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## The Growers Solution

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### The Growers Program and Soil Testing

By Jim Halbeisen

For years the agricultural establishment has consistently maintained using smaller amounts of fertilizer when following the Growers Program would result in poor economic production and “wear out” the soil. They used soil tests to back their reasoning, claiming test values would decrease while adhering to the Growers Program 1, 2, or 5 years in a row.

Therefore, the soil testing data recently received from a farmer in the southeastern part of the United States is of great interest to us at Growers Chemical Corporation. Seems this Growers customer wanted to see for himself how Dr. V. A. Tiedjens ideas compared with other farming philosophies. After having been on the Growers Program for several years he decided to pull soil samples from his farm and

from the farms of close neighbors; one who had continued using conventional farming methods and another who used chicken litter during the same period, to see if there was a difference in their soil tests.

**GMS Program:** For seven years our man has followed the Growers Program approach. Each year his soil has received about 1 ton per acre of a fine grind high quality limestone which is 35% calcium and 2% magnesium. The corn crop is planted with 4 to 5 gallons per acre of GMS followed by foliar sprays of 2 gallons per acre of GMS. Each year the corn crop received between 100 to 120 pounds of nitrogen as dry fertilizer, and dairy lagoon water was added to the soil 4 out of the 7 years at a 2 to 3 inch level for those years.

**Commercial Program:** For the last seven years this farmer has followed the agricultural establishment exactly. Soil tests are run annually and fertilizer is added to the soil at the rates recommended by the soil test.

**Chicken Litter Program:** For the last 7 years this producer has used mostly chicken litter to fertilize his crops. He consistently uses about 3 tons per acre of litter while 4 out of the 7 years he added another 2 tons of litter per acre.



50 Years on the Growers Program in Northern Ohio.

After seven years on their own separate programs each farm’s soil was sampled. Soil test results from a well respected southeastern US soil laboratory, along with their soil fertility recommendations, are shown in the following charts.

We do not know how much conventional fertilizer had been applied over the years, but we assume it was at least adequate if they were following the recommendations. According to the argument, the 70 or 80 pounds of GMS applied per acre per year over the same time period should have “worn out” the soil which the soil tests should have shown. Instead, the

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### Customer Conference Calls

Staff

Our one hour question and answer telephone conference calls are scheduled to continue at 9 p.m. Eastern time on the second Thursday evening of each

month until further notice. On December 10, January 14, February 11, March 11, April 8, etc., dial 1-712-429-0690, then when asked for your participant PIN, dial 637573#. Please join us. ■

## How Important are Soil Tests?

By Jim Halbeisen

When farm commodity prices escalated in late 2007, fertilizer raw material suppliers significantly increased their prices in 2008, presumably to get a larger chunk of the farmer's dollar. Then, to have farmers deal with the high fertilizer prices, the agricultural establishment recommended they use soil tests to determine their mineral or element needs. Every farmer has heard the slogan "Don't guess, soil test".

But, are soil tests the best method to use when deciding the economic fate of a farming operation? Over the years nearly every farmer has seen how one soil sample sent to several different soil testing laboratories comes back with all different results.

In our Growers Chemical Corporation network of farmers, we commonly see soil testing problems with the element potassium in the dairy industry. Seems the dairyman's soil test generally has him adding more soil potassium for better crop production. Meanwhile, he is already adding supplements to his dairy ration to neutralize the effects of too much potassium in his forage plants.

It is important we understand soil tests are an attempt to predict which mineral elements in the soil medium will be available for the growing plant.

Most true soil scientists realize the soil is a living biological media and not, as commonly viewed, a chemical media. Horst Marschner in his plant physiology reference book *Mineral Nutrition of Higher Plants* says, "Quite often much more is expected from soil testing than the method allows." The reason being, soil testing uses inorganic chemical extraction of the mineral elements but doesn't deal with its biological content. Although for years soil biological populations have been recognized by soil microbiologists and their importance in releasing mineral elements to growing crops emphasized, only just recently have main

stream agricultural publications started discussing them. Marschner in his text book devoted an entire chapter to the mineral nutrition of plants coming from the soil's biological population, or, as he calls it, the Rhizosphere. Below is his introduction to the chapter about the relationship between plant mineral nutrition and the rhizosphere.

