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## The Growers Solution

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### Blossom Set and GNA

By Jim Halbeisen

In the early 1960's Dr. V.A. Tiedjens started experimenting with Growers Nutritional Additive (GNA) believing GNA would help seed set on agronomic crops and result in increased yields. His vision has been realized. Farmers using GNA over the years tell us they have consistently seen yield increases, improved and earlier crop maturation and better seed set.

Global warming or not, many North American farm operations find temperature extremes and variations are becoming more challenging, and more of our fruit and vegetable operations have turned to GNA for some help.

Temperature inversion (a large temperature change in a short period of time) can prove to be a serious problem for crops. For example, blossom shed of peppers or cantaloupe occurs following a weather front when a couple days



GNA helped set and retain blossoms and to increase crop quality.

Please turn to page 4

### Inside The Solution

Blossom Set and GNA .....page 1  
Jim Halbeisen

Target Fertility Technology .....page 1  
Jim Halbeisen

Mike Pinson Field Day 2007 .....page 2  
Jim Halbeisen

On The Road Again .....page 2

Early Order Discount .....page 4

### Growers Target Fertility Technology

By Jim Halbeisen

As farmers, our job is to grow plants and to trap and store as much sunlight energy as possible in those plants. Traditionally, fertility additions to the soil were used to stimulate growth and trap energy.

This appeared to work well when the fertility enhancements were relatively inexpensive and the timing of their application didn't seem too important. Now, however, with the dawn of ethanol as a fuel replacement and with the price of oil (or energy) going extremely high, inefficiently applied soil

fertility products have become very expensive and hard to justify using.

Even with very high commodity prices, high priced fertilizers, resulting from the high energy prices, have made it very difficult for farmers to turn a profit. Farmers must capture and sell as much energy as possible through their crops while controlling the energy inputs used to grow those crops. Farmers growing the most energy using the least amount of energy will be agriculture's winners in the future.

How is this done? First a little background.

Dr. V. A. Tiedjens started working with high

Please turn to page 3

# Mike Pinson Field Day 2007

By Jim Halbeisen

It was a pleasure for us to participate in a field day on the farm of Mike Pinson of Mountain Grove, Missouri, during the evening of August 1, 2007. Mike is a Jersey dairy farmer who also raises Red Angus cattle.

Mike has followed The Growers Program for about 10 years using high calcium limestone from Springfield, Missouri, and targeting his fertility with Growers Mineral Solutions (GMS).

For his field day Mike used different fertility approaches in different fields to see if there were any significant quality differences between them. The farmers attending the field day were able to walk the fields with us to "see for themselves" if any differences did occur.

People on these field walks, which in this case included a practicing veterinarian who has his own livestock operation, always lead

us into some very good indepth discussions.

Besides cattle, Mike, in association with his son Chad, operate Central States Alfalfa Corp., selling only high quality hay. It appears 2007 hay production is down significantly in the United States, and with his early April freeze and dry weather, Mike's hay business has been quite active.

The subject of the US hay shortage was discussed in the August issue of the *Hay & Forage Grower* and in their September 18, 2007 edition of *e Hay Weekly*. From California to Florida hay is in high demand.

The analyses of the corn silage harvested from Mike's farm are included in the following tables. The higher level of sugar found in Field One is typical of other tests comparing corn silage grown with GMS versus dry fertilizer. In this case we believe the high calcium limestone and GMS also helped give the dry fertilizer plots more energy. ■

## FIELD ONE, CORN SILAGE

Assays	Dry Matter Results		Dry Matter Results
Moisture, %	58.9	Lignin, %	2.4
Dry Matter, %	41.1	NDF-CP, %	1.9
Crude Protein, %	8.2	Starch, %	28.1
Heat Dam. Protein, %	0.5	PH	4.9
ADF, %	24.6	Sugar, %	1.56
ANDF, %	44.7	NE/LACT, MCAL/LB	0.71
Phosphorus, %	0.23	TDN EST., %	68.6
Calcium, %	0.30	NE/GAIN	0.44
Potassium, %	1.39	N.F.C.	39.6
Magnesium, %	0.21	NE/MAINT	0.72
Sulfur, %	0.10		
Ash, %	4.90		
Fat, %	2.6		

In 2007, the Field One corn was planted with 4 gallons of GMS per acre and foliar sprayed with 2 gallons of GMS per acre twice. Fifty pounds per acre of nitrogen were sidedressed as ammonium nitrate. High calcium limestone has been applied to the field over the years.

