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The Growers Solution

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Other than by various sizes and types of spray booms (seen above), foliar sprays are also applied by mist blowers, high boys and planes. Finer mists or smaller spray particles will be more readily absorbed into crop foliage, but GNS sprays should not be applied much earlier in the sunny afternoon shown here.

Foliar Feeding Issues

By Jim Halbeisen

Both the April issue of *The Corn and Soybean Digest* and the March issue of the *American Vegetable Grower* carried excellent articles praising the efficiency of foliar feeding. It seems some university personnel and private consultants are beginning to say foliar feeding can be an important part of any farming operation's fertility program.

It is interesting that both publications used for their scientific references the excellent work Michigan State University's Horticulture Department did with radioactive isotopes and foliar feeding in the early 1950's. Coincidentally, at the Growers annual sales meeting in December 2003, our sales force reviewed the video summarizing MSU's original research.

Readers wishing to see the video should contact their local Growers Nutritional Solutions representative.

Also, the above articles discussed trace elements issues and the need for balanced nutrition when foliar feeding. We at Growers Nutritional Solutions (GNS) have consistently stressed both issues since 1955, while many competitors have maintained there is little need for trace elements and that only nitrogen (N), phosphorus (P), and potassium (K) are necessary for successful fertility. Today, some universities are coming to believe, as do the authors of *The Corn and Soybean Digest* article, that imbalances of trace elements are responsible for "yield drag" (yield reduction) associated with GMO soybeans. Even some chemical companies in their literature are starting to discuss the importance of trace elements for normal plant growth.

These two and other similar articles have initiated a number of recent calls to our office from

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An Inspiring Family Produce Operation

By Jennie Henry

Bill Reeger and his sister, Mary Masterson, are a hard working team. They've transformed the family's beef and grain farm into a model farm-market and wholesale green bean operation. Their Shelocta, (west central) Pennsylvania, farm employs, including their children, three generations of family members.

Negotiating a small country road two miles off the main highway, visitors first see the farm-market which is overflowing with bright, colorful objects, tactfully arranged. Outside are bins of freshly picked, picture perfect vegetables and pots of flowers. Inside, the building is decorated in garden and nature inspired crafts and tools, also for sale. The aroma of baking sweets is overwhelming and draws the visitors back to the bakery. Behind the building, visitors can observe and walk through fields of flowers, herbs and vegetables.

Mary is definitely the Master of the market. Her energy and eye for detail is apparent in every nook and corner. Talking with her as she unloads a truckload of freshly picked tomatoes, she explains, "We are a destination point way off the beaten path. We have striven to have the best quality customers can get.

"My aunt manages the bakery and they also serve lunch. We sell a lot of fresh vegetables. We raise tomatoes, sweet corn, beans, specialty hot peppers, Hungarian wax peppers, bell peppers, pickling cucumbers and we have an acre and something of asparagus. We sell to a couple of restaurants in town. We do the Penn's Corner Alliance which is a Co-op of farmers that deliver to restaurants in Pittsburgh on Mondays and Thursdays. We have a huge pumpkin festival in the fall. We've done a corn maze for a couple of

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Foliar Spray For Quality and Economics

By Jim Halbeisen

Corn and soybean price increases since the end of the 2003 harvest have certainly helped row crop farmer's income. Meanwhile these increases have adversely affected feed commodity costs. Livestock farmers, however, can soften the economic blow by using Growers Nutritional Solutions (GNS) and the Growers Soil Program on the crops they grow for their own animal feed.

Forage test results of crops grown on the Growers Program (high calcium lime for soil fertility) and GNS (for crop nutrition) generally allow customers and their nutritionists to use fewer purchased inputs while achieving targeted animal productivity. For example, most livestock operators who consistently foliar spray

GNS on forages during the growing season will see plant phosphorus levels increase to the high side of the desired range, which enables them to lower their usage of very expensive supplemental phosphorus inputs to the ration.

Nutritionists generally see quality protein and energy levels in crops grown on the Growers Program which allows for reduced purchases of expensive off farm products. This could be a real money saver should corn and soybean prices spike even higher.

Sufficient soil calcium is needed to regulate and balance nutrient flow into plants. It is also needed to improve sugar levels in plant tissues to insure elevated energy levels, a very important goal of the Growers Program.