"The conditions in the rhizosphere differ in many respects from those in the soil some distance from the root, the so-called bulk soil. Roots not only act as a sink for mineral nutrients transported to the root surface by mass flow and diffusion. In addition, they take up either ions or water preferentially, which may lead to the depletion or accumulation of ions (Chapter 13). They also release  $H^+$  or  $HCO_3^-$  (and  $CO_2$ ) which changes the pH, and they consume or release

$O_2$ , which may cause alterations in the redox potential. Low-molecular-weight root exudates (e.g., secretions) may mobilize mineral nutrients directly, or indirectly by providing the energy for microbial activity in the rhizosphere. These root-induced modifications are of crucial importance for the mineral nutrition of plants. Although the chemical properties of the bulk soil (e.g., the pH) are very important for root growth and mineral nutrient availability, the conditions in the rhizosphere and the extent to which roots can modify these conditions play a very decisive role in mineral nutrient uptake in general (Marschner *et al.*, 1986b), and in micronutrient uptake in particular (Marschner, 1991b). Conditions in the rhizosphere are also of importance for the adaptation of plants to adverse soil chemical conditions, as occur, for example, in acid mineral soils (Marschner, 1991b)."



Georgia Cantaloupe.

That additional biological populations exists in conjunction with growing plant roots explains why soil testing is not as accurate as commonly claimed and their limitations be understood. Inorganic chemical extraction has a certain degree of accuracy predicting mineral elements in so called "bulk soils," but trying to measure or predict the available mineral elements coming by way of biological populations in close symbiotic relationships with plant roots is much more complicated and expensive. So most testing laboratories ignore the biological portion of the soil altogether which compromises their accuracy and skews their interpretations, recommendations and predictions.

Our Growers Soil Test focuses on the soil's most important element, calcium, but even it does not fully address the biological needs of the soil. Those can only be found by way of a growing crop, which is why Dr. V. A. Tiedjens back in 1955 told producers he would make predictions about their soil calcium needs with a soil test, but he still wanted them to use the best soil test available—the strip test. Today, as in 1955, Growers Chemical Corporation tells customers and potential customers to apply varying rates of high calcium lime to test strips on their own farms and watch to see which rate creates the best economic success. ■

## More On Strip Tests

Staff

Since 1955 Growers Chemical Corporation has advised farmers to use strip tests to find the ideal rate of high calcium limestone to be applied to a particular field. (See accompanying article *How Important are Soil Tests?*)

Although farmers seem to understand and accept the "strip test" concept, some in the agricultural establishment have long suggested the strip test is not "sound science." However,

more often now in agricultural literature, we are seeing references to the strip test.

A quote from the article "*More Seeds Per Acre*" in the September, 2009, edition of *Farm Industry News* provides verification or credibility to Dr. Tiedjens' advocating the strip test.

"Some soils and conditions might not be conducive to higher populations," says Iowa State University agronomy professor Roger Elmore, "but across the Corn Belt, the average plant population is increasing about 400

plants/acre/year. Today's elite hybrids are more tolerant of higher plant populations, and as populations have increased, so has stress tolerance."

ISU has conducted a lot of plant population research and Elmore has found, "At 32 locations over the last three years throughout the state, populations of 35,000 to 37,000 seeds/acre have yielded better than lower or higher populations have. **Growers wanting to try higher seeding rates should do some strip testing in their fields first.**" ■

## Can the Growers Program Model Work?

By Jim Halbeisen

Contrary to the agricultural establishment's suggestions, the model of the Growers Program, in recognizing the elements Carbon, Hydrogen, and Oxygen (sun, air and water) make up 96% of healthy plant tissue teaches, much smaller volumes of Nitrogen, Phosphorus and Potash are required to grow profitable crops. Since 1955 Growers Chemical Corporation has been telling farmers when the soil is supplied with adequate calcium additions, added fertilizer minerals and elements can be significantly reduced. Also, using target fertility technology, additional plant nutrients, if needed, can be applied at the most advantageous time and place, further reducing the fertility input requirements. So, when the two pieces of the Growers Program are combined, sufficient soil calcium and target fertility, farming operations can realize some very significant cost savings and still grow healthy and profitable crops.

