

GROWERS TARGET FERTILITY

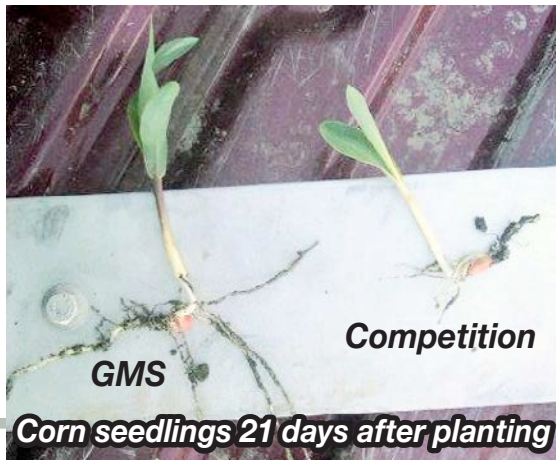
“The placement of elements close to the plant to take advantage of the efficiencies of reduced time and distance.”



THE 3 MAIN POINTS OF THE PROGRAM

1. Provide a good growing medium by ensuring adequate calcium in the soil.
2. Supply necessary nutrients to the plant by applying balanced high quality soluble plant nutrients at the correct time.
3. Put in comparison plots and yield check to verify profitable results.

Since 1955, Growers Mineral Solutions has been helping farmers increase profits by raising higher quality crops with lower overall costs. This is accomplished by creating a superior rooting media and stimulating plants with smaller amounts of balanced nutrition (GMS) at stress points in the plant's life. This is a farming philosophy known as the "Growers Program."

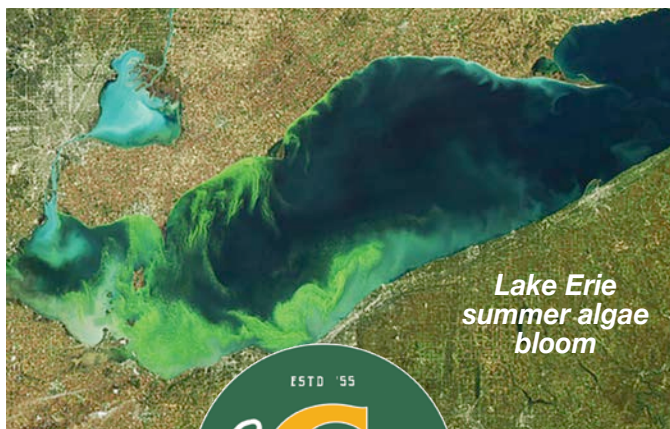


Corn seedlings 21 days after planting

Fertilizer Regulation

More fertilizer than is necessary is being applied to North American farms, and it is leading to government regulatory agency interventions. Indicative of this are the more frequently heard terms such as: "nutrient management," "hypoxia," "dead zones," "algae blooms," "total maximum daily load (TMDL)," etc. Dealing with all these issues will affect ways farmers use nitrogen and other chemical nutrients in the future.

It is important farmers try to reduce inputs to trim per acre costs, and those interested in dealing with future regulatory guidelines examine their soil's calcium content and use competitively priced Growers Mineral Solutions to follow the 4Rs of Nutrient Stewardship which are apply the right source of nutrient, at the right rate, at the right time, and in the right place.



Lake Erie summer algae bloom



THE FARMERS SOLUTION

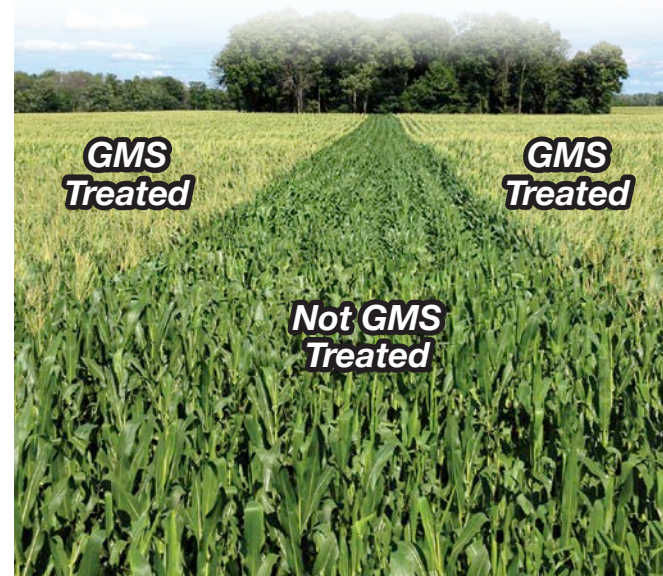
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Your local Growers Representative is:

THE GROWERS PROGRAM STARTER



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THE FARMERS SOLUTION

WHY STARTER?

The plant's first stress period occurs at germination, and this can be aggravated by cold, wet soils. By applying GMS directly on the seed, the farmer is placing a balanced load of clean nutrition in the seed bed. He is "Targeting Fertility" and "following the 4Rs."

