



160 Airport Drive Skyway Industrial Park Presque Isle Maine 04769 207-762-5771

## **Multi Variant Research Review of Trace Nutrients and Specialty Products**

We have reviewed all of the data we have collected over the past 5 years to see if we could see anything that we might be able to use to draw some conclusions for our growers.

### **OVERVIEW**

This data indicates that a positive effect is found in a number of parameters

The parameters most positively affected are Yield, Specific Gravity and Tuber Calcium.

These parameters are most positively affected with the combination of products.

If you are going to use any one product to increase these parameters it would be TEM 16

If you want the biggest impact on yield, specific gravity and tuber calcium you should apply all products together.

We evaluated the following data set

#### **Description of Data Set:**

5 years of research

6 potato varieties

10 growers

2 states and 2 provinces

With 6 different products

For a total of 43 trials

We evaluated the following products

#### **Product used**

Liquid Zinc and boron (some multiple applications)

Oro RZ

Nano Cal

TEM 16

GAB DG 101

We found a great deal of interesting information

And some information that was of very little use.

This is usually the case when a great deal of data is evaluated.

Most of the time in trials that we perform we are most concerned with yield because this is how our growers make their money. However, we collect a huge amount of data when we do trials not just yield. Including; size distribution, tuber calcium, specific gravity, dry weights, tubers per plant, tuber set, root mass and tubers per plant.



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When we went through all of the data looking at all parameters, we started to see some interesting correlations of results when evaluating with multiple parameters and parameters interactions

Specifically, when we looked at

Yield specific gravity and tuber calcium together we saw some interesting observations

Many of these studies were done with growers that follow ATC/CCC nutrient program but there are also growers who were not.

This was a huge amount of data to evaluate. All of this data was actually collected over a number of different trials for a number of different clients

I wanted to see if there was any correlation with all of the data collected over all of these trials.

This evaluation was some what satisfying in that it confirmed a program that has been used for years works very well

IT was found that those trials that showed the lowest yields, lowest specific gravity, and tuber calcium were those treatments that received none of the products above

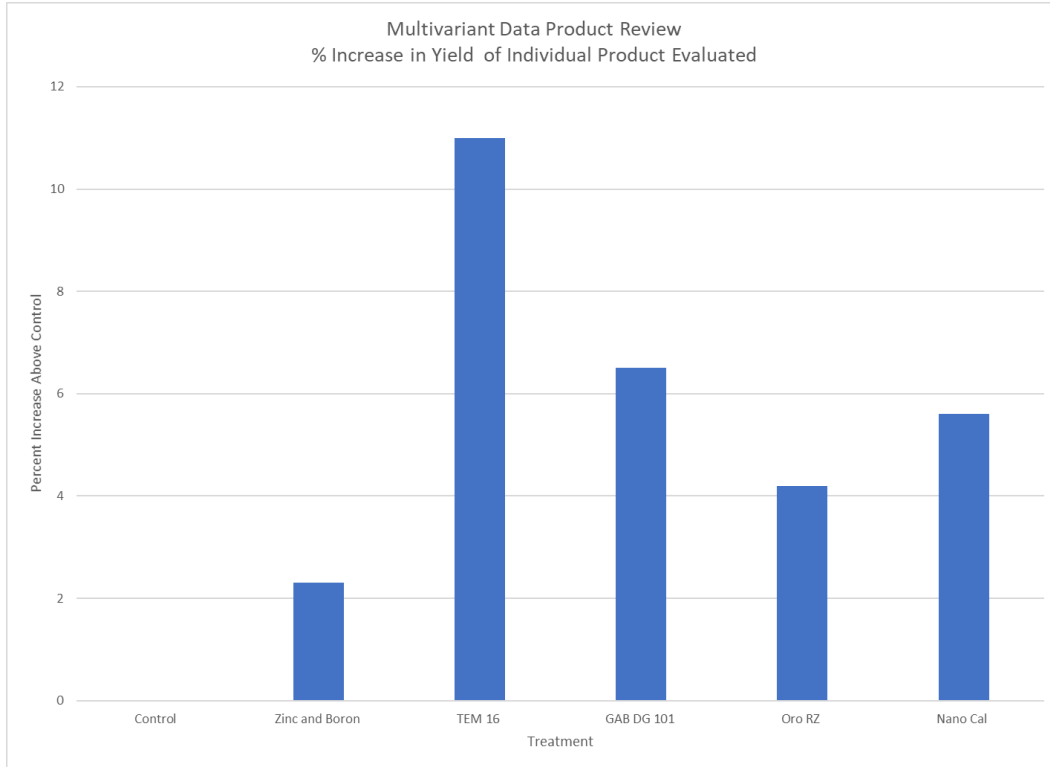
Those treatments that showed the highest yield, specific gravity, and tuber calcium for grower, variety and year are those treatments that received TEM 16, Foliar Zinc and Boron, ORO RZ and Nano Cal.

