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The Growers Solution

WINTER 2005

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VOLUME 18 ISSUE 1

The Future of Growers — The Next 50 Years

By Jennie Henry, daughter of J. P. Henry, President and Founder of Growers Nutritional Solutions

September 15, 2004 marked the beginning of the fiftieth year Growers Chemical Corporation has been in existence. This is a huge accomplishment in my opinion. And much of the recognition has to go to Dad, who has guided the Company through the many different economic cycles and political polices.

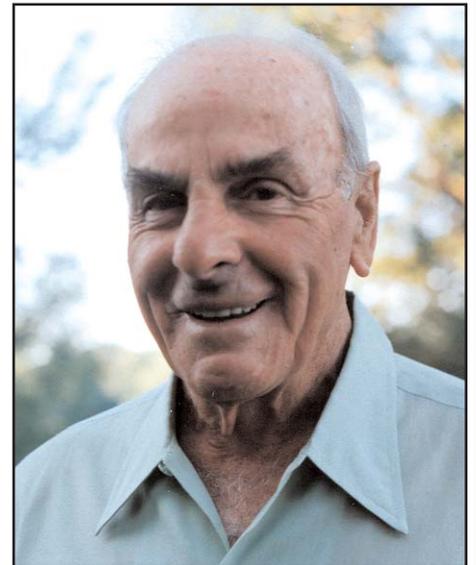
However, he did not manage solo. He put together an amazing team. First with Dr. Tiedjens and George Ward, continuing on with Wilbur Franklin, Jim Johns and Jim Halbeisen, plus all the truck drivers, factory workers,

office staff and sales personnel. He attracted and developed an awesome team of enthusiastic, knowledgeable, and capable people dedicated to passing on the philosophy of Dr. Tiedjens and the Growers Program.

If it was not for my father, Dr. Tiedjens would probably not be so well remembered today. And his philosophy exemplified in the Growers Program probably would have been forgotten.

Things have changed tremendously in 50 years. In agriculture, tractors, equipment, hybrid seed and genetics have been "improved." Computers took up entire air conditioned rooms, now we carry them around in little cases. What top corporate CEO is still in charge with the same successful product a half century later? The Growers Nutritional Solutions formula and its top management remains the same as it was in 1955.

Accused of being conservative does not
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Joe Henry, president of Growers Nutritional Solutions

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Thriving Indiana Orchards & Produce Farm

By Ed Bulcher, Growers District Manager, Jim Halbeisen and Jennie Henry

Greg Huber was interviewed in the fall of 2004 by his District Manager Ed Bulcher and Growers' Jim Halbeisen.

To set the stage, Huber's Orchard & Winery is located near Borden, Indiana, 14 miles northwest of Louisville, Kentucky. The farm produces fruit on 300 acres, vegetables on 200 acres and trees on 100 acres. They sell their produce at their retail farm market and winery. They produce beautiful custom gift baskets and boxes filled with their wines, fruit, cheese, jellies, and preserves. The market is really an entertainment complex. It has an ice cream

factory, a cheese and gift shoppe, bakery, an animal petting zoo with pony rides and a picnic area. They also put on parties and weddings in their Plantation Hall which seats up to 1,000 people.

Greg is in charge of all production on the farm. He began using and experimenting with GNS in the spring of 2000.

Jim Halbeisen's first question for Greg was "What do you feel is the single most important effect of Growers on your operation?" Greg immediately replied, "As far as our fruits and vegetables are concerned, it has been the shelf life. It has really improved, whether it is strawberries or any of our vegetables. For

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Watching For Asian Soybean Rust

By Jim Halbeisen

The American Soybean Association and the Ohio Soybean Council sponsored a Regional Soybean Rust Meeting near Columbus, Ohio on July 22, 2004. The objective was to give an update on the coming of Asian soybean rust. There were speakers from the Agricultural Research Service, the Ohio State University, Office of Pest Management Policy of the United States Department of Agriculture, John Deere, BASF Corporation, Bayer Crop Science, Dow Agro Sciences, and Syngenta Crop Protection. Basically, they reported the Asian soybean rust is still mainly below the equator in South America.

Researchers then believed the fungus would take up residence in the south first and spread north as the trade winds and environment allow. They said the infections will be small in volume, in scattered areas and will grow in size in the future. Some predicted our northern areas will never receive very serious infections, while others thought the environment around Great Lakes would help intensify the infections.

Meanwhile, on November 10, 2004 USDA announced that a case had been found in Louisiana. Their experts from the Animal and Plant Health Inspections Services (APHIS) confirmed the infection and identified it to be the most virulent form of the Asian soybean rust. It has the scientific name of *Phakopsora pachyrhizi*.

What will happen next is up for speculation. Meanwhile, about all we can do is to look at the experiences other countries already infested have had.

SCOPE AND DAMAGE:

According to the researchers the Asian soybean rust is a much stronger strain of fungus than the ones we now have. Our grass species fungal infections generally use certain avenues to enter the plant, but this is not the case with Asian soybean rust which can enter legume plants just about anywhere it desires. It usually starts at the bottom of the plant, but it can use any part of the lower leaves for its entry.

