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The Growers Solution

EARLY FALL 2010

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Soil Calcium and the Growers Program Since 1955

By Jim Halbeisen

The agricultural establishment has tended to ignore that part of farmers' financial balance sheets showing the leveling-off of costs of crop fertility inputs since their late 2008 season run up. From a crop fertility perspective and looking at nitrogen (N), phosphorous (P), and potassium (K), we see their present prices are significantly higher than they were before the 2008 increases. This trend could continue, however, if the price of energy keeps increasing, because fertilizer production is tied very closely to energy prices.

Since 1955 Growers Chemical Corporation has told producers the best way to deal with fertilizer prices on a cost per acre basis is to use "Target Fertility Technology." During the crop's major growing stress periods, place fertility when most needed and as close to the plant as possible. Using the Target Fertility approach, producers are overcoming crop

fertilization's biggest enemies, time and distance.

Another part of the Growers Program suggested to farmers by Growers Chemical Corporation is the use of the element calcium in soils.

In the April 2010 edition of the Farm Progress publication *Ohio Farmer*, the article "Balance Calcium, Magnesium" discussed applying limestone containing a higher percentage of calcium relative to the magnesium percentage. It is interesting the CCA (Certified Crop Advisor) being interviewed has discovered the importance of calcium in soil. As quoted from the *Ohio Farmer*:

"Question: What is key to yields in your area? Answer: Most of the soils I work on are lakebed and glacial till soils that have a considerable

amount of clay in their composition. With the wide use of the yield monitor in my client base, we learned early that the No. 1 item that affects yield is water. Drainage, lack of drainage, infiltration rates, ponding, runoff and soil structure are at the top of the list - not nitrogen, phosphorus and potassium, as one might guess.

"Question: How important is the balance between calcium and magnesium to productivity? Answer: Early in my agricultural career, I adjusted pH with the local source of dolomite lime, and although pH was corrected, our clay soils had poor soil structure. They were wet, crusted easily after drying, and it was extremely tough to get a good stand.

"After talking with independent consultants who had experience with the same soil

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White Salt Can Prevent 'Acute Bloat'

By Dr. Tom Swerczek

Along with the grass tetany syndrome frequently affecting cattle grazing lush grass and legume pastures, often seen is acute bloat. Although it is likely the pathogenesis of grass tetany and acute bloat syndromes are similar, it has been observed cattle having access to adequate loose salt rarely die from either. When there is an acute deficiency of magnesium and/or calcium, not only are the skeletal muscles affected, but also are the smooth muscles of the gut, including the rumen. When this occurs, cattle are more susceptible to acute bloat, especially animals grazing lush high legume pastures. In addition, cattle and sheep grazing similar pastures may be affected with vaginal and rectal prolapses. Nitrate, also, seemingly has an estrogenic-like effect causing relaxation of smooth muscles of the reproductive tract, rumen and intestinal

tract. In any case, adequate sodium in the diet seemingly prevents these syndromes believed to be associated with excessive potassium and nitrate in the diet.

Ironically, the industry recommends reducing the salt and replacing it with "bloat blocks." However cattlemen are reporting numerous cattle deaths from acute bloat, even when they have access to "bloat blocks."

[This is a recent and abbreviated addition to Dr. Tom Swerczek's paper presented and published in December 2007 explaining how grass tetany in cattle can be prevented by access to diets containing adequate amounts of loose white salt (sodium chloride.) Here Dr. Swerczek explains how acute bloat also can be prevented with adequate sodium in the diet. The complete text and/or his shortened version of the original with cited references are available from the Growers office. Dr. Swerczek's address is 664 Providence Road, Lexington, KY 40502.] ■

Bechtel's Garden

By Staff

Ben and Connie Bechtel of Conrath, in north central Wisconsin, planted their garden June 3rd this year. Their pictures were taken July 14th., about 6 weeks later. Four years earlier this ¼ acre garden plot received about 30 tons of high calcium lime. This is the equivalent of about 120 tons per acre, and it happens to be the same lime Ben and son Brett sell and spread for their farm customers. The



120 ton per acre lime produced broccoli weighing almost one pound each.

