



WESTERN LABORATORIES, INC.

P.O. Box 1020
PARMA, IDAHO 83660

USEFUL CONVERSIONS AND TABLES FOR WESTERN LABORATORIES REPORTS

SMALL CONCENTRATIONS

ppm = parts per million
ppm = parts per million parts = pounds/million pounds
ppm ÷ 10,000 = per cent
ppm = per cent × 10,000
ppm = milligrams/liter
ppm × 0.00136 = tons/AcFt of water
ppm × 0.0584 = grains/gallon
ppm = 17.12 × grains/gallon
ppm × 8.345 = pounds/million gallons
ppm = 640 × soluble salt reading
ppm × 2 = pounds/Ac. furrow slice
ppm × 3.5 = pounds/AcFt
ppm Ca ÷ 200 = 1 meq Ca
ppm Na ÷ 230 = 1 meq Na
ppm K ÷ 390 = 1 meq K
ppm Mg ÷ 120 = 1 meq Mg

WEIGHTS AND VOLUMES

1 acre-foot of soil = approx. 3,500,000 pounds
1 acre-furrow slice = approx. 2,000,000 pounds
1 square acre = 43,560 Ft²
1 acre-foot of water = about 2,722,500 pounds
1 acre-foot of water = 325,851 gallons
1 acre-inch of water = 27,154 gallons

CONVERSIONS

To convert from ppm to pounds:
NO₃ × 3.6 = lbs N/AcFt
ppm P × 2.3 = lbs P₂O₅
ppm P × 8.05 = lbs P₂O₅/AcFt
ppm K × 1.2 = lbs K₂O
ppm K × 4.2 = lbs K₂O/AcFt
ppm S × 3 = lbs SO₄
ppm S × 10.5 = lbs SO₄/AcFt
ppm SO₄ ÷ 3 = ppm S
lbs SO₄ ÷ 3 = lbs S

SOIL pH — Hydrogen Ion Concentration

The soil is measured on a 1:2 soil to water solution. The pH indicated on the report measures the active soil alkalinity or acidity.

pH below 5.5 strongly acid soil
pH 5.5 to 5.9 moderately acid soil
pH 6.0 to 6.5 slightly acid soil
pH 6.6 to 7.2 neutral soil
pH 7.3 to 7.7 slightly basic soil
pH 7.8 to 8.4 moderately basic soil high in free lime
pH above 8.5 strongly basic soil high in total salts

SOLUBLE SALTS — Electrical Conductivity

Scale of Conductivity in mmhos/cm

0	2	4	8	16
Salt effects mostly negligible	Yields of sensitive crops may be restricted	Yields of many crops restricted	Only salt tolerant crops yield satisfactory	Only a few very tolerant crops yield satisfactory

The relative Salt Tolerance of Some Crops may be found in our Salt Problem Information Sheet.

ORGANIC MATTER — Walkley-Black Titration Method

Organic matter is the storehouse of nutrients, increases soil tilth and friability, and contributes to the soil water holding capacity of the soil.

% Organic Matter	Evaluation
0 to 0.9	very low
1.0 to 1.5	low
1.6 to 2.5	medium
2.6 to 4.9	high
above 5.0	very high

Organic Matter Release of Nitrogen/Acre/Year

% OM × Factor = pounds Nitrogen/Ac/Yr

Factors:	
60	S.E. Washington-N.E. Oregon
55	Winnemucca, Nevada
50	E. Oregon-S.W. Idaho
40	Magic Valley, Idaho
35	E. Idaho-N. Utah
30	W. Wyoming

NITRATE-NITROGEN, Buffered Extraction Method

The measurement of NO₃-N determines residual nitrogen. The following range reflects average soil levels and does not suggest nitrogen requirements for particular crops.

NO ₃ -N, ppm	Evaluation
0-5	very low
6-10	low
11-25	medium
26-40	high
41+	very high

PHOSPHORUS-P, Sodium Bicarbonate Method

P, ppm	Evaluation
1-4	very low
5-11	low
12-25	medium
26-45	high
45+	very high

POTASSIUM-K, Ammonium Acetate Method

K, ppm	Evaluation
0-100	very low
101-200	low
201-450	medium
451-750	high
750+	very high

CALCIUM — Ca

Ca, ppm	Evaluation
0-900	very low
901-1500	low
1501-4000	medium
4001-5000	high
5000 +	very high

MAGNESIUM — Mg

Mg, ppm	Evaluation
0-150	very low
151-350	low
351-600	medium
601-1200	high
1200 +	very high

SODIUM — Na

Na, ppm	Evaluation
0-30	very low
31-60	low
61-175	medium
176-450	high
450+	very high

