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## The Growers Solution

SUMMER 2008

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### Fertilizer Costs 2009

By Jim Halbeisen

Although still a year down the road, many farm operators are quite concerned about their 2009 crop season fertilizer budgets. Even though commodity prices are significantly higher, world demand for fertilizer has raised fertilizer prices to levels that are eating away at farm profits. This has operators examining different approaches to the use of fertilizers or, as Growers Chemical Corporation likes to say; minerals, mineral elements or plant food.

Since 1955 Growers Chemical Corporation has referred farmers to early scientific research verifying plants are composed of mainly sunlight, air, and water (carbon, hydrogen, oxygen) and it doesn't require a lot of fertilizer to grow a profitable crop. Dr. V. A. Tiedjens found when minerals of high purity and proper concentra-

tions were added, plants of high quality and volume would be produced at minimal cost. For years this approach was criticized by the establishment for not supplying enough total nutrients to keep a soil productive over a long period of time, and that Growers Mineral Solutions (GMS) would eventually "wear out" the soil.

Since Growers Chemical Corporation started in business in 1955, successful customers, on their own farms, have invariably repudiated the myth that GMS and the Growers Soil Program "will wear out the soil." The point we are making here is that the Target Fertility Technology approach offers real alternatives to the recently questioned, but popular, idea that certain (large) quantities of fertilizer applied to the ground are required to grow a particular crop. And if fertilizer, or mineral element, demand remains very strong, only a reduction in their use, as in Target Fertility, will allow farmers to maintain profits.

Agricultural producers looking at GMS for the first time need to realize Target Fertility Technology is sound science and they can use whatever portion of that science they wish to use. However, if a producer's past fertilizer protocol creates an economic hardship, it would be poor business not to examine a proven, although different, technology that could very well make the difference between profit and loss.

Whether it be fertilizer applications at planting time or foliar applying minerals during the plant's reproductive set, or both, Growers Chemical Corporation's half century of experience reducing fertility costs could help many farm operations become more profitable in today's changing and unfamiliar economic conditions. ■

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Target Fertility — Foliar Spraying GMS with a High Boy

## Caution!

By Jim Johns

A word of caution for those who are considering buying less expensive liquid and/or dry fertilizing materials.

Growers has been around for a half century and has survived through agriculture's good and a whole lot of bad times. To make this happen, Growers management has had to be very careful about its ingredient purchases—quality and cost wise. There are a lot of “bargains” out there, even “subsidies.”

Our competitive position in the liquid fertilizer industry is complicated by the fact that GMS is designed to be used as a starter on the seed at planting, a foliar spray on the crop leaves and a mineral supplement for the animals. GMS must be “clean.” It can not have toxicities or high levels of heavy metals in its ingredients. The higher levels of toxicities in most fertilizers “burn” plants, so ground applications are used to buffer them. Plants and animals do not buffer toxicities too well, they much prefer clean nutrients. This means we need to buy food or technical grade ingredients which are much higher priced than are the industrial and fertilizer grade materials commonly used for making liquid and dry fertilizers. The larger trade-off for GMS is higher grade nutrients are more efficient—lesser amounts are needed to do the job. Feed the plant and up to 90% of the

nutrients applied are used, feed the ground and maybe 10% of the nutrients are used by the plant.

Our liquid solution competitors offer 10% less N., P. and K. per gallon (9-18-9 = 36%, 10-20-10 = 40%) than are found in GMS. Regardless, however, their pricing is often more than 10% less than GMS. We know it would be difficult to make a profit selling truck loads of water at some of their prices. Even considering the difference in costs of the ingredients and the other beneficial elements found in GMS, their pricing doesn't make sense. So how are they doing this? Seems we need to factor in the knowledge they are being “subsidized,” and Growers can not afford their subsidies.

Different manufacturing plants buy cheap acids to clean castings, etc. So after they are finished with these chemicals in their processes, according to EPA, they have toxic wastes that should go to a costly disposal site. Instead, they have found they can pay fertilizer manufacturers substantially less money to take the toxic wastes. The resulting subsidized fertilizers meet the states' N., P. and K. analysis guarantees all right, but the states do not check for heavy metals and other toxicities contained in these fertilizers. So it is “win - win” for the industrial plant and the fertilizer manufacturer. But what about the farmer? What does all this

toxic waste applied do for his ground, crops and animals now and in the future?

Investigative reporter Duff Wilson's book *Fateful Harvest* of a few years ago blew the whistle on this favorite fertilizer industry practice and it created quite a stir for a while, especially out on the West Coast. But the fertilizer industry and the regulators have quietly let the story and issue die, and both are back to “business as usual,” letting the farmer unknowingly pay the ultimate price for cheap subsidized fertilizer. ■

## The Fertilizer Game Has Changed

By Jim Halbeisen

Growers Chemical Corporation has traditionally offered customers early order discounts for GMS and suggested they take delivery in the winter or early spring to ensure they had inventory on hand and be ready to go when spring planting arrives.