Foliar spraying crops raised for livestock feed with the balanced nutrition found in GNS

can enhance many desirable qualities, such as higher levels of phosphorus in plant tissue (discussed above). Forage tests of consistently foliar sprayed crops have shown they also have excellent protein readings and are in the high range for the necessary immune system elements; zinc, copper, and manganese.

A strong GNS foliar feeding program on producer grown crops can be very beneficial economically as an alternative to high priced purchased corn and soybean products used to supplement livestock feed. Consistent GNS foliar feeding will improve crop quality on soils with or without adequate calcium, but to create the very best balanced and quality nutrition for livestock feed, attaining recommended soil calcium levels is a priority ■

The Feed Analysis Report Numbers for a Customer's Growers Grown 3rd Cutting Hay Indicate Quality

One measure of quality in feed is the Potassium to Calcium (K:Ca) ratio. Our experience says a 1:1 ratio is ideal and will contribute to healthy feed and productive cows. Anything less than a 2:1 ratio is preferred. Higher ratios, like 3:1, 4:1, etc., will likely be considered poor feed and will probably result in poor performance in the dairy — both production-wise and animal health-wise. The test shown here has a 1.25:1 ratio which is excellent.

Other important numbers to be related to the K:Ca ratio are the percentages of Crude Protein (CP), Acid Detergent Fiber (ADF) and Neutral Detergent Fiber (NDF). One rule of thumb says CP - ADF - NDF should be expected to read about 20 - 30 - 40 respectively. Our test shown here has CP about 30% higher and both ADF and NDF

some 30% less, which, again, is excellent.

Phosphorus (P) and Magnesium (Mg) both at .42% are about twice average findings, which is beneficial for two reasons. One, the dairyman will have to buy less of these expensive minerals for the ration, and two, compared to most purchased minerals, those found in this hay will be more digestible (available) and beneficial to the animals.

The Total Digestible Nitrogen (TDN) at 76.8% is excellent as compared to an average of, say, 55%. This high TDN value, coupled with the high calcium and phosphorus and low potassium readings, is a meaningful measure of feed quality.

The best measure of quality, of course, is how the animals eating it perform. Cows should do very well on this hay.

Feed Analysis Report

Grower: XXXX, Kalona, IA
Chemist: XXXX
Date: 12/15/03

Dry Matter: 88.00%
Moisture: 12.00%

	Dry Matter Basis %
Crude Protein	26.40
HDP	0.50
Fiber, ADF	20.30
Fiber, NDF	29.30

Calculated Values:

Relative Feed Value (RFV)	232
TDN	76.60%
Net energy Lactation (NEI)	0.80 Mcal / lb
Net energy Gain (NEg)	0.55 Mcal / lb
Net energy Maint. (NEm)	0.84 Mcal / lb
Calcium	1.77
Phosphorus	0.42
Potassium	2.22
Magnesium	0.42

Growers And The University's Programs Compared

By Harold Kennell, District Manager
and Jennie Henry

When I asked about setting up a 10 year continuous plot comparing the Growers' and the university's fertilization programs, the County people warned me I would be "wearing out the ground." Now, 12 or 13 years later and the contest is supposedly over, things look better than ever for us, so I guess I can forget the "wearing-out-the-ground" fear they were putting on me.

We call them the Shelby County Extension Comparison Plots. Originally the County Agent ran them on a two year corn and soybeans rota-

tion; corn one year, soybeans the next, and later they have been run by the local school's Ag teacher. Each year Growers had twelve rows and the school's dry program had twelve rows. The yield, cost and profit contest was to go 10 years, so it officially ended with the 2000 year, but, so far, they have kept it going on through 2003.

The plot area had been a corn experiment for 30 years before we started. I was able to get rid of some of the variables by having them change the row directions and rotate with beans. Well, 1990 was a toss up. There really wasn't much difference, even though I had dumped some

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Harold Kennell in the Growers part of the Shelby County comparison plots.

An Inspiring Family

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years and we do strawberries.

“Between Bill and me, we have six kids and they are all close to the same age. The older girls ran the ‘you pick’ strawberries this year and did real well. They like making money. We put the barnyard in for the kids because they wanted a business. They know all the animals, their names, their birth dates and everything about them. It’s been a good experience for them.