Besides soybeans, Asian soybean rust can affect up to 90 other species of legume plants. This fungus will affect peas, dry beans, lima beans, green beans and several forage species. Yield reductions of 10 to 90% can be very significant depending on the amount of infection. Of economically important plants, alfalfa appears to be one of the few to have significant resistance to the rust.

WARNING SIGNS:

Recognizing Asian soybean rust in the field is going to be very difficult at first. It's



For soybean rust fungicide, high pressure, high volume sprayers are required.

appearance is very similar to "brown spot," "bacterial pustule" and "bacterial blight" and a 30 power hand lens will be required to accurately identify the fungus. It was suggested producers scout their fields now to become more familiar with the infections they currently have so that if and when the Asian soybean rust does arrive, it will be more easily recognized. Producers are encouraged to contact people who can help identify Asian soybean rust if they think they see symptoms.

It may be prudent for our Growers people to plant a small percentage of their 2005 soybean crop acreage with a very early variety. Since the rust becomes active at the reproductive or flowering stage, this small early plot could serve as an "alarm signal" for the rest of the crop which will probably flower later but will likely also be infected, but the warning from the earlier crop should allow for the spraying response needed in the near future.

FUNGICIDE CONTROL:

Of the plant species susceptible to Asian soybean rust there is little to no plant resistance, so, breeding for plant resistance is not an option.

At present, most producers dealing with Asian soybean rust are turning to fungicides.

There are only two chemical fungicides having EPA approval for Asian soybean rust control, however, chemical companies believe there may be as many as 12 available by 2005. Meanwhile, every farmer must be concerned with two important points about fungicide control.

First, the cost of the chemicals will be about \$15 to \$20 per acre per spray. Therefore, farmers must know their costs, yield potential and the proper time to spray.

Second, unlike herbicides, spraying fungicides is totally different. The available Asian soybean rust fungicides are not systemic

and will not move in the plant like herbicides, therefore, the whole plant must be covered with the fungicide. Also, since the fungus must be sprayed while it reproduces, sprays with very high pressure, very fine mists and very high water content will be required. In Brazil most producers use cone jet spray nozzles at 90 pounds pressure per square inch and use a total spray volume of 30 gallons per acre.

The USDA researchers say the verdict is still out on the relationship between row width and the effect of Asian soybean rust. Dr. Monte Miles from the University of Illinois says they will be investigating the influence of row widths during Brazil's upcoming soybean crop season.

THE GROWERS SOLUTION:

Growers Chemical Corporation does not recommend mixing Growers Nutritional Solutions (GNS) with anything other than water. We realize, however, many producers have mixed GNS with various insecticides and fungicides and have saved additional trips over the field. They have also demonstrated that spraying several times during the season gets significant amounts of GNS on their crop foliage which results in very good crop health, quality and production. Thus, the foliage spraying of fungicides may be an excellent time to supply the balanced nutrition of GNS to your crops. Updates will follow.

As a Growers Nutritional Solutions (GNS) user, I am wondering what effect the fungus might have on healthy plants in healthy soils. Because many GNS customers have long since been able to use less toxic methods in controlling fungus infections in vegetables and other crops, will our healthier soils and plants help us lower control costs for Asian soybean rust? Apparently we won't know the answer until the fungus arrives. ■

The Future of Growers

Continued from page 1

mean we are "stuck-in-the-muds." After fifty years, I see this as a compliment. I see the longevity of the Growers formula as a symbol of the genius of Dr. V. A. Tiedjens. He spent his life observing agriculture and developing a philosophy and formula that are based on scientific fact, and they will endure. It is the Truth. Truth does not change with the fads and whims of the marketplace.

It appears as changes occur in agriculture, the Growers Nutritional Solutions (GNS) product continues to adapt. In 1955, GNS was a way to efficiently place nutrients directly on the plant, reducing the farmer's expenses. This method produces a higher quality plant, which when fed to livestock, produces an animal that has less health problems. It also produces better tasting crops that store longer.

The Growers philosophy of applying high calcium lime has helped improve soil quality and reduce erosion. Livestock producers have discovered that manure from animals consuming Growers grown feeds and using the Growers mineral supplement have lower mineral content, making for fewer headaches in nutrient management.

These improvements are Truth. It does not depend on someone's presentation, or theories, or the latest coming out of the universities or industry. The Growers Program and Growers Nutritional Solutions are based on sound, scientific principles.

A system has been set up to educate our Growers Sales Representatives and customers and to manufacture, sell and distribute our product. As new technology has evolved, the Growers Company has adapted. We have moved from explaining our product and its use through movies, to videos and now to the Internet. Computers have been assisting us in the office for many years. Although the manufacturing process has remained much the same, we have improved the facility and increased its capacity with new and larger stainless steel piping and tanks. To insure the least possible amount of contamination, we have quality stainless steel tank trucks and the best drivers to bring in the cleanest and purest raw materials.

GNS has had many successes in plant nutrition, and livestock producers have had the same with Growers grown feed and the GNS mineral.

