



## Heavy Metals

## Soil Report

Mehlich-3 Extraction

**Client:** A M (Allie) Powell  
PO Box 395  
Roanoke Rapids, NC 27870

Sampled County : Halifax

**Advisor:** Chester Cobb  
NCDENR-Div of Waste  
Mgmt  
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Sampled: 10/10/2013 Received: 10/31/2013 Completed: 11/07/2013 Farm: 42-04

[Links to Helpful Information](#)

## Agronomist's Comments:

This report contains both routine soil test information as well as heavy metals data in a section labeled as Heavy Metals under soil test lab results. Using Mehlich 3 as a soil test extractant, background levels of these metals typically seen in NC soils when analyzed are as follows: arsenic (As)- 4.5 ppm, cadmium (Cd)- 0.1 ppm, chromium (Cr)- 0.2 ppm, lead (Pb)- 4.2 ppm, nickel (Ni)- 0.8 ppm, & selenium (Se)- 0.2 ppm (FY2005-2007). Although the above metals here are not believed to pose a concern for plant growth, continue to monitor these and note where elevated above background levels. Note any lime and fertilizer recommendations. Jagathi Kamalakanthan 11/7/2013

Sample ID: 4204A	Recommendations:	Lime (tons/acre)	Nutrients (lb/acre)									More Information	
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Mg	S	Mn	Zn	Cu	B		
Lime History:	1 - Bermuda hay/past., M	0.0	180-220	0	210	0	0	0	0	0	0	0	<a href="#">Note: 12</a> <a href="#">Note: 3</a>
	2 - Small Grain (SG)	0.0	80-100	0	110	0	0	0	0	0	0		

Test Results [units - W/V in g/cm<sup>3</sup>; CEC and Na in meq/100 cm<sup>3</sup>; NO<sub>3</sub>-N in mg/dm<sup>3</sup>]:

Soil Class: Mineral

HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mn-AI1	Mn-AI2	Zn-I	Zn-AI	Cu-I	Na	ESP	SS-I	NO <sub>3</sub> -N
0.46	1.23	6.7	80	1.4	6.0	278	14	70	9	66	37	39	32	1664	1664	1509	0.1	1		

Heavy Metals (parts per million): Arsenic, 0.2 Cadmium, 0.1 Nickel, 0.6 Chromium, 0.2 Lead, 5.7 Selenium, 0.1

Sample ID: 4204B	Recommendations:	Lime (tons/acre)	Nutrients (lb/acre)									More Information	
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Mg	S	Mn	Zn	Cu	B		
Lime History:	1 - Bermuda hay/past., M	0.0	180-220	0	170	0	0	0	0	0	0	0	<a href="#">Note: 12</a> <a href="#">Note: 3</a>
	2 - Small Grain (SG)	0.0	80-100	0	90	0	0	0	0	0	0		

Test Results [units - W/V in g/cm<sup>3</sup>; CEC and Na in meq/100 cm<sup>3</sup>; NO<sub>3</sub>-N in mg/dm<sup>3</sup>]:

Soil Class: Mineral

HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mn-AI1	Mn-AI2	Zn-I	Zn-AI	Cu-I	Na	ESP	SS-I	NO <sub>3</sub> -N
0.36	1.23	6.8	82	1.2	6.1	256	26	70	10	49	43	42	35	1454	1454	1254	0.1	1		

Heavy Metals (parts per million): Arsenic, 0.2 Cadmium, 0.1 Nickel, 0.6 Chromium, 0.2 Lead, 4.0 Selenium, 0.1



Reprogramming of the laboratory-information-management system that makes this report possible is being funded through a grant from the North Carolina Tobacco Trust Fund Commission.

Thank you for using agronomic services to manage nutrients and safeguard environmental quality.

