



Miller's Miscellaneous

Hi everyone and welcome to many of our new Southern Hemisphere readers!

This quarter's newsletter contains articles written from some useful web information that has been recently released.

The USGA published an article to help understand the practice of flushing your soils of harmful salts. See our added information

to help you with this practice.

What are Polyacrylamides? Recently there was some good information on the web about this product. PAM's are unique chemistry. Read more about how and why to use it.

We have had some very recent success stories using our Acidi-pHlow – injectable synthetic acid product. Good information

here and good pictures to go along with the article. High bicarbonate irrigation sources have become more of a norm. See the good and bad behind this water source and how to help your soils exist with this water.

Lastly our ever more popular True Trivia returns. Good luck with the answer. And please pass this newsletter along to your friends and customers.

Special Interest Articles:

- Miller's Miscellaneous.
- Polyacrylamides
- Product Knowledge
- Flushing Salts
- What Happened?
- Acidi-pHlow Update
- True Trivia

Polyacrylamides. What are they? Are they useful?

Polyacrylamides, or PAM is catching some new attention lately for many reasons. There are not many products on the market that contain PAM. Remediator is one that has been in use for many years and sold through AQUA-AID and VERDE-CAL.

Here is the short list of PAM uses and benefits:

- Poor water quality
- Cloudy/silty water
- Poor soil structure
- Silty compacted soil
- Hard pan soil with poor drainage
- High salts
- Improved rooting
- High EC and SAR
- High sodium in soil or water
- Erosion
- Standing water

Sounds like it fits many needs? And it does.

PAM is a long chain polymer that, in the case of turf and ornamentals, is anionic. This means it is not toxic to fish and plant life and will bind with fine soil particles to create larger soils structure and increase oxygen and drainage in the soil. If you have tight soils and poor drainage due to high volumes of silt, it may be worth a try. PAM goes after fine soil particles and even will help phosphorus runoff because of its strong affinity to soil. This could be very important in areas where P use is or has become limited and your locations have state or federal inspections for runoff. Think of your sports turf fields... many have been built on high silt content soil. Very tight and hard. This is a perfect location to use Remediator containing PAM.

A very good article about polyacrylamide use on golf courses was published in the Florida Turf Digest. Please take time to read the article located at this link: http://www.verde-cal.com/west/pdf/Polyacrylamide_on_golf_courses.pdf

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Polyacrylamides (cont.)

To learn more about **Remediator**, go to the following link:
<http://www.aquaaid.com/product/remediator/>



Remediator is a product that combines PAM with calcium and other wetting agents. **Remediator** rates are 32 oz per 1000 sq ft or 10.75 gallons per acre. It must be watered in immediately. Rates can be doubled or tripled if desired. Do not tank mix **Remediator** with

any other product.

Remediator can react very fast in the soil. In some instances same/next day results can be experienced. If you need a fast knock-down of the problem you're having, use **Remediator**. **Remediator** is another great

option in the lineup of several great products to use for problems in the soil and/or water. The calcium in **Remediator** is fast acting, while long lasting. By quickly releasing and then holding to the colloid, both quick and long term benefits result.

Product Knowledge! What do you know about our products?

How many acids are in our products AcidipHy and Acidi-pHlow?

Answer: FOUR

Three synthetic acids and one organic acid. Both also contain Manganese Sulfate. The AcidipHy rate are higher and can be sprayed onto turf. Acidi-pHlow is designed to be injected through irrigation systems. Both help greatly when dealing with bicarbonate, sodium and other poor water quality issues.

Flushing Salts: More useful information...

"That some achieve great success is proof that others can achieve it as well."
Abraham Lincoln

Recently the USGA published their findings on useful ways to "flush greens" of harmful salts and create better balance of nutrient availability after the flush. You can read that article by following the link here:

The summary of the information was simply spelled out to the reader. *"There are many different products on the market to remove excess salts and sodium from the soil, but soil scientists agree that, pound for pound, gypsum (Calcium sulfate) is the best material for breaking up salt accumulations, especially sodium, and moving them out of the root system with effective flushing procedures."* (Flushing Greens: More Than Just Heavy Watering, Bub White, Green Section Record Vol. 52 (9), May 2, 2014)

Our newsletter dated first quarter 2010 basically sends the same message. It is about volume of soluble calcium that creates results. VERDE-CAL G has always been the best method to remove harmful salts and return your soil profile back to a nice balance of available nutrients. Why is this? Because we provide more than 100% soluble Calcium Sulfate with each application. Based on the solubility tests run recently, our VERDE-CAL G exceeded the expected amount of soluble calcium

sulfate expected from gypsum. (2nd quarter NL 2014).

