

The Soil Test Report

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The University of Arkansas soil test report was revised in 2006. The new report form presents additional information to help the user understand the meaning of the numbers in the report. The new soil test report is divided into seven sections:

1. Background Information
2. Nutrient Availability Index

3. Soil Properties
4. Fertilizer and Amendment Recommendations
5. Crop 1 Notes
6. Crop 2 Notes
7. Crop 3 Notes

A brief description of each section follows.

 UNIVERSITY OF ARKANSAS DIVISION OF AGRICULTURE		FARMER JONES Client ID: 5554321																																																																					
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Cooperative Extension Service Soil Analysis Report Soil Testing And Research Laboratory Marianna, AR 72360 http://www.uark.edu/depts/soiltest <small>The University of Arkansas is an equal opportunity/affirmative action institution.</small>		Date Processed: 8/3/2006	1																																																																				
		Field ID: 1																																																																					
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		Lime Applied in the last 4 years: No	Leveled in past 4 years: No																																																																				
		Irrigation: Unknown																																																																					
County: Chicot	Lab Number: 123456	Sample Number: 1234567																																																																					
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Crop		N	P ₂ O ₅	K ₂ O	SO ₄ -S	Zn	B	Lime																																																															
Last Crop	Cotton (6)																																																																						
Crop 1	Cotton (6)	70	0	0	0	0	0	6000																																																															
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Apply up to 1/3 of the recommended N immediately before or after planting. Sidedress the remaining N before match-head square. For skip-row cotton, adjust N rate to acres.																																																																							
If a winter cover crop precedes cotton, apply up to 1/2 the N rate immediately before or after planting. Side-dress remaining N before match-head square.																																																																							
If S-deficiency has occurred on this soil before apply 20 lb SO ₄ -S/acre.																																																																							
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Background Information

The **background information** section is located at the top right of the report and includes client information, field size, field ID, county of origin and selected field history and management information. The sample number can be used to obtain soil test nutrient concentrations on the web (<http://www.uark.edu/depts/soiltest/>).

Nutrient Availability Index

The **nutrient availability index** section contains the concentration of each nutrient in both parts per million (ppm) and pounds per acre (lb/acre). In addition to reporting the concentration for each nutrient, the report shows an availability index or soil test level associated with the concentration of P (phosphorus), K (potassium) and Zn (zinc). This index is related to the yield expected without fertilization. The index applies only to P, K and Zn since the levels of other nutrients are not used to make fertilizer recommendations.

1. Nutrient Availability Index

Nutrient	Concentration		Soil Test Level (Mehlich 3)
	ppm	lb/acre	
P	12	24	Very Low
K	166	332	Optimum
Ca	2988	5976	--
Mg	622	1244	--
SO ₄ -S	171	342	--
Zn	5.6	11.2	High
Fe	618	1236	--
Mn	59	118	--
Cu	0.8	1.6	--
B	0.4	0.8	--
NO ₃ -N			--

Nitrogen (only in the nitrate form) is determined only for certain crops, but it can be done if requested. Analysis for nitrate-nitrogen is not performed for samples submitted from lawns, pastures and many other crops due to the variable nature of this nitrogen form, in addition to the lack of correlation to plant growth.

Soil Properties

The **soil properties** section on the report includes those properties of a qualitative nature. Soil pH is one of the most important properties since it affects plant growth and the availability of several nutrients. Having the correct soil pH is critical for optimum plant growth.

Soil EC (EC = electrical conductivity) is the salinity level in the soil; this test is now done only on a request basis.

Soil ECEC is the estimated cation exchange capacity, which indicates the ability of a soil to hold positively charged ions against leaching. This number represents the percentage of sites (locations) in the soil occupied by the basic ions: Ca⁺⁺, Mg⁺⁺, Na⁺ and K⁺. Generally, sandy soils have an ECEC < 10, loamy soils have an ECEC of 10 to 20 and clayey soils have an ECEC > 20.

2. Soil Properties

Property	Value	Units
Soil pH (1:2 soil-water)	5.3	--
Soil EC (1:2 soil-water)		µmhos/cm
Soil ECEC	28	cmolc/kg
Organic Matter (Loss on Ignition)		%
Estimated Soil Texture	Clay	

Estimated Base Saturation (%)

Total	Ca	Mg	K	Na
75.1	53.2	18.4	1.5	2.0

Organic matter is not a routine analysis. It is done only on request, and there is a fee associated with it. The analysis is based on the amount of weight loss after subjecting the soil sample to a temperature of 360°C (680°F).