Element	Low to Deficient	Adequate
SO ₄ -S (sulfate water sol)	less than 10 ppm	10 to 30 ppm
Zn (zinc by DTPA-TEA)	less than 0.8 ppm	.9 to 4.0 ppm
Mn (manganese by DTPA-TEA)	less than 2.0 ppm	3 to 7 ppm
Cu (copper by DTPA-TEA)	less than 0.3 ppm	.7 to 4.0 ppm
Fe (iron by DTPA-TEA)	less than 5.0 ppm	5 to 10 ppm
B (boron by hot water sol)	less than 0.5 ppm	.5 to 2.0 ppm

Element	Excessive to Toxic
SO ₄ (sulfate water sol)	—
Zn (zinc by DTPA-TEA)	15 + ppm
Mn (Manganese by DTPA-TEA)	150 + ppm
Cu (copper by DTPA-TEA)	20 + ppm
Fe (iron by DTPA-TEA)	—
B (boron by hot water sol)	3 + ppm

Approximate Relation of Cation Exchange Capacity to Soil Texture

CEC	Soil Texture
0-8	sand/loamy sand
8-12	loamy sand/sandy loam
12-16	sandy loam
16-20	silt loam/loam
20-24	loam/silty clay loam
24-30	clay loam
30 +	clay

FREE LIME — CaCO₃, 1N HCl Method

% Lime	Evaluation
0-25	very low
.25-5	low
.6-2.9	medium
3.0-8.0	high
8.1 +	very high

Sulfur Required to Neutralize the Free Lime

% Lime	Lbs Free Lime/Ac Ft	Lbs S Required to Neutralize the Free Lime
0.5	17,500	5,933
1.0	35,000	11,667
1.5	52,500	17,500
2.0	70,000	23,333
2.5	87,500	29,167
3.0	105,000	35,000
3.5	122,500	40,833
4.0	140,000	46,667
4.5	157,500	52,500
5.0	175,000	58,333
6.0	210,000	70,000
8.0	280,000	93,333
10.0	350,000	116,667
15.0	525,000	175,000
20.0	700,000	233,333

Approximate Pounds of S (Based on 99% S) Needed to Lower the Soil pH of One Acre-Foot of Soil

Change in pH	Pounds of Sulfur/Acre		
	Sand	Loam	Clay
8.5 to 6.5	3,500	4,375	5,250
8.0 to 6.5	2,450	2,625	3,500
7.5 to 6.5	875	1,400	1,750
7.0 to 6.5	175	275	525

Calculations for Salt Problem Soils

Ca-ppm ÷ 200 = meq Ca, Na-ppm ÷ 230 = meq Na, Mg-ppm ÷ 120 = meq Mg, K-ppm ÷ 390 = meq K
To calculate the per cent sodium of the Cation Exchange Capacity;

$$\frac{\text{meq Na}}{\text{CEC}} \times 100 = \% \text{ Na of the CEC}$$

Base Saturation:

$$\text{meqs } \frac{\text{Ca} + \text{Mg} + \text{K} + \text{Na}}{\text{CEC}} \times 100 = \% \text{ BS}$$

$$\text{ppm } \frac{\text{Ca} + \text{Mg} + \text{K} + \text{Na}}{\text{CEC} \times 2} = \text{approx. } \% \text{ BS}$$

1 meq of Ca/100g = 200 ppm or 400 lbs/AFS or 700 lbs Ca/AcFt
1 meq of Mg/100g = 120 ppm or 240 lbs Mg/AFS or 420 lbs Mg/AcFt
1 meq of K/100g = 390 ppm or 780 lbs K/AFS or 1365 lbs K/AcFt
1 meq of Na/100g = 230 ppm or 460 lbs/AFS or 805 lbs Na/AcFt

% Na of the CEC Based on Different Sodium Concentrations and Cation Exchange Capacities

Soil Sodium in ppm-Na	CEC in meq/100g of soil							
	8	10	12	14	16	18	20	22
	% Sodium of the CEC							
100	5.4	4.3	3.6	3.1	2.7	2.4	2.2	2.0
200	10.9	8.7	7.3	6.2	5.4	4.8	4.4	4.0
300	16.3	13.0	10.8	9.3	8.1	7.2	6.5	5.9
400	21.8	17.4	14.5	12.4	10.9	9.7	8.7	7.9
500	27.1	21.7	18.1	15.5	13.6	12.1	10.9	9.9
600	32.6	26.1	21.8	18.6	16.3	14.5	13.1	11.9
700	38.0	30.4	25.3	21.7	19.0	16.9	15.2	13.8
800	43.5	34.8	29.0	24.9	21.8	19.3	17.4	15.8
900	48.9	39.1	32.6	28.0	24.5	21.7	19.6	17.8
1000	54.4	43.5	36.3	31.1	27.2	24.2	21.8	19.8
1500	81.5	65.2	54.3	46.6	40.8	36.2	32.6	29.6
2000	108.8	87.0	72.4	62.1	54.4	48.3	43.5	39.5
2500	135.9	108.7	90.6	77.6	67.9	60.4	54.4	49.4
3000	163.0	130.4	108.7	93.1	81.5	72.4	65.2	59.3
3500	190.3	152.2	126.8	108.7	95.1	84.6	76.1	69.2
4000	217.4	173.9	144.9	124.2	108.7	96.6	87.0	79.0