From the beginning the agricultural establishment, the land grant universities and the chemical companies, have maintained, in following the Growers Program, farm producers would "wear-out" their soils because crops would eventually extract from the soil profile all available mineral elements. This issue has been addressed many times, most recently in our article "Follow Growers Lead in Tough Times" published in the Summer, 2009, issue of *The Growers Solution*. There we discussed in depth the technology behind the Growers Program and highlighted scientific data of recent times, as well as that from earlier years, which gives substance to the Growers Program.

Even though there is much scientific evidence refuting the agricultural establishment's position, many producers have been reluctant to use methods not recommended by the local county agent. However, with the run up of corn prices related to biofuel and ethanol demand followed by costs going to the moon, farmers began looking at fertilizer use a lot differently. Especially in the summer of 2008, when corn prices reached the \$8.00 per bushel range, and fertilizer manufacturers sent fertilizer prices up, in some cases as much as 400% higher. With these cost increases carried over to the 2009

crop season, farmers had difficulty, financially, justifying buying their normal fertilizer requirements. And when their 2009 crop season economics turned sour, farmers just had to cut fertilizer use. Statistics for North America fertilizer usage for the 2009 crop year had nitrogen (N) use down 15%, phosphorus (P<sub>2</sub>O<sub>5</sub>) use down 31%, and potassium (K<sub>2</sub>O) use down 45%.

So, if the agricultural establishment has been correct through the years in professing so much N, P, and K is needed to grow a crop, then the 2009 corn and soybean yields should be down significantly. However, in their October, 2009, crop report, the United States Department of

of good agronomic practice by U.S. farmers banking a portion of these nutrients in the soil in addition to replacing what the crop removed. Farmers decided to pull down their P and K soil bank a bit this year given the general uncertainty in the financial and grain markets and the high cost of nutrients they were faced with during the last planting cycle. As key advisors to our farmers we must convince them to return to their traditional nutritional practices or face eventual reduction in yields. This will be a much easier sell given the deflation in nutrient prices. In the case of nitrogen and phosphates wholesale prices are below their ten year trend value, and potassium has reset to a



Georgia Cabbage.

Agricultural stated US farmers are going to raise the second largest total corn crop ever, and this crop will also result in the largest average bushels per acre corn yield ever at 164.2 bushels. And they predict the US soybean crop will be third largest ever recorded.

How can the agricultural establishment explain this impossible 2009 crop season contradiction? Perhaps this quote from the Fall 2009, *Plant Nutrient Newsletter* from [www.andersonsnutrients.com](http://www.andersonsnutrients.com) gives us and farmers the answer.

"Many of us are scratching our heads wondering how we're going to set a new corn yield record in light of reduced application of phosphate and potassium. In my mind if this outcome holds true it will be the result of years

value which I believe is sustainable for farmers and basic nutrient manufacturers who need these higher values to justify the significant investments they are making in new capacity."

Apparently the agricultural establishment will be encouraging farmers to return to their earlier ways—namely, pilling on and banking excess levels of NP&K. We at Growers Chemical Corporation continue to be at odds with that thinking. In fact, we feel the 2009 crop season results confirms our long time position while disproving the establishment's. Regardless, we will still be favoring our Growers Program model holding down farmers' everyday fertilizer use and expenses to practical economic levels. ■

# Growers MINERAL SOLUTIONS

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### Inside:

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## Growers Program and Soil Testing

values of P, K., Mg., and Ca. found in the top and subsoils ranged from Medium to mostly Very High and showed the Growers Program to be building or maintaining soil nutrient values much more effectively than the Commercial or Chicken Litter programs. Dr. Tiedjens and his Growers Program have been vindicated—again. ■

