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The Growers Solution

EARLY FALL 2008

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VOLUME 21 ISSUE 4

Market Gardening with Growers

By Karl and Laurie Neubrand

We are located in western Ontario about 15 miles north of Stratford and started market gardening about 10 years ago. Four years later we increased our production area and two years ago we doubled it. We also have four greenhouses covering about 6300 square feet.

In the greenhouses, Karl plants cold hardy asian greens, endive, Bull's blood beets, mache, spinach, carrots, green onions, leeks and radishes. The greenhouses are built with two layers of 6 ml plastic with a 1/70 horsepower fan blowing air in between. The greenhouses use only the sun as their heat source.

Karl starts planting about mid September for salad greens and spinach and has 3 plantings about 7 to 10 days apart. For us, the last planting should be in by the last week in October to get enough growth before it gets too cold. The beds have compost and snow white (limestone) worked in before planting. The beds are covered with row cover by the end of October or early November. The row cover, held up by # 9 wire wickets, helps hold in daytime heat overnight.

This year I sprayed everything with Growers once a week after picking which makes the re-growth a lot better during late December and early January when everything slows down.



Karl and Laurie Neubrand's greenhouse showing lettuce, spinach and garlic, wire wickets and row cover.

The salad greens and spinach keep for about 2 to 3 weeks after picking. Most of our customers comment how well they keep compared to the

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What's Next for the 2009 Crop?

By Jim Halbeisen

As farmers, none of us are very happy with the suppliers of fertility raw materials taking advantage of commodity price increases. Lets face it, however, as the prices of seed, pest control and other agricultural input products increase, this is

big business at its best.

Agriculture in North America has become energy intensive which means we use a lot of input to grow the crop. It is now imperative to find those areas where we can cut a few corners.

I hear you old Growers customers screaming you are "down to the bone" with the cost cutting knife. I think I am too. However, for the 2009 crop season many of us are going to have to see if there isn't some more cutting to be done before we start hurting production to the point of negative return.

Some say they are going to find more cheap manure. This is a possibility. But they must not forget manure works better when calcium is added to it (remember who told you that) and that soil nutrients in cold wet soils are not very available to the plant or seed if they are not highly soluble and near the root zone. Also, when the soil is in a very dry condition, those same manure nutrients are not very available to the plant. Manure can supply minerals to the soil, but there still are environmental conditions, such as too cold or too dry, that will not allow them to be absorbed by the plant.

The Growers Mineral Solutions (GMS)

educational seminars, started in 1955 by Growers Chemical Corporation, have consistently helped many producers find where fertility corners may be rounded without causing serious yield or economic damage.

GMS customers need to ask their GMS Sales Representatives for suggestions in dealing with price increases. Those new to the Growers philosophy need to contact the local GMS representative to help make cost comparisons of their present fertilizer approach against the GMS approach.

For our own operation here in northwest Ohio fertility costs are a concern, however, the availability issue has more of my attention. As more fertilizer production has moved off of North American shores, farmers here are into the same situation US consumers are in with the gasoline for their vehicles. Many producers tell us they are going to wait out these fertilizer prices, because they surely will come down. In my opinion, if an operation waits until the eleventh hour to purchase its fertility needs, it is flirting with fire unless it is willing to plant that high priced seed with no fertility supplementation.

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The Growers Program and Calcium

By Jim Halbeisen

The Early Fall edition of our *The Growers Solution* usually carries articles devoted to the science of the element calcium and its influence in soil. With the recent huge increases in fertilizer prices, many North American farm operations are examining different approaches to soil fertility trying to get input costs under control (see accompanying article; Calcium and Fertilizer Prices).

To those of you new to the Growers philosophy we will try to give a brief, credible explanation of soil calcium science. Remember, please, many "old" Growers customers know only one thing about the science of calcium in soils, and that is, it works.

The paper also stated, "The European soils that have been studied, exclusive of alkali and highly acidic soils, appear to be remarkably similar in regard to the relative proportion of the several replaceable bases present. Calcium normally comprises 75 to 90% of the total magnesium from 10 to 15% and potassium and sodium only a few percent."

2. Exchangeable Cations of the Soil and the Plant: I. Relation of Plant to Certain Cations Fully Saturating the Soil Exchange Capacity: by K. K. Gedroiz published in 1931 in *Soil Science*. This article stated, "After the practically complete replacement from the soil of exchangeable calcium, the plants require for their development the introduction into

Liming materials are a bigger bargain today than they ever were.

One of the founders of Growers Mineral Solutions (GMS), Dr. V. A. Tiedjens, did not discover the importance of calcium in soil, however, his in depth research into early calcium studies, in addition to his own experiments, convinced him it was the key to successful economical plant growth.