Some farmers were not interested in this approach because their local suppliers, carrying large inventories, would take late orders and ship product without delay. However, it appears that this option is no longer available.

As fertilizer prices climb, local suppliers are having difficulties financing and carrying adequate supplies of higher priced inventories. Accordingly, farmers are now being required to pay for their fertilizer needs before the local establishments purchase inventory.

So, now purchasing fertilizer has become a year round event, similar to the marketing of grain, milk, or livestock. To secure price guarantees and availability of product when they are ready to use it, farmers will have to take their fertilizer deliveries in time frames other than just prior to spring planting.

Even the agricultural establishment is advis-



Target Fertility — GMS on the Seed through a Seed Firmer

ing producers to take a fresh look at fertilizer purchasing. According to Ohio State University Extension economist Barry Ward: “Treat fertilizer purchases the same as market analysis of grain. Make fertilizer evaluation a year round activity. Spreading out your purchases and buying at several different times should result in a better price average over the long run as you average your high priced purchases with your low priced purchases”. ■

## On The Road Again

### SUMMER 2008

This summer 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.

July 15-17, 2008	Michigan Ag Expo East Lansing, MI
July 15-17	Wisconsin Farm Technology Days Greenleaf, WI
Aug. 5-7	Farmfest Redwood Co., MN
Aug. 5-7	Empire Farm Days Seneca Falls, NY
Aug. 19-21	Penna Ag Progress Days Rock Springs, PA
Aug. 20-21	Hastings Cty Plowing Match Sterling, Ontario, Canada
Aug. 26-28	Farm Progress Show Boone, IA
Sept. 16-18	Ohio Farm Science Review London, OH
Oct. 14-16	Sunbelt Ag Expo Moultrie, GA

*Hope To See You!*

## *Nitrate Toxicity, Sodium Deficiency and the Grass Tetany Syndrome*

By T. W. Swerczek, DVM, Ph.D.

The factors inducing grass staggers (tetany) have been a mystery to scientists since it was first described in 1930. It is hypothesized that important factors causing grass tetany are nitrate toxicity and a dietary sodium deficiency which induce an electrolyte and mineral imbalance. The grass tetany syndrome is associated with a deficiency of magnesium (hypomagnesemia), a coexisting calcium deficiency (hypocalcemia), sodium deficiency (hyponatremia) and an excess of potassium (hyperkalemia) in the blood of affected animals.

Grass tetany affects high producing cattle and other herbivores being fed rations excessive in protein including non-protein nitrogenous compounds. A common factor is excessive nitrogen fertilization of pastures. Yet, the mechanisms by which this causes grass tetany have not been adequately investigated. During the last decade unprecedented late frosts and freezes to lush pasture forages have provided important clues to the causes of the syndrome and other disorders associated with nitrate toxicity in herbivores.

Grass tetany occurs most often in older brood cows grazing lush growth of pastures in early spring and environmental conditions of cool, cloudy and wet weather promoting rapid, lush growth of cool season grasses. These weather conditions accompanied by frosts and freezes, will cause acute spikes in potassium as well as nitrate in the form of potassium nitrate in pastures and, seemingly, cause electrolyte and min-

eral imbalances in herbivores. These imbalances may not be readily apparent, unless blood samples are tested shortly before death, as the body can obtain cations from tissues until they are depleted, only then will severe clinical signs and death occur.

Hypomagnesemia and hypocalcemia are more likely to occur in high producing animals fed diets high in protein, including non-protein nitrogenous compounds, including nitrate. When these diet components are high, anionic imbalances caused by nitrate are not only caused by forages as exogenous sources of nitrate, but nitrate is also produced endoge-

mals.

It is apparent nitrate toxicity in herbivores is much more prevalent than previously reported. A well documented form of nitrate toxicity occurs in ruminants when nitrate is converted to nitrite by the microflora of the gastrointestinal tract and then the nitrite induces a methemoglobinemia and anoxia. However, it is hypothesized a much more common mode of nitrate toxicity, and not previously recognized, is when nitrate toxicity induces a severe electrolyte and mineral imbalance in ruminant and non-ruminant herbivores. This is an important factor in the pathogenesis of grass tetany and likely other syndromes, including reproductive disorders in all herbivores, including horses.

Seemingly, adequate dietary sodium not only protects against nitrate toxicity, but also aids in the prevention of grass tetany, and other metabolic and reproductive disorders in herbivores. ■

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(This article has been shortened considerably from the original paper presented by Dr. Swerczek at the Annual *Growers Mineral Solutions* meeting in Milan, Ohio, December 4, 2007. The complete text with cited references is available on the Growers web site or from the Growers office. Dr. Swerczek's address is 664 Providence Road, Lexington, KY 40502.

It is interesting to note an article in the March 2008 *Missouri Ruralist* magazine has University of Missouri agronomist Dale Blevins saying feeding salt in the spring may head off grass tetany. Eds.)

