

# POLK COUNTY GRAZIER

AUGUST 2, 2021

An eNewsletter brought to you by the Rich Mountain Conservation District



## Soil Testing for Pasture Management

The last article described how to collect a soil sample and get it sent off for analysis. Here we'll look at an example soil test report and what parts are the most important to read and understand. Soil testing provides a baseline to begin a fertilization program and can be used to monitor changes in the soil fertility that may not be obvious in the forage growth. Soil testing also provides information to determine the most cost-efficient method of fertilization as well as protecting water quality by preventing overapplication of nutrients. Soil test reports provide a lot of information and this can be intimidating when reading the results and trying to figure out what to do. The soil sample test report below is very common for pastures in Polk and Montgomery counties that have had little to no lime or other fertilizers applied recently.

Here are the most important parts of the soil test report that are circled and numbered below:

- Field ID**— the field ID is the number of other identifying value you gave to the field when you collected the soil sample. It's important to be looking at the correct soil test report and know which field it came from.
- Acres**— the acres in the field are important when you are ready to apply your fertilizer. Recommendations in the soil test report are in lbs/acre of each fertilizer so you should know approximately how many acres are in each field.

<b>DIVISION OF AGRICULTURE</b> <b>RESEARCH &amp; EXTENSION</b> <i>University of Arkansas System</i>		<b>Soil Test Report For:</b> Rich Mountain Conservation 479-394-1933 508 7th St Mena, AR 71953							
<b>Marianna Soil Test &amp; Research Laboratory</b> 008 Lee 214 Marianna, AR 72360 (870) 295-2851 soiltest@uark.edu ~ https://soiltest2.uaex.edu/Default.aspx		Polk <b>Sample ID</b> 00073510 <b>Lab ID</b> 64688 <b>Date Processed</b> 5/11/2020 <b>Field ID</b> 2							
Previous Crop: Pasture (212)		Acres: 4							
Field Levelled in last 4 years:		Irrigation Water Source:							
Lime Applied in last 4 years: No		Nutrient Management Plan:							
<b>Soil pH &amp; Nutrient Availability Index</b>		4.0 - 5.0	5.1 - 6.0	6.1 - 7.0	7.1 - 8.0	8.1 - 9.0			
<b>Soil pH</b> 5.7		Strongly Acidic	Medium Acidic	Slightly Acidic	Slightly Alkaline	Strongly Alkaline			
<b>Mehlich III Nutrient</b>		<b>Soil Test Level</b>							
	ppm	lbs/acre	Very Low	Low	Medium	Optimum	Above Optimum		
<b>Phosphorus (P)</b>	24	48	< 16 ppm	16 - 25 ppm	26 - 35 ppm	36 - 50 ppm	> 50 ppm		
<b>Potassium (K)</b>	56	112	< 61	61 - 90	91 - 130	131 - 175	> 175		
<b>Zinc (Zn)</b>	2.9	5.8	< 1.6	1.6 - 2.5	2.6 - 4.0	4.1 - 8.0	> 8.0		
<b>Mehlich III Nutrient</b>		<b>Other Soil Properties</b>		<b>Units</b>					
Sulfate-S (SO4-S)	12	24	Electrical Conductivity (EC)	µmhos/cm					
Calcium (Ca)	320	640	Estimated CEC (ECEC)	6 cmolc/kg					
Magnesium (Mg)	66	132	Organic Matter	%					
Iron (Fe)	103	206	Estimated Soil Texture	Sandy Loam					
Manganese (Mn)	182	364	<b>Base Saturation</b>	37	Ca	25.3	% of ECEC		
Copper (Cu)	1.4	2.8			Mg	8.7	% of ECEC		
Boron (B)	0.3	0.6			K	2.3	% of ECEC		
Nitrate (NO3-N)					Na	0.5	% of ECEC		
<b>Methods:</b> Soil pH and EC in 1:2 soil-water volume mixture; nutrients other than NO3-N extracted with Mehlich-3 determined by ICAP; Nitrate extracted with Al2(SO4)3 and determined by electrode; ECEC by cation summation; organic matter by weight loss on ignition.									
<b>Comments:</b> Unit of lbs/acre assumes the sample depth represents a plow layer weighing 2 million pounds.									
<b>Code</b>	<b>Name</b>	<b>N</b>	<b>P<sub>2</sub>O<sub>5</sub></b>	<b>K<sub>2</sub>O</b>	<b>SO<sub>4</sub>-S</b>	<b>Zn</b>	<b>B</b>	<b>Lime</b>	<b>lb/acre</b>
212	Mixed Cool and Warm-Season Grass	60	80	160	0	0	0	3000	
<b>Crop 1 Notes:</b> To favor cool-season grasses, apply N in late winter. To favor warm-season grasses, do not apply N until May 1. For higher production, topdress 50 lb N/Acre after every 4-6 weeks of grazing or as needed.									
<b>Crop 2 Notes:</b>									
<b>Crop 3 Notes:</b>									

**3. Soil pH**— soil pH is the level of acidity of the soil. The lower the number is more acidic and the higher the number is more alkaline with 7.0 being neutral. This is also a logarithmic scale which means a soil with a pH of 5.0 is 10 times more acidic than a soil with a pH of 6.0 and 100 times more acidic than a soil with a pH of 7.0. Soil pH affects the availability of nutrients to the plants so a soil with a very low (or high) pH will not be able to provide those nutrients sufficiently. Most soils in Polk and Montgomery counties are naturally acidic (pH ranges from 4.5 to 7.0) due to the shale geology and the high rainfall rates. Soils with a pH below 4.5 or above 7.0 are not impossible but rare in this area. Plants grow well when the pH is slightly acidic (6.1-7.0).