Many of today's common livestock ailments, particularly those in the dairy industry, seem to mirror similar problems we see in modern day humans. When the Growers Program and products have been properly used in the dairy, many of the ailments have been reduced or eliminated. The cows are healthier and lead a better quality of life, and so does the farmer. If the use of Growers Nutritional Solutions in the field and as a mineral supplement in the barn has made such dramatic improvements in crops

and livestock, what could GNS do for human health?

What is the future for the Growers Company and Growers Nutritional Solutions? One thing is for certain; there is always change and most of it is different from what the "experts" have predicted. While it is important to have goals and guidelines to help steer the company into the future, it is also important to be flexible, to be able to adapt.

As application methods for GNS change and improve and the consumer at large becomes more concerned with the crop production inputs and animal health, who knows where GNS will go? Our plan is have Growers Nutritional Solutions and the Growers Program around and viable for another fifty years. ■



Jennie Henry, editor of *The Growers Solution*.

On The Road Again — Winter 2005

Growers Nutritional Solutions is scheduled to set up and staff booths at the following upcoming farm shows and conventions this winter. It's a great time to stop in and review your plant food and animal nutrition needs, hear about new developments at Growers or just chat with the folks who make it all happen — your friends and neighbors.

Jan. 4-6	Keystone Farm Show York, PA	Jan. 20-21	Long Island Ag Forum Riverhead, NY
Jan. 5-7	Delaware Veg & Potato Mtg. Harrington, DE	Jan. 26-27	Delmarva Ag Conf. Harrington, DE
Jan. 5-6	Northern Illinois Farm Show Dekalb, IL	Jan. 27-28	North Central Ohio Grazing Conf. Wooster, OH
Jan. 8-15	Pennsylvania Farm Show Harrisburg, PA	Feb. 1-3	Mid Atlantic Fruit & Vegetable Hershey, PA
Jan. 11-13	New Jersey Vegetable Marketing Atlantic City, NJ	Feb. 2-4	Southern Farm Show Raleigh, NC
Jan. 11-13	Le Salon De L'Agriculture St. Hyacinthe, Que, Canada	Feb. 4	Northern Indiana Grazing Conf. Shipshewana, IN
Jan. 11-13	Ontario Landscape Congress Toronto, Ontario, Canada	Feb. 8-9	Alexandria Area Ag. Show Alexandria, MN
Jan. 12-13	Heart of America Grazing Conf. Wilmington, OH	Feb. 8-11	Canadian International Farm Equip. Toronto, Ont., Canada
Jan. 18-20	Fort Wayne Farm Show Fort Wayne, IN	Feb. 15-17	Empire State Fruit & Vegetable Expo Rochester, NY
Jan. 18-20	Virginia Farm Show Fishersville, VA	Feb. 16-17	Ontario Fruit & Vegetable Conv. St. Catharines, Ont., Canada
Jan. 19-20	NFO Convention Grand Rapids, MI	Feb. 16-19	National Farm Machinery Show Louisville, KY
Jan. 19-21	Ohio Fruit & Vegetable Show Toledo, OH	Feb. 24-26	New York Farm Show Syracuse, NY
		Mar 1-3	Central Minnesota Farm Show St. Cloud, MN
		Mar. 9-11	Western Fair Farm Show London, Ont., Canada
		Mar. 17-20	Can-Am Equine Trade Show London, Ont., Canada

Hope To See You!

Out of Date Nutrient Recommendations

By Jim Halbeisen

The October 2004 edition of Farm Journal had an article featuring Alfred Blackmer of Iowa State University who's research finds that the current recommended amounts of nitrogen are more than is necessary to achieve profitable corn yields. In future newsletter articles we will examine the nitrogen problem in more detail, however, for now, we want to discuss our contention that the 1.2 Rule, now being questioned by Blackmer but still followed by the agricultural establishment, is too high. (The 1.2 Rule says that you should apply 1.2 pounds of nitrogen for every bushel of corn you wish to grow.)

After World War II, fertilizer companies told farmers that soil fertility was an arithmetic game. For every pound of nutrient removed by the crop, you had to replace that pound-for-pound with fertilizer. Then they started to inflate that rate so you would have a build up of soil nutrients which would be "like having money in the bank." Many farmers felt the buildup idea was too expensive, but they did go along with replacing the nutrients removed.

Early in the history of Growers Chemical Corporation, Dr. V. A. Tiedjens used university research to show that the removal of nutrients by crops was quite variable. He backed his position by referencing the work of Dr. Kenneth C. Beeson which is found in *USDA's Miscellaneous Publication No. 369*, from March, 1941, "The Mineral Composition of Crops with Particular Reference to the Soil's in which They Were Grown." Dr. Beeson concluded, "There is an abundance of evidence that plants and their parts vary greatly and significantly in the principle elements when grown in different soils in different environments, or even in environments that differ only in small degrees. Out of the confusion of the contradictory results of the fertilization experiment, one can draw a few very definite conclusions. The necessity for a balanced source of nutrients for the plant is thus indicated, and the variance in results by investigators would tend to prove that this is a problem that can be solved only by the study of the characteristics of each soil type."

