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The Growers Solution

SPRING 2006

VOLUME 19 ISSUE 2

Growers-Grown Crops Shine When Chemical Testing Techniques Used

By Jim Halbeisen

Two of our Growers sales representatives have used a fairly new lab test and calculation to determine the quality of feed produced using the theories of the Growers Program. Head to head, with all variables equal except the fertility, one dairy farmer was estimated to be able to produce $233.10 in additional value per acre using the Growers Program. Below is an abbreviated explanation. (For the full paper, please contact the Growers office and we will send it out to you.)

The New York state company, Dairy One Forage Testing Laboratory, Inc., has developed a quality calculation using a computer spreadsheet program called MILK2000. MILK2000 uses forage analyses which include crude protein, neutral detergent fiber (NDF), *in vitro* NDF digestibility, starch, and non-fiber carbohydrate. From these, their computer program estimates energy content and predicts milk production per ton of forage dry matter (DM). The calculation combines yield and quality into a single term.

John Sensenig, a GNS representative from New York state, had a farmer who varied his fertility approach on a corn crop that was harvested for corn silage. With the field being of uniform soil make-up, the farmer kept all other production practices such as plant variety, population, weed control, manure application and time of planting the same, but he varied the fertility approach.

On one side of the field, 200 pounds per acre of ammonium sulfate was bulk spread before planting. The crop was planted using 4 gallons per acre of GNS in the row and 2 gallons per acre of GNS as a foliar spray.

On the other side of the field, 200 pounds per acre of ammonium sulfate and 100 pounds per acre of urea were bulk spread. The crop was planted with 25 gallons of a 7-21-7 fertilizer.

When the crop was harvested, John collected silage samples from each side. Both fertility treatments produced 20 tons per acre at 70% moisture or 30% dry matter. Thus, each treatment produced 6 tons of dry matter corn silage per acre. Using the value of $15 per one hundred pounds of milk, and the MILK2000 computer program, he calculated the economic advantages of the GNS fertility approach.

The analyses from Dairy One Forage Testing Laboratory, Inc. MILK2000 spreadsheet are summarized in Table 1. The bottom lines show the GNS fertility was higher than the competitor's fertility by 259 (3,698-3,439) pounds of milk per ton of dry matter or $233.10

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Inside The Solution

Conservation Security Program (CSP) Alert

We recently received a call from a GNS customer who was notified that his watershed will be participating in a program where producers can voluntarily implement nutrient reduction practices. This program may be part of or may be similar to the CSP. The CSP is a federal project which will be available in every United States watershed over the next 8 to 10 year period. It includes nutrient reduction practices which when followed will result in payments to the producer.

Recent literature on the Doha Round of talks in Hong Kong of the 149 member World Trade Organization (WTO) has stated that agricultural subsidies are under the microscope. This literature claims the United States government subsidies, such as loan deficiency payments (LDPs), may be replaced with those that are associated with conservation measures such as nutrient reduction programs.

If this is true, in the future only the producers who can grow a corn crop with less fertilizer will be receiving government help and the rest will have to figure out how to replace that LDP payment which was about 40 cents per bushel for corn for the 2005 growing season.

Customers who have examined these programs of nutrient reduction find their present GNS fertility program falls easily within the parameters for receiving compensation.

If you are interested in participating in these types of programs it is *important* to sign up for the program when your watershed is enrolling producers because the program sign up will only last for one year and then that watershed will close the enrollment for another 8 to 10 years. Recent articles appearing on the Internet are saying that some US congressmen are urging a CSP sign up for early spring of 2006 which is different from the past sign ups which occurred in the summer. So, again be aware of these various possibilities. ■

Growers-grown Crops Shine

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per acre.

Daniel Weaver, a GNS representative from Georgia, used the MILK2000 spreadsheet to compare soil fertility treatment effects on forages, which are listed in Table 2. All cultural practices were the same between the GNS fertility and the competitor's fertility, except the corn variety. The yield for the competitor's fertility was the average of the eight different varieties tested (Table 3).