Saline soil — pH below 8.5, sodium less than 15%, soluble salts less than 4. Sodic soil — pH greater than 8.5, sodium greater than 15%, soluble salts less than 4. Saline — Sodic soil — pH less than 8.5, sodium greater than 15%, soluble salts greater than 4.

Crop Tolerance for Per Cent Na of the CEC

0 to 5%	5 to 10%	10 to 15%	15 + %
Beans	Wheat	Crested Wheat	Barley
Strawberries	Oats	Fescue	Salt Grass
Carrot Seed	Spearmint	Perennial Rye	
Radish Seed	Alfalfa	Sugar Beets	
Onions	Turnip Seed	Tall Wheat	
Lettuce Seed	Sweet Corn	Birdsfoot Trefoil	
Fruit Trees	Field Corn		
Potatoes	Pasture		
Hops	Cotton		
Orchard Grass			
Cabbage Seed			
Most Clovers			
Celery			
Tomatoes			
Peppermint			
Peas			

Converting Foliar Micronutrient Materials From Per Cent to Pounds Per Gallon

Liquid % Metallic × weight/gallon = pounds metal/gallon
Dry % Metallic × 1 pound = pounds metal/pound

WESTERN LABORATORIES

Pumpkin Testing



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Western Laboratories
**ATLANTIC GIANT
PUMPKIN PROGRAM**

This is the ultimate monitoring program! It is designed for those growers trying to raise pumpkins greater than 1,800 pounds in size.

SV Pumpkin

1 Pre-Season Soil + Nematode	\$101.00
1 Pre-Season, Post-Amendment Soil	\$55.00
5 Complete Tissue	\$230.00
5 Soil Supply Rate Tests	\$200.00
	<u>\$586.00</u>
Program Pre-Paid Discount	<u>-\$261.00</u>
PROGRAM TOTAL	\$325.00

Please Submit Payment With 1st Sample

Sample Collection Schedule: July 1st, July 15th, August 1st, August 15th, & September 1st.

INDIVIDUAL PRICES

Complete Soil	55.00	Tissue Test	46.00
Soil Supply Rate Test	40.00	Nematode	46.00
DNA Diseases		Call lab	

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Western Laboratories, Inc.

TEST	ATLANTIC GIANT PUMPKIN FEE SCHEDULE	PRICE
75	Complete Soil Test for Atlantic Giant Pumpkin pH, texture, soluble salts (ECe), Cation Exchange Capacity (true), percent lime, percent organic matter, nitrates, ammonium, phosphorus (alkaline soils – sodium bicarbonate extract, acid soils – Bray extract), potassium, calcium, magnesium, sodium, zinc, iron, manganese, copper, sulfates and boron	55.00
75S	Complete Soil Test for Atlantic Giant Pumpkin PLUS Soil Solution	95.00
11	Complete Tissue Test for Atlantic Giant Pumpkin — Nitrates, phosphorus, potassium, calcium, magnesium, sulfur, zinc, copper, manganese, iron and boron, recommendations. This is for crops requiring Nitrogen.	46.00
80	Disease Test for Atlantic Giant Pumpkin Pythium, Phytophthora, Fusarium, Verticilium	145.00

Prices subject to change without prior notice.

Knowledge for Giant Pumpkin & Watermelon Growers

By John P. Taberna – Soil Scientist

For more information please visit www.westernlaboratories.com/publications-from-john

If the water extracted pH is less than 6.7, add 10 pounds of lime per 1000 sq. ft. If the pH is greater than 6.7 and the Ca is less than 2400 ppm, add 5 pounds gypsum. It takes up to 7 years for lime to completely dissolve. Don't expect rapid increase in pH. Remember: You're only treating the top 6 inches with lime. Gypsum will go into solution in the first year.

Fertilizer Recommendations:

Phosphorus (P)

The lab suggests 2 pounds of Phosphorus per 1000 sq. ft. 11-52-0 Ammonium Phosphate is a common Phosphorous fertilizer and it contains 3% sulfur. Take the 2-pound recommendation and divide by .52 (% P in 11-52) and you get 3.88 pounds 11-52. The problem is the recommendation is P and 11-52 is Phosphate. You now need to multiply the 3.85 by 2.3. You will get 8.86 pounds of 11-52 per 1000 to get the 2-pound P recommendations.