Dr. Tiedjens published a concise summary of Beeson's work (shaded area) which is found in the *Growers Nutritional Solutions Sales Manual*. Looking at Dr. Tiedjens summary, it is quite obvious why nutrient concentrations can be so variable for different crops, why he suggested that farmers' land maybe did not need all the fertilizers recommended by the agricultural establishment's arithmetic method,

and why the data proved to be a very effective Growers sales tool for many years.

The most glaring contradiction or problem in the arithmetic method, as we see it, is deciding how to calculate the pounds of nutrients removed by the crops. Which removal numbers can we use?

Prevailing authorities, with mounting skepticism, have always questioned the validity of Dr. Beeson's research in that it dated back to 1941.

Then in 2003, several authors from the eastern United States published an article in an early 2003 issue of the *Agronomy Journal*,

entitled "Nutrient Removal by Corn Grain Harvest." Their research was directed towards Nutrient Management issues rather than for fertilizer recommendations, but they, in effect, although not intentionally, confirmed Dr. Beeson's 60 plus year old work.

These later researchers grew corn at established sites to reflect differing soils over a high total of site years. They analyzed the corn grain for the amounts of the nutrients; nitrogen (N), phosphorus (P), potassium (K), sulfur (S), calcium (Ca), magnesium (Mg), zinc (Zn), manganese (Mn), copper (Cu), boron (B) and

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Crop Yields and Mineral Content

by

Dr. V.A. Tiedjens

Much can be said about the amount of fertilizer needed to produce a bushel of corn or wheat. After looking over published data on the subject, I don't believe anyone can say for certain how much nitrogen, phosphoric acid, or potash is needed because this is affected by many factors. Dr. Kenneth C. Beeson in U.S.D.A. Bulletin 369 published in 1941, has summarized the data taken from 607 separate scientific publications. From his discussion the picture shapes up like this:

1. Minerals (potash, calcium, phosphorous, sulfur, etc.) are taken into plants in solution.
2. Plants do not absorb minerals in the proportion that they occur in the soil. Only available portions of nutrients should be considered.
3. Succulent plants remove more minerals than woody plants.
4. The same variety will absorb different amounts of nutrients from different soils.

5. The different parts of a plant differ in their mineral content. The minerals necessary to produce a corn plant up to tasseling are different from those needed for the production of the seed and ear.
6. The percentage of minerals in the plant reaches its maximum before the plant produces flowers. This varies between a plant like corn and a perennial plant like alfalfa.

Scientists have found that a 100 bushel corn crop, same variety, grown in Virginia will have an entirely different mineral content than that same 100 bushel crop grown in Ohio. Any statement to the effect that a certain level of minerals is needed to produce 100 bushels of corn cannot be proven with existing experimental data.

The minerals in a high acre yield of a given crop may vary widely which is shown for a few selected crops. Figures are taken from U.S.D.A. Bulletin 369.

Crops and Yield	Pounds of Phosphoric Acid in 1 Acre of Crop		Pounds of Potash in 1 Acre of Crop	
	Highest	Lowest	Highest	Lowest
Field Corn — 100 Bu.	44.8#	12.9#	51.5#	12.3#
Wheat — 60 Bu.	19.5#	5.4#	22.0#	10.4#
Soybeans — 50 Bu.	32.4#	15.0#	72.0#	24.3#
Alfalfa — 4T.	43.0#	8.0#	343.0#	44.0#
Oats — 60 Bu.	10.2#	2.9#	14.0#	5.4#
Potatoes — 300 Bu.	24.7#	5.5#	200.0#	53.0#
Snap Beans — 400 Bu.	23.5#	6.0#	54.0#	25.0#
Tobacco	6.3#	1.8#	84.0#	24.0#

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Section 8 Questions #1 - Crop Yields and Mineral Content

Out of Date

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iron (Fe). The object was to find out how many soil nutrients would be removed by the harvested corn grain over a range of growing conditions in the Mid-Atlantic region and to determine if nutrient concentrations in grain were related to the crop yield.

They stated that past extension fertilizer recommendations, which is what they used on the plots, took into account the needed replacement of nutrients lost to harvest. However, they wanted to see if nutrient removal by crops could also keep applied nutrients from reaching excessive levels in soils.

They found that the nutrient concentrations of P, K, Zn, and Fe in corn were only weakly related to yield.

Table I is a summary of the nutrient concentrations found in the research plots. The data shows they vary by a factor 1.5 for N, 2.5 for P, 2 for K and even higher for some of the micronutrients. The large variability of nutrient concentrations in corn grain surprised the researchers, and they could not explain why it happened.

Applied fertilizer could not account for the variability, because the same fertilizer treatments were used on all plots.

Some thought the variability could be caused by hybrid differences, but that idea was eliminated by the analysis of a single hybrid across the testing area, Table II, which had variability very similar to that of the entire trial's.

