

# University Research Rejects Efficiency Ratio Claims

“Our results did not substantiate the “efficiency ratios” claimed by the fertilizer manufacturers.” - Zinc Fertilizer Efficiency Ratios, Colorado State University

## What is an “Efficiency Ratio”?

An “efficiency ratio” is the term given to a fertilizer that has either been mixed with something or is applied in a way that is supposed to make it more effective. An “efficiency ratio” of 10:1 allegedly means that the product will deliver the efficiency of 10 pounds of fertilizer, when only 1 pound of actual fertilizer is applied.

## The severe damage done to unknowing growers:

**Soil Test Levels Plummet:** When a soil test calls for 5 pounds of a micronutrient to grow a targeted yield on a specific crop, 5 pounds of that micronutrient needs to be applied to correct the soil deficiency and supply the required amount to the crop. Efficiency Ratio products only supply a fraction of the nutrient that is required and will never raise soil test levels. The soil will become more and more deficient as the crop removes more nutrients than are being replaced.

**Growers Overpay:** The price of a 10:1 efficiency ratio product is not 10 times less than a product containing a 1:1 ratio. By the time the manufacturer, distributor, and fertilizer dealer take their markups, the grower pays the same for 1 tenth the amount of product as he would have paid for a product sold on a 1:1 basis.

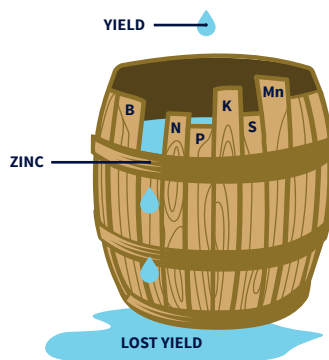
**Yields Suffer:** Because only a fraction of the micronutrient that was needed is applied, crops will not get the nutrient required to reach full potential. The crop may get a small amount of nutrient needed in the early stages of growth, but it won't be enough to last the entire growing season.

**Long Term Effects:** Growers that are continually sold efficiency ratio products will eventually have to correct severely deficient soils. You can't remove more nutrients than you replace over time, at some point massive amounts of the nutrients will need to be applied to correct deficiencies.

## Don't limit your crop's potential:

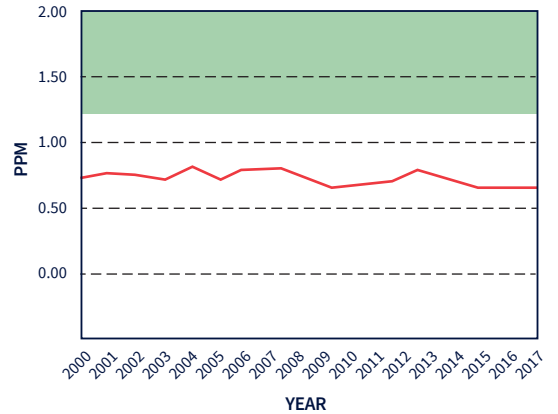
- While they are required in much lower quantities than macronutrients, micronutrients are every bit as important to the successful development of crops.
- **Liebig's Barrel - Law of Minimum:** A plant's growth is limited by the nutrient in shortest supply.
- All your fertility expenses in N-P-K-S and other nutrients will be wasted if soil deficient zinc is the limiting factor on yields.
- You need to keep all macro and micronutrient levels at the right level to maximize yield. If your soil is deficient in a nutrient, yield will escape and your crop may not reach its full potential.
- Review historic levels on your soil test results. If levels have not improved, you may be getting an efficiency ratio product.

Preferred Soil Test Range	
Zinc	3 - 6 ppm
Boron	1.3 - 2.0 ppm
Manganese	13 - 30 ppm
Iron	17 - 25 ppm
Copper	17 - 25 ppm



## Midwest Average Boron Values, 2000-2017

The graph below reveals boron deficiencies that a soil lab has observed for almost two decades. Average boron levels in the soil have remained steady at about 0.70 ppm. However, these levels are well below the preferred soil test range of 1.3 – 2.0 ppm.



▶ Target Range (1.3-2.0 ppm)    ▶ Midwest Boron

This graph shows the combined average boron levels for the Midwest states of MN, NE, IA, and SD. Laboratory data from each state was compiled from soil tests taken over the past 18 years.

## What's the solution?

- Granular micronutrients are the most cost-effective way to correct soil deficiencies.
- A pound of product is a pound of product. Make the most of your investment and apply products that make economic and agronomic sense.
- Let's build and maintain your micronutrient soil levels with quality products.

## ZINC MAXI GRANULAR 35

35% ZINC SULFATE MONOHYDRATE

## MANGANESE MAXI GRANULAR 32

32% MANGANESE SULFATE MONOHYDRATE

## SOURCE BORON 15

MAXI GRANULAR BORON

July 30, 2019



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