1. A General Discussion of Base Exchange in Soils: by W. P. Kelley published in 1926 in *Journal of the American Society of Agronomy*.

This article tells us the "physical properties of soils are also influenced by the exchange complex. When calcium is the predominant replaceable cation the clay particles tend to assume the form of aggregates. The clay is said to be granulated and the soil is relatively porous."

the soil of calcium fertilization, without which they do not grow at all."

These two publications basically explain Dr. Tiedjens' reasons for using calcium in The Growers Program. Since 96% of healthy plant tissue (see figure 1) is comprised of carbon (C), hydrogen (H), and oxygen (O), which comes mainly from the sun, air and water, Dr. Tiedjens believed a porous soil would create an environment where plant roots could more easily grow and expand to allow more contact with soil minerals and soil water. Soils already have minerals present in their composition (see figure 2), but those minerals can be, and need to be, made available to the growing crop.

In addition to allowing access to the minerals in the soil, a more porous soil allows the soil's

living biology to receive more oxygen and better survive. The bacteria, fungi, and actinomyces in soils help plants absorb minerals

Concentrations of Nutrient Elements in Plant Material at Levels Considered Adequate¹

Element	Chemical Symbol	Concentration in dry matter ppm or %
		ppm
Molybdenum	Mo	0.1
Copper	Cu	6
Zinc	Zn	20
Manganese	Mn	50
Iron	Fe	100
Boron	B	20
Chlorine	Cl	100
		%
Sulfur	S	0.1
Phosphorus	P	0.2
Magnesium	Mg	0.2
Calcium	Ca	0.5
Potassium	K	1.0
Nitrogen	N	1.5
Oxygen	O	45
Carbon	C	45
Hydrogen	H	6

¹From Epstein (1965), after Stout (1961). Copyright 1965 by Academic Press New York and London. Mineral Nutrition of Plants: Principles and Perspective: Epstein (1972)

Figure 1

more efficiently as well as expose the soil's native minerals to plant absorption.

Radioactive isotope research done by the USDA in eastern Pennsylvania shows atmospheric nitrogen becomes incorporated in plant tissue after passing through soil microbes. Nitrogen fixation in soil can be, and is, accomplished naturally by soil bacteria. Remember, the air we are all currently breathing is 79% nitrogen gas.

That legume plants increase the amount of nitrogen fixing bacteria in the soil profile is well-known and is a starting point; however, there is an abundance of other bacteria living independently in the soil also able to fix nitrogen from the air. One genus of these soil bacteria, azotobacter, is of great importance, and, in the course of a year, its members are capable of fixing from 15 to 40 pounds of atmospheric nitrogen per acre.

Any beginning soil physics class teaches the ideal soil environment is 50% pore space. (see figure 3) Increases in soil porosity allow soil biology to release more soil fertility, whether that fertility is added to the soil or is native to the soil itself. Calcium additions influence the cation exchange capacity (CEC) of soil in a manner that allows the soil to become more

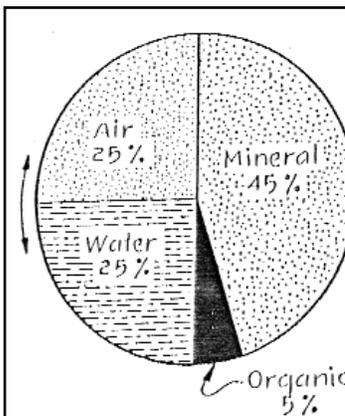
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Figure 2 COMPOSITION OF SOILS

For 1 Plow Acre 6-2/3 Inches in Depth — Approximately 2,000,000 lbs. or 1,000 tons

Elements	Sandy Loam Pounds Per Acre	Silt Loam Pounds Per Acre	Clay Loam Pounds Per Acre
Organic Matter	20,000 =	54,000 =	96,000 =
Lbs. of Nitrogen Live Portion (Earthworms, Bacteria)	1,340# Nitrogen 1,000	3,618# Nitrogen 3,600	6,432# Nitrogen 4,000
Silicon Dioxide	1,905,000	1,570,000	1,440,000
Aluminum Oxide	22,600	190,000	240,000
Iron Oxide	17,000	60,000	80,000
Calcium Oxide	5,400	6,800	26,000
Magnesium Oxide	4,000	10,400	17,000
Potash	2,600	35,000	40,000
Phosphate	400	5,200	10,000
Sodium Oxide	4,600	26,000	24,000
Titanium Oxide	13,600	18,000	14,400
Sulphur Trioxide	600	8,500	6,000
Manganese	2,500	2,000	2,000
Zinc	100	220	320
Copper	120	60	60
Molybdenum	40	40	40
Boron	90	130	130
Colbalt	50	50	50
Chlorine	50	200	200

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Volume composition of a silt loam surface soil when in good condition for plant growth. The air and water in a soil are extremely variable, and their proportion determines in large degree its suitability for plant growth.