Nitrogen (N)

The lab recommended 3.5 pounds of Nitrogen per 1000 sq., but you should only to apply ½ pre-plant. So, $3.5/2=1.75$ pound of N. There is 11% N in the 11-52 so take 8.86 pounds of 11-52 applied and multiply it by .11 ($8.86 \times .11$) you get 0.97 pounds of Nitrogen. You are going to apply 1.75 pounds Nitrogen pre-plant, so $1.75-0.97=0.78$ pounds N. Your pH is above 7 so you are going to use ammonium sulfate (21-0-0-24). Ammonium Sulfate contains 21% N so $0.78/.21=3.7$ pounds Ammonium Sulfate and with the Nitrogen in the 11-52, you have 1.75 pounds Nitrogen pre-plant.

Potassium (K)

The lab recommends 5 pounds Potassium per 1000 sq. ft. The best source for pre-plant K is 0-0-50 Potassium Sulfate. The K in 0-0-50 is K₂O, not K. So $50/1.2=K$ in 0-0-50 (42% K). You will need to apply 12 lbs. 0-0-50 to get 5 lbs. per 1,000 sq. ft.

- * During midseason, if you notice marginal burning, add 2 pounds of 0-0-60 Potassium Chloride per 1000 sq. ft. and thoroughly water with overhead irrigation.

Potassium was the biggest deficiency from midseason on for Ron Wallace when he hit the 2,009-pound giant pumpkin.

Sulfur (S)

All products suggested contain Sulfur. There is no need to add more.

Magnesium (Mg)

The lab recommends 0.7 pounds of Magnesium. Epsom Salt is the easiest to find and it contains 10% Mg. $0.7 \text{ pounds} / 0.1 = 7 \text{ pounds}$ Epsom Salt to apply per 1000 sq. ft. When burying the vines, always add $\frac{1}{2}$ teaspoon of Epsom Salt. Be sure to thoroughly mix. When drenching, add $\frac{1}{2}$ teaspoon Epsom Salt to the drench. During midseason, if you see mottling and blistering, foliar spray 1 teaspoon per plant twice a week. If you can find the product Kmag, this would satisfy the K, Mg and S needs. Add 1 teaspoon to foliar or drench per week per plant.

Calcium (Ca)

If you are having blossom end rot or collapsing of the pumpkin, it's generally related to Calcium, Boron and Potassium. After pollination, when you're burying the vines; add 1 heaping teaspoon Gypsum, 1 level teaspoon 0-0-50 and $\frac{1}{2}$ teaspoon borax each time. Don't forget to thoroughly mix with your mycorrhiza, peat moss and other secret amendments. Also, don't forget Taberna's Secret Formula to stimulate bacteria and beneficial fungal growth: 2 cans of beer, 2 multivitamins, 2 aspirins, then pee in the hole after waiting an hour. This is a man's thing that naturally occurs in the backyard, so if you are a gal raising giants... put your significant other to work!

Micronutrients

When pre planting, it's best to use Metallic Sulfate materials. It's been found that sulfated forms of micronutrients retard onset fungal diseases.

Zinc (Zn)

The lab recommends 2 oz. of Zinc per 1000 and you are using Zinc Sulfate which contains 36% of Zn. $2 / .36 = 5.6$ ounces Zn to apply per 1000.

Manganese (Mn)

The lab recommends 1.5 oz. of Manganese. Manganese Sulfate is 24% Mn. $1.5 / .24 = 6.3$ oz. per 1000.

Copper (Cu)

The lab recommends .7 Copper. Copper Sulfate contains 25% Cu. $0.7 / .25 = 2.8$ oz. Copper Sulfate per 1000.

Boron (B)

If Boron is recommended, it's best to foliar or drench with 1 tablespoon of Borax. When burying the vine, don't go over $\frac{1}{2}$ tablespoon of Borax.

In season when you're applying micronutrients, use chelated products. Some examples are amino acid chelates, or citric acid chelates. I suggest buying individually and not taking the shotgun approach. Fancy EDTA materials are fantastic but very poor for foliar application. EDTA is stable at any pH for 2 months in soil. These materials are prone to leeching. Giant pumpkin and melon growers tend to water heavily and may leach expensive chelated below the effective root zone. The amino acid and citric acids are readily absorbed by plant tissue. It also wouldn't hurt to add 1-teaspoon product to vine burial mix.

Soil Report on 1S (Soil Solution):

Test 1 is a complete soil test using Western University's extraction methods. These methods are designed for Western soils that mostly tend to have pH's greater than 7. These methods were developed by Colorado State.