The researchers concluded that grain nutrient concentrations can be highly variable even for a given corn hybrid grown in different environments. This research also showed that there was no relationship between nutrient concentrations and yield. The researchers concluded, "Even though average volumes of corn grain nutrient removal in this study are similar to existing reference values, the variability seen in this study raises questions about the usefulness of average values for estimating crop nutrient removal across a range of conditions. Livestock producers should also consider the implications of nutrient variability of grain in ration balancing for the mineral

Table I

Nutrient	Minimum		Maximum	
	grams/Kg	pounds/bu	grams/Kg	pounds/bu
Nitrogen (N)	10.2	0.57	15.0	0.84
Phosphorus (P)	2.2	0.12	5.4	0.30
Potassium (K)	3.1	0.17	6.2	0.35
Sulfur (S)	0.9	0.05	1.4	0.08
Magnesium (Mg)	0.88	0.05	2.18	0.12
Calcium (Ca)	0.13	0.007	0.45	0.03
Iron (Fe)	0.009	0.005	0.0895	0.005
Zinc (Z)	0.015	0.008	0.0345	0.002
Boron (B)	0.0023	0.0001	0.010	0.0006
Manganese (Mn)	0.001	0.00006	0.0098	0.0006
Copper (Cu)	0.001	0.00006	0.0058	0.0003

*Table I. Variations in nutrient concentrations of corn grain from 23 sites-years in the Mid-Atlantic area (Delaware, Massachusetts, Maryland, New Jersey and Pennsylvania) in 1998 and 1999. Concentrations are expressed on a dry weight basis.

Table II

Nutrient	Minimum		Maximum	
	grams/Kg	pounds/bu	grams/Kg	pounds/bu
Nitrogen (N)	12.3	0.69	14.6	0.82
Phosphorus (P)	2.2	0.12	4.0	0.22
Potassium (K)	3.1	0.17	5.0	0.28
Sulfur (S)	0.9	0.05	1.4	0.08
Magnesium (Mg)	0.88	0.05	1.45	0.08
Calcium (Ca)	0.15	0.008	0.35	0.02
Iron (Fe)	0.009	0.005	0.0615	0.003
Zinc (Z)	0.015	0.008	0.030	0.002
Boron (B)	0.0045	0.0003	0.078	0.0004
Manganese (Mn)	0.003	0.0002	0.007	0.0004
Copper (Cu)	0.001	0.00006	0.0058	0.0003

*Table II. Variations in nutrient concentrations in corn grain from a single hybrid (Pioneer Hybrid 3394) grown at different site-years in 1998 and 1999. Concentrations are expressed on a dry weight basis.

**From Growers Nutritional Sales Manual*

nutrition of their animals."

Trying to make fertilization rate recommendations by merely assuming general nutrient extractions, such as multiplying 1.2 times anticipated corn yield to predict needed pounds of applied nitrogen (1.2 Rule), is a very inexact way of fertilizing the crop, as is trying to use the nutrient concentrations to predict profitable yields.

It seems this modern day 2003 research goes a long way towards replicating Dr. Kenneth C. Beeson's sound fundamental research published

in 1941. We all need to know that the essentials of science are constant and modern day bells and whistles do not change the basics.

Unlike his peers of a half century ago and their counterparts of today, Dr. Tiedjens early on recognized the inconsistent availability of soil nutrients to growing crops. This explains why he aimed his efforts towards directly feeding plant seeds and foliages with nontoxic plant foods (GNS) while addressing soil fertility issues with the Growers Program. ■

There Is Still Time!

EARLY ORDER DISCOUNT

It is not too late to take advantage of the Growers seasonal Cash In Advance of Delivery (CIAD) discounts which are 6% for January, 4% for February and 2% for March. Call your Growers representative for an explanation of the early order discounts, quantity pricing and delivery of Growers

Nutritional Solutions.

There are three ways the GNS CIAD discount can pay customers:

1. The GNS CIAD discount pays more than most savings institutions' interest, so it pays to buy early if the cash is available.
2. The GNS CIAD discount pays more than

most lending institutions' interest costs, so it pays to borrow and buy early.

3. The GNS CIAD discount results in orders being placed earlier. This allows deliveries to be more evenly spaced out, which requires less delivery equipment and helps keep GNS prices down. ■

Thriving Indiana Orchards

Continued from page 1

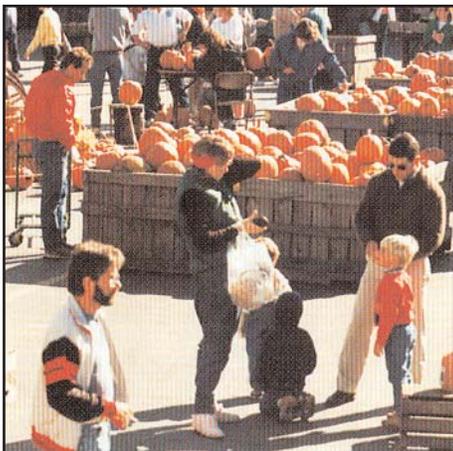
instance, the pumpkins have a big deep wall. We start to pick the first of October and continue until Halloween. Meanwhile, they sit on the ground or in the market and they need to be able to hold and not wither away.