Prior to the 2004 growing season, the GNS fertility side received 3 tons per acre of high calcium limestone. Prior to the 2005 growing season, it received an additional 1 ton per acre of limestone. During the 2005 growing season, half of the GNS fertility side received 220 pounds of urea per acre flown on at four feet. The other half received 220 pounds of urea per acre flown on at four feet, plus 5 gallons per acre of GNS in the row and 2 gallons per acre of GNS as a foliar spray.

On the competitor's fertility side, 292 pounds per acre of a combination of products was applied preplant. The total result was 35 pounds per acre of N, 40 pounds per acre of P_2O_5, 60 pounds per acre of K_2O, 7.5 pounds per acre of Mg (magnesium), 15 pounds per acre of S (sulfur), and 0.8 pounds per acre of B (boron). When the corn was about four feet tall, 220 pounds of urea were flown on.

The yields for the GNS fertility using only calcium and nitrogen yielded 18.73 tons per acre of corn silage at 30% dry matter. The GNS fertility with GNS, calcium, and nitrogen yielded 19.97 tons per acre of corn silage at 30% dry matter. The competitor's fertility with nitrogen yielded 19.09 tons per acre of corn silage at 30% dry matter.

The difference between the GNS fertility plot is the use of 7 gallons of GNS. Daniel implemented this to see if GNS would help improve the energy produced in the crop tissue. The GNS provided an additional 1,987.7 (20,429.3 - 18,441.6) pounds of milk per acre which is an additional $298.16 per acre if the value of milk is $15 per 100 pounds. Thus, with this arithmetic, the producer was well compensated for the cost of the GNS.

In conclusion, Daniel has told us that since the corn varieties were different, he didn't want to talk much about comparing the GNS fertility to the competitor's fertility. However, he plans to conduct a comparison in 2006 that removes that variety difference. He is doing that because in 2005, the difference between the GNS fertility and the competitor's fertility was 3,735.1 (20,429.3 - 16,694.2) pounds of milk per acre which resulted in a $560.27 per acre advantage to the Growers Program when milk is valued at $15 per 100 pounds. ■

Table 1: Corn Silage Samples From New York

COMPONENTS	GNS FERTILITY DRY MATTER BASIS	COMPETITOR FERTILITY DRY MATTER BASIS
% CRUDE PROTEIN	8.3	8.2
% ACID DETERGENT FIBER	22.2	25.7
% NEUTRAL DETERGENT FIBER	39.0	44.7
% STARCH	36.8	29.6
% LIGNIN	2.9	3.1
% SUGAR	3.3	3.1
% TDN	75	72
% CALCIUM	0.21	0.28
% PHOSPHORUS	0.23	0.22
% MAGNESIUM	0.16	0.22
% POTASSIUM	1.35	1.10
% SODIUM	0.002	0.005
% CHLORIDE ION	0.13	0.25
NEL Mcal/LB	0.79	0.74
MILK LBS./TON OF DM	3,698	3,439
MILK LBS./ACRE	22,188	20,634
$/ACRE (MILK @ $15/100 LBS.)	3,328	3,095

Table 2: Corn Silage Samples From Georgia
(green samples not fermented)

COMPONENTS	GNS FERTILITY		COMPETITOR FERTILITY
	CALCIUM	CALCIUM & GNS	
% CRUDE PROTEIN	9.0	8.7	7.7
% ACID DETERGENT FIBER	29.1	25.4	31.8
% NEUTRAL DETERGENT FIBER	48.9	42.9	53.2
% STARCH	26.2	29.3	23
% LIGNIN	4.0	3.8	4.7
% SUGAR	3.5	3.6	3.4
% TDN	68.0	70	64
% CALCIUM	0.40	0.31	0.33
% PHOSPHORUS	0.31	0.29	0.18
% MAGNESIUM	0.18	0.14	0.15
% POTASSIUM	1.51	1.34	1.33
% SODIUM	0.028	0.015	0.007
% CHLORIDE ION	0.36	0.32	0.36
NEL Mcal/LB.	0.68	0.73	0.62
MILK LBS./TON DM	3,282	3,410	2,913
MILK LBS./ACRE	18,441.6	20,429.3	16,694.2
$/ACRE (MILK $15/100 LBS.)	2,766	3,064	2,504

