

# G



## The Growers Solution

LATE FALL 2016

© Copyright 2016, Growers Mineral Solutions

VOLUME 29 ISSUE 4

### Inside The Solution

**Growers Program & Stress**  
Staff.....page 1

**On the Road Again**  
Winter 2016/2017.....page 2

**Phosphogypsum**  
Staff.....page 2

**Nutrient Management in Maryland**  
Dennis Grove.....page 2

**Agriculture and Nutrient Management and GMS**  
Staff.....page 3

**Monthly Conference Call**  
Staff.....page 4

### Growers Program & Stress

by Staff

Growers Chemical Corporation received a picture on August 3, 2016 of two corn fields which are right next to each other on a major US highway. These pictures were taken in a part of the United States that had significantly higher temperatures and significantly lower rainfall for the 2016 crop season.

Picture 1 was taken from the major US highway, and one can see that the fields are of the same topography and only separated by a legal boundary which is at the same place as the first utility pole on



Picture 1: Side by side corn on a major highway.

the picture. As you examine the picture closely, in the distance one can see the change in the corn's appearance (firing at the bottom). The change in the corn's appearance is highlighted by Pictures 2 and 3. These fields were planted within 7 days of each other during the middle of May with similar Pioneer® hybrids. The fertility difference between these fields is the Growers Program (Picture 2) and the conventional university program (Picture 3) which follows the philosophy of so many pounds of fertilizer are needed to grow so many bushels of corn.

In a dry, stressful environment the high application rate of fertilizer creates a salt zone that can be harmful to plant roots. In a more normal year rainfall removes a portion of these applied salts

*"Stress" continued on page 4*

Growers Chemical Corporation is always looking for information that can help agricultural producers be more successful. This is our invitation to any reader to submit information, articles, or suggestions about data that would be useful to *The Growers Solution*.



Picture 2: Growers Program corn

Picture 3: High input corn

## On The Road Again 2016/2017

### HOPE TO SEE YOU

Growers Mineral 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.

Nov. 10 Thurs	Butler Fruit & Veg Show Butler, PA
Nov. 17-18 Thurs-Fri	AL Fruit & Veg Conference Clanton AL
Nov. 18 Fri	Truck Patch Connection Crab Orchard, KY
Nov. 29-Dec. 1 Tues-Thurs	Greater Peoria Farm Show Peoria, IL
Dec. 6-8 Tues-Thurs	Great Lakes Fruit & Veg Expo Grand Rapids, MI
Jan. 5-8 Thurs-Sun	GA Fruit & Veg Conference Savannah, GA
Jan. 9-12 Mon-Thurs	Delaware Ag Week Harrington, DE
Jan. 10-12 Tues-Thurs	Keystone Farm Show York, PA
Jan. 11-12 Weds-Thurs	SC Agri Biz & Farm Expo Florence, SC
Jan. 12-13 Thurs-Fri	Mid Ohio Produce Growers Mt. Hope, OH
Jan. 17-19 Tues-Thurs	Ft. Wayne Farm Show Ft. Wayne, IN
Jan. 17-19 Tues-Thurs	Empire State Produce Expo Syracuse, NY
Jan. 18-20 Weds-Fri	Virginia Farm Show Fishersville, VA
Jan. 25-26 Weds-Thurs	Chatham-Kent Farm Show Chatham, Ontario, Canada
Jan. 31-Feb. 2 Tues-Thurs	Iowa Power Farming Show Des Moines, IA
Jan. 31-Feb. 2 Tues-Thurs	Mid Atlantic Fruit & Veg Conf Hershey, PA
Feb. 1-3 Weds-Fri	Southern Farm Show Raleigh, NC
Feb. 7-8 Tues-Weds	KIKV Winter Ag Show Alexandria, MN
Feb. 7-9 Tues-Thurs	New Jersey Vegetable Conf Atlantic City, NJ
Feb. 15-18 Weds-Sat	National Farm Machinery Show Louisville, KY
Feb. 22-23 Weds-Thurs	Ontario Fruit & Vegetable Conf Niagara Falls, ON, Canada
Feb. 23-25 Thurs-Sat	New York Farm Show Syracuse, NY
Feb. 28-Mar. 2 Tues-Thurs	Central MN Farm Show St. Cloud, MN
Mar. 8-10 Weds-Fri	London Farm Show London, ON, Canada

## Phosphogypsum

by Staff

According to *wikipedia.com*: "Phosphogypsum refers to the gypsum formed as a by-product of the production of fertilizer from phosphate rock. It is mainly composed of gypsum. Although gypsum is a widely used material in the construction industry, phosphogypsum is usually not used but is stored indefinitely because of its weak radioactivity. The long range storage is controversial."

