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# How I use Soil Amendments and Micronutrients

# Soil testing and fertilizing

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- Fertilize them!
- Put some fertilizer down early.
- Your K should have been on last fall.
- 3+ years to break all your potash down.
- The higher the CEC of your soil, the more potash you need. My 10 CEC soils require 150 ppm, that is 300 lbs of potash for maximum yield.





Table 11.01. Ratings of Soil Tests

Test	Rating*
Water pH	100
Salt pH	30
Buffer pH	30
Exchangeable H	10
Phosphorus	85
Potassium	60
Boron (alfalfa)	60
Boron (corn and soybeans)	10
Iron (pH > 7.5)	30
Iron (pH < 7.5)	10
Organic matter	75
Calcium	40
Magnesium	40
Cation-exchange capacity	60
Sulfur	40
Zinc	45
Manganese (pH > 7.5)	40
Manganese (pH < 7.5)	10
Copper (organic soils)	20
Copper (mineral soils)	5

\*On a scale of 0 to 100; 100 indicates a very reliable, useful, and cost-effective test, and 0 indicates a test of little value.

# Soil testing and fertilizing

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- Pull tissue samples every summer.
- Get all your fields sampled **over time** so you can see what your uptake is, what is out of balance and what micronutrients you are missing in the soil test.
- No D's on this report card!
- Strive to get every nutrient at S for Sufficient or Satisfactory on your report card.

## PLANT ANALYSIS Info Sheet Number:

REPORT OF ANALYSIS-PERCENT							REPORT OF ANALYSIS - PARTS PER MILLION					
N	P	K	Mg	Ca	S	Na	Fe	Mn	B	Cu	Zn	
NITRO GEN	PHOS PHORUS	POTAS SIUM	MAG NESIUM	CALCIUM	SULFUR	SODIUM	IRON	MANGA NESE	BORON	COPPER	ZINC	
<b>4.58</b>	<b>.42</b>	<b>2.75</b>	<b>.33</b>	<b>.42</b>	<b>.31</b>	<b>.001</b>	<b>130</b>	<b>43</b>	<b>7</b>	<b>12</b>	<b>32</b>	
H	S	L	E	S	S-H	S	L-D	D	D	H-E	D	
3.90	0.46	3.20	0.19	0.39	0.25	0.007	164	93	18	8	50	

D or Deficient    L or Low    S of Sufficient    H or High    E or Excessive

The major elements in this sample would appear to all be adequate. There would not normally be a Mg problem in most of your soils. This is generally only a problem on the sandier soils. The zinc is low which can cause some striping, however, the level is not normally low enough to see visual symptoms. I am assuming that this striping you see is on the upper leaves which would point to micronutrients. The Mn is also low and will result in interveinal striping. Do you have a soil test from this area that you can correlate the plant uptake with?





# Soil testing and fertilizing

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- Pull your soil samples at flowering and after harvest... OR
- Anytime... then get on a schedule!
- Use a lab you have confidence in or change labs

# Soil testing and fertilizing

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- Legumes love calcium and air.
- Soil test should be 70% calcium
- Tissue test should be High, not deficient, low or even medium!
- Calcium is missing in your program or tied up with too much magnesium, which has two positive ions, not one.





# Soil testing and fertilizing

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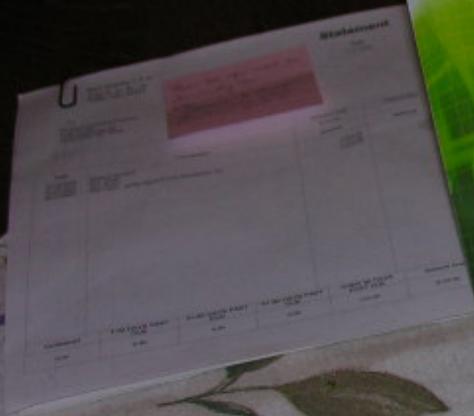
- Look at calcium nitrate fertilizer.
- Consider high calcium pelletized lime banded or broadcast.
- Think outside the box for higher yields.

# Seed quality

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- Every seed should be handled like eggs from the day it is planted for seed until the day you deliver it to the buyer
- Damaging seed kills germination and opens it up to pythium, fusarium, phytophthora, rhizoctonia and other diseases





# Inoculate

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- Invest the time and money
- Purchase the right varieties and traits for your farm
- Buy a good seed lot treated with the right treatment and inoculants for your situation
- Or apply them at seeding time.

## 4. Flowering

- Control all the things that will optimize your plan



# Evaluate Roots and Soil

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- At least dig up plants and analyze
- Dig a root pit and examine your soil profile
- Study your roots, nodules and soil aggregation compared to others'
- Get a second opinion
- Submit a 24" profile sample





# Should you apply fungicides?

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- If you are producing seed, have identified disease that can be controlled with a fungicide or are in a high yield system the answer is YES!
- If you are in a normal, lower management system the answer is MAYBE
- If you weren't prepared to spend the time and money to apply fungicide in a normal system.....NO

# Spread that Residue!

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- Long term impact of residue is ***permanent soil change*** affecting:
  - humus,
  - microbes
  - soil temperature
  - moisture
  - oxygen
  - pests
  - weed seed patterns



## 6. Post-Harvest Evaluation

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- Record your yield on yield monitor
- Take notes during harvest
- Spend the next winter going over maps
- Begin to build a multi-year plan
- Consult with your board of directors!



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