Table 3: Corn Silage Samples From Georgia (green samples not fermented)

	GNS FERTILITY		COMPETITOR FERTILITY							
COMPONENTS	CALCIUM	CALCIUM AND GNS	1	2	3	4	5	6	7	8
% CRUDE PROTEIN	9.0	8.7	7.5	7.9	7.8	8.1	7.3	7.4	6.8	8.8
% ACID DETERGENT FIBER	29.1	25.4	35.9	29.5	32.6	30.4	32.7	30.9	31	31.1
% NEUTRAL DETERGENT FIBER	48.9	42.9	57.6	49.2	53.5	52	54.9	52.8	54	51.2
% STARCH	26.2	29.3	16.8	27.0	22.4	24.7	20.9	23.3	25.0	23.8
% LIGNIN	4.0	3.8	5.2	4.5	5.0	4.6	5.0	4.3	4.0	5.0
% SUGAR	3.5	3.6	3.6	3.3	3.0	3.4	3.0	3.4	3.9	3.3
% TDN	68	70	61	67	63	67	63	65	65	64
% CALCIUM	0.40	0.31	0.41	0.33	0.33	0.29	0.37	0.27	0.30	0.36
% PHOSPHORUS	0.31	0.29	0.19	0.22	0.19	0.19	0.19	0.16	0.16	0.16
% MAGNESIUM	0.18	0.14	0.15	0.15	0.15	0.14	0.17	0.15	0.14	0.15
% POTASSIUM	1.51	1.34	1.48	1.33	1.37	1.30	1.39	1.23	1.17	1.38
% SODIUM	0.028	0.15	0.008	0.007	0.007	0.006	0.007	0.008	0.007	0.006
% CHLORIDE ION	0.36	0.32	0.39	0.35	0.40	0.33	0.38	0.34	0.32	0.36
NEL Mcal/LB	0.68	0.73	0.57	0.66	0.61	0.65	0.60	0.63	0.63	0.63
MILK LBS./TON OF DM	3,282	3,410	2,518	2,978	2,870	3,069	2,855	3,059	3,005	2,948

Cadmium, The Health Villian?

By Jim Halbeisen

In July of 2005 the United States Department of Health and Human Services Centers for Disease Control and Prevention (CDC) released their report: *Third National Report on Human Exposure to Environmental Chemicals.* Scientists, physicians, and health officials use the report's unique information relating to environmental chemical exposure for disease prevention.

Biomonitoring is used in the ongoing assessment of environmental chemical exposure and the resultant health and nutritional status of the United States population. Biomonitoring is the measurement of chemicals in the blood, urine, tissue and other bodily fluids, and extensive quality control and quality assurance review is used in the process.

The report's release stimulated a rash of newspaper and journal articles relating to the environmental problems associated with chemical use. *The Wall Street Journal* is running a series entitled "Toxic Traces New Questions About Old Chemicals." In their July 2005 issue, *Chemical Processing*'s article named "Biomonitoring Assumes Growing Significance" discusses the CDC's report's effect on the chemical industry. Also, major newspapers published a report from the *Knight Ridder Washington Bureau* stating that 1 in 20 Americans have cadmium levels that could possibly cause cancer. Some experts contend that the rising levels of cadmium in the population are troubling because the toxic metal's supposed major environmental source, smoking, is decreasing. Thus, if it is not tobacco, they say it may possibly be coming from the food supply.

When we see data such as this published, it tends to reinforce our heavy metal cadmium findings. Early on, when we first registered GNS as a phosphorus mineral feed supplement, we saw some pretty unbelievably favorable results as GNS was introduced into feed rations. This was especially apparent when the implementation of GNS was accompanied by the removal of competing feed supplements, and it led to our suspicion that the competing supplements carried toxicities that had created some of the consuming animal's initial problems.

The good results continued and remained somewhat unexplained until the late 1990's when we met Dr. Tom Swerczek, a veterinary pathologist. He had found in his research that cadmium was a definite problem in the feed supplementation and plant fertility businesses.