overliming injury the experts predict should be obvious in the pictures, but we don't see any. Ben and Connie said all the vegetables turned out real well. They taste good and the yield was exceptional, especially the potatoes (which, we are told, do not like lime.) There were 5 or 6 potatoes to the plant and all were 2" to 3" in diameter—no scab. They picked a bushel and a peck of green beans from a 35 foot row, the broccoli weighed about a pound each and the red beets, different kinds of peppers, etc., and except for some blighted tomatoes planted too close for all the moisture, everything did great in spite of the persistent excess rain they had at first. The lime allowed the water to go down and kept the



Northern Wisconsin garden with lime at rate of 120 TPA.

vegetables from drowning. When it came to planting and spraying with Growers, Ben said they followed the directions in the *Recommendations For Using* book and the bottle label—one ounce of GMS per gallon of water. There were two sprays. ■

Soil Calcium and the Growers Program

Continued from page 1

conditions, and attending educational sessions with the National Soil Erosion Laboratory staff, I began using high calcium lime in places where magnesium was abundant in the clay soils and water infiltration was a problem. Paying attention to the calcium-magnesium relationship has been the No. 1 practice that has made my business successful. We can now raise better, more consistent crops on these heavy clays, and the water infiltration rate has improved dramatically. This has helped no-till succeed, and has increased stand consistency and nutrient efficiency."

This crop advisor's experience coincides with the teachings of Dr. V. A. Tiedjens who studied the value of calcium in soils as early as the 1920's, and, finding it was so important, early on, made it a key part of the Growers Program.

Scientifically, in nature calcium exists in soil with very few molecules of water (low radius of hydration) which allows calcium to flocculate soil. By flocculation, we mean calcium neutralizes a large number of cation exchange capacity positions so the colloids in soil come together in flocs. This causes the soil to have a larger network of pores or air spaces which allows easy entry of oxygen, air, into the soil and good water relations for roots and microbes.

By comparison, the hydrated radius of magnesium is very much larger than calcium's which causes Mg to restrict the porosity of soil and encourage compaction, exactly the opposite of soils with high exchangeable calcium.

The crop advisor of the *Ohio Farmer* article mentions water as the number 1 factor

affecting crop yields. At Growers Chemical Corporation we know water is important, but the improved porosity of soil by calcium allows oxygen to enter the soil profile so it can be available to crop roots and biological life. All introductory texts of soil discuss in detail the need for soils to have as much void volume content (50%) as solid volume of mineral and organic matter content (50%). Within that void volume they contend the ideal soil will contain 50% water and 50% air. Therefore the ideal soil for growing crops contains 50% minerals and organic matter, 25% water, and 25% air.

Dr. Tiedjens found liming could have an impact on soil pH, but the need to insure proper soil porosity was much more important to the farmer's success. Proper soil porosity permits plants to breathe better in the root zone facilitating more efficient use of the soil's elements and allows the soil's biological life to more efficiently release minerals to the plant, whether added or native to the soil. These 2 factors help farmers grow economically competitive crops with fewer input costs.

Although almost anytime is good, to achieve the maximum efficiency, the fall of year is best suited for applying limestone, because, with the help of the winter moisture, it has time to dissolve and be of benefit to the following year's crop. Fineness of grind and calcium and magnesium percentages are very important qualities to consider when choosing liming sources. To better understand the importance of soil calcium for your farming operation, please contact your local Growers Mineral Solutions (GMS) sales representative. ■

On The Road Again

EARLY FALL — 2010

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

September 15-16 Wed - Thur	Central New York Farm Progress Mohawk, NY
September 21-23 Tues- Wed - Thurs	Ohio Farm Science Review London, OH
October 19-21 Tues-Wed-Thurs	Sunbelt Agricultural Exposition Moultrie, GA
November 19 Friday	Truck Patch Connection Crab Orchard, KY
December 7-9 Tues-Wed-Thurs	Great Lakes Expo Fruit & Veg. Grand Rapids, MI

Hope To See You!

51 Years On The Right Track

By Jim Johns

Stanley Pfeifer and his wife Ruby have been using Growers on their north central Ohio farm near Bellville for 51 years and, "In all that time, other than lime, we haven't applied a pound of anything else." From those beginning years of their farming, county agents, neighbors, etc., kept telling him he would be out of business in ten years using Growers and following the Growers Program.