In late August, 2016, the large fertilizer manufacturing company Mosaic discovered a huge problem at their New Wales facility at Mulberry, Florida which is 45 minutes east of Tampa, Florida. A massive sinkhole opened up under a lined lagoon which was full of phosphogypsum and the sinkhole tore the lagoon liner allowing 215 million gallons of contaminated liquid to enter the sinkhole. The sinkhole, which was 45 feet in diameter, is believed to have allowed the contaminant to enter a large Florida aquifer.

This massive spill brings to light some of the toxicity problems that can occur with phosphate fertilizer. When phosphate ore (rock phosphate or apatite) is treated with sulfuric acid to make phosphoric acid (which is used to make phosphate fertilizer), several different materials are present in the waste products left from the manufacture of phosphoric acid.

There are several metals that are part of the phosphogypsum by-product that make this by-product quite toxic. The toxic metals included in the by-product are fluorine (F), chlorine (Cl), bromine (Br), uranium (U), thorium (Th), and cadmium (Cd). All of these metals are allowed in phosphoric acid (phosphate fertilizer) to various levels according to the grade or the cost of the phosphoric acid which compose GMS vs. el cheapo vs. 10-34-0.

Growers Chemical Corporation believes that as more of these toxic metals are applied to the soil through cheap fertilizer, the more the microbes in the soil are slowed down by the added toxicity. The agricultural establishment does not believe the biological activity in soil is of significant importance, so any reduction to their function because of toxicity is of little consequence to productivity. Contrary to the agricultural establishment, Growers Chemical Corporation says that, as the levels of these metals increase in the soil environment, the microbes' ability to release fertility elements to the growing crop is reduced significantly. With more applied toxicity, more fertility must be added to the soil to try and achieve good agricultural productivity which means more fertilizer is added to the soil environment. As more inefficient fertilizer is added to the system, the greater chance there will be a release or a loss into the environment.

The metal issue in fertilizer is why Growers Chemical Corporation believes a higher priced fertilizer will result in more profitability per acre in the long run. This comes from better soil microbial release of added and native fertility elements. ■

## Nutrient Management in Maryland

by Dennis Grove

Nutrient management in Maryland started in 1997. Initially the nutrient management plan was nitrogen limiting only. Later phosphorus limiting plans were required. Nutrient Management plans are required of all farmers having a gross income of \$2,500 or more annually. Livestock farmers are required to have a plan if they had eight animal units (8,000 lbs.) of animals on their property even though they may not be crop farming. This captured not only farms, but someone who had horses, or grew and sold produce from a small lot, grew Christmas trees, or nursery, both in-ground and in containers. Plans must be developed by a University of Maryland specialist, certified private consultant, or a farmer who is trained and certified by the Department of Agriculture to prepare their own plan.

The information required to develop a nutrient management plan is extensive, such as aerial maps for each farm showing each field and the acreage with soil tests from each field. If any animal waste is to be applied, the waste material must be analyzed for nutrient content. Soil samples are required at least every three years. Animal waste samples are required every other year.

If the soil phosphorus level is over the FIV (fertility index value) of 150, or 132 ppm (Mehlich 3 soil test), then a phosphorus site index, and a phosphorus management tool must also be developed. These environmental risk assessment tools are used with fields having high phosphorus levels and identifies phosphorus management options to reduce the risk of phosphorus runoff into nearby waterways, either by physical loss, or through the groundwater.

These rules require additional information for each field in addition to the information listed above. Additional information required is from RUSLE 2, which includes the percent of slope and length of the slope of the field, distance from the edge of the field to surface water (ditch, pond, creek, etc.), the watershed the field is in, all cropping operations such as type of tillage, animal waste spreading, and how it is to be applied and incorporated, planting, harvest, cover crop information, and crop residue additions.

This information is entered into the phosphorus site index and the phosphorus management tool, and a score is generated which represents the potential for loss of phosphorus to the water of the watershed. This program integrates with the nutrient management program to generate field and crop-specific nutrient recommendations.