Our other products to help with harmful salts accumulation:

- Remediator
- Salt-Aid
- Redi-Cal
- AcidipHy L or G
- Acidi-pHlow
- Aqua-Carbon
- VERDE-CAL G
- VERDE-CAL K Plus

Regardless of whether you want a liquid or granular product, we have something that will work for your situation. Many times it will require a combination of products to accurately flush/replenish those salts and nutrients.

Remember... Volume of soluble calcium sulfate is key to any flushing situation. We can show from test results that a minimum of 85 lbs. per acre of soluble calcium sulfate is the critical number to accurately flush and receive visual response from turf.

To learn more about Salts and to read a great article about flushing salts, go to the links below:

<http://www.verde-cal.com/west/pdf/Jan-Feb-Mar-10.pdf>

http://www.verde-cal.com/west/pdf/Flushing_Greens.pdf

Flushing Salts (cont.)

Look at the product you are using. Add up the nutrient you are getting from that product per acre based on that products labeled rates. Nearly every time you will see that the amount of

soluble nutrient comes up short of the minimum 85 lbs. And when you come up short, you are spending valuable budget dollars to maintain a problem. Take a look at the following article titled:

What Happened? The positive end result was due to a volume of soluble calcium sulfate.

VERDE-CAL G gets results every time.

"Mistakes are part of the dues we pay in life".

Sofia Loren

What Happened?

St. Augustine turf surrounding a beautiful fountain in south Florida. The turf looks burned all around the fountain.



Picture courtesy of Jennifer Palmer, Howard Fertilizer

What do you think happened here?

"This is what I learned: that everybody is talented, original and has something important to say."

Brenda Ueland

Acidi-pHlow Update: A tough situation solved!

This year we have received more inquiries regarding bicarbonate buildup and relating issues to soil and turf. Right after what was for most an abnormally high year for precipitation in 2013, now bicarbonate levels in soil and water seem to be surfacing. We think it is an accumulation of several factors possibly happening.

1. Perhaps less soil amending due to budget restraints
2. Excessive rainfall early on in 2013, but dry and hot on the latter half of the year.
3. Less monitoring/testing of soils and water quality
4. Change in water source

5. Topdressing sand changed and more fine particles in the sand
6. Less aeration and topdressing
7. Flushing greens with improper amounts of calcium sulfate

Again, in nearly each case we have personally seen, it was a combination of the above factors that led to surface and visual problems on the specific turf area.

Bicarbonates in water will cause higher pH, possible tightening of the soil due to the formation of calcium carbonate salt buildup at the soils surface, and sealing off.

Algae growth can also be seen and discolored turf results as well. Many times these problems are misinterpreted as a disease problem. If you experience any of these problems you should first do the following:

1. Pull a complete soil test. This includes exchangeable cations, soluble cations and anions.
2. Run also a water test from your irrigation source and a quick coupler or sprinkler on the property. This will give you two tests to show water quality before it enters your irrigation system as well as after.

**Need a past issue of the VERDE-CAL newsletter?
Go to our website:
www.verde-cal.com**

Acidi-pHlow (cont.)

