

Report generated for:  
 Stephen King  
 Hort 325 Class  
 MS 2133  
 , --

Brazos County  
 Laboratory Number: 249976  
 Customer Sample ID: None  
 Crop Grown: **VEGETABLES , TRUCK FARM**

### Soil Analysis Report

Soil, Water and Forage Testing Laboratory  
 Department of Soil and Crop Sciences  
 345 Heep Center, 2474 TAMU  
 College Station, TX 77843-2474  
 979-845-4816 (phone)  
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 Visit our website: <http://soiltesting.tamu.edu>

Sample received on: 9/4/2008  
 Printed on: 9/9/2008  
 Area Represented: not provided

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.		
pH	5.2	(6.5)	-	Strongly Acid								
Conductivity	78	(-)	umho/cm	None								<b>Fertilizer Recommended</b>
Nitrate-N	17	(-)	ppm									145 lbs N/acre
Phosphorus	32	(50)	ppm									45 lbs P2O5/acre
Potassium	60	(125)	ppm									80 lbs K2O/acre
Calcium	546	(180)	ppm									0 lbs Ca/acre
Magnesium	80	(50)	ppm									0 lbs Mg/acre
Sulfur	10	(13)	ppm									5 lbs S/acre
Sodium	162	(-)	ppm									
Iron												
Zinc												
Manganese												
Copper												
Boron												
<b>Limestone Requirement</b>												<b>1.00 tons 100ECCE/acre</b>

\*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended.

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

**Sulfur:** Available sulfur may be found deeper in soil profile, thus limiting any response to added sulfur.

## Steps

- 1) Calculate how large your area is:
  - a.  $220' \text{ rows} \times 360' \text{ across} = 79,200 \text{ sq.ft.} / 43,560 \text{ (sq.ft. per acre)} = 1.8 \text{ acres}$
- 2) Calculate how much of each nutrient you need:
  - a.  $145 \text{ lbs. N} \times 1.8 = 261 \text{ lbs. N}$
  - b.  $45 \text{ lbs P}_2\text{O}_5 \times 1.8 = 81 \text{ lbs. P}_2\text{O}_5$
  - c.  $80 \text{ lbs K}_2\text{O} \times 1.8 = 144 \text{ lbs. K}_2\text{O}$
  - d.  $5 \text{ lbs S} \times 1.8 = 9 \text{ lbs. S}$
- 3) Calculate amount of each fertilizer needed, starting with fertilizers that contain multiple ingredients\*

Fertilizer	Fertilizer Formulation				Total lbs. Fertilizer	Total lbs Nutrient Needed			
	N	P	K	Sulfur		N	P	K	S
Urea	46%	0%	0%	0%	550	253	0	0	0
Ammonium nitrate	34%	0%	0%	0%		0	0	0	0
Ammonium sulfate	21%	0%	0%	24%	38*	8	0	0	9
Super phosphate	0%	20%	0%	0%		0	0	0	0
Triple super phosphate	0%	45%	0%	0%	180	0	81	0	0
Diammonium phosphate	18%	46%	0%	0%		0	0	0	0
Potassium chloride	0%	0%	60%	0%	240	0	0	144	0
Potassium sulfate	0%	0%	52%	18%		0	0	0	0
Totals						261	81	144	9

Now let's consider cost of fertilizers:

Fertilizer	\$/Ton	lbs.	Cost
Urea	\$906	550	\$249
Ammonium nitrate	\$764	0	\$0
Ammonium sulfate	\$576	38	\$11
Super phosphate	\$470	0	\$0
Triple super phosphate	\$836	180	\$75
Diammonium phosphate	\$884	0	\$0
Potassium chloride	\$560	240	\$67
Potassium sulfate	\$500	0	\$0
Total Cost			\$403

If we consider the cost of each ingredient before we calculate how much we need, we would probably use different ingredients. First look at the cost per unit of each nutrient and whether multiple nutrients are supplied.

Fertilizer	\$/Ton	N	P	K	Sulfur	\$/lb. N	\$/lb. P	\$/lb. K	\$/lb. S	lbs Needed	Cost
Urea	\$906	46%	0%	0%	0%	\$0.98				481 <sup>3</sup>	\$218.06
Ammonium nitrate	\$764	34%	0%	0%	0%	\$1.12					\$0.00
Ammonium sulfate	\$576	21%	0%	0%	24%	\$1.37			\$1.20	38 <sup>1</sup>	\$10.80
Super phosphate	\$470	0%	20%	0%	0%		\$1.18				\$0.00
Triple super phosphate	\$836	0%	45%	0%	0%		\$0.93				\$0.00
Diammonium phosphate	\$884	18%	46%	0%	0%	\$2.46	\$0.96			176 <sup>2</sup>	\$77.83
Potassium chloride	\$560	0%	0%	60%	0%			\$0.47		86 <sup>4</sup>	\$24.19
Potassium sulfate	\$500	0%	0%	52%	18%			\$0.48	\$1.39		\$0.00
Total Cost											\$330.88

Fertilizer	Fertilizer Formulation				Total lbs. Fertilizer	Total lbs Nutrient Needed			
	N	P	K	Sulfur		N	P	K	S
Urea	46%	0%	0%	0%	481	221	0	0	0
Ammonium nitrate	34%	0%	0%	0%	0	0	0	0	0
Ammonium sulfate	21%	0%	0%	24%	38	8	0	0	9
Super phosphate	0%	20%	0%	0%	0	0	0	0	0
Triple super phosphate	0%	45%	0%	0%	0	0	0	0	0
Diammonium phosphate	18%	46%	0%	0%	176	32	81	0	0
Potassium chloride	0%	0%	60%	0%	86	0	0	52	0
Potassium sulfate	0%	0%	52%	18%	0	0	0	0	0
Totals						261	81	52	9

Now it's your turn. This will be due during the exam next Wednesday. Put your name on this paper and bring to class on Wednesday. Using the prices listed and soil test results/recommendations provided, calculate the cheapest fertilizer blend for our field plots (140' X 390'). (Fill in the empty squares below).

Size of field in acres:				
	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S
Lbs of Nutrients needed:				

Analysis	Results	CL	Units	Recommendation
pH	6.5	6.5	-	-
Conductivity	78	-	umho/cm	-
Nitrate-N	10	-	ppm	160 lbs N/acre
Phosphorous	5	50	ppm	175 lbs P <sub>2</sub> O <sub>5</sub> /acre
Potassium	80	125	ppm	60 lbs K <sub>2</sub> O/acre
Calcium	100	180	ppm	40 lbs Ca/acre
Magnesium	60	50	ppm	0 lbs Mg/acre
Sulfur	7	13	ppm	10 lbs S/acre
Sodium	150	-	ppm	-
Limestone Requirement				0.00 tons 100ECCE/acre

Fertilizer	\$/Ton	N	P	K	Sulfur	\$/lb. N	\$/lb. P	\$/lb. K	\$/lb. S	lbs Needed	Cost	N	P	K	S
Urea	\$1,087	46%	0%	0%	0%										
Ammonium nitrate	\$611	34%	0%	0%	0%										
Ammonium sulfate	\$806	21%	0%	0%	24%										
Super phosphate	\$400	0%	20%	0%	0%										
Triple super phosphate	\$920	0%	45%	0%	0%										
Diammonium phosphate	\$1,238	18%	46%	0%	0%										
Potassium chloride	\$448	0%	0%	60%	0%										
Potassium sulfate	\$400	0%	0%	52%	18%										
<b>Total Cost</b>															