Giant pumpkin and watermelon growers have the best results with a soil pH between 7.2-7.8. The Soil Solution test emulates exudates that are given off by the plant roots to stimulate bacteria and fungi to release nutrients into the Soil Solution.

Roots only obtain nutrients from the Soil Solution. The complete soil test (Test 75) measures the extractable nutrients that is potential to the roots, Soil Solution testing (Test 75S) measures the nutrients the roots can see.

The soil solution gives you a heads up for problems in season. In the left column are the answers from the previous page. On the right are the Soil Solution test numbers that are available to the roots from the extractable nutrients.

When you see recommendations, it indicates these nutrients could be your limiting factors preventing you from maximum weight and quality from your fertilizer program. Remember plants get their oxygen from the roots. Oxygen must be present for most nutrients to be assimilated by roots. **KNOW YOUR WATER**

The numbers in the **SHOULD BE** column are higher than during the growing season because there are no roots present giving off organic acids. They are as follows:

ELEMENT:	SHOULD BE:
Phosphorus (P)	2 lbs.
Potassium (K)	15 lbs.
Calcium (Ca)	9 lbs.
Magnesium (Mg)	2 lbs.
Zinc (Zn)	85 g
Copper	56 g
Manganese (Mn)	85 g
Boron (B)	28 g

Pounds in Soil Solution

During growing season to get a pumpkin greater than 2500 pounds and watermelon greater than 250 pounds the following must be in the Soil Solution

Nitrogen- decreases to 3 pounds by August 10

Phosphorus: >2 all season

Potassium: > 8 all season

Sulfur: >1 all season

Calcium: >3 all season

Magnesium: >1 all season

Grams in Soil Solution

Zinc: >80 all season

Manganese: >50 all season

Copper: >15 all season

Boron: >28 all season

Iron is generally not an issue if you use acid residue fertilizers.



Date:
Client:
Gardner:
Garden ID:

ATLANTIC GIANT PUMPKIN SOIL REPORT

						PARTS PER MILLION-PPM			
pH WATER EXTRACT	pH SMP BUFFER	pH CaCl	SOLUBLE SALTS (EC)	LIME	% OM	NITRATE	AMMONIUM	PHOSPHORUS	
						NO3-N (PPM)	NH4-N (PPM)	P(PPM)	P BRAY
6.4	6.7	5.9	0.10	0.0	4.8	3	1	68	104.72
EVALUATION									
Slight Acidic			Normal	Good	Medium	Very Low		High	Very High
POUNDS PER ACRE									
						9	3	204	314.16

PARTS PER MILLION-PPM									
POTASSIUM K	SULFUR S	CALCIUM Ca	MAGNESIUM Mg	SODIUM Na	ZINC Zn	COPPER CU	MANGANESE Mn	IRON Fe	BORON B
264	6	1426	196	40	5.0	1.7	8	106	0.9
EVALUATION									
Adequate	Very Low	Low	Low	OK	High	Adequate	Adequate	Adequate	Adequate
POUNDS PER ACRE									
792	19	4278	588	120	15	5.1	24	318	2.7

Meq/100 GRAMS SOIL					CEC by sum of cations				
0.7		7.1	1.6	0.2				9.6	

Texture	Silt Loam			Balance	Ideal	Yours	Evaluation	Watch
Cation Exchange Capacity-CEC	22			N:S	10:1	0.6:1	Low	watch N
Percent Base Saturation	46			Ca:Mg	6-20:1	7:1	ok	
TBS%				Ca:K pH >7	15:1	:1		
BASES	IDEAL	YOURS		Ca:K pH <7	10:1	5:1	Low	watch Ca
Calcium-% of CEC	65-80	32		Ca:P pH >7	100:1	21:1	Low	watch Ca
Magnesium-% of CEC	10-20	7		Ca:P pH <7	40:1	21:1	Low	watch Ca
Potassium-% of CEC	2-6	3		P:Zn	15:1	14:1	Low	watch P
Sodium-% of CEC	< 5	1		P:Mn	4:1	8.5:1	High	
Hydrogen-% of CEC	< 15	57		P:Cu	25:1	40:1	High	watch Cu
				Zn:Cu	3:1	2.9:1	High	watch Cu
				Mn:Zn	3:1	2:1	Low	watch Mn
				Mn:Cu	7:1	5:1	Low	watch Mn
				K:B	200:1	293:1	High	watch B
				Mg:K	2:1	0.7:1	Low	watch Mg

*"Always practice
the laws of Agronomy."*

John P. Taberna, Soil Scientist

NUTRIENT SUGGESTIONS FOR ATLANTIC GIANT PUMPKIN			
<i>POUNDS PER 1,000 SQUARE FEET</i>		<i>OUNCES PER 1,000 SQUARE FEET</i>	
Nitrogen	3.6	Zinc	.7
Phosphorus	2.1	Plant Food Iron	
Potassium	4.3	Manganese	1.8
Sulfur	1.2	Copper	.1
Gypsum		Boron	.4
Lime			
Magnesium	.7		