High quality raw materials and proper elemental balance in GMS allows it to be applied directly on the seed—"Targeted." Being in a liquid form greatly helps improve nutrient absorption by the seed or seedling, and soil microbiological life.

By comparison, most fertilizers contain toxins, referred to be the agricultural establishment as "Nonnutritive Elements." These toxins must be buffered by the soil to prevent injury to the seed or newly germinated plant. The toxins will eventually be digested by soil biological life, but this digestion may require a change in microbial population not conducive to the growing crop.

Fertilizers containing toxins, high salt concentrations, or heavy metal content usually must be placed in a standard 2 by 2 band configuration (2 inches beside the seed and 2 inches below the seed) to protect the seed. A disadvantage to the 2 by 2 band is that roots must reach a certain length to encounter the nutrients. If environmental conditions prevent the emerging plantlet from reaching those lengths, the utility of the placed fertility is significantly lessened. The closer the proximity of the seed applied fertility, the better the usage in any environmental situation.

Important considerations with starters are environmental conditions and seed density. These govern the rates at which fertility elements can be applied directly to the seed. The wetter and colder the soil environment, the more total volume of fertility elements can be placed on the seed. Also, soils with higher clay content and higher organic matter content can allow more fertility elements to be placed on the seed. Additionally, the physically harder the seed's covering is, the more fertility elements can be placed on the seed. (Caution is advised in some Southern areas where light, hot, dry soil conditions may call for a 2 by 2 banding configuration.)

WATER CONSIDERATIONS

Anytime GMS is placed directly on the seed, any water added to the solution in equal volumes to the GMS helps to lessen the osmotic influence of the GMS. If the volume of GMS used for the soil moisture content, soil temperatures, soil texture, soil organic matter volume, and added water is still too high, the producer may need to put the GMS in the 2 by 2 position. This situation may occur in Southern soils below the Mason Dixon line. In this case, consult with the GMS sales representative.

STABILITY OF STARTER

Producers may wonder what happens to recently applied starter fertilizers when shortly followed by a heavy rainfall. If the heavy rainfall comes before the applied elements are utilized by the plant, it is important the elements be stabilized by the soil's microbiological population. Once the elements, as found in GMS, are absorbed by the soil's microbiology and trapped in the microbes' tissue, they will not be "washed away" from the plant's root zone. As soon as the elements become part of the microbe complex, they will cycle back for utilization by the plant.

The more toxins, salt, and/or heavy metals in the fertilizer, the longer it takes for those elements to cycle into the biological complex, and the more susceptible those elements will be to environmental loss.

How GMS is Used

IN THE ROW OR SEED BED APPLICATION

Non-toxic GMS was designed to be applied to the crop seed at planting to help germination. Inexpensive drop tubes or specialized devices direct GMS into the seedbed before it is covered over. Also used are squeeze pumps, roller pumps, 12 volt pumps, and gravity-type planter kits.

QUALITY VS. QUANTITY

Today, most agricultural markets are based on quantity with little attention given to product quality.

Quality can be very important in all commodity markets. Farmers with adequate calcium levels in their soils and proper nutrient applications (GMS) to their crops find they can do well with lesser amounts of applied fertility elements, and their crops dry down in the field earlier resulting in less crop drying fuel consumption. Protein levels tend to be higher when soil calcium is adequate and when GMS has been used on the crop.

Likewise, fungal infections such as vomitoxin and aflatoxin can be significant in grain or forage. The problem of fungal infections in forages have always been well recognized, but fungal infections in grain can be problematic, especially for grain intended for ethanol production where rejections can become a serious issue. These fungal infections can be lessened by the Growers program.

BALANCED NUTRITION & CALCIUM

Since 1955, we have advocated the Growers Program—Calcium and GMS—as a way to achieve competitive and quality production. The science behind Dr. V.A. Tiedjens' Growers Program is sound as proven by four and five generations of profitable customer use.

Literature from the fertilizer industry is suggesting there is better nutrient uptake by plants when the plant food (fertilizer) is properly balanced. One article says plant utilization of nutrients is improved when the nutrients are applied to the crop in a balance of specific ratios of all the essential elements. GMS's essential elements are designed to be in proper balance and are meant to be applied in smaller volumes, and at less expense than most fertilizers requiring more total volume.

Excess carbohydrates produced by the plant due to its greater photosynthesis, or production of sugars, are excreted by the crop's root hairs to stimulate microbial colonies on, or next to, the root. Healthy microbial life feeds on calcium, and most all applied nutrition, when not toxic, and makes it more available to the crop. When GMS is applied nutrition, soil life thrives. Soil life and plant health care closely tied.

Calcium and GMS together can dramatically improve crop quality and resistance to fungal diseases often affecting grain crops and the shelf life of fruit and vegetable crops. Calcium deficiencies, plus the lack of GMS in the crop's diet, could result in the deterioration of the plant's cell wall structural integrity.

