		0.2702	0.0676	35.29%		0.0175	4.16%
009	Ammoniacal Plus Nitrate Nitrogen (%)	3	3	13.40	4.630	13.40		4.630	1.890	34.55%		0.1968	2.71%
010	Total Nitrogen (32%)	65	63	31.81	1.977	32.13	0.8800	0.4575	0.0408	1.42%	1.37%	0.2839	2.37%
020	Total Phosphorus as P2O5 (%)	2	2	0.0130	0.0099								
041	Direct Available Phosphorus as P2O5 (%)	2	1	0.2585									
050	Soluble Potassium as K2O (%)	5	5	8.477	11.52	8.477		11.52	3.643	135.90%		0.0132	2.90%
060	Water (%)	1		0.2850									
101	Acid Soluble Calcium (%)	2	2	0.0965	0.0983								
121	Acid Soluble Magnesium (%)	3	3	3.766	6.494	3.766		6.494	2.651	172.41%		0.0453	3.28%
143	Elemental Sulfur (%)	1		0.0015									
148	Total Sulfur (%)	3	2	11.58	16.33	11.58		16.33	8.164	141.02%		0.0380	2.77%
165	Acid Soluble Boron (%)	1		0.0035									
181	Acid Soluble Cadmium (ppm)	1		0.5500									
190	Water Soluble Chlorine (%)	1		0.7775									
191	Acid Soluble Chromium (ppm)	1		121.0									
202	Acid Soluble Cobalt (ppm)	1		2.093									
221	Acid Soluble Copper (%)	2	2	0.0015	0.0014								
241	Acid Soluble Iron (%)	3	3	0.0176	0.0290	0.0176		0.0290	0.0118	165.11%		0.0004	7.35%
261	Acid Soluble Manganese (%)	1		0.0016									
289	Acid Soluble Molybdenum (ppm)	1		11.54									
291	Acid Soluble Nickel (ppm)	1		69.63									
311	Sodium (%)	3	3	0.2042	0.2225	0.2042		0.2225	0.0908	108.98%		0.0110	5.08%
321	Acid Soluble Zinc (%)	3	2	0.0065	0.0050	0.0065		0.0049	0.0025	76.15%		0.0010	8.53%

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# Analytes: 28

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Lab Values

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Issue Date : 05/31/2015

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 (%)	0368	7.360	0.0000	7.936	0.4335	0.1617	18	-1.33	001.99	0
001	Ammoniacal Nitrogen (%)	0498	7.400	0.2000	7.936	0.4335	0.1617	18	-1.24	001.10	0
001	Ammoniacal Nitrogen (%)	0230	7.410	0.4400	7.936	0.4335	0.1617	18	-1.21	001.10	0
001	Ammoniacal Nitrogen (%)	0501	7.595	0.0900	7.936	0.4335	0.1617	18	-0.79	001.99	0
001	Ammoniacal Nitrogen (%)	0482	7.665	0.1700	7.936	0.4335	0.1617	18	-0.62	001.99	0
001	Ammoniacal Nitrogen (%)	0027	7.738	0.3000	7.936	0.4335	0.1617	18	-0.46	001.99	0
001	Ammoniacal Nitrogen (%)	0096	7.805	0.1100	7.936	0.4335	0.1617	18	-0.30	001.99	0
001	Ammoniacal Nitrogen (%)	0169	7.815	0.0300	7.936	0.4335	0.1617	18	-0.28	001.99	0
001	Ammoniacal Nitrogen (%)	0444	7.885	0.0100	7.936	0.4335	0.1617	18	-0.12	001.10	0
001	Ammoniacal Nitrogen (%)	0486	7.915	0.0500	7.936	0.4335	0.1617	18	-0.05	001.99	0
001	Ammoniacal Nitrogen (%)	0456	7.940	0.0200	7.936	0.4335	0.1617	18	0.01	001.10	0
001	Ammoniacal Nitrogen (%)	0510	8.005	0.0500	7.936	0.4335	0.1617	18	0.16	001.99	0
001	Ammoniacal Nitrogen (%)	0513	8.120	0.0600	7.936	0.4335	0.1617	18	0.43	001.99	0
001	Ammoniacal Nitrogen (%)	0481	8.320	0.1600	7.936	0.4335	0.1617	18	0.89	001.10	0