“Our kids do all of our radio commercials, so they are involved. If all six of them come back and stick around after they get out of college, or whatever, then we will expand. We have five micro businesses within this entire business we could expand. Right now, we have it shrunk down so Bill and I can manage it without too many headaches.”

Just up the road from the farm-market, we found Bill in the sorting building. He was supervising all the people working two lines of conveyors picking and cleaning green beans. He was at the end checking the beans one last time before they were boxed. As we talked, he would move wagons with the tractor as they filled or emptied. In between, he was on a walkie-talkie and his pace never slowed.

Bill does the technical work on the farm. He plants and sprays all the crops. He harvests and oversees the sorting and packing of the 200 plus acres of green beans produced on the farm each year.

“Quality is our business, and in ours, it is so visual. It is right there,” Bill explains. In order to attract customers and to keep them coming back, to both their market or to the grocery stores, he must keep plant health near its maximum potential to have produce with good eye appeal, good storing qualities and delicious taste.

Bill first started with the Growers Program in 1992 when District Manager Terry Hoffman encouraged him to buy a 30 gallon drum of Growers Nutritional Solutions. Bill said, “We are seeing better quality and good solid beans, and the shelf life is better. This year has been hot and dry, but they just kept on growing. These past couple of weeks, I’ve really been pounding the spray and getting good results.”

Bill has limed his ground heavily with high calcium lime. “We’ve been doing that for a lot of years.” He mold board plows all of the bean ground and plants using about one gallon of GNS through the planter with about ten gallons of 28%. This gives the plants their initial growth. He plants for 10 to 12 weeks, three times a week. Last year he had 35 different plantings of green beans.

“Then I start spraying the Growers. That builds the plant. I build quality with the Growers.” Bill foliar sprays his own concoction of GNS, sugar, hydrogen peroxide and baking soda. Each field is sprayed 5 to 6 times a season. “It depends on how the field is looking and what the weather is doing. I’ll use less than 2 gallons and up to, sometimes, 3 gallons (of GNS) per spray. I’d rather use a little bit more, because about a 1/3 box of beans pays for a gal-



Mary Masterson,
Reeger’s Vegetables, Shelocta, PA

lon, so you make up the Growers cost real fast.

“I have very little disease.” Pointing to the green beans they were packing, Bill said, “These beans were really weedy and had a lot of cover, but there is no mold. With the calcium and the Growers, apparently they are building a better plant structure. They resist disease better, they store better and they have a longer shelf life.”

The farm has been in Bill’s and Mary’s family for over a hundred years, and, by teaching their children the basics of the farm operation and moneymaking, they are encouraging them to be a part of it’s future. Meanwhile, Growers Nutritional Solutions is helping them raise quality products so that their business will continue to flourish. ■

Programs Compared

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limestone on ours.

Then in 1991, the first official record keeping year, the plot went to corn. Because my planter had liquid attachments on it, I planted all the corn. We put the Growers on my side and then shut it off on the County’s dry side. At harvest time we picked all the corn by hand. Because we had put limestone on the year before, we didn’t need any nitrogen, so Growers really beat the dry by almost \$100.00 per acre in profit.

The ten years we had agreed to do was over in 2000, and, on a profit-per-acre basis, Growers had won nine years. The following year, 2001, was the first time dry fertilizer really beat us. Our yields were about the same, but our cost was \$20.00 higher. That seemed funny, so I asked about their expenses.

He said, “All we used was nitrogen on our side. We decided the soil test was so high in fertility it didn’t need fertilizer, so we didn’t put any on.”

I said, “You said you beat us because you didn’t use any fertilizer. I guess that makes me the winner.”

He said, “You lost. We were \$20.00 better in profit on our side.”

“No.” I said, “I have been trying to educate

you, and everyone else, that fertilizer is a waste of money. You finally found that out, didn’t use fertilizer and won the plot. But I proved my point, so it looks like we both won.”

For the beans in 2002 they didn’t put anything on, so we didn’t put anything on ours either, but we still beat them by 3 bushels per acre. They did the weighing when I wasn’t there, so my toe wasn’t on the scale, if you know what I mean. Looking at it with the naked eye, their beans didn’t look too much different from ours. They cut a ditch open the fall before and shoved a bunch of dirt up on the plot, so they

moved the whole plot down about a row and kind of messed up the plots a little, especially our limed area.