In the early 1950's during the developmental stages of GNS, Dr. Victor Tiedjens had proved to himself that heavy metals at too high of a concentration in fertilization solutions were harmful to fresh growing plant tissue, especially when row applied or foliar sprayed. Accordingly, Growers Chemical Corporation has always used ingredients with the lowest heavy metal concentrations available and economically feasible in the formulation of GNS. This approach practically eliminates any chances of injury to crops, which, in turn, helps create success for the farmer.

In the early years Dr. Tiedjens knew that GNS would also be a good balanced mineral source for animals and many good GNS customers, on their own initiative, supplemented their feeds quite successfully.

However, after GNS received approval as a phosphorus feed supplement in the mid 1990's and we learned of Dr. Swerczek's research, many of the pieces of the cadmium puzzle started to fit together.

A few years ago, the book *Fateful Harvest* by Duff Wilson described how toxic ingredients find their ways into commercial fertilizers. That, our discovery of Dr. Swerczek's research and our successes using GNS as a phosphorus feed supplement, especially when other phosphorus supplements in the ration had been removed, stimulated us to pursue a detailed chemical analysis and testing regimen of various other feed and fertilizer products.

Our research led us to discover that the commonly used testing methods had inherent problems when checking for cadmium. We found we needed to use a process called "neutron activation," considered to be the "gold standard" of chemical analysis, to accurately measure cadmium concentrations.

Many phosphorus deposits around the world carry lead, arsenic, cadmium and other heavy metal contaminations, while some are known to be radioactive because of their uranium content. Because these lesser grade phosphorus sources carrying these pollutants are relatively inexpensive, too often they find their way in feed and fertilizers.

It should be mentioned here that because GNS is made from expensive, highly refined phosphorus ingredients, testing has shown GNS to be lower in cadmium by factors of 10 to 1,000 when compared to other agricultural products, whether feeds or fertilizers.

When a feed product has a higher level of cadmium, that cadmium may be entering the human food chain directly through the consumption of the animal exposed to that particular phosphate supplement. Similarly, if a fertilizer contains a phosphorus product with a higher level of cadmium, that cadmium could be entering the human food chain directly by consuming the animals that consume the plants exposed to the cadmium. Thus, the human exposure to the heavy metal cadmium could be quite significant when phosphate sources are not purified or refined adequately. Even though some North American companies are using higher priced, more purified phosphates, the United States Environmental Protection Agency claims that phosphate materials contaminated with cadmium and destined for fertilizer and animal feed are still with us. So, this report makes complete sense to us, and it seems quite reasonable that cadmium levels in humans would be increasing just from their exposure to contaminated food sources.

According to the Center For Disease Control, exposure to cadmium relates to heart problems, lung function, osteoporosis, cancer, and estrogen dysfunction, and all appear to be increasing in North America. The Third National Report concerning the problems of high cadmium exposure seems to show reasons for the increase.

In our research, we have discovered calcium to be important in combating the effects of cadmium in the environment. In soils, adequate levels of available calcium inhibit the uptake of cadmium into the plant. And research in Poland showed that rats on a diet high in cadmium will demonstrate no adverse physical problems if the diet is also high in the element calcium. Whereas rats fed a high cadmium diet with low levels of calcium will show many physical problems related to heart function, lung function, estrogen function, osteoporosis, and cancer.

Again, our cadmium research and our ongoing calcium experience reinforces the importance of the Growers Program.

For an in depth discussion on the effect of cadmium on livestock refer to *The Growers Solution* Spring 2001, Volume 14, Issue 2. ■

On The Road Again

SPRING 2006

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.

Feb. 28, Mar. 1-2	Central Minnesota Farm Show, St. Cloud, MN
Mar. 1-3	East Central Farm Show Peterborough, Ontario
Mar. 8-10	Western Fair Farm Show London, Ont., Canada
Mar. 28-30	Wisconsin Public Service Farm Show, Oshkosh, WI
July 11-13	Wisconsin Farm Technology Days Sheboygan Co, WI
July 18-20	Michigan Ag Expo Lansing, MI
August 1-3	Farmfest 2006 Redwood Co, MN
August 8-10	Empire Farm Days Seneca Falls, NY
August 15-17	Pennslyvania Ag Progress Days Rock Springs, PA

Hope To See You!

