@agronomybadger

Soil Fertility Management

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Why Soil Fertility Management Matter?

Photo: Josh Kamps

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The Soil Test= Report Card

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

LAB #: 3477

County: Lafayette
Account No.: 558620
Date Received: 7/16/2019
Date Processed: 7/17/2019
Slope: 0%
Acres: 0
Plow Depth: 7"
Irrigated: No
Soil Name: unknown, loamy soil
Tiled: No
Field Name: Lafayette
Previous Crop: no crop

SOIL TEST REPORT

Results also available on-line at http://not available
lab number: 3477 access code: tqpc7

This Report is for:
UW-Madison Nutrient and Pest Management Program - Daniel Smith ANM19- Lafayette
445 Henry Mall, Suite 318
Madison, WI 53706

NUTRIENT RECOMMENDATIONS

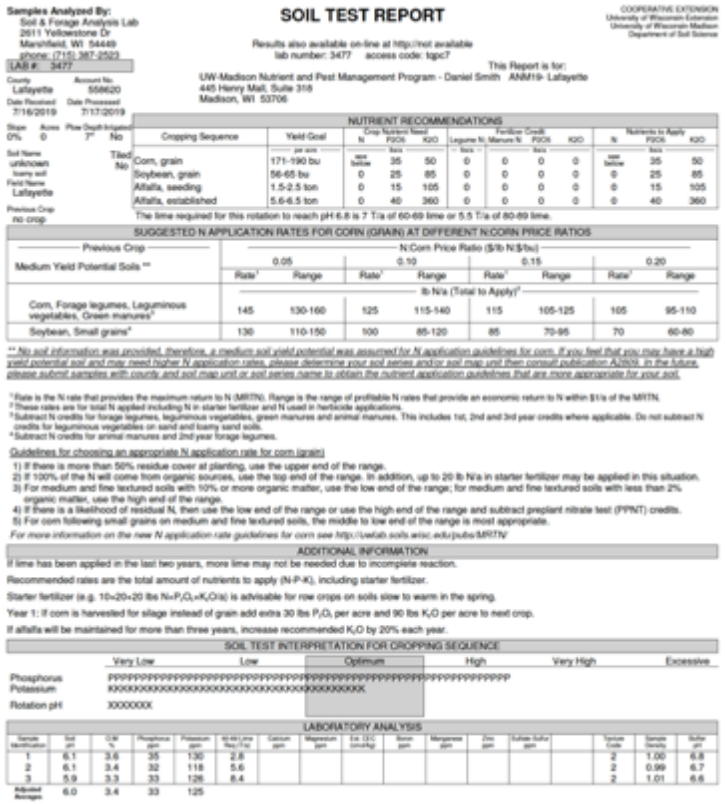
Cropping Sequence	Yield Goal	Crop Nutrient Need N	P2O5	K2O	Fertilzer Credit Legume N	Manure N	P2O5	K2O	Nutrients to Apply N	P2O5	K2O
	per acre	lbs/a			lbs/a		lbs/a			lbs/a	
Corn, grain	171-190 bu	see below	35	50	0	0	0	0			
Soybean, grain	56-65 bu	0	25	85	0	0	0	0			
Alfalfa, seeding	1.5-2.5 ton	0	15	105	0	0	0	0			
Alfalfa, established	5.6-6.5 ton	0	40	360	0	0	0	0	0	40	360

The lime required for this rotation to reach pH 6.8 is 7 T/a of 60-69 lime or 5.5 T/a of 80-89 lime.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop / Medium Yield Potential Soils **	N:Corn Price Ratio ($/lb N:$/bu) 0.05 Rate[1]	0.05 Range	0.10 Rate[1]	0.10 Range	0.15 Rate[1]	0.15 Range	0.20 Rate[1]	0.20 Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

*** No soil information was provided, therefore, a medium soil yield potential was assumed for N application guidelines for corn. If you feel that you may have a high yield potential soil and may need higher N application rates, please determine your soil series and/or soil map unit then consult publication A2809. In the future, please submit samples with county and soil map unit or soil series name to obtain the nutrient application guidelines that are more appropriate for your soil.*



The Soil Test= Report Card

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

	Very Low	Low	Optimum	High	Very High	Excessive
Phosphorus	PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP					
Potassium	KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK					
Rotation pH	XXXXXXX					

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	6.1	3.6	35	130	2.8									2	1.00	6.8
2	6.1	3.4	32	118	5.6									2	0.99	6.7
3	5.9	3.3	33	126	8.4									2	1.01	6.6
Adjusted Averages	6.0	3.4	33	125												