001	Ammoniacal Nitrogen (%)	0452	8.370	0.0600	7.936	0.4335	0.1617	18	1.00	001.10	0
001	Ammoniacal Nitrogen (%)	0506	8.495	0.2100	7.936	0.4335	0.1617	18	1.29	001.99	0
001	Ammoniacal Nitrogen (%)	0487	8.700	0.6000	7.936	0.4335	0.1617	18	1.76	001.99	0
001	Ammoniacal Nitrogen (%)	0420	9.345	0.3500	7.936	0.4335	0.1617	18	3.25	001.99	0
001	Ammoniacal Nitrogen (%)	0389	24.68	0.2400	7.936	0.4335	0.1617	18	38.63	001.10	2
002	Nitrate Nitrogen (%)	0027	7.640	0.0100	8.307	0.5935	0.1950	11	-1.12	002.99	0
002	Nitrate Nitrogen (%)	0371	7.745	0.0500	8.307	0.5935	0.1950	11	-0.95	002.99	0
002	Nitrate Nitrogen (%)	0486	7.830	0.1800	8.307	0.5935	0.1950	11	-0.80	002.99	0
002	Nitrate Nitrogen (%)	0513	7.920	0.0053	8.307	0.5935	0.1950	11	-0.65	002.99	0
002	Nitrate Nitrogen (%)	0420	8.170	0.0800	8.307	0.5935	0.1950	11	-0.23	002.99	0
002	Nitrate Nitrogen (%)	0452	8.270	0.1400	8.307	0.5935	0.1950	11	-0.06	002.99	0
002	Nitrate Nitrogen (%)	0501	8.340	0.0800	8.307	0.5935	0.1950	11	0.06	002.99	0
002	Nitrate Nitrogen (%)	0506	8.495	0.2100	8.307	0.5935	0.1950	11	0.32	002.99	0
002	Nitrate Nitrogen (%)	0482	8.665	0.4900	8.307	0.5935	0.1950	11	0.60	002.99	0
002	Nitrate Nitrogen (%)	0230	14.05	0.5000	8.307	0.5935	0.1950	11	9.68	002.20	0
002	Nitrate Nitrogen (%)	0498	16.80	0.4000	8.307	0.5935	0.1950	11	14.31	002.99	0
002	Nitrate Nitrogen (%)	0368	0.0000	0.0000	8.307	0.5935	0.1950	11	-13.99	002.99	4
005	Urea Nitrogen (%)	0506	15.05	0.1000	15.99	0.9501	0.1400	3	-0.99	005.99	0
005	Urea Nitrogen (%)	0513	15.98	0.0400	15.99	0.9501	0.1400	3	-0.01	005.99	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				
005	Urea Nitrogen (%)	0027	16.95	0.2800	15.99	0.9501	0.1400	3	1.01	005.99	0
006	Biuret Nitrogen (%)	0506	0.0055	0.0010	0.4453	0.6219	0.0055	2	-0.71	006.99	0
006	Biuret Nitrogen (%)	0405	0.8850	0.0100	0.4453	0.6219	0.0055	2	0.71	006.10	0
007	Urea (%)	0513	34.74	0.0800			0.0800	1			
008	Biuret (%)	0510	0.1100	0.0000	0.7657	0.2702	0.0175	8	-2.43	008.10	0
008	Biuret (%)	0513	0.1900	0.0000	0.7657	0.2702	0.0175	8	-2.13	008.10	0
008	Biuret (%)	0498	0.6550	0.0500	0.7657	0.2702	0.0175	8	-0.41	008.10	0
008	Biuret (%)	0481	0.8050	0.0500	0.7657	0.2702	0.0175	8	0.15	008.10	0
008	Biuret (%)	0415	0.8150	0.0100	0.7657	0.2702	0.0175	8	0.18	008.10	0
008	Biuret (%)	0090	0.8800	0.0200	0.7657	0.2702	0.0175	8	0.42	008.10	0
008	Biuret (%)	0420	0.9850	0.0100	0.7657	0.2702	0.0175	8	0.81	008.10	0
008	Biuret (%)	0487	1.100	0.0000	0.7657	0.2702	0.0175	8	1.24	008.99	0
009	Ammoniacal Plus Nitrate Nitrogen (%)	0481	8.060	0.0200	13.40	4.630	0.1968	3	-1.15	009.10	0
009	Ammoniacal Plus Nitrate Nitrogen (%)	0513	15.84	0.0105	13.40	4.630	0.1968	3	0.53	009.99	0
009	Ammoniacal Plus Nitrate Nitrogen (%)	0444	16.30	0.5600	13.40	4.630	0.1968	3	0.63	009.10	0
010	Total Nitrogen (32%)	0487	19.35*	0.3000	32.13	0.4575	0.2839	63	-27.93	010.99	0