"Maryland," continued on next page

# Agriculture & Nutrient Management & GMS

by Staff

As a farmer, whether you agree or disagree with the report *Informing Lake Erie Agriculture Nutrient Management via Scenario Evaluation* released by the University of Michigan Graham Sustainability Institute, every farm operation must come to grips with the reality of added minerals, elements, or nutrients to crops and control of their loss into the environment (see the accompanying article "Report: Farmers Doing Too Little to Stop Lake Erie Algae"). In the past, agriculture has tried to sidestep this issue with various strategies, however, many recent events such as Lake Erie; Des Moines, Iowa; the Gulf of Mexico; and Chesapeake Bay have drawn public attention to agriculture's contribution to water pollution problems. Because of the public scrutiny that agriculture is now receiving about the water issue, many farm operations are reexamining their crop nutritional approach. These particular farm operations are deciding to try and be proactive about dealing with this possible regulatory subject.

The agricultural industry has tried to be proactive on this environmental subject with their creation of the 4R Nutrient Management approach. The approach is to apply fertilizer to crops through the methodology of right rate, right time, right source, and right place so as to prevent as much nutrient loss as possible. This approach has been promoted by the agricultural establishment for several years as a solution to the nutrient loss problem. Some areas of the country are giving special recognition to fertilizer suppliers that promote this type of approach to their customer base.

Growers Chemical Corporation has always promoted a fertilizer approach that is in agreement with the 4Rs methodology of fertilization. In fact, the in-furrow and foliar feeding approach of GMS from Growers Chemical Corporation for a fertilization approach would be the perfect implementation of the 4R approach to nutrient management. By using properly balanced elements that have gone through a higher purification process, those elements are able to fit the 4R approach with more reliable results.

So, if any farm producer believes that nutrient management is going to be part of farming's regulatory future, please call a GMS sales representative to discuss GMS and the 4R nutrient management approach. ■

*"Maryland," continued from previous page*

If there is a ditch, tile line, or stream associated with the field, the phosphorus management tool score usually will not permit the application of soil applied phosphorus if the FIV is 150 or higher.

Additional regulations which are in effect include: No nutrients may be applied to the fields from November 1 through February 28 east of the Chesapeake Bay and November 15 through February 28 west of the Chesapeake Bay. Nutrients may not be applied to frozen, snow-covered, or water-saturated soil. No phosphorus may be applied to soils with a phosphorus level of FIV 500 or 569 ppm until the soil test is below FIV 500.

All applied animal waste must be incorporated within 48 hours, unless applied to hay, pasture, or established small grains. Animal waste may not be applied within a 35 foot buffer beside a ditch or other waterway. A vegetated 10 foot buffer must be in place along each ditch or waterway, in which no crop may be grown. Animals must also be excluded from this 10 foot buffer.

If a farm has animal waste storage and it becomes full during the non-application period, emergency application will not be permitted as in the past. The operator will need to find another place to put the animal waste.

Record keeping is required. Required records for each field include dates of nutrient application, the analysis and amount of nutrients applied, and yield records for each crop. A summary of applied nutrients is required to be submitted to the Department of Agriculture by March 1 of each year for the previous year. Random inspections from the Maryland Department of Agriculture to determine compliance to the regulations are conducted throughout the year. ■

## REPORT: FARMERS DOING TOO LITTLE TO CUT LAKE ERIE PHOSPHORUS

by John Flesher, AP environmental writer

<http://www.agweb.com/article/report-farmers-doing-too-little-to-cut-lake-erie-phosphorus-naa-associated-press/>

TRAVERSE CITY, Mich. — Mar. 22, 2016, 9:06am ET

Cutting phosphorus runoff into Lake Erie enough to prevent harmful algae outbreaks would require sweeping changes on the region's farms that may include converting thousands of acres of cropland into grassland, scientists said in a report Tuesday.

The study released by the University of Michigan Water Center found current efforts to keep phosphorus, which is found in livestock manure and artificial fertilizers, on fields instead of flowing into the lake are falling drastically short of results needed to achieve a 40 percent drop in runoff—a target set by the U.S. and Canada in February.

Excessive levels of the nutrient are the leading cause of increasingly massive blooms, which in 2014 left more than 400,000 people in Toledo, Ohio and southeastern Michigan unable to consume tapwater for two days because the bacterial algae produce a toxin. Another bloom last year was the largest on record. Phosphorus also causes a "dead zone" in Lake Erie's central basin with so little oxygen that fish cannot survive.

Using computer modeling, a team of scientists tested different combinations of best-management practices that could bring the algae under control. Some are already in use, such as planting vegetation buffers between cultivated fields and waterways. Others include applying phosphorus-based fertilizers beneath the land's surface instead of on top, where it's more likely to wash away, and planting cover crops such as winter wheat.