## FIELD TWO, CORN SILAGE

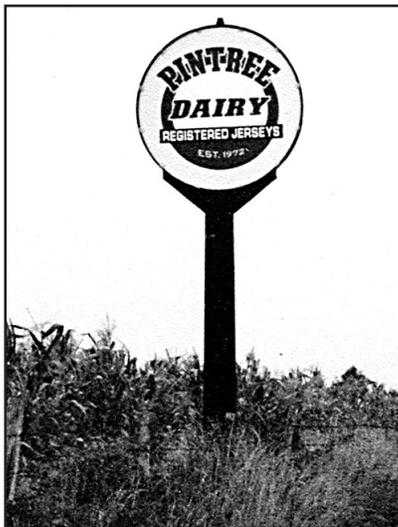
Assays	Dry Matter Results		Dry Matter Results
Moisture, %	51.9	Lignin, %	3.2
Dry Matter, %	48.1	NDF-CP, %	2.00
Crude Protein, %	8.1	Starch, %	24.3
Heat Dam. Protein, %	0.6	PH	5.1
ADF, %	27.8	Sugar, %	1.20
ANDF, %	49.8	NE/LACT, MCAL/LB	0.70
Phosphorus, %	0.21	TDN EST., %	67.6
Calcium, %	0.37	NE/GAIN	0.42
Potassium, %	1.13	N.F.C.	34.8
Magnesium, %	0.25	NE/MAINT	0.71
Sulfur, %	0.09		
Ash, %	4.70		
Fat, %	2.6		

In 2007, the Field Two corn received a broadcast application of 350 pounds of 40-10-10 and was planted with 4 gallons of GMS per acre and foliar sprayed with 2 gallons of GMS per acre twice. Fifty pounds per acre of nitrogen were sidedressed as ammonium nitrate. High calcium limestone has been applied to the field over the years.

## FIELD THREE, CORN SILAGE

Assays	Dry Matter Results		Dry Matter Results
Moisture, %	60.5	Lignin, %	2.9
Dry Matter, %	39.5	NDF-CP, %	1.8
Crude Protein, %	8.1	Starch, %	32.1
Heat Dam. Protein, %	0.5	PH	4.6
ADF, %	22.6	Sugar, %	1.20
ANDF, %	41.9	NE/LACT, MCAL/LB	0.72
Phosphorus, %	0.24	TDN EST., %	69.2
Calcium, %	0.30	NE/GAIN	0.45
Potassium, %	1.10	N.F.C.	42.7
Magnesium, %	0.21	NE/MAINT	0.73
Sulfur, %	0.10		
Ash, %	4.50		
Fat, %	2.8		

In 2007, the Field Three corn ground received a broadcast application of 650 pounds of 40-10-10 and was planted with 2 gallons of GMS per acre and foliar sprayed 2 gallons of GMS per acre. Fifty pounds per acre of nitrogen were sidedressed as ammonium nitrate. High calcium limestone has been applied to the field over the years.



Pintree Dairy-Registered Jerseys of Mountain Grove, Missouri.

## On The Road Again

### SPRING 2008

Growers Mineral Solutions is scheduled to set up and staff booths at the following upcoming farm shows and conventions this spring and summer. 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.

April 1-3, 2008

Wisconsin Public Service Farm Show Oshkosh, WI

August 5-7

Farmfest 2007 Redwood Co, MN

July 15-17

Wisconsin Farm Technology Days Greenleaf, WI

August 19-21

Pennsylvania Ag Progress Days Rock Springs, PA

July 15-17

Michigan Ag Expo Lansing, MI

September 16-18

Ohio Farm Science Review London, OH

August 5-7

Empire Farm Days Seneca Falls, NY

Hope To See You!

## Growers Target Fertility Technology

Continued from page 1

calcium limestone when he was at the University of Wisconsin in the 1920's. By the late 1930's, he knew calcium in the soil was key to creating an ideal plant growing media. When sufficient amounts of soluble calcium are present, soils will have proper porosity and plant roots and biological life in the soil will be able to function at maximum effectiveness.

When calcium levels are sufficient, soil minerals, either native or added by fertilizers, are more available to plants. Ample calcium is critical to achieving the best possible energy production while using the least amount of energy inputs.

*"Farmers growing the most energy using the least amount of energy will be agriculture's winners in the future."*

Unfortunately, this may not happen quickly because calcium sometimes is slow to dissolve and it may take the soil's biological complex several years to develop extensively enough to help feed the plant. It is not a quick stimulus like a shot of nitrogen is to a grass crop. However, once calcium does improve the soil, other energy inputs can be used less frequently. By the 1940's, Dr. Tiedjens had the calcium portion of Growers Target Fertility Technology well understood.

In the early 1930s, Dr. Tiedjens experimented dissolving dry fertilizer in water to side dress crops. He knew dry fertilizer needed water before it could work and that time and distance of its placement were enemies to the growing crop.

Besides leading to the atomic bomb, the splitting of the atom by world chemists led to higher purification of minerals which Dr. Tiedjens found could be placed closer to the growing plant and at more opportune times. Through hydroponic experimentation he arrived at the proper balance and timing of mineral applications that would produce productive plants with the least amount of mineral input.