The **soil texture** is now **estimated** based on a relationship between soil pH and calcium concentration. The **estimated base saturation** represents the percentage of cation exchange sites in the soil occupied by the basic ions: Ca, Mg, Na and K. The difference between this number and 100 is the percentage of the cation exchange sites occupied by the acidic ions: Al and H.

Fertilizer Amendment Recommendations

The **recommendations** section includes the fertilizer and lime recommendations for the crop(s) of interest. Clients can choose up to three different crops, but the order of the crops selected does not represent a crop rotation. There is a statement to remind the user of environmental regulations that may supersede the fertilizer rates recommended. The amount of fertilizer and lime recommended may be

Example 1 – Fertilizer and lime recommendations in lb/1000 sq ft

3. Recommendations (Notice: State and/or federal nutrient management regulations may supersede these agronomic recommendations.)

Crop		N	P2O5	K2O	SO4S	Zn	B	Lime
Last Crop	Hay (124)	----- lb/1000 sq.ft. -----						
Crop 1	Roses (601)	1	0	2	0	0	0	0
Crop 2								
Crop 3								

Example 2 – Fertilizer and lime recommendations in lb/100 row ft

3. Recommendations (Notice: State and/or federal nutrient management regulations may supersede these agronomic recommendations.)

Crop		N	P2O5	K2O	SO4S	Zn	B	Lime
Last Crop	Hay (124)	----- lb/100 row ft. -----						
Crop 1	Brambles (522)	0.6	0	0.6	0	0	0	0
Crop 2								
Crop 3								

Example 3 – Fertilizer and lime recommendations in lb/acre

3. Recommendations (Notice: State and/or federal nutrient management regulations may supersede these agronomic recommendations.)

Crop		N	P2O5	K2O	SO4S	Zn	B	Lime
Last Crop	Hay (122)	----- lb/acre -----						
Crop 1	Corn for Grain up to 150 bu/acre (2)	185	0	105	0	0	0	5000
Crop 2	Other Crop - Analysis Only (18)	0	0	0	0	0	0	0
Crop 3	Other Crop - Analysis Only (18)	0	0	0	0	0	0	0

given in pounds per acre (lb/acre), pounds per 1,000 square feet (lb/1000 ft²) or pounds per 100 feet of row (lb/100 row ft), depending on the crop selected. The previous crop grown will appear in the first box, with its respective crop code in parentheses.

Examples of the three different formats are shown above. The first example represents a recommendation based on pounds per 1,000 square feet (lb/1000 ft²), which is typically associated with samples from homeowners (lawns and gardens). In the example, the recommendation for roses is to apply 1 lb N (nitrogen), 0 lb P₂O₅ (phosphorus), 2 lb K₂O (potassium) and 0 lb of lime/1000 ft². To convert the recommendations to lb/acre, simply multiply by 43.6.

The second example represents a recommendation for brambles, which is based on pounds per 100 feet of row (lb/100 row ft). In this case, 0.6 lb N, 0 lb P₂O₅, 0.6 lb K₂O and 0 lb of lime were recommended. To convert the recommendations to lb/acre, simply multiply by 117 (a 4-foot wide row is assumed).

The third example represents a recommendation for field corn based on pounds per acre (lb/acre). In this case, the recommendations called for 185 lb N,

0 lb P₂O₅, 105 lb K₂O and 5,000 lb of lime. Also note that the recommendation is specific for a corn yield of 150 bushels per acre (1 bushel = 56 lb). Different recommendations would be provided for targeted corn yields of 125, 175 or 200 bushels per acre. The fertilizer recommendations for corn and other crops, such as grain sorghum, and forages for hay are based on intended yield goals, so the user must be careful to select the appropriate yield goal and associated crop code.

Crop Notes

The **crop notes** section includes written instructions with information on how and when to apply the recommended fertilizer. The notes apply only to the respective crop code (i.e., Crop 1 Notes apply only to Crop 1). Precautionary notes or recommendations for other nutrients may also appear in this section. The user is encouraged to follow the suggested instructions. Below is a sample of the notes that would accompany the recommendations for the corn crop selected above.

4. Crop 1 Notes:

Apply one-third to one-half of the total-N rate immediately before or after planting and side-dress the remainder when corn is 10-to-12 inches tall (V6 stage).

Consider a 3-way split with a third split (45 lb N/acre) applied 1 to 2 weeks before tasseling.

If S-deficiency has occurred on this soil before, apply 20 lb SO₄-S/acre.

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