



Micro**Essentials**<sup>®</sup>

# MicroEssentials<sup>®</sup> and VRT

*Performance. Profitability. Peace of Mind.*

MicroEssentials<sup>®</sup> advanced crop nutrition technology and variable rate application technology (VRT) are the perfect team to help today's progressive grower efficiently take yield to its highest potential on every acre.

Both technologies provide an exacting approach to meeting the needs of the crop, by filling the identified nutritional gaps. And, because of the MicroEssentials balanced nutritional profile and unique patented granule, MicroEssentials is technology that can help feed each plant to optimize its productivity – taking yield across every acre, in every zone, to new heights.

## **Pre-formulated granule simplifies VRT.**

Each of the three unique MicroEssentials products provides an excellent source of nutrition for all crops needing N, P, S (and Zn). The patented single granule formulation combines these needed nutrients in the right ratio at the right time making them more available and easier to use throughout the season. And, because every granule contains each of the essential nutrients, they are distributed much more consistently and evenly across the field than separate applications, providing a foundation of balanced soil fertility on every acre, for every plant in every zone.

## Critical nutrient ratios make the most of any fertility program.

Every MicroEssentials product contains phosphorus and sulfur (and zinc) in a proper ratio that benefits most crops. Key nutrient interactions between P and S make the nutrients more available and easier for plants to use throughout the growing season.

**MicroEssentials**<sup>®</sup>



- *Phosphorus content level increases 10 to 30%* – Key nutrient interaction between phosphorus and sulfur helps plants take up more of the nutrients applied and P content increases 10 to 30 percent.
- *Sulfur content level increases 10 to 42%* – MicroEssentials delivers an optimal rate of sulfur in two forms: the sulfate form (50%), which is immediately available to developing roots, and the elemental form (50%) which becomes available later in the growing season. As a result, the crop benefits from season-long supply of sulfur.
- *Nitrogen kick-starts young plants* – Plants also start out faster because MicroEssentials delivers nitrogen in the way young plants prefer – in the ammonium form – about 40% ammonium sulfate and 60% mono-ammonium phosphate.
- *Balances soil pH* – The pH of the MicroEssentials granule balances the soil pH around the granule to enhance P availability to the plants.
- *Zinc content level increases 10 to 45%* – because zinc is incorporated into every MicroEssentials SZ granule, zinc is uniformly distributed across the field and readily available to each plant – in fact plant roots come in contact with 12 times more zinc in MicroEssentials than when zinc is applied alone.
- *MicroEssentials S10 (12-40-0-10S)*
- *MicroEssentials S15 (13-33-0-15S)*
- *MicroEssentials SZ (12-40-0-10S-1Zn)*

## Optimize the yield potential of every crop.

Using MicroEssentials as the base of a site-specific fertility program minimizes the possibility of under-fertilizing or over-fertilizing zones in the field. A plant's yield potential is limited by the amount of the most limited nutrient. Supplying adequate levels of the deficient nutrients will maximize yield. And with three formulations, MicroEssentials will always fit in the VRT prescription for any field.

## Optimize the fertilizer investment.

Both VRT and MicroEssentials technologies take a fresh approach to meeting the needs of the crop, by filling the nutritional gaps identified through grid soil testing and precision-based prescriptions.



**During the manufacturing process, sulfur (and zinc) are added and form partial layers around a developing granule.**

In many blended fertilizer programs, the benefits of support nutrients – S and Zn – are lost as plants must seek out the sparse granules across large areas. With S and Zn incorporated into MicroEssentials phosphate fertilizer granules, these critical support nutrients are uniformly distributed and readily available to each plant in the field.

**4-Way Blend Fertilizer Distribution**



**MicroEssentials® SZ Distribution**



● Ammonium Sulfate   ○ Mono-Ammonium Phosphate   ● Elemental Sulfur   ● Zinc

Because MicroEssentials offers season-long availability of nutrients, crop uptake is optimized, plants efficiently use the entire fertility package provided and growers get the most for their fertilizer investment.

**Advanced nutrition PLUS application efficiency.**

Just as precision farming technologies such as autosteer and automatic boom controls have improved application efficiency the advanced nutrition technology of MicroEssentials is enhancing the efficiency of plant nutrition.

■ *Saves time* – MicroEssentials eliminates the costly investment in time, equipment and human resources needed to store, mix, blend and apply the needed combinations of individual fertilizer products.

■ *Easier on equipment* – Highly flowable and less corrosive than other products, means there’s less time spent unclogging or repairing application equipment or components of your plant infrastructure.

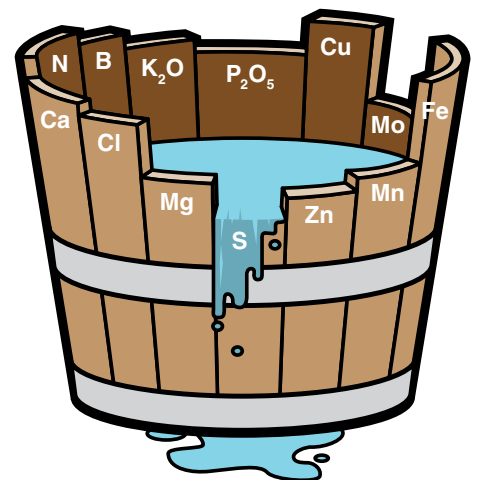
■ *Lower volume* – High analysis means less volume to handle than the equivalent blend of MAP or DAP and additional S or Zn sources.