010	Total Nitrogen (32%)	0481	23.81*	0.3800	32.13	0.4575	0.2839	63	-18.18	010.12	0
010	Total Nitrogen (32%)	0483	30.70*	0.2200	32.13	0.4575	0.2839	63	-3.12	010.60	0
010	Total Nitrogen (32%)	0510	31.07*	0.0000	32.13	0.4575	0.2839	63	-2.31	010.11	0
010	Total Nitrogen (32%)	0493	31.28	0.1000	32.13	0.4575	0.2839	63	-1.85	010.12	0
010	Total Nitrogen (32%)	0234	31.29	0.4600	32.13	0.4575	0.2839	63	-1.83	010.60	0
010	Total Nitrogen (32%)	0472	31.30	0.0450	32.13	0.4575	0.2839	63	-1.81	010.60	0
010	Total Nitrogen (32%)	0157	31.45	0.1000	32.13	0.4575	0.2839	63	-1.48	010.60	0
010	Total Nitrogen (32%)	0070	31.58	0.8500	32.13	0.4575	0.2839	63	-1.20	010.60	0
010	Total Nitrogen (32%)	0498	31.60	0.2000	32.13	0.4575	0.2839	63	-1.15	010.12	0
010	Total Nitrogen (32%)	0095	31.62	0.5000	32.13	0.4575	0.2839	63	-1.11	010.60	0
010	Total Nitrogen (32%)	0494	31.65	0.0900	32.13	0.4575	0.2839	63	-1.05	010.60	0
010	Total Nitrogen (32%)	0086	31.74	0.3670	32.13	0.4575	0.2839	63	-0.85	010.60	0
010	Total Nitrogen (32%)	0042	31.76	0.4700	32.13	0.4575	0.2839	63	-0.81	010.60	0
010	Total Nitrogen (32%)	0177	31.79	0.1300	32.13	0.4575	0.2839	63	-0.74	010.60	0
010	Total Nitrogen (32%)	0307	31.81	1.060	32.13	0.4575	0.2839	63	-0.69	010.60	0
010	Total Nitrogen (32%)	0513	31.82	0.0287	32.13	0.4575	0.2839	63	-0.67	010.99	0
010	Total Nitrogen (32%)	0105	31.86	0.2600	32.13	0.4575	0.2839	63	-0.58	010.60	0
010	Total Nitrogen (32%)	0211	31.88	0.0500	32.13	0.4575	0.2839	63	-0.55	010.11	0
010	Total Nitrogen (32%)	0275	31.88	0.1400	32.13	0.4575	0.2839	63	-0.54	010.60	0
010	Total Nitrogen (32%)	0028	31.98	0.0800	32.13	0.4575	0.2839	63	-0.32	010.60	0
010	Total Nitrogen (32%)	0506	32.00	0.4000	32.13	0.4575	0.2839	63	-0.27	010.99	0
010	Total Nitrogen (32%)	0043	32.02	0.0800	32.13	0.4575	0.2839	63	-0.23	010.60	0
010	Total Nitrogen (32%)	0291	32.02	0.0000	32.13	0.4575	0.2839	63	-0.23	010.60	0
010	Total Nitrogen (32%)	0486	32.03	0.0200	32.13	0.4575	0.2839	63	-0.21	010.60	0
010	Total Nitrogen (32%)	0035	32.05	0.1500	32.13	0.4575	0.2839	63	-0.18	010.60	0
010	Total Nitrogen (32%)	0389	32.06	0.0400	32.13	0.4575	0.2839	63	-0.14	010.60	0
010	Total Nitrogen (32%)	0023	32.07	0.4080	32.13	0.4575	0.2839	63	-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 (32%)	0405	32.10	0.0600	32.13	0.4575	0.2839	63	-0.06	010.60	0
010	Total Nitrogen (32%)	0501	32.13	0.0100	32.13	0.4575	0.2839	63	0.00	010.60	0
010	Total Nitrogen (32%)	0354	32.14	0.0010	32.13	0.4575	0.2839	63	0.03	010.60	0
010	Total Nitrogen (32%)	0377	32.16	0.0700	32.13	0.4575	0.2839	63	0.06	010.60	0
010	Total Nitrogen (32%)	0049	32.17	0.0700	32.13	0.4575	0.2839	63	0.09	010.60	0
010	Total Nitrogen (32%)	0090	32.18	0.0500	32.13	0.4575	0.2839	63	0.11	010.11	0
010	Total Nitrogen (32%)	0451	32.23	0.5500	32.13	0.4575	0.2839	63	0.22	010.60	0