After spending two years in the US Army, in 1958, Stan and Ruby married and started their own farm operation. Along about that time the Schaefer Oil man came by selling farm equipment lubricants and told Stan about a 2 gallon per acre liquid fertilizer in Milan, Ohio. Only an hour or so north, Stan decided to go up and find out about it for himself. In the process he became acquainted with Dr. Tiedjens, and Stan is still proud of the fact Dr. Tiedjens visited their place two or three times to help them along.

During the first couple of years it was tough and it looked questionable, so Stan made trips to Milan to see Dr. Tiedjens. Doc in his 50s or 60s at the time said to Stan then in his early 20s,

"Young man, you have to figure it out and make the decisions for yourself, but my advice is stay with Growers. If you go back to following the county agent and Ohio State you will be broke in 25 years. Stay with Growers and in 25 years you will be prosperous." Stan says it happened like Doc said and continues to happen today. "Fifty one years latter we have some money in the bank, and the experts gave up predicting our downfall a long time ago."

Stan says farmers until reaching a certain age in life, along about 30 years, are still searching for better ways to do things; like liming, rotations, using products like Growers, etc., but afterwards they resist changing to things different because they may have to admit to themselves they have been on the wrong track all along.

Stan says, "Limestone (calcium) is one of the most abundant elements on Earth, is twice mentioned in the Bible, and it was put here for a reason. For ages lime was used in hog and chicken operations, dairies, etc., to keep insects, odors, and diseases under control, only now we are told to use chemicals. Is that progress?"



Stanley Pfeifer and his wife Ruby.

Dr. Tiedjens was a big promoter of subsoiling, recalls Stan. He would say, "Forget tiling. In fact, don't worry about subsoiling existing tile out. Keep the water on the farm. Don't run it off down the stream. Subsoiling and liming will allow water to go down into the ground when it is wet and then be drawn back up for the crop to use when it dries."

Doc told Stan, "If the ground is limed right, ten pounds of hay or pasture seed would do just fine, but, if not, 20 pounds could be needed." According to Stan, "Lime benefits farmers—not Big Business." ■

Early Spring Ground Warmer?

By TGS Staff

We recently received a call from Rick Loll of Campbell, in west central Minnesota, telling us of an interesting benefit resulting from a high calcium lime application some twelve years earlier. Seems Rick and his son Ben had spread 4, then 8 tons, for a total of 12 tons per acre on one of their heavy Fargo Clay fields.

This spring the hired man reported the field worked real nice which is not too surprising, because liming is supposed to help tilth, aeration, drainage, soil life, etc.

However, of real interest, while Ben was out there in April scouting the fields using an ordinary digital kitchen thermometer to see if any were ready for planting, he discovered the limed field's ground temperature to be 74

degrees while other non-limed fields near by were still measuring 60 degrees. 14 degrees warmer! Could calcium be considered a ground warmer for earlier planting?

(Perhaps others have had similar experiences, if so, we would like to hear about them. Should be apparent in some of our often recommended experimental lime strips. Eds.) ■

Calendar Photos

We need pictures of all the months or seasons for our 2011 Growers Mineral Solutions calendar. Photo subjects to be Growers customers and their families, crops, farms, animals, etc. The more recent the better, but older ones will do as well. Will need the pictures with some identifying copy by mid September, at the latest, so we can have the calendar assembled, printed and ready for distribution by October. This will be an ongoing appeal from year to year. Thank you, very much. Eds.

In Passing

Veterinary consultant for Growers customers and sales representatives since January 2000, Dr. Jon Paulson, of Brandon, South Dakota, died June 17, 2010 at age 66.

Customer Conference Calls

By Staff

Because they seem to be of value and benefit to customers and prospective customers, we plan to continue our monthly conference calls on the second Thursday; September 9, October 14, November 11, etc., but now starting at 9:00 PM Eastern time instead of 10:00 PM Eastern as it was during the summer months.

The usual format has Jim Halbeisen giving updates on pricing, markets, news of interest, etc., followed by a guest presenter relating to his or her operation's use of Growers and the Growers Program. The guests' subjects will vary from month to month and may relate to dairy, produce, row crops, fruit, hay and pastures, nursery, etc. Callers are encouraged to ask the guest or Jim questions or make comments anytime.