■ *Versatile* – Convenient and easy to use, MicroEssentials is great spring or fall, in direct VRT application, blends and starter programs. MicroEssentials technology saves time from the plant to the field, adding value to each minute of the day.

By pairing the site-specific precision of VRT and the advanced nutrient technology of MicroEssentials, growers can better match the plants’ nutritional needs with a more available form of key nutrients, limiting over-application of nutrients that may be lost through volatilization or run-off

**Law of the minimum**

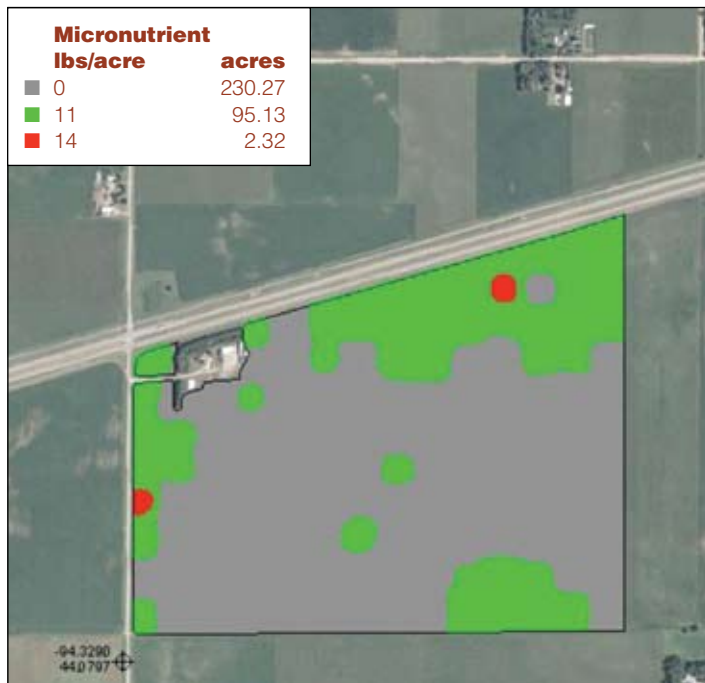
- If one nutrient is lacking, plant growth and yield will be poor, regardless of how abundant all the other nutrients are.
- A crop’s yield potential is limited by the amount of the most limiting nutrient.
- If the deficient nutrient (for example, sulfur) is supplied, growth will increase until the next nutrient becomes limiting (in this illustration, zinc)



## MicroEssentials® and VRT a perfect match

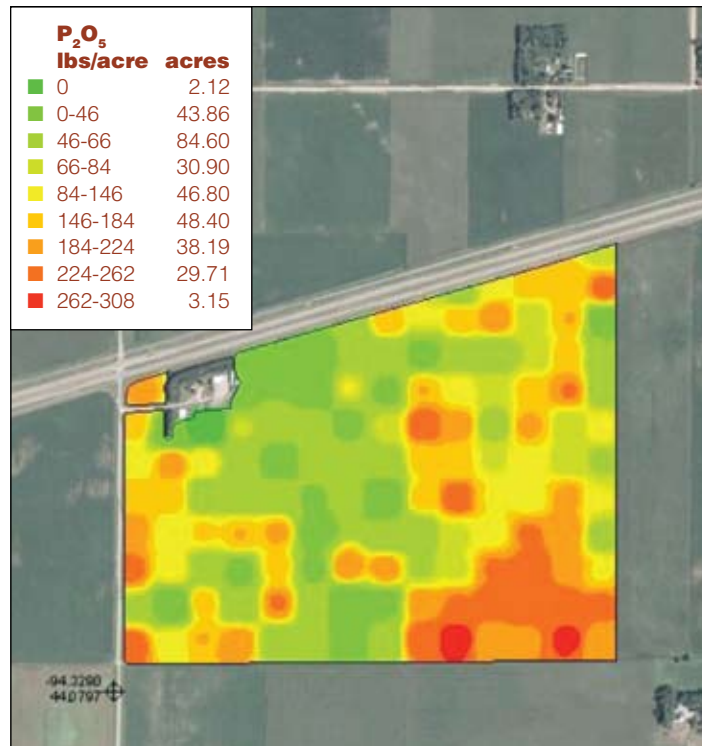
### Example 1: Micronutrient Variable-Rate

**Application** Use MES as the primary P source and vary the rate based on  $P_2O_5$  recommendations. The nutrient value that each granule provides is used to “fill the gaps”. Use the added efficiency that MES will offer on N, P, S, Zn, and take into account benefits from the nutrient synergies (P to Zn ratio; N to S ratio). If there are micronutrient needs beyond what MES provides, supplement those needs spring or fall-applied crediting what MES provided for S and or Zn.



### Example 2: Phosphorus Variable-Rate

**Application** Use 100 lbs/A of MES flat rate and supplement the rest of the  $P_2O_5$  needs with a secondary P source. Supplement micronutrient needs with secondary products (AMS, Zn Sulfate etc.) spring-applied or fall-applied by crediting micronutrient values from MES and varying the rate of micro nutrients needed based on the Micro nutrient values in 100 lbs/A of MES.



Contact your local Mosaic representative or visit our website at [microessentials.com](http://microessentials.com)



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