



# Magruder Certificate of Analysis

## Magruder Sample #181211 Grade 11-11-21

Analyte	Value	± Standard Uncertainty	# Labs
Ammoniacal Nitrogen (%)	7.011	0.061	38
Nitrate Nitrogen (%)	4.332	0.071	25
Total Nitrogen (11%)	11.27	0.02	81
Total Phosphorus as P <sub>2</sub> O <sub>5</sub> (%)	10.81	0.07	52
Direct Available Phosphorus as P <sub>2</sub> O <sub>5</sub> (11%)	10.69	0.06	50
Soluble Potassium as K <sub>2</sub> O (21%)	21.69	0.1	88
Acid Soluble Magnesium (1.5%)	1.573	0.019	56
Total Sulfur (10%)	10.76	0.07	47
Acid Soluble Boron (0.05%)	0.04760	0.00070	44
Acid Soluble Chromium (ppm)	10.79	1.3	19
Acid Soluble Cobalt (ppm)	1.980	0.147	17
Acid Soluble Copper (0.05%)	0.03560	0.00070	50
Acid Soluble Iron (0.1%)	0.1313	0.0029	52
Acid Soluble Lead (ppm)	1.913	0.420	18
Acid Soluble Manganese (0.25%)	0.2627	0.0032	56
Acid Soluble Molybdenum (20ppm)	37.40	1.92	24
Acid Soluble Nickel (ppm)	5.866	0.678	17
Acid Soluble Zinc (0.05%)	0.04260	0.00050	59

1. Data obtained from participant results in the Magruder Check Sample Program.
2. Guaranteed concentrations noted by the value preceding the unit in Analyte name.
3. Values are robust means. Standard uncertainty determined as  $1.25 \times \text{robust standard deviation} / \sqrt{\text{\#Labs}}$ . Results only shown for analytes tested by 16 or more labs. Values and uncertainties for analytes tested by less than 16 labs are available in Analyte Reports.
4. Technical information on Certificate of Analysis available at [www.magruderchecksample.org/prod/Articles.html](http://www.magruderchecksample.org/prod/Articles.html)