### GMS - Chicken Litter - Commercial

Sample ID	P	K	Mg	Ca	pH		S	B	Zn	Mn	Fe	Cu	OM	CEC	% Base Saturation				
	lbs/A	lbs/A	lbs/A	lbs/A	Soil pH	Buffer pH	lbs/A	lbs/A	lbs/A	lbs/A	lbs/A	lbs/A	%	meg/100g	% K	% Mg	% Ca	% H	
GMS Top	189 <sub>VH</sub>	300 <sub>H</sub>	181 <sub>H</sub>	3581 <sub>VH</sub>	7.4	7.85	24 <sub>L</sub>	1.3 <sub>A</sub>	19 <sub>VH</sub>	111 <sub>VH</sub>	16 <sub>A</sub>	2 <sub>H</sub>		11.3	3.4	6.7	79	11	
GMS Sub	73 <sub>M</sub>	188 <sub>A</sub>	141 <sub>A</sub>	2431 <sub>VH</sub>	7.4	7.85	24 <sub>L</sub>	1.1 <sub>A</sub>	9.6 <sub>H</sub>	98 <sub>VH</sub>	15 <sub>A</sub>	1.2 <sub>M</sub>		8.1	3	7.2	75	15	
Commercial Top	140 <sub>H</sub>	265 <sub>H</sub>	227 <sub>VH</sub>	1379 <sub>VH</sub>	6.7	7.85	25 <sub>L</sub>	0.9 <sub>M</sub>	24 <sub>VH</sub>	45 <sub>H</sub>	25 <sub>H</sub>	2.1 <sub>H</sub>		5.9	5.7	16	58	20	
Commercial Sub	83 <sub>A</sub>	177 <sub>A</sub>	218 <sub>VH</sub>	1090 <sub>VH</sub>	6.8	7.85	27 <sub>M</sub>	1 <sub>M</sub>	6.8 <sub>A</sub>	33 <sub>A</sub>	12 <sub>A</sub>	0.6 <sub>L</sub>		5.1	4.5	18	54	24	
Litter Top	73 <sub>M</sub>	198 <sub>A</sub>	143 <sub>A</sub>	1342 <sub>VH</sub>	6.7	7.85	24 <sub>L</sub>	0.7 <sub>M</sub>	7.9 <sub>A</sub>	54 <sub>VH</sub>	17 <sub>A</sub>	2.8 <sub>VH</sub>		5.4	4.7	11	62	22	
Litter Sub	15 <sub>L</sub>	124 <sub>M</sub>	147 <sub>A</sub>	809 <sub>VH</sub>	6.7	7.85	28 <sub>M</sub>	0.9 <sub>M</sub>	1.5 <sub>L</sub>	31 <sub>A</sub>	16 <sub>A</sub>	0.5 <sub>L</sub>		4	4	15	51	30	

### Soil Fertility Recommendations (lbs./Acre)

\* = Maintenance Recommendation

Sample ID	Crop	Yield	Lime	Gypsum	N	P	K	Mg	S	B	Zn	Mn	Fe	Cu
GMS Top	CORN	150 Bushels			210	* 50.0	80.0		16					
GMS Sub	CORN	150 Bushels			210	55.0	90.0		16					
Commercial Top	CORN	150 Bushels			210	* 50.0	* 80.0		15	0.1				
Commercial Sub	CORN	150 Bushels			210	* 50.0	* 90.0		13		0.0			0.4
Litter Top	CORN	150 Bushels			210	55.0	90.0		16	0.3				
Litter Sub	CORN	150 Bushels			210	115.0	100.0		12	0.1	6.0			0.5

L=Low M=Medium A=Adequate H=High VH=Very High

Happy  
Holidays  
from Growers

### 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@hmcltd.net](mailto:growers@hmcltd.net)  
or visit our Web site: [www.growersmineral.com](http://www.growersmineral.com)

### Staff

Even though we are in daily contact with them, our raw material suppliers are still not giving us much for definite information regarding their future prices. It is still, "Prices subject to change without notice." We are inclined to think their prices, and, likewise, our prices will stay the same, hopefully through spring planting. Meanwhile, we plan to keep our Cash-In-Advance of Delivery discount in place through March,

namely; 8% for December, 6% for January, 4% for February and 2% for March.

Compared to most of the other fertilizers out there, Growers Mineral Solutions' current pricing translates into very competitive total per acre costs for nearly all crops, forages, and produce—even more so when early order discounts are taken. There may be other cheaper products available, but the crops grown with them invariably suffer quality wise.

Stay with GMS for lower per acre costs and higher quality crops. ■

## Pricing Forecast