**** Split apply nitrogen. Do not apply more than five pounds of fertilizer on established vegetation at one time. Always irrigate following fertilization on established crop. Over and under irrigation is a major cause of poor plant appearance.***

**Actual product is based on SO4 solutions. If using a chelate divide actual amount by factor 5 due to efficacy of chelates.*



Date:
 Client:
 Gardner:
 Garden ID:

ATLANTIC GIANT PUMPKIN 75S REPORT

EXTRACTABLE NUTRIENTS					SOIL SUPPLY			
ELEMENT	ANSWER	SHOULD BE	RECS**	PRE-PLANT SUGGESTIONS	ELEMENT	ANSWER	SHOULD BE	ADD ** WEEKLY
			LBS	LBS			LBS / DAY	LBS
Phosphorus-ppm	68	25 - 40	2	1	P-lbs	0.5	2	0.24
Potassium-ppm	264	300 +	4	1	K-lbs	2.0	15	0.45
Calcium-ppm	1426	1,800 +	*		Ca-lbs	4.4	9	*
Magnesium-ppm	196	250 +	1	0	Mg-lbs	3.0	2	
			OZ	LBS			grams / DAY	OZ
Zinc-ppm	5.0	1.0 - 3.0	1	0	Zn-grams	34	85	4.05
Copper-ppm	1.7	0.8 - 2.5	0	0	Cu-grams	11	56	3.55
Manganese-ppm	8	6 - 30	2	1	Mn-grams	9	85	6.08
Boron-ppm	0.9	0.8 - 1.2	.4		B-grams	28	28	

* Refer to soil report for Calcium recommendations, if needed.

** Recommendations in amount per 1000 sq.ft.

All chelating products can be used if the zinc, copper and magnesium are adequate. When the levels are below the should be levels, you need to use the elements in the sulfate forms. Disease suppressions are caused by the elements in their metallic forms. Chelates are an excellent sources for plant and production needs.

PRE-PLANT:

For disease suppression add 1/2 of the weekly recommendations for all micro nutrients in a sulfate or water soluble oxide in calcareous soils.

For plant needs and maximum bulking add the other 1/2 in chelate form by using the SV (Secret Vault) program to monitor weekly requirements.

1. If no lime and calcium is less than 1800 and soil solution is less than "should be" add 20 lbs. per 1000 sq.ft. of gypsum pre-plant.

If phosphate, potash and magnesium in soil solution are less than requires consider putting field on the SV Program to monitor it. If you are using the SV program and the phosphate, potash, and magnesium "should be" levels in the soil solution are higher than results on the SV Program, it is because the sample is taken with out the influence of the root system. In season results are lower because plant root gives off carbonaceous exodates.

*"Always practice the laws of Agronomy."
 John P. Taberna, Soil Scientist*

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Lab No:

2440

Test # 11

Reported: 7/13/2017

Dealer No:

Dealer :

Address

Grower:

Sample ID:

Irrigation:

Crop: Atlantic Giant Pumpkin

GIANT PUMPKIN PLANT ANALYSIS REPORT

PLANT NUTRIENTS	SUFFICIENCY RANGE	YOUR TEST RESULTS		NUTRIENT SUGGESTIONS IN OUNCES PER 1000 SQ.FT.		
				FOLIAR	INJECTION OR WATER RUN	YOU APPLIED
NITRATE NO ₃ - ppm	5840	13877				
NITROGEN N - %	-		N			
PHOSPHORUS P - %	0.81 - 1.2	0.89	P			
POTASSIUM K - %	7.5 - 12.0	12.90	K			
SULFUR S - %	.23 - .5	0.22	S	0.55	3.64	
CALCIUM Ca - %	.5 - 2.25	1.93	Ca			
MAGNESIUM Mg - %	.25 - .48	0.32	Mg			
ZINC Zn - ppm	42 - 75	40	Zn	0.07	0.09	
MANGANESE Mn - ppm	25 - 75	99	Mn			
COPPER Cu - ppm	13 - 45	12	Cu	0.04	0.07	
IRON Fe - ppm	75 - 500	109	Fe			
BORON B - ppm	24 - 70	26	B			

HIGH RANGE	●		●				●				
SUFFICIENT RANGE		●		●	●				●	●	
DEFICIENT RANGE				●			●		●		
	N	P	K	S	Ca	Mg	Zn	Mn	Cu	Fe	B

To get how many oz. per 1000 sq.ft. you need to apply for each product, divide the % nutrient that is in the product (recommendation/%nutrient in product). Example if N recommendation is 7 oz per 1000 sq.ft. and the product has 15% N then $7/.15 = 46.6$ oz of 15% N per 1000 sq.ft..