"We've found that the Growers Program has helped out a lot on pumpkins. Last year was the first year I used Growers on them and we had the best crop we've ever had. And at this point this year, they look as good or better than last, but the money is not in the bank yet, so we'll see what happens."

Greg continued, "We started using the Growers product after I went to a meeting Ed put on where he talked a lot about liming the ground. I had had experience with liming some pumpkins before when we were having a problem with what they call 'pumpkin pox'. We couldn't get rid of it after spending four or five years trying everything we could think of -- ie, maybe our sprayer wasn't working right, etc., etc.

"Actually we stumbled on the answer. We have always put about 20 tons of lime per acre on a field before we plant a new orchard, because it's a long-term deal. One year we had already put the lime on, but we decided not to plant the new orchard, instead, we planted it to pumpkins. That cured our pumpkin pox problem, so we knew it had something to do with the lime." Gesturing towards Ed Bulcher, Greg concluded, "And then when I went to your meeting and heard you talk about lime, 'Get your calcium right, and then use our product, Growers, to supplement it with the micro nutrients.' That triggered something, 'Hey these guys might actually know what they are talking about. They were talking about the lime and I had some first hand experience with that.'"

"Is it standard procedure for you to apply 20 tons of lime per acre to prepare for orchards?" Jim asked. Greg replied, "Oh yes, there's fruit



Looking over pumpkins at Huber Orchard Winery.

been grown on this farm for...well I'm the sixth generation. Dad, and my grandpa before him, always put 20 tons on before he planted because the orchards will be there for 20 or 30 years. They had some good practices back then, but ideas changed over time, and we changed with them. Then we saw a downfall in all of our produce. Shelf life was the worst. We couldn't keep it on the shelf."

"So after you heard Ed the first time, what was your starting point using Growers?" questioned Jim. "We were real conservative," answered Greg. "We are retail and we don't want to just go out on a limb just over night. So we tried it on a trial basis. We had some success with it, but it took about three years and by now we're pretty much one hundred percent switched over."

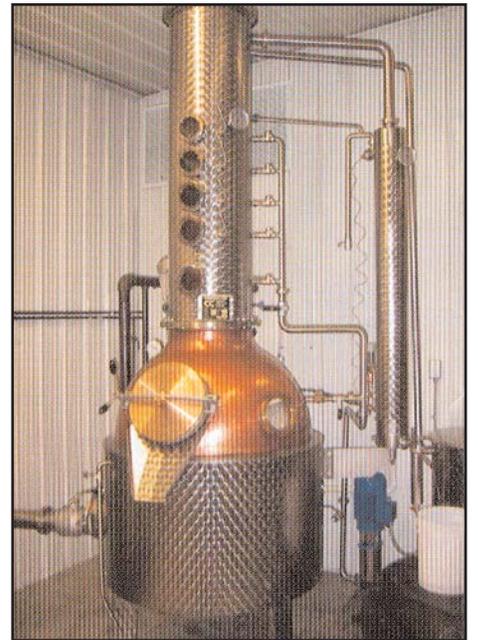
"How did you start first?" asked Jim. "We started with light rates," replied Greg. "The first thing that Ed talked about was grapes. He said, 'Oh my God, you're going to love this product on grapes. Just give it a try.' So we did. The first year we had a couple of test plots. We used it, maybe not like the book says, but in a couple of different instances. We didn't know if the good results were just by accident or what. So the next year, we tried it on all of our grapes, and had a real big success with it."

Jim questioned, "What did you see that you liked?" "It makes the plants much stronger," stated Greg. "You could just see the increase in plant health, the real sturdy buds on it. We really noticed that this year with the cold temperatures we had. Of course, everybody says we couldn't grow vinifera grapes. Twelve below zero and we still had a full crop of them. We were real excited about that. And the sugars! The other day our partner Ted said we had 23 brix in some vinifera."

"That's a significant improvement?" Jim questioned. "Yes," replied Greg. "Of course, we never had the vinifera grapes before, but we've had the French hybrid grapes and they are consistently higher and stronger. Probably back in the late eighties, early nineties, we were having inconsistent crops, and the plants weren't as healthy. One year we ended up over cropping, the next year we'd under crop — inconsistent yields. We feel we are getting more consistent yields now."

Jim continued his questioning along the same lines, "If you were to prepare a field for grapes, what would you do from a calcium standpoint?" Greg answered, "We've got a good supplier locally. They screen it, because they are looking for the bigger pieces for some kind of road projects. So we get real fine lime, the finer the better. When we put it on, it's just a big dust bowl out there."

"If I was going to plant grapes, we'd put on at least 25 ton per acre. Then we would subsoil it a couple of times, backwards and crossways and sideways. We have a V ripper with seven



The Starlight Distillery features brandies, ports, Eau-de-vie and dessert wines.

shanks on it, which we pull it as deep as we can. When the wheels are on the ground, it is running between 18 and 24 inches deep, and it's all my 175 horsepower tractor will pull. When we are done with that, we disc it all up and get out there with the chisel plow. We always put a cover crop on it. Kill it off and sow grass seed on it.