010	Total Nitrogen (32%)	0423	32.24	0.0500	32.13	0.4575	0.2839	63	0.24	010.60	0
010	Total Nitrogen (32%)	0325	32.25	0.5000	32.13	0.4575	0.2839	63	0.27	010.60	0
010	Total Nitrogen (32%)	0230	32.26	0.1900	32.13	0.4575	0.2839	63	0.28	010.60	0
010	Total Nitrogen (32%)	0231	32.26	0.0400	32.13	0.4575	0.2839	63	0.29	010.60	0
010	Total Nitrogen (32%)	0452	32.27	0.0100	32.13	0.4575	0.2839	63	0.30	010.60	0
010	Total Nitrogen (32%)	0105	32.28	0.0000	32.13	0.4575	0.2839	63	0.34	010.11	0
010	Total Nitrogen (32%)	0037	32.29	0.1770	32.13	0.4575	0.2839	63	0.36	010.60	0
010	Total Nitrogen (32%)	0292	32.31	0.0300	32.13	0.4575	0.2839	63	0.39	010.60	0
010	Total Nitrogen (32%)	0072	32.31	0.2400	32.13	0.4575	0.2839	63	0.40	010.60	0
010	Total Nitrogen (32%)	0324	32.31	0.2400	32.13	0.4575	0.2839	63	0.40	010.60	0
010	Total Nitrogen (32%)	0027	32.33	0.5870	32.13	0.4575	0.2839	63	0.44	010.11	0
010	Total Nitrogen (32%)	0136	32.33	0.0800	32.13	0.4575	0.2839	63	0.45	010.60	0
010	Total Nitrogen (32%)	0444	32.36	0.5600	32.13	0.4575	0.2839	63	0.51	010.60	0
010	Total Nitrogen (32%)	0356	32.38	0.0800	32.13	0.4575	0.2839	63	0.56	010.60	0
010	Total Nitrogen (32%)	0055	32.46	0.1600	32.13	0.4575	0.2839	63	0.73	010.60	0
010	Total Nitrogen (32%)	0368	32.49	0.1750	32.13	0.4575	0.2839	63	0.79	010.60	0
010	Total Nitrogen (32%)	0096	32.50	0.3000	32.13	0.4575	0.2839	63	0.82	010.60	0
010	Total Nitrogen (32%)	0040	32.55	0.1000	32.13	0.4575	0.2839	63	0.93	010.60	0
010	Total Nitrogen (32%)	0025	32.56	0.0900	32.13	0.4575	0.2839	63	0.94	010.60	0
010	Total Nitrogen (32%)	0390	32.60	0.8000	32.13	0.4575	0.2839	63	1.04	010.60	0
010	Total Nitrogen (32%)	0007	32.70	0.6000	32.13	0.4575	0.2839	63	1.26	010.60	0
010	Total Nitrogen (32%)	0233	32.79	1.230	32.13	0.4575	0.2839	63	1.44	010.60	0
010	Total Nitrogen (32%)	0073	32.83	1.250	32.13	0.4575	0.2839	63	1.53	010.60	0
010	Total Nitrogen (32%)	0360	32.86	0.1500	32.13	0.4575	0.2839	63	1.59	010.60	0
010	Total Nitrogen (32%)	0450	33.00	0.8000	32.13	0.4575	0.2839	63	1.91	010.60	0
010	Total Nitrogen (32%)	0029	33.18	1.200	32.13	0.4575	0.2839	63	2.30	010.60	0
010	Total Nitrogen (32%)	0351	33.28	0.4957	32.13	0.4575	0.2839	63	2.52	010.60	0
010	Total Nitrogen (32%)	0489	33.57	0.0100	32.13	0.4575	0.2839	63	3.15	010.60	0
010	Total Nitrogen (32%)	0185	31.35	3.160	32.13	0.4575	0.2839	63	-1.70	010.12	1
010	Total Nitrogen (32%)	0500	15.66*	0.0000	32.13	0.4575	0.2839	63	-35.99	010.11	2
020	Total Phosphorus as P2O5 (%)	0389	0.0060	0.0000	0.0130	0.0099	0.0100	2	-0.71	020.50	0
020	Total Phosphorus as P2O5 (%)	0292	0.0200	0.0200	0.0130	0.0099	0.0100	2	0.71	020.20	0
041	Direct Available Phosphorus as P2O5 (%)	0354	0.2585	0.1090	0.0130	0.0099	0.1090	1	24.80	041.60	0
041	Direct Available Phosphorus as P2O5 (%)	0325	0.0050	0.0100	0.0130	0.0099	0.1090	1	-0.81	041.50	4
050	Soluble Potassium as K2O (%)	0292	0.0100	0.0000	8.477	11.52	0.0132	5	-0.73	050.50	0