John P. Taberna, Soil Scientist

WESTERN LABORATORIES Disease Test Report

Lab:
61663

Dealer: PD

Grower:

Field ID:

Crop: Atlantic Giant Pumpkin

Date Rec'd 8/24/2017

Date Rep'd 8/25/2017

Soil	Unit	Evaluation	Plant	Evaluation
Pythium ultimum	664	cfu	high	
Phytophthora	ND		not detected	
Fus oxysporum	62	cfu	low	
Rhizoctonia				
verticillium	1	cfu	low	

Recommendations

Numbers in Soil are presented in Colony Forming Units per gram dry soil (CFU/g dry soil) or expressed in Ct values. Ct values higher than 30 are usually not a problem. Ct values less than 25 are serious cause of concern.

Harry Kreeft, plant pathologist Western Laboratories Inc.

H Kreeft

Western Laboratories

P.O. Box 1020 • 211 Highway 95 • Parma, ID 83660
208-722-6564 • 1-800-658-3858 • FAX 208-722-6550

Dealer:

Grower:

Variety:

Field id:

SV No:

19024

GDD nematodes

SECRET VAULT 2017

WEEK			Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
LABORATORY NO			1870	4090	6499	8450	9396					
DATE			7/4	7/18	8/1	8/15	9/8					
		SUFFICIENCY RANGE	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST	YOUR TEST
PLANT	Nitrates ppm	> 2500	20582	16859	14360	14053	11414					
SOIL	Nitrogen lbs	4.0	11	12	13	11	9					
PLANT	Phosphorus %	> 0.81	0.52	0.53	0.3	0.44	0.47					
SOIL	Phosphorus lbs	2.00	2.80	2.80	2.20	1.80	1.50					
PLANT	Potassium %	> 7.5	11.2	12.0	11.4	13.1	10.0					
SOIL	Potassium lbs	8.0	48.9	55.3	49.1	38.0	36.0					
PLANT	Sulfur %	> .23	0.3	0.23	0.21	0.3	0.2					
SOIL	Sulfur lbs	2.0	25.6	32.0	28.7	14.7	13.9					
PLANT	Calcium %	> .5	1.28	1.58	2.02	2.3	2.58					
SOIL	Calcium lbs	3.0	6.1	7.6	5.8	5.5	4.4					
PLANT	Magnesium %	> .25	0.4	0.37	0.4	0.4	0.36					
SOIL	Magnesium lbs	2.0	9.4	11.4	13.8	11.2	9.5					

PLANT	Zinc ppm	> 42	33	27	31	22	25					
SOIL	Zinc grams	80.0	150.0	114.0	90.0	84.0	69.0					
PLANT	Manganese ppm	> 25	32	25	32	40	47					
SOIL	Manganese grams	50.0	18.0	18.0	15.0	12.0	9.0					
PLANT	Copper ppm	> 13	8	6	7	9	7					
SOIL	Copper grams	15.0	12.0	9.0	12.0	12.0	9.0					
PLANT	Boron ppm	> 24	39	33	42	34	42					

SOIL TEST REPORT	NITROGEN IN POUNDS PER ACRE FOOT									
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
LABORATORY NUMBER	1870	4090	6499	8450	9396					
DATE	7/4	7/18	8/1	8/15	9/8					
Nitrates - lbs	69	78	81	66	51					
Ammonium - lbs	6	9	12	9	9					
Total Nitrogen - lbs	75	87	93	75	60					

FERTILIZER RECOMMENDATIONS IN POUNDS ACTUAL PER 1000 SQFT

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
LAB NO	1870	4090	6499	8450	9396							
DATE	7/4	7/18	8/1	8/15	9/8							
ELEMENT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT	INJECT
Nitrogen	0.19											
Phosphate	0.25	0.25	0.25	0.29	0.34							
Potash												
Sulfur		0.10	0.10		0.10							
Calcium												
Magnesium												