Ed chuckled, "Tell us your first experience of the growth on your grape clippings." "Good point," Greg replied. "We took an old cow pasture and grew Christmas trees on it for about 15 to 20 years. We ripped out the trees and put about 20 or 25 tons of lime down. We just loaded down the lime, because it had never been worked on, never been limed for as long as I can remember. We plowed it down, ripped it, sub soiled it, ripped it. We got that lime down there as deep as we could. Then we put in the grapes. The next year they just took off growing and went to the top of the wire, which is unheard of the first year. The second year, they were all trained up, and the third year they produced part of a crop."

Continued Ed, "How long does it normally take one of those type grapes to come and start producing?" Greg replied, "They usually say it's about six years before you are in full production, maybe the fourth or fifth. But we were at least a year or two ahead in schedule."

"So you gained a year to 18 months?" asked Jim. "Oh yes, at least," answered Greg.

"How's the sugar, grape and wine quality been?" questioned Ed. "It's been great!" said Greg. "We always strive for sugar, to get it high, and that is getting better each year. I think another big key is not putting that other fertilizer on anymore. As far as I can say, the

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Reduce Yield Drag With Growers

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to the soil bacterium for the normal exchange of minerals there, so the plant dies of mineral deficiencies.

In a Roundup Ready® plant, a gene has been introduced via Agrobacter transferins, a bacteria, that gives the plant the ability to produce an enzyme that breaks down glyphosate into harmless metabolites and the plant lives. Most of the time, however, the plant is stressed and there is some yield reduction (called Yield Drag in soybeans) caused by a lack of minerals.

We have found increasing the minerals available while reducing the rate of Roundup® is desirable.

Reducing the rate of glyphosate, Roundup®, applied seems to cause less stress on the crop being protected. Meanwhile, careful additions of Growers Nutritional Solutions (GNS) to the spray tank adds quality, balanced nutrition to

help the crop maintain an adequate level of minerals while the glyphosate is being metabolized in the plant.

The addition of some surfactants to other generic glyphosate products, ammonium sulfate or sulfuric acid to acidify the spray tank water, use of warm water as opposed to cold well water, and specific rates of glyphosate and GNS are all subjects to be discussed with your GNS representative.

Weeds without generic glyphosate tolerance tend to be killed quicker because the material is absorbed and transported throughout the weed plants faster. Careful attention should be given to proper times within the weed's life cycle to get the best results. At least a dozen weeds have shown resistance to glyphosate at some point in their life cycle.

Some weeds, such as alligator weed, were tolerant from the beginning because they did

not transfer the material to the tubers and the plant grew back from that point. Others, such as rye grass, have acquired resistance because there were some escapes when the product was used at the wrong stage of plant development. Canola has become a problem because the introduction of a glyphosate tolerant cultivar, which quickly interbred with all other known cultivars of this obligate cross pollinator. We also must learn to contend with a new problem, Roundup Ready® corn in soybean or cotton fields.

When we understand what is happening, we can better access the arsenal of management tools available to us and make informed decisions about what action to take, if any.

Jim Halbeisen at the home office will have copies of the original research for anyone wanting to learn more about this subject at a more technical level. ■

Thriving Indiana Orchards

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quality of our grapes has been as good as they have been since we've been growing grapes. Of course, if we have good quality grapes you're going to come up with a better product."

Ed continued, "You're also starting to produce your own brandies from your wines. How's that coming along?" "Great," answered Greg. "We take the wine and distill it down to one hundred and ninety proof. We hold it about a year to let it mellow out a little bit. Then we take the fresh juices of that product, whether it is blueberry, peach, raspberry, apple, pear -- we do quite a few different ones, and we infuse the fresh juices back into that high proof. After that we let it sit for about six months to settle in, let everything blend together naturally, and then we bottle it. It's kind of a dessert wine. It's gone over real well. The brandies will be out soon. To be called a brandy, it has to be two years old. Ours will be three. It just takes a long time for brandy to mellow out enough. It has to age. It's a long process." Ed laughed, "I liked your statement, 'you have the only legal still in the state of Indiana!'"

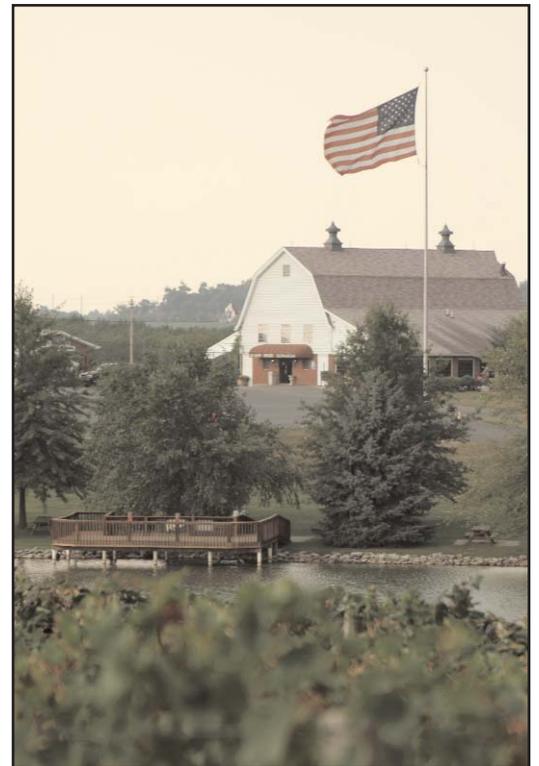
"What's your protocol with limestone now?" asked Jim. "I don't look at the soil test," Greg answered. "I just go out and lime. When I plant pumpkins, we're putting 8 to 10 ton on. Right now it's the middle of September, I'll put my lime on right now for next year. I get the ground ready, lime it, subsoil it, and sow it to rye, so it will be ready to no-till in the spring. I've learned to plan a year ahead of time. It's worked out real good.