Plant physiology textbooks say healthy plant tissue is 96% carbon (C), hydrogen (H), and oxygen (O) and minerals compose 4% or less of the total plant. Aware of this, Dr. Tiedjens

placed clean minerals as close as possible to plants while they were enduring stress. In so doing, he eliminated the inefficient need for plants to seek out bulk spread dry minerals placed away from the plant in order to use the soil's capacity to buffer and neutralize heavy metals and salt toxicities.

Because the minerals in Growers Mineral Solutions have very low heavy metal and

salt concentrations, it is meant to be used as a row starter, seed treatment, or a transplant solution to help overcome the stress of germination and early growth. It is important to realize micro nutrients are also very necessary for early plant growth. Over stimulation with only nitrogen (N), phosphorus (P) and potassium (K) can lead to imbalanced growth vulnerable to infections during stress periods.

The period of reproductive growth is the other time of stress for plants and another time Dr. Tiedjens wanted to keep the plant nutrients as close as possible. He foliar sprayed the plant using clean minerals with low heavy metal and low salt concentrations. Often during the plant's reproductive growth stage it is so dry soil minerals are either not available or not in proper balance for essential metabolic needs. Foliar feeding the plant can help satisfy those demands.

In the short term, the idea of Growers Chemical Corporation's Target Fertility Technology is to place clean, highly refined minerals as close as possible to the plant, overcoming dry fertilizers' inefficiencies of timing and distance. A growing plant needs 16 elements. The three most abundant, carbon, hydrogen and oxygen, come free from Mother



**Jim Halbeisen, Growers Research Director and farm operator, shown in the Growers Soils Lab.**

Nature. The other 13 can be found in GMS at concentrations that will create successful crops year after year, which we know to be true because some GMS customers have been doing it for over 50 years.

In the long term, farmers must learn the value of calcium for improving the soil environment to maximize usage of native and added soil minerals. By adding calcium, the total applied energy inputs to the soil can be reduced significantly.

Growers Target Fertility Technology means:

- Creating maximum soil porosity with the element calcium so soil biology can make maximum use of native or applied plant fertility.

- Placing clean balanced fertility minerals as close as possible to the plant during its stress periods to defeat the enemies of dry mineral fertility additions; time and distance. ■

*"By adding calcium, the total applied energy inputs to the soil can be reduced significantly."*

# Growers MINERAL SOLUTIONS

## SPRING 2008

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- Inside:*
- Blossom Set and GNA
  - Growers Target Fertility Technology
  - Mike Pinson Field Day 2007

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PAGE 4 THE GROWERS SOLUTION

SPRING 2008

## Blossom Set and GNA

*Continued from page 1*

of very cool to cold weather replaces relatively warm weather. Blossom shed results in reduced yield or in a later produced crop, which, in either case, can result in serious financial loss.

For years vegetable producers have been using Growers Nutritional Additive (GNA) with Growers Mineral Solutions (GMS) to offset temperature inversion problems. It seems that GNA when applied with GMS strengthens the blossom and helps it withstand more temperature changes. GMS's nutrient balance helps strengthen plant tissue while GNA seems to enhance reproductive tissue. Thus, GNA has helped many GMS vegetable customers improve blossom set and blossom retention.

Row crop customers, dealing with extreme heat, see definite blossom retention improvement using GNA. Here again, blossom retention improvement is related to the enhanced tissue quality of the plant and its reproductive parts. Also, many times during very hot weather, the soil is so dry its minerals

aren't readily available to the plant to give it good tissue quality. Foliar spraying GMS with GNA helps supply crops important minerals in dry weather.

For example; clientele in southern US see less blossom abortion in soybeans after using GNA in their GMS sprays. This is an important advantage towards increasing yields in non double crop soybeans which are usually raised in cooler weather but still see some very large temperature extremes. In the case of double crop soybeans, however, extreme temperature variations could find GNA to be a very important ingredient for increasing yields and



**GNA with GMS enhanced blossom growth and crop productivity in Michigan.**

bringing on earlier maturity, especially with soybean prices at record levels.

Farm operations interested in trying GNA should contact their GMS representatives. ■

### The Growers Solution

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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, Ohio 44846, call 1-800-437-4769, fax 419-499-2178.

email to: [growers@hmltd.net](mailto:growers@hmltd.net)  
or visit our Web site: [www.growersmineral.com](http://www.growersmineral.com)

## Early Order Discounts

### March is the Last Month for a Discount!

**I**t's not too late to take advantage of the Growers seasonal Cash In Advance of Delivery (CIAD) discount. The CIAD for March is 2%. After March, there will be no additional discounts for the rest of the growing season.

Be aware of a probable price increase

soon. This from just one of our suppliers, "Effective April 1, 2008, XXXX, Inc. will increase all list and off list prices of -----."

Call your Growers representative for an explanation of the early order discounts, quantity pricing, and delivery of Growers Mineral Solutions. ■