We now have a different conference call

server, so the call-in numbers have changed. To join in, dial 1 218 936 4141. After dialing in, you will be asked for your participant PIN number, dial in 8262757# (be sure to include the # after the last number.) This will put you into the conference call and, at first, able to converse with everyone calling in. But as Jim starts his presentation, all conference callers will automatically be put on "mute" so no one other than Jim can be heard. Latter, when he starts asking for comments and questions, callers wishing to be heard will need to press * 6 to "unmute" themselves. When finished with their questions those callers should return to the "mute" mode by again pressing * 6. Playbacks or recordings of the entire conference call are available from the new server during the month following the call by dialing 1 218 936 4143 followed by the access code number 658977. ■

Growers EARLY FALL 2010

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More on Cadmium

By Jim Halbeisen

In nature, cadmium tends to be associated with the element phosphorus (P) and can be a very dangerous contaminant in phosphorus fertilizers and feeds. For about 10 years now, we at Growers Chemical Corporation have been waving the "the red warning flag" about cadmium in the food chain, prompting many Growers Mineral Solutions (GMS) customers to follow rather more closely the Growers Program. See our article "Cadmium, The Health Villain" in the Spring 2006 issue of *TGS*.

So it was with great interest we read an article discussing cadmium levels in protein drinks in the July 2010, issue of *Consumer Reports*. Their Internet site ConsumerReports.org quoted, "All of the drinks in our tests had at least one sample containing one or more of these contaminants: arsenic, cadmium, lead and mercury. For most drinks we tested, levels were in the low to moderate range, when we could detect

them. But with three of the products we tested, consumers who have three servings daily could be exposed to levels of one or two of these contaminants that exceed the maximum limits proposed by U.S. Pharmacopoeia, the federally recognized authority that sets voluntary standards to cover dietary supplements."

In recent years our networking has unearthed human level research indicating our concern about cadmium in the food chain to be well founded. An example is a paper published in *Diabetes Care*, Volume 26, Number 2, for February 2003, titled "Urinary Cadmium, Impaired Fasting Glucose, and Diabetes in the NHANES III" which reads, "Increasing rates of type 2 diabetes worldwide suggest that diabetes may be caused by environmental toxins. Cadmium is a widespread environmental pollutant that accumulates in the pancreas and exerts diabetogenic effects in animals. To test the hypothesis that exposure to cadmium is associated with impaired fasting glucose and type 2 diabetes, we examined the associations between urinary cadmium and the prevalence of impaired fasting glucose (prediabetes) and diabetes in the Third National Health and Nutrition Examination Survey (NHANES III).

The paper concludes, "In this large cross-sectional study, urinary cadmium levels are significantly and dose-dependently associated with both impaired fasting glucose and diabetes. These findings, which require confirmation in prospective studies, suggest that cadmium may cause prediabetes and diabetes in humans."

Giving tremendous credibility to our earlier cadmium-in-the-food-chain alarms is a quote in the paper stating, "Apart from occupational

exposure to cadmium (which should be rare in this cohort), the major source of cadmium is the diet."

The commodity price explosion of 2008 resulted in extremely high agricultural input prices for the 2009 crop season. This has caused many farmers to focus more on the costs of the crop inputs and less about the contaminants they may contain. However, we at Growers Chemical Corporation believe the heavy metal contamination of soil fertility inputs and livestock feed has become a very large problem, and in the not too distant future could cause financial difficulties on farms in the form of crop health problems and/or animal health problems.

That human health is being influenced by chemicals in the environment has received at least some recognition recently with the release of the President's Cancer Panel's annual 2008-09 report titled, "Reducing Environmental Cancer Risk, What We Can Do Now." It was authored by two M.D.'s appointed by the Bush administration. The panel's conclusions about heavy metals and other toxicities in the environment received the same reviews from the agricultural establishment as did we at Growers Chemical Corporation about our cadmium warnings. Characteristically, *Ag Professional* whose mission statement reads: providing agronomic and business management solutions to retailers/distributors, professional farm managers and crop consultants resulting in increased production and profitability in the food, fiber and energy market place said, "These doctors are more than a little out of touch with reality."

So much for Ag's concern about cadmium and other heavy metals in the food chain. ■

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