The Nature and Properties of Soil
Seventh Edition: Buckman and Brady (1969)

Calcium and Fertilizer Prices

By Jim Halbeisen

With the beginnings of Growers Chemical Corporation in 1955, Dr. V. A. Tiedjens suggested to farmers they could grow high quality and productive crops with very small amounts of fertilizer. His premise; plant materials are predominately carbon (C), hydrogen (H), and oxygen (O) or sunlight, air, and water. His review of 1920's scientific literature showed the most productive soils in the world contained cation exchange capacity, CEC, levels that were high, 75 to 90 per cent, in calcium. He found the soil's physical and biological properties would allow a plant to grow with very little fertility input when the soil CEC contained 80 to 85 per cent calcium. The concept of applying high calcium limestone to soil and then using small amounts of targeted fertility on growing crops became "The Growers Program."

In the late 1950's the Growers Program idea competed against a more rotational style of agriculture, not heavily reliant on commercial fertilizers to create large yields responses. The rotational style relied mainly on livestock sources of fertility and was beneficial to the physical and biological properties of the soil, and it used very small amounts of synthetic fertilizers. The Growers Program was very compatible and cost effective with rotational agriculture because high calcium limestone helped to improve the physical and biological

properties of the soil even more than just adding more manure, plus the target fertility of GMS was helping the crop during times of stress (planting in cold soil or reproducing in dry soil.)

Later, after the United States and Russia grain exchange in 1974, North American farmers seeking increased yields started using a style of agriculture that relied more heavily on synthetic fertilizers. It was then the agricultural establishment began teaching soil fertility was best measured by the soil test, and nutrient removal needed to be monitored very closely. This presented a challenge because they began saying The Growers Program would eventually "wear out" the soil. The soil fertility idea sold very well "in Peoria" because fertilizers were cheap and little attention was given to its efficiency and its effect on the environment.

In those times it was Growers' mission to convince farmers to try improving their soil properties with the element calcium and placing limited amounts of fertility elements close to the crop at proper times, their operations would be more cost efficient and pollution would be reduced by having fewer fertility element losses to the environment.

Since 1974 The Growers Program has had some difficulty competing against the establishment's university endorsed high input fertility program. Regardless, since 1955 we have persistently followed Dr. V. A. Tiedjens'

soil and fertility ideas and have consistently maintained the use of high calcium limestone would allow a producer to grow competitive crops with significantly less fertility inputs.

Growers is, and has been, the only agricultural company to advocate the use of high calcium liming products as an approach to trimming fertility expenses, and producers today should tap into our vast experience on the subject. When fertilizer input costs were relatively insignificant, fertilizer competitors maintained high calcium lime expenditures were not important and lime money should, instead, be used for additional fertilizer. Today, following that line of thinking, the "Fertilizer addiction," could be a farm operation's cripple.

In 2008, as we did in 1955, we are showing farmers how to use high calcium lime to help control fertility inputs. As dedicated users will verify, high calcium lime additions are not quick fixes. They usually take time to show results. Though prices could change, compared to other inputs high calcium liming products are relatively very inexpensive, which makes this an opportune time for farm operators to acquaint themselves with the value of calcium.

All North American farm producers need to realize only one company through the years has been advising farmers how to use the least amount of fertility to achieve consistent and profitable crop production and that is Growers Chemical Corporation. ■

Market Gardening with Growers

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greens they get at the supermarket.

We started digging up carrots in early January. Our customers will buy these carrots over other carrots because they are fresh, crisp and very sweet.

Karl is always experimenting with different ingredients. "Last year I tried a red veined spinach that was not bolt tolerant in warm weather and had no cold tolerant rating. It has done very well during the cold months of November to mid March."

I planted a small patch of garlic in the

greenhouse about mid December. When the garlic came up about the end of January, I covered it with row cover and by mid March it was about 12 inches high. This garlic was ready 7 weeks before the field garlic.

Neubrand Country Produce
RR #2
Monkton, Ontario, Canada N0K 1P0

Francis Cornish, Growers Sales Representative
RR #1
Woodham, Ontario, Canada N0K 2A0

Growers Program and Calcium

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porous which, in turn, allows for a larger root mass to probe for more minerals and water.