*Mineral imbalance in plant tissue caused by environment stress and excessive fertilizer inputs create certain disease syndromes in animals. Feeding high levels of salt can lessen the problem*

nously by the bacteria in the gut of affected animals. The combination of the two sources of nitrate may produce excessive anionic ions that need to be neutralized by cations and this causes the "washing out" effect of essential cations, including magnesium, calcium, and sodium in the urine, feces and milk. Seemingly, the feeding of adequate levels of sodium during periods of environmental stress will aid in the prevention of grass tetany induced by acute anionic imbalances from nitrate in high producing ani-

## *Prepare for 2008 Corn Dry Down*

By Jim Halbeisen

Some United States corn belt areas experienced cold and wet weather early in the growing season, and many so-called experts are speculating the 2008 corn crop will be wetter than normal this fall. This, in turn, suggests grain drying expenses could once again be a major factor influencing corn profits. Late planted corn can be helped along and its maturity hastened by foliar spraying with Growers Mineral Solutions (GMS).

Growers Chemical Corporation's foliar spraying experience has shown, with the proper mineral balance as found in GMS, crops tend to go into reproductive phase earlier and faster leading to crops that mature and dry down more quickly in the fall. For many years customers have used GMS foliar sprays as a way to

improve corn profits by having a drier crop at harvest, thus less drying expense.

Phosphorous, a major component of GMS, is a key element in many plant metabolic processes and is a very important plant development element. Therefore, the phosphorus in GMS, when foliar sprayed, can help that plant achieve faster development.

The amount of sugar produced in the plant by foliar spraying crops with GMS is another important factor. Once again, phosphorus is the key element in the utilization of energy in the

individual cell. (At the Growers' winter meetings we extensively discussed adenosine triphosphate or ATP and its role in cell energy conversion.) And by ensuring adequate phosphorus in the plant, by way of GMS sprays, the farmer has a chance to produce higher energy level plants. This is going to be a key factor in today's world of high priced energy, and it is especially relevant for livestock producers.

To ensure foliar spraying success, it is necessary to plan ahead. Important bases to cover include time of day, plant size, plant growth stage, and water quality. Early foliage spray preparations help ensure proper early season timing of foliar applications, and if properly scheduled, the entire growing season can receive timely and profitable foliar spray applications. ■

If the fall of 2008 corn dry down is questionable, please read the Spring 2008 issue of *The Growers Solution* article "Blossom Set and GNA".

# Growers MINERAL SOLUTIONS

## SUMMER 2008

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SUMMER 2008

## New to Liquid Fertilizers ?

By Jim Halbeisen

As fertilizer costs escalate, farmers are looking at different ways to satisfy their fertilizer needs, so many are looking at liquids.

A GMS Sales Representative recently told us some customers encounter competing companies claiming to use the same technologies as found in Growers Mineral Solutions (GMS.) These companies say they use the same ingredients, but have lower costs because of their purchasing expertise or their use of alternative raw materials. When price shopping farmers need to remember most GMS competitors' years of experience in the field is much less than Growers Chemical Corporation's. So, if a producer has a failure using a cheaper product, he should not judge Growers Mineral

Solution's Target Fertility Technology by that bad experience. There are large differences in product quality, performance and profitability.

In producing cheaper products many companies cut corners on elemental quality and elemental balances, and they do not have properly skilled people doing their formulating. Our local and national news media constantly reminds us that these business approaches and short commings are quite pervasive in today's world.

Producers truly interested in lowering fertilizer (energy) usage should examine GMS's Target Fertility Technology regardless of previ-



Target Fertility — Foliar Spraying GMS with a spray boom

ous set backs with cheaper imitation products. Use the GMS product and network, and do the job correctly next time. ■

## Price Per Gallon or Price Per Acre

By Jim Halbeisen

As farmers consider different fertilizer protocols, it is important they make both economic comparisons and production comparisons.

Growers Chemical Corporation has always encouraged comparison plots, and still does. To make comparisons, GMS should be placed in field plots next to and alongside the plots of other fertilizer protocols with which it is being compared, avoid variables and compare yields and input costs.

When making comparisons it is critical to know the input rates of the various materials used and what their unit costs were. Per acre cost comparisons are the easiest and fairest way to test different protocols.

Because the establishment believes the GMS approach will eventually "wear out" the soil and productivity will suffer, it is important multi-year comparisons also be made to test their "theory".

Multi-year tests are very important, too, when comparing GMS to the low priced "pop up" materials, many of which have no standard protocol of application and very little past per-

formance experience because they are usually only a small part of larger bulk materials applications. Because low priced materials do not perform as well as a high quality materials with proper mineral balances, such as GMS, multi-year comparisons usually show the cheaper materials need either larger volume applications or the addition of large bulk applications to maintain production.

When making comparisons between GMS and cheaper "pop ups" or any other materials, all per acre production costs need to be considered. In other words, the cost per gallon of the material is probably not the whole story in that most "pop ups" and other liquid materials either use more gallons per acre or require higher levels of other bulk materials to achieve comparable production over a period of several years. ■

### The Growers Solution

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