"And then after my pumpkins are gone,"

Greg continued, "I have a couple of years while the field is still built up. I rotate it into tomatoes, green beans, sweet corn, or every once in a while, I'll slip in a strawberry. That's another crop we rotate with, but we always put 6 or 8 tons of lime on before we plant strawberries. Every third year we have pumpkins and we put 10 tons of lime on. If it's a field that hasn't been farmed, or an orchard we take out, I put 20 to 25 tons on."

Jim asked, "I know each crop is a little bit different, but what is your standard protocol with Growers as far as applying it?" Greg laughed, "I'll have to go get my little green book. That's pretty handy — *The Growers Recommendation Book*. I kind of go off of that. From one year to another, I kind of adjust it a little bit. We usually go 1 to 2 gallons per acre per spray, and we probably put on at least five sprays per crop. The fall application is the next thing for me to try to conquer. I'm really interested in helping the plant as it goes into dormancy - real strong, healthy buds."

"Is there anything you can say that could give someone an idea that the Growers Program might work for him?" concluded Jim. "Times change," answered Greg, "and people have a hard time changing, but sometimes you need to change and experiment to improve. That doesn't mean I'm going to make a lot of changes, because this is what we are going to do until something different is proven better. The Growers Program has been a great start for us and I think everybody ought to give it a shot. If nothing



Part of Huber's Orchard & Winery complex.

else, do like I did, just do a couple of acres. That's what I did, I was impressed and I am still impressed."

For more information on Huber's Orchard & Winery, log on to their web site www.huberwinery.com, or call 1-800-345-9463. ■

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Inside:

- The Future of Growers
- Thriving Indiana Orchards & Produce Farm
- Watching For Asian Soybean Rust
- Out of Date Nutrient Recommendations
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WINTER 2005

Reduce Yield Drag With Growers

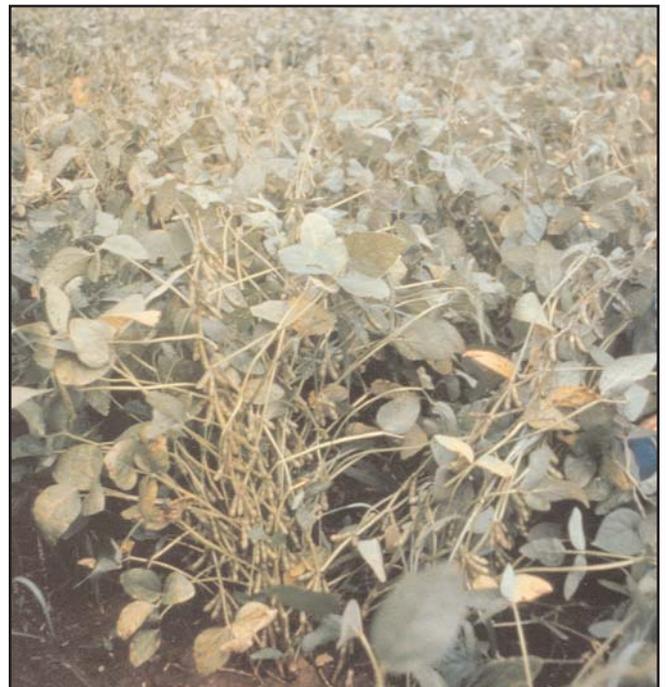
By Bill Dunlap, Growers District Manager

Most of us accept and use black box technology without ever asking how it works. The TV, Computer, ATM and ubiquitous Cell Phone are just a few examples of modern tools we have incorporated into our daily lives without thought of what makes it tick. Maybe we need more of the gene that makes little boys take their toys apart to see how they work.

I guess my take-'em-apart gene must still be active, because I wondered about glyphosate (trade name Roundup®), did a little research and found out how Roundup Ready® crops were created.

First, we need to understand how glyphosate works. When this non-selective chemical is sprayed on plants, it is transferred and absorbed throughout the plant by the phloem. It kills the plant by interrupting the photosynthesis process in the leaves where sugars are produced. It also interrupts the transport of sugars throughout the plant. Ultimately, no sugar is transferred to the roots and

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Growers may help reduce Roundup® yield drag.

The Growers Solution

Editor: Jennie Henry
Circulation, U.S.A. and Canada: 10,000

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