050	Soluble Potassium as K2O (%)	0325	0.0100	0.0000	8.477	11.52	0.0132	5	-0.73	050.99	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				
050	Soluble Potassium as K2O (%)	0354	0.1740	0.0460	8.477	11.52	0.0132	5	-0.72	050.52	0
050	Soluble Potassium as K2O (%)	0456	20.89	0.0200	8.477	11.52	0.0132	5	1.08	050.61	0
050	Soluble Potassium as K2O (%)	0102	21.30	0.0000	8.477	11.52	0.0132	5	1.11	050.00	0
060	Water (Free) (%)	0456	0.2850	0.0100			0.0100	1			
101	Acid Soluble Calcium (%)	0354	0.0270	0.0100	0.0965	0.0983	0.0050	2	-0.71	101.30	0
101	Acid Soluble Calcium (%)	0102	0.1660	0.0000	0.0965	0.0983	0.0050	2	0.71	101.30	0
121	Acid Soluble Magnesium (%)	0389	0.0080	0.0000	3.766	6.494	0.0453	3	-0.58	121.99	0
121	Acid Soluble Magnesium (%)	0354	0.0265	0.0150	3.766	6.494	0.0453	3	-0.58	121.30	0
121	Acid Soluble Magnesium (%)	0102	11.26	0.1210	3.766	6.494	0.0453	3	1.15	121.30	0
143	Elemental Sulfur (%)	0389	0.0015	0.0010			0.0010	1			
148	Total Sulfur (%)	0354	0.0325	0.0230	11.58	16.33	0.0380	2	-0.71	148.99	0
148	Total Sulfur (%)	0102	23.12	0.0530	11.58	16.33	0.0380	2	0.71	148.01	0
148	Total Sulfur (%)	0072	0.0000	0.0000	11.58	16.33	0.0380	2	-0.71	148.99	4
165	Acid Soluble Boron (%)	0354	0.0035	0.0030			0.0030	1			
181	Acid Soluble Cadmium (ppm)	0389	0.5500	0.1000			0.1000	1			
190	Water Soluble Chlorine (%)	0102	0.7775	0.0030			0.0030	1			
191	Acid Soluble Chromium (ppm)	0102	121.0	0.8140			0.8140	1			
202	Acid Soluble Cobalt (ppm)	0102	2.093	0.0390			0.0390	1			
221	Acid Soluble Copper (%)	0102	0.0005	0.0000	0.0015	0.0014	0.0005	2	-0.71	221.30	0
221	Acid Soluble Copper (%)	0354	0.0025	0.0010	0.0015	0.0014	0.0005	2	0.71	221.30	0
241	Acid Soluble Iron (%)	0389	0.0002	0.0001	0.0176	0.0290	0.0004	3	-0.60	241.99	0
241	Acid Soluble Iron (%)	0354	0.0015	0.0010	0.0176	0.0290	0.0004	3	-0.55	241.30	0
241	Acid Soluble Iron (%)	0102	0.0510	0.0000	0.0176	0.0290	0.0004	3	1.15	241.30	0
261	Acid Soluble Manganese (%)	0102	0.0016	0.0000			0.0000	1			
289	Acid Soluble Molybdenum (ppm)	0102	11.54	0.0890			0.0890	1			
291	Acid Soluble Nickel (ppm)	0102	69.63	0.4870			0.4870	1			
311	Sodium (%)	0354	0.0485	0.0210	0.2042	0.2225	0.0110	3	-0.70	311.99	0
311	Sodium (%)	0510	0.1050	0.0100	0.2042	0.2225	0.0110	3	-0.45	311.30	0
311	Sodium (%)	0102	0.4590	0.0020	0.2042	0.2225	0.0110	3	1.15	311.33	0
321	Acid Soluble Zinc (%)	0354	0.0030	0.0020	0.0065	0.0049	0.0010	2	-0.71	321.30	0
321	Acid Soluble Zinc (%)	0292	0.0100	0.0000	0.0065	0.0049	0.0010	2	0.71	321.30	0
321	Acid Soluble Zinc (%)	0072	0.0000	0.0000	0.0065	0.0049	0.0010	2	-1.31	321.30	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. Robust statistics not used if < 6 labs reporting, in this case the Z Scores are included for information only (Grey). An offset lab value with an asterisk 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.