

# Trace element analysis of soybean pods shows how MicroMax/XP nutrients quickly move into soybeans

**A**rising concern in the wake of increased glyphosate application in recent years is that *soybeans require higher tissue levels of manganese and other elements to avoid deficiencies which reduce yield.*

Several years ago, tissue analysis of manganese showing 20 parts per million was considered adequate. Now in a glyphosate environment, crop nutritionists often recommend a level of 50 to 100 parts per million.

Glyphosate chelates (ties up) manganese and other micronutrients in soybean tissue.

It also chelates manganese in the soil. Growers are turning to foliar application as a means of avoiding trace deficiencies, which show up as yellow flash, delays in growth, and vulnerability to fungal disease.

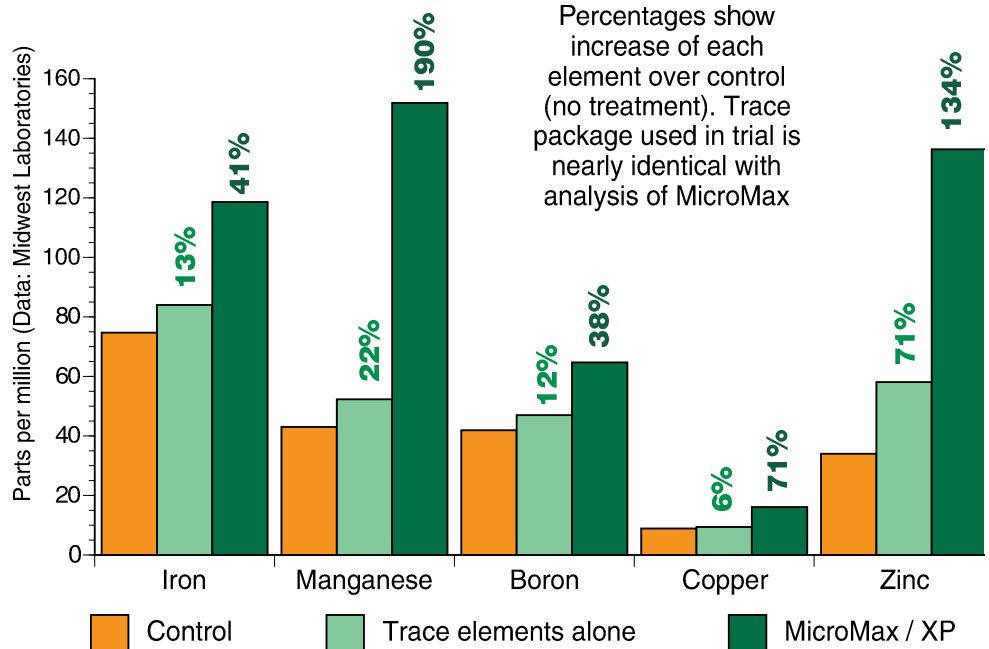
**To meet this need,** Kugler Company developed a trace element blend called KS Micro Max. It contains five primary trace elements. However, these metals aren't easily moved into the leaf and through plant circulation. The answer: *Add a field-proven surfactant and carrier, BinBuster XP, to the foliar-applied trace pack.*

In field trials at late R6 stage, researchers tank-mixed a trace pack nearly identical with Micro Max with BinBuster XP. They sprayed seven soybean plots with the mix Aug. 3, 2010, and took 30 pod samples from each site about two weeks later. Pods were also taken from seven sites sprayed with the trace element mix by itself, and from seven unsprayed control plots in a random-replicated pattern.

As the data in the accompanying chart show, the trace element pack alone raised average manganese levels by 22%, moving tissue from a marginal 43 parts per million to a safer 52 parts per million.

Zinc levels were raised 71% with the trace mix alone, but the efficiency of zinc metabolism in the pod almost doubled when BinBuster XP was included in the tank mix as a surfactant and carrier.

## Trace element content of soybean pods and beans with foliar-applied trace element blend, with and without BinBuster XP surfactant/transporter



Test in August 2010 in cooperation with ACRES research farm, Cedar Falls, IA

Now, Kugler Co. has begun blending BinBuster XP precisely at the factory, making Micro Max into an even more effective product labeled MICRO MAX / XP.

The surfactant in BinBuster XP helps the mineral-rich solution in MICRO MAX / XP spread a thin film across soybean leaves by reducing surface tension.

After trace elements are absorbed, BinBuster XP speeds translocation of trace elements, which are the catalysts and regulators which crops need for health.

MICRO MAX / XP is a "first line of defense" for a healthier soybean crop that can better resist disease.

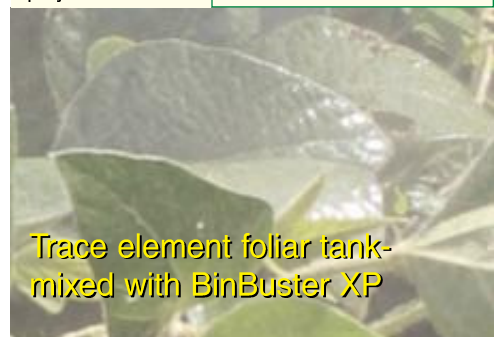


Trace element foliar applied alone

Above, beads form on leaf without the surfactant/carrier, BinBuster XP. Photo below shows how MicroMax / XP forms a smooth film sprayed on the leaf.

### MicroMax/XP trace element analysis % by Wt.

Boron (B)	0.025%
Copper (Cu)	0.5%
Iron (Fe)	1.0%
Manganese (Mn)	2.00%
Zinc (Zn)	2.00%



Trace element foliar tank-mixed with BinBuster XP

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