- Steve Troxler, Commissioner of Agriculture

A M (Allie) Powell

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**Understanding the Soil Report: explanation of measurements, abbreviations and units****Recommendations**Lime

If testing finds that soil pH is too low for the crop(s) indicated, a **lime recommendation** will be given in units of either ton/acre or lb/1000 sq ft. For best results, mix the lime into the top 6 to 8 inches of soil several months before planting. For no-till or established plantings where this is not possible, apply no more than 1 to 1.5 ton/acre (50 lb/1000 sq ft) at one time, even if the report recommends more. You can apply the rest in similar increments every six months until the full rate is applied. If MG is recommended and lime is needed, use dolomitic lime.

Fertilizer

Recommendations **for field crops or other large areas** are listed separately for each nutrient to be added (in units of lb/acre unless otherwise specified). Recommendations for N (and sometimes for B) are based on research/field studies for the crop being grown, not on soil test results. K-I and P-I values are based on test results and should be > 50. If they are not, follow the fertilizer recommendations given. If Mg is needed and no lime is recommended, 0-0-22 (11.5% Mg) is an excellent source; 175 to 250 lb per acre alone or in a fertilizer blend will usually satisfy crop needs, SS-I levels appear only on reports for greenhouse soil or problem samples.

Farmers and other commercial producers should pay special attention to **micronutrient levels**. If \$, pH\$, \$pH, C or Z notations appear on the soil report, refer to [\\$Note: Secondary Nutrients and Micronutrients](#). In general, homeowners do not need to be concerned about micronutrients. Various crop notes also address lime fertilizer needs; visit [ncagr.gov/agronomi/pubs.htm](http://ncagr.gov/agronomi/pubs.htm).

Recommendations **for small areas, such as home lawns/gardens**, are listed in units of lb/1000 sq ft. If you cannot find the exact fertilizer grade recommended on the report, visit [www.ncagr.gov/agronomi/obpart4.htm#fs](http://www.ncagr.gov/agronomi/obpart4.htm#fs) to find information that may help you choose a comparable alternate. For more information, read [A Homeowner's Guide to Fertilizer](#).

**Test Results**

The first seven values [soil class, HM%, W/V, CEC, BS%, Ac and pH] describe the soil and its degree of acidity. The remaining 16 [P-I, K-I, Ca%, Mg%, Mn-I, Mn-AI1, Mn-AI2, Zn-I, Zn-AI, Cu-I, S-I, SS-I, Na, ESP, SS-I, NO<sub>3</sub>-N (not routinely available)] indicate levels of plant nutrients or other fertility measurement. Visit [www.ncagr.gov/agronomi/uyrst.htm](http://www.ncagr.gov/agronomi/uyrst.htm) for more information.

**Report Abbreviations**

<b>Ac</b>	exchangeable acidity
<b>B</b>	boron
<b>BS%</b>	% CEC occupied by basic cations
<b>Ca%</b>	% CEC occupied by calcium
<b>CEC</b>	cation exchange capacity
<b>Cu-I</b>	copper index
<b>ESP</b>	exchangeable sodium percent
<b>HM%</b>	percent humic matter
<b>K-I</b>	potassium index
<b>K<sub>2</sub>O</b>	potash
<b>Mg%</b>	% CEC occupied by magnesium
<b>MIN</b>	mineral soil class
<b>Mn</b>	manganese
<b>Mn-AI1</b>	Mn-availability index for crop 1
<b>Mn-AI2</b>	Mn-availability index for crop 2
<b>Mn-I</b>	manganese index
<b>M-O</b>	mineral-organic soil class
<b>N</b>	nitrogen
<b>Na</b>	sodium
<b>NO<sub>3</sub>-N</b>	nitrate nitrogen
<b>ORG</b>	organic soil class
<b>pH</b>	current soil pH
<b>P-I</b>	phosphorus index
<b>P<sub>2</sub>O<sub>5</sub></b>	phosphate
<b>S-I</b>	sulfur index
<b>SS-I</b>	soluble salt index
<b>W/V</b>	weight per volume
<b>Zn-AI</b>	zinc availability index
<b>Zn-I</b>	zinc index