**4. Nutrient Availability**— the two main nutrients to look at here are Phosphorus (P) and Potassium (K). The lab analyzes several other secondary or micro-nutrients such as Zinc (Zn) and Calcium (Ca) but they are normally in the soil in sufficient quantities for growing grass as long as the pH is adequate. The analysis also does not include Nitrogen (N) which is very important for growing grass but is difficult to test because it fluctuates so much from day to day due to weather and other factors. Nitrogen (N), Phosphorus (P), and Potassium (K) are important macro-nutrients for plant growth but are especially critical for growing grasses. Optimum levels of P range from 36-50 ppm (parts per million) and K range from 131-175 ppm.

**5. Fertilizer Recommendations**— the University of Arkansas Soil Test Lab provides recommended fertilizers based on the planned crop that was provided when the soil test was submitted. The amount of Nitrogen (N), Phosphate (P<sub>2</sub>O<sub>5</sub>) and Potash (K<sub>2</sub>O) is given in actual amounts of these nutrients per acre. Commercial fertilizers are normally sold with a set of 3 numbers that gives their composition of those 3 nutrients. Triple thirteen is 13 % N, 13% P<sub>2</sub>O<sub>5</sub>, and 13 % K<sub>2</sub>O and is denoted as (13-13-13). It's important to know that commercial fertilizers are never 100% of each of these nutrients and the amount of the actual nutrient needed should be calculated based on the composition of the fertilizer. For example, if 60 lbs per acre of Nitrogen are needed and you are applying ammonium nitrate which is around 34% actual Nitrogen (34-0-0), you can divide 60 lbs/ac by 0.34 and get the amount to apply. In this case you would need to apply 176 lbs/ac of ammonium nitrate to get the recommended 60 lbs/ac of Nitrogen. Lime needed is recommended in lbs per acre of agricultural lime.

**6. Notes**— other fertilization recommendations are shown here based on the given crop.

One thing that is important to know is that pasture grass and forages will generally grow even without added fertilization but these forages will be more productive and provide more nutrition to livestock if the soil nutrients are optimum. Fertilizers can also be expensive so graziers should balance their financial resources with the quality and quantity of forage they want to produce.

If you would like more information on soil testing or nutrient management planning, please contact Jessica Beck, Water Quality Technician at the Rich Mountain Conservation District, or your local county extension agent: Polk County — Sherry Beaty Sullivan (479)394-6018 or Montgomery County — Randy Black (870)867-2311.



**FREE**

Free copies of the Forage Crop Pocket Guide are available at the Rich Mountain Conservation District office in Mena. The 57 page booklets are sponsored by Union Bank of Mena, First Financial Bank, Diamond Bank, & Farm Credit of Western Arkansas. These have great information and topics included are:

- ⇒ Plant Characteristics
- ⇒ Fertilizer and Nutrients
- ⇒ Stand Establishment
- ⇒ Animals
- ⇒ Grazing
- ⇒ Forage Quality
- ⇒ Hay and Silage

### Upcoming Grazing Meetings and Seminars:

- ⇒ **August 3, 2021— Stockpiling Forages (online seminar)** you are invited to attend the weekly grazing training sessions by Jeremy Huff, the USDA/NRCS state grazing specialist. He offers these training sessions as a Zoom meeting and the instructions for logging in are included in attached flyer. If you have the Zoom app on your phone you can just scan the QR code on the flyer. If you want to see it on your computer there is a link included in the attachment. There are sessions normally every Tuesday at 1pm so [see the attached flyer](#).
- ⇒ **August 10, 2021— Installation of Temporary Livestock Water (online seminar)** next week's online training by Jeremy Huff. [see the attached flyer](#)
- ⇒ **August 12-14, 2021— Profitable Grazing & Stockmanship Conference**—at Claremore, OK. There is a \$250 fee for all three days. To register, go to [Eventbrite/profitablegrazing](https://www.eventbrite.com/profitablegrazing) or email the organizer at [mrssara-bullis@yahoo.com](mailto:mrssara-bullis@yahoo.com)

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Take a picture with your cell phone to visit the RMCD website →

#### Did you Know?

⇒ An intensive rotational grazing system moving cattle every 2 days covers every square yard with manure in 2 years. Continuous grazing would require 27 years with much manure deposited in loafing areas.