Since they seemed to be continuing on with the plots, last fall, 2003, I decided to put down more high calcium lime, but a bunch this time. It was like snow - probably the equivalent of 100 tons per acre - but the first couple of rains washed it in. I’ll put Growers in the row and foliar feed according to the directions in the *Recommendations Book* and not worry about the cost anymore — just the profit. ■

1991	Corn	\$97.31	per acre	Growers profit over the dry program
1992	Soybeans	36.12	“	“
1993	Corn	21.19	“	“
1994	Soybeans	28.50	“	“
1995	Corn	38.73	“	“
1996	Soybeans	5.44	“	“
1997	Corn	0.47	“	“
1998	Soybeans	-5.55	“	“
1999	Corn	61.89	“	“
2000	Soybeans	3.92	“	“ end of 10 years
2001	Corn	-18.53	“	“
2002	Soybeans	15.48	“	“
2003	Corn	0.00	same yield,	no fertilizer cost for either plot

The above are the profit results only. More detailed information on yields, inputs costs, crop prices, etc. has been appearing each year in the *Growers Results Book* and is available from your local Growers representative or at the Growers Milan office.

Growers NUTRITIONAL SOLUTIONS

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Our Research is Your Profit

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Foliar Feeding Issues

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new, old, and prospective customers asking about foliar feeding. The calls included many important questions and issues needing to be addressed.

Yield Response: The article in *The Corn and Soybean Digest* includes statements and quotations from a competitor's salesperson who says foliar feeding his product is not a quick fertility fix, and, at times, it does not give much yield response. This is most probably true in his situation, but not with Growers. GNS contains a balance of many beneficial mineral nutrients and is very low in heavy metal content. Both factors encourage the absorption of nutrients into the plant and help yield response.

The article also states foliar feeding success is affected by the health of the soil. We at Growers totally agree. Foliar feeding is not a cure for poor soil management, but it is a profitable fertility approach, especially with good soil health and good soil cultural practices.

Water Quality: With the proper equipment, GNS can be sprayed direct, without dilution. However, when dilution is necessary for the

foliar spraying of GNS, the hardness of water (its dissolved solids) can become a big issue. (An in-depth discussion of water hardness appeared in the Summer 2000, issue of *The Growers Solution*. It is also explained in our GNS little green book, *Recommendations for Using*.) The level of dissolved solids and the type of acidifier used will directly affect the water's ability to enhance nutrient absorption into the cuticular tissue of the plant's surface. Therefore, if water is to be used to dilute GNS for foliar feeding, you must discuss with your GNS representative how this can be done correctly.

Timing of Application: The best time to foliar feed is when the plant has or is accumulating moisture (like dew) on the leaf surface. So, sprays should be applied in the early morning, late afternoon (evening) or on foggy or overcast days in summer.

Plants will not absorb minerals through the foliage during the heat of the day or in bright sunlight. Some customers wanting to increase day light spraying hours, have asked whether higher levels of water dilution will allow them to spray further into the warmer parts of the day. We know of no direct research on this, however, individual operators, mindful of their water quality, could try some plots. Spring or fall foliar sprays can be made during a higher percentage of day light hours, although there may be times in very early spring and very late fall when it would be prudent to wait for warm temperatures.

Stress Periods: Timing of foliar feeding to supply essential nutrients to the crop during periods of stress is important. This would be when soil conditions are too wet or too dry, when the crop is in a reproduction stage, etc.

While considering the various factors needed for successful foliar spraying and following Growers' basic recommendations, a farm operator must also realize each farm has different conditions and variables to be dealt with. He may

have to experiment some to see what performs best on his farm.

All of us want to believe there is one "magic" answer for our questions, but it simply does not exist in research. ■

On The Road Again Summer 2004

This summer Growers Nutritional 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.

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|-------------|--|
| July 20-22 | Michigan Ag Expo
East Lansing, MI |
| Aug. 3-5 | Farmfest
Redwood Co., MN |
| Aug. 10-12 | Empire Farm Days
Seneca Falls, NY |
| Aug. 17-19 | Penna Ag Progress Days
Rock Springs, PA |
| Sept. 21-23 | Ohio Farm Science Review
London, OH |
| Sept. 21-23 | Wisconsin Farm
Technical Days
Chippewa Co., WI |

Hope To See You!

The Growers Solution

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