IN OUNCES ACTUAL PER 1000 SQFT

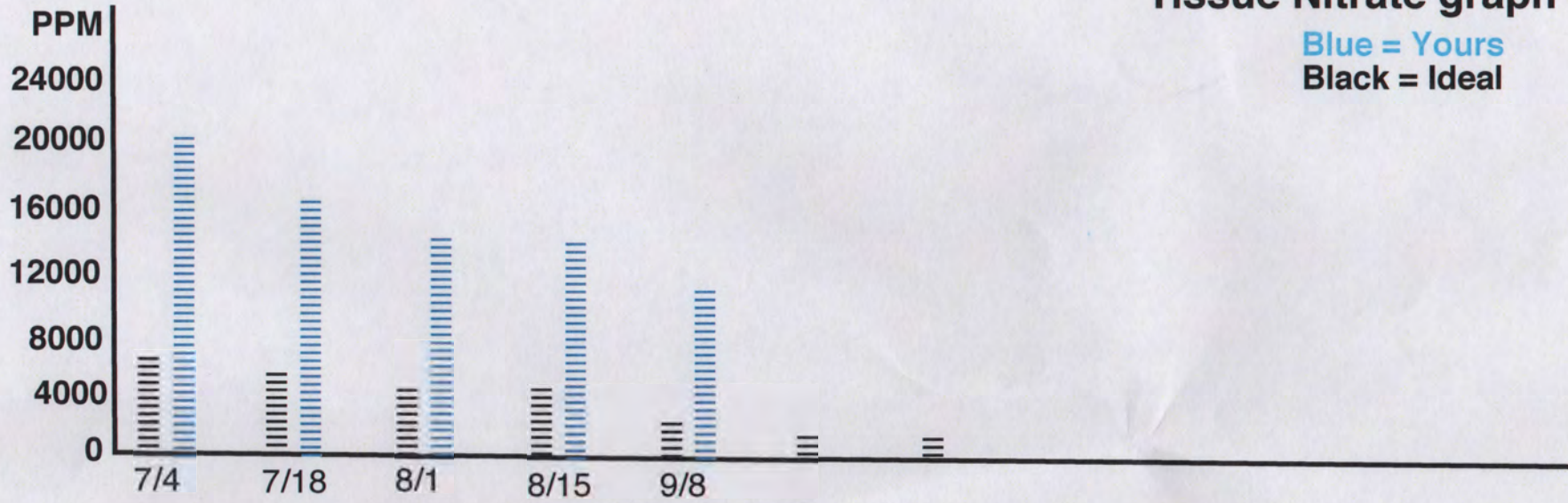
Zinc	1.60	1.60	1.60	1.60	3.20							
Manganese	3.20	3.20	3.20	3.20	3.20							
Copper	1.60	3.20	3.20	3.20	3.20							
Boron												

*Actual product is based on SO₄ solutions. If using a chelate divide actual amount by factor 5 due to efficacy of chelates.

Field:

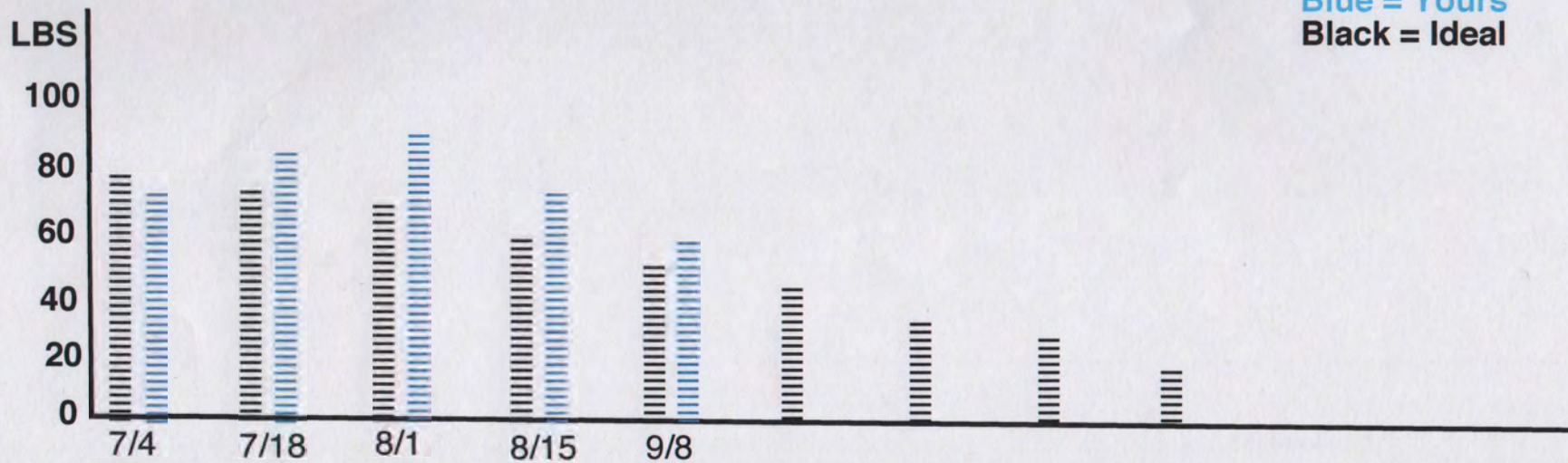
Tissue Nitrate graph

Blue = Yours
Black = Ideal



Soil Nitrogen graph

Blue = Yours
Black = Ideal



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