Ohio and Michigan rely largely on voluntary compliance, but too few farmers are participating, the report found. "Our results suggest that for most of the scenarios we tested, it will not be possible to achieve the new target nutrient loads without very significant, large-scale implementation of these agricultural practices," said Don Scavia, a University of Michigan ecologist who led the study.

The study focused on the Maumee River watershed, which includes 17 counties in northwestern Ohio and smaller sections of Michigan and Indiana. High phosphorus runoff from farms in that area is the primary cause of toxic algae in western Lake Erie, it said.

Policy alternatives described as "most promising" by Jay Martin of Ohio State University, the report's co-author, included widespread use of the best-management practices and conversions of some croplands to switchgrass or other grasses. One called for removing nearly 30,000 acres in the watershed from production. That's the equivalent of 6,300 farms, as the average farm in the area consists of 235 acres.

Jeff Reuter, past director of the Ohio Sea Grant and a Lake Erie specialist who wasn't involved with the study, said some cropland is so overloaded with phosphorus that turning it into grassland or wetlands is the only way to stop the runoff.

Such a requirement could drive some farms out of business, said Joe Cornely of the Ohio Farm Bureau Federation, who criticized the study for focusing only on the Maumee basin and agriculture instead of other phosphorus sources such as sewage treatment plants.

"Yes, agriculture's got some things we need to do," Cornely said. "But to give the idea that a single sector of our economy or a single geography is the only way to attack this...runs the risk of raising unrealistic expectations among the public."

Government could pay subsidies to farmers who convert their land to protect water quality, Scavia said. "This study is a strong affirmation that we can once again restore the health of Lake Erie, but it cannot be done with half-measures and a piecemeal approach," said Jack Schmitt, deputy director of the Michigan League of Conservation Voters.

*Inside this issue:*

- Growers Program & Stress
- Phosphogypsum
- Nutrient Management & GMS
- Nutrient Management in MD

**Remember: Monthly  
Conference Call**

On the second Thursday of each month at 9:00 PM Eastern for the months of September through May, and 10:00 PM for the months of June through August, we hold a Conference Call usually featuring a customer or sales person recounting how he has used GMS. There is no participation charge for the call.



At 9:00 or 10:00 PM Eastern, dial 1-712-832-8300. When asked for the pre-assigned access code, dial in 8262757 #, then dial 1 to acknowledge the recording. For telephone recordings up to 30 days following the Conference Call, call the Growers Office at 800-437-4769 for the Conference Call number and access code number.

"Stress" continued from page 1



*Picture 4: The three ears on the left are from the salt damaged corn, and the three ears on the right are from the corn grown on the Growers Program.*

which detoxifies the root zone so as to cause less injury to the plant's roots. These pictures show the difference between a root zone with excess salt load (Picture 3) and a root zone with no excess salt (Picture 2). Some GMS customers have even commented that in these hot, dry seasons that a very high rate of nitrogen (N) applied as a side dress can create a high salt root environment which can stress the crop.

Random ears of corn were selected from the two different areas of the pictured corn fields. The differences in the ears are shown in Picture 4. The three ears on the left are from the salt damaged corn and the three ears on the right are from the corn grown on the Growers Program.

An important issue that Growers Chemical Corporation would like to emphasize with these pictures is the damage that can be done to the soil's biological life from the high salt levels. Soil microbes are just small plants according to the botanist, therefore, it is possible to injure those small plants with high salt levels in a stress year just as the corn plants are injured by the high salt levels. Salt damage can also occur in a year of normal moisture, but it is not as severe or as noticeable when more water enters the soil. With salt damage, the soil biological life is not totally destroyed; their population is only reduced enough so that there is a need for more soil applied inputs to try to achieve profitable production.

Incidentally, in the higher moisture of a more normal season, what happens to the removed salts that caused the damage in the hot, dry growing season? Environmentalists call it nutrient removal into the environment. The more mature (older) farmers probably do not have to concern themselves with that answer. However, to deal with future nutrient regulations the young farmer has to figure out how to grow profitable crops with significantly lower fertility inputs. ■

**The Growers Solution**

Editor: Jennie Henry

Circulation: U.S.A. and Canada: 10,000

The Growers Solution is published 4 to 6 times a year by Growers Mineral Solutions, a division of Growers Chemical Corporation. All rights reserved. Reproduction in whole or in part without written permission of the publisher is prohibited.

**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; or email to: growers@hmcld.net. Visit our Web site: www.growersmineral.com