Calcium and the Growers Soil Program is an economical and environmentally viable alternative to high fertility inputs. Have your Growers Mineral Solutions Sales Representative gather soil samples from your fields to determine the amount of liming additions would be needed to bring your ground up to levels where natural nitrification and other nutrients in the ground should be released, and, thus, reduce applied fertility needs. Liming materials are a bigger bargain today than they ever were. ■

The Growers Solution

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More About Growers

We hope you will find this newsletter helpful and interesting and we welcome your input. Please send letters-to-the-editor, comments, suggestions, etc. to: Growers, P.O. Box 1750, Milan, Ohio 44846, call 1-800-437-4769, fax 419-499-2178.

email to: growers@hmltd.net
or visit our Web site: www.growersmineral.com

On The Road Again

EARLY FALL 2008

This fall *Growers Mineral Solutions* is scheduled to set up and staff booths at the following upcoming farm shows. It's a great time to stop in and review your plant food and mineral supplement programs, hear about new developments at Growers or just chat with the folks who make it all happen—your friends and neighbors.

October 14-16 Tues., Wed., Thurs.	Sunbelt Agricultural Exposition Moultrie, GA
October 22-23 Wed.-Thurs.	Pennsylvania Grazing Conference Punxsutawney, PA
November 14 Friday	Truck Patch Connection Withee, WI
November 21 Friday	Truck Patch Connection Middlefield, OH

Hope To See You!

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Excellent Wheat

By Jim Halbeisen

While touring western Indiana and eastern Illinois this summer, I witnessed some of this year's very best double crop soybeans using GMS. Working with Growers Mineral Solutions (GMS) sales representative Marty Whitsitt of Jasper, Indiana, we observed the soybean field of Matt and Robin Hauk of Shoals in southwest Indiana. Their double crop soybeans were planted on June 30, 2008 and had excellent size and vigor during our visit of August 12, 2008. However, most interesting was the discussion on the wheat earlier harvested from this particular field.

The story is that Marty and Matt met for the first time in January of 2008, at a Burger King®. Both being farmers their conversation centered around growing crops. Of course Marty brought up the Growers philosophy and eventually Matt decided to give GMS and the Growers Program a try.

Marty devised different protocols for Matt's various crops, however on the wheat with the cold wet spring and since the wheat price had



Robin and Matt Hauk of Shoals in southwest Indiana in their double crop soybeans.

improved significantly, Matt decided to use 5 gallons of GMS per acre to get it jump started. He applied the 5 gallons in the early weeks of April. And then, after making that initial application, one week later he applied another 5 gallons of GMS, again a change from Marty's initial recommendations.

Before Matt met Marty in January, Matt had already applied 100 pounds per acre of DAP (diammonium phosphate) to the wheat in the

fall of 2007. Therefore, this particular field received as its total fertility 100 pounds per acre of DAP and 10 gallons per acre of GMS. The wheat at harvest averaged 101 bushels per acre. (Most dry wheat yields average around 60-70 bushels per acre. Ed.)

If this yield and the fertility arithmetic is of interest to you for your operation, please contact your local GMS representative and ask about the GMS protocols for various crops. ■

What's Next?

Continued from page 1

Joe Henry, the owner of Growers Chemical Corporation, successfully dealt with similar fertilizer shortages and price increases in 1974. His experience helped Growers customers with their fertility costs in 2008 and it should also be of significant help with availability in 2009. However, if countries such as China and India, in helping their own populations, completely shut the door to their raw materials, the world wide scramble for fertility sources will be dramatic.

I believe the method we will use for our own operation will be similar to our grain marketing

approach. That is, we need to get some grain sold early for early income, but try to stretch pricing out over the selling season to keep the price at an average we can live with economically. Also, as grain marketing of one crop season can span several years, fertility purchases will probably need to follow a similar approach.

Today's North American political environment never makes the farmer's work and planning any easier, but, for the sake of our next generations, I believe small businesses are up to the challenge—especially with Growers on our side. ■

Price Questions?

Staff

Because the fate of Growers could depend on it, Joe Henry has been closely watching plant food raw material price and availability developments. A veteran and survivor of the material shortages and price gouging of 1974, his experience puts Growers and Growers Customers in an enviable competitive position during these troubled times. Future predictions seem to be almost anyone's guess. Wild guesses have prices coming back down to near normal or to at least reasonable levels and raw material supplies to be no problem—no abnormal foreign demand for nitrogen, phosphorus and potash. Either could happen, but very very doubtful, especially the raw material supplies prophecy. Raw materials are already hard to find and there are no indications at all prices will soften. Hopefully, we will have better insight with our next *The Growers Solution* newsletter, meanwhile, check with your Growers Sales Representative—who will be updated as the situation changes, or call Growers at 800/437-4769. ■