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Our Research is Your Profit

Inside:

SPRING 2006

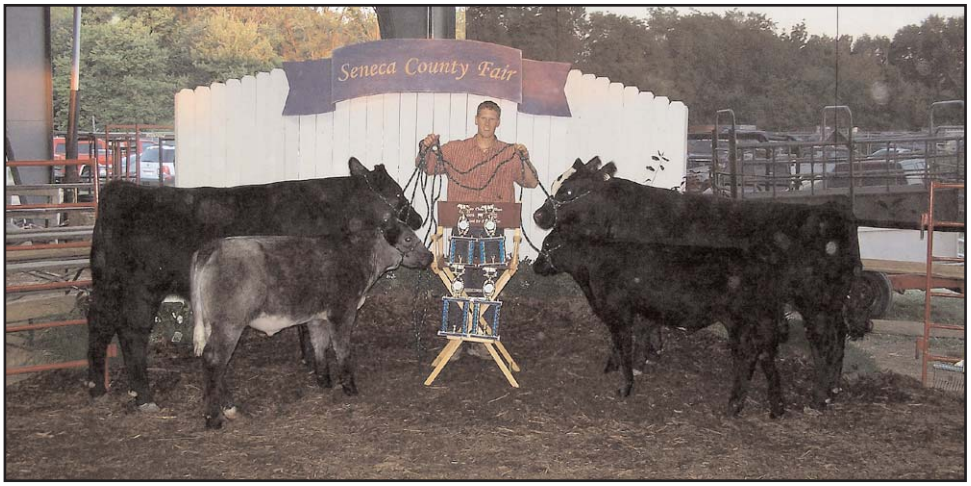
"Growers Grown" Wins Big at the County Fair

By Matt Gooding

Cliff Riehm had a very busy and rewarding show at the Seneca County Fair held in July 2005. Cliff is pictured with his partners in winning the Champion Beef Feeder Steer, the Reserve Grand Champion Steer, the Reserve Champion Beef Feeder Steer, the Reserve Champion County Calf, First Place Super Steer Showmanship, and the First Place Super Beef Feeder Showmanship awards.

For the past four years, Cliff has used almost 3 gallons of GNS to the ton of feed. He also has continuously added a little GNS to the water trough. There is no other livestock mineral used. When Cliff hauls the steers to a show, he also adds GNS to the water buckets. Masking the city water taste, the steers readily drink the foreign water.

Cliff's parents, John and Diane farm near Tiffin, Ohio. They raise produce, grain, hay and cattle. Their produce is marketed through their farm market and wholesale markets. The home farm is well limed according to the Growers philosophy. All of their home raised feed; the corn, oats and hay, is on the Growers Program. John says, "I have not used dry fertilizer on the farm since 1995."



John credits the Growers Program in the field and the use of Growers Nutritional Solutions (GNS) in the barn with better flush with good #1 grade embryos. He says, "The recep cows have had a good percentage of conception." He appreciates its simplicity and versatility as the Growers product is used everywhere on the farm.

The Riehm's raise and sell 4-H club calves, breeding mainly a combination of Angus and Simmental. The family has been serious competition at the Seneca County Fair for many years. John says, "cattle from our herd have won at least one Champion per year except once in the past 17 years." ■

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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, OH 44846, call 1-800-437-4769, fax 419-499-2178,
email to: growers@hmcltd.net or see our website: www.growersnutritional.com

March is the Last Month for a Discount!

Early Order Discounts

It's not too late to take advantage of the Growers seasonal Cash In Advance of Delivery (CIAD). The CIAD for March is 2%. After March, there will be no additional discounts for the rest of the growing season. Call your Growers representative for an explanation of the early order discounts, quantity pricing, and delivery of Growers Nutritional Solutions. ■