Soil Test Category	Recommendations
Very Low, Low	Crop removal +
Optimum	Crop removal
High, Very High	½ or ¼ Crop removal
Excessively High	None

Build vs. Maintain

Soil Test P Changes Slowly: *Example*

- Soil test P = 75 ppm (EH)
- Track draw-down of P over a CCOHHH rotation.
  - **Corn @160 bu/a removes 60 lb P_2O_5/a/yr**
  - **Oats @ 100 bu/a removes 30 lb P_2O_5/a/yr**
  - **Alfalfa @ 5 tons/a removes 65 lb P_2O_5/a/yr**
- Removal of P_2O_5 over rotation = 345 lbs **P_2O_5**

Soil Test P Changes Slowly: *Example*

- Soil test P = 75 ppm (EH)
- Track draw-down of P over a CCOHHH rotation.
- Removal of P_2O_5 over rotation = 345 lbs **P_2O_5**
- Change in soil test P = 345 lb P_2O_5/18 = 19 ppm P

Still excessively high !

Soil test P = 56 ppm (EH) after the 6-year rotation.

(75 ppm P - 19 ppm P = 56 ppm P)

Soil Test K Changes Quickly: *Example*

- Soil test K = 200 ppm (EH)
- Track draw-down of K over a CCOHHH rotation.
  - **Corn @160 bu/a removes 45 lb K_2O/a/yr**
  - **Oats @ 100 bu/a removes 20 lb K_2O/a/yr**
  - **Alfalfa @ 5 tons/a removes 300 lb K_2O/a/yr**
- **Removal of K_2O over rotation = 1,010 lbs K_2O**

Soil Test K Changes Quickly: *Example*

- Soil test K = 200 ppm (EH)
- Track draw-down of K over a CCOHHH rotation.
- **Removal of K_2O over rotation = 1,010 lbs K_2O**
- **Change in soil test K = 1,010 lb K_2O/7 = 144 ppm K**

Soil test K = 56 ppm (VL) after the 6-year rotation.

(200 ppm K - 144 ppm K = 56 ppm K)

UW Nitrogen Recommendations for Corn are Based On:

- Corn & nitrogen prices
- Soil yield potential
- Soil texture (sands vs. others)
- Previous crop
- Irrigation (sands & loamy sands)

- NOT CORN YIELD GOAL -

Example

Urea $350/ Ton (46-0-0)

2000 lbs. X .46= 920 lbs. N

$350/920 lbs. = $0.38/lb.

Grain Price $3.15 (8/25/2020 Mineral Point)
$0.38 lb./ $3.15 bu= N:Corn Price Ratio = 0.12

Price Adjusted N Guidelines for Corn

- Loamy (medium & fine-textured soils) -

****Additional Rates and Adjustments for No-till, Manure Credits, Soil Type, etc.

Soil Yield Potential	Previous Crop	- - - N:Corn Price Ratio ($/lb N:$/bu) - - -							
		0.05		0.10		0.15		0.20	
		Rate[1]	Range[2]	Rate[1]	Range[2]	Rate[1]	Range[2]	Rate[1]	Range[2]
		- - - - - - - - - - lb N/a to apply[3] - - - - - - - - - -							
High	**Corn**, legumes[4]	**190**	170-210	**165**	155-180	**150**	140-160	**135**	125-150
	Soybean, small grain[5]	**140**	125-160	**120**	105-135	**105**	95-115	**90**	80-105
Medium	**Corn**, legumes[4]	**145**	130-160	**125**	115-140	**115**	105-125	**105**	95-110
	Soybean, small grain[5]	**130**	110-150	**100**	85-120	**85**	70-95	**70**	60-80

[1] Maximum return to N (MRTN) rate.

[2] Within $1/a of MRTN rate.

[3] Total N to apply, includes N in starter, herbicides, etc.

[4] Subtract N credits for forage legumes, legume vegetables, animal manures, green manures.

[5] Subtract N credits for animal manures and second-year forage legumes.

Planning Manure Applications

Poor Soil Conservation Could Be Reducing Your Net Worth

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Poor Soil Conservation Could Be Reducing Your Net Worth- But Why?

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Protecting the Soil= Protecting Your Asset

- Nutrient Management
- Soil Conservation
- Soil Testing
- Crop Rotation and Diversification

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Thanks!

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Questions?

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