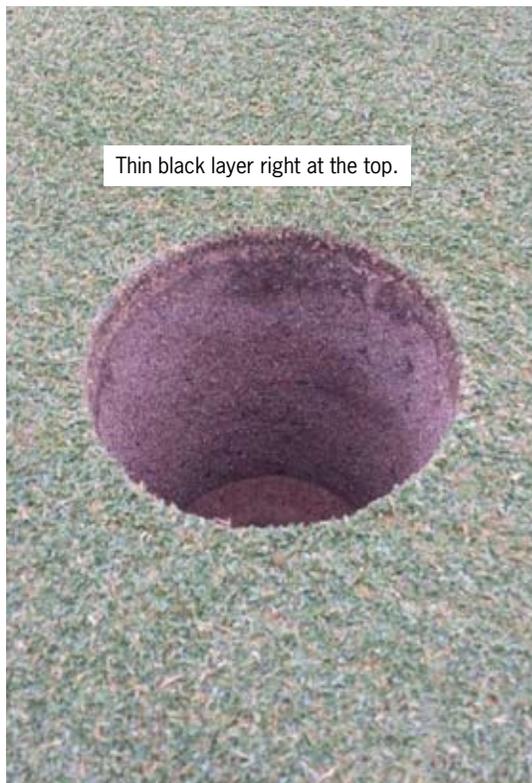
“Great works are performed not by strength, but perseverance.”

Samuel Johnson

3. Look carefully at your program to flush or amend the soil. Are you applying volume of calcium sulfate? Volume of acid products? Or small doses of liquids or granulars? In most cases, if you examine your program you will find the missing link. Most times it is simply increasing rates of the product you are using. Or, it could be that the product you are using simply will not deliver enough volume of acidity or nutrient to relieve the problem and allow for lasting results.

- Three synthetic sulfuric acids
- One organic acid
- Manganese sulfate
- Injectable penetrant

The idea here was to put back into solution the insoluble calcium carbonate salt layer and flush it through. The rates for Acidi-pHlow vary from 1 to 2 quarts per acre depending on the problem and the amount of bicarbonate in the soil. Many times you can add a good liquid calcium product and/or humic acid type product for more benefits from the application.



Thin black layer right at the top.

TRUE TRIVIA:

What did George Bouyoucos invent that is so widely used in the turf industry today?

(answer on next page)

“The only true wisdom is in knowing you know nothing.”

Socrates

In this picture you will notice a small thin black layer right at the tip of the soil profile. Below that the soil texture looks very good. This particular soil began to experience problems associated with “sealing off”. Lack of drainage, algae formation, poor color of turf. This thin layer at the top is in actuality calcium carbonate salt. Refer to our first quarter newsletter (link in the margin) from this year for a great explanation on this buildup of salt in the upper part of the soil profile.

In this case the Golf Course Superintendent applied AQUA-AID’s Acidi-pHlow. Acidi-pHlow is a combination of:

And the results of proper rates and volume of product as seen in this picture. The black layer at the top is gone and the turf has responded as if it were fertilized. Nutrients are available and oxygen and water are better balanced. Microbes can function. The turf greens up and recovers and grows.



In this case the Acidi-pHlow application was followed up with our VERDE-CAL K Plus which would be a perfect product to replace needed nutrients that were flushed out.

Just as the USGA stated.... Proper flushing requires volume of release. In this case it was volume of acidity and then volume of soluble nutrient to replace the exchangeable sites on the soil colloid. If you think you have this situation happening at your property, it would be a great idea to get us involved. Utilize a EC meter to test for salt levels. Take the proper tests and get them interpreted correctly. Then choose the best products to go after the problem and more importantly use the correct rates so the curative effect will be strong and long lasting.

What Happened: (answer)

The fountain water was treated with chlorine to keep it clean. Apparently the levels of chlorine were so high that when the wind blew the spray from the water onto the grass, the grass was

burned back.

VERDE-CAL G was applied here to help the recovery of the grass and to flush out any high levels of Chlorine in the soil. Because the proper volume of VERDE-

CAL G available calcium sulfate was applied and released, the treatment and recovery was a success.

Here are the results two weeks later.



Picture courtesy of Jennifer Palmer, Howard Fertilizer



Picture courtesy of Jennifer Palmer, Howard Fertilizer

True Trivia: (answer)

- 1. Soil Moisture Meter – 1949



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“If you love life, don't waste time, for time is what life is made up of.”

Bruce Lee

**FEED THE SOIL AND THE SOIL
WILL FEED THE PLANT.**

If you need more literature, please request some to be mailed to you by contacting the following:

maryanne@aquaid.com
scott@aquaid.com

Specify how much you need and where to mail it to.