When We looked at the data for products individually, we found that each of them had an impact on each of the parameters we evaluated.

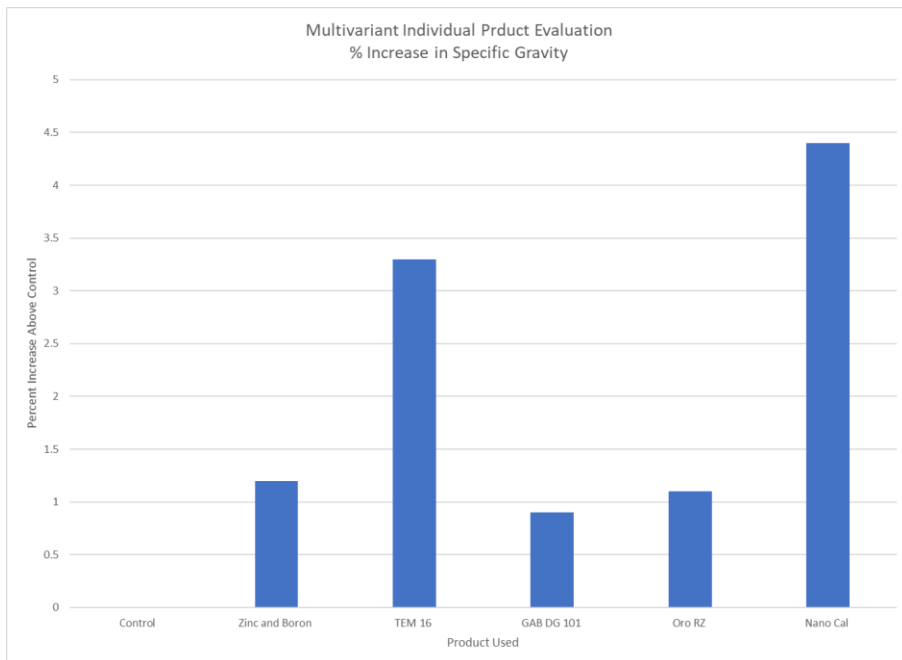


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## YIELD



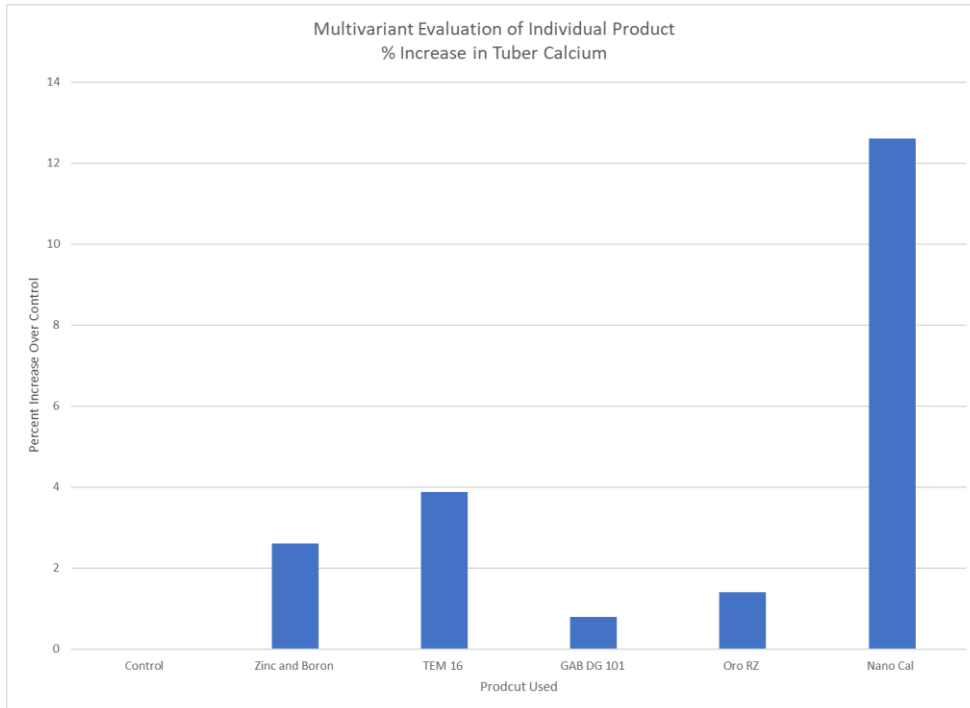
## SPECIFIC GRAVITY





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## TUBER CALCIUM



As can be seen from the data above each of the products have an impact on the individual parameters evaluated.

The product that had the biggest impact is the addition of TEM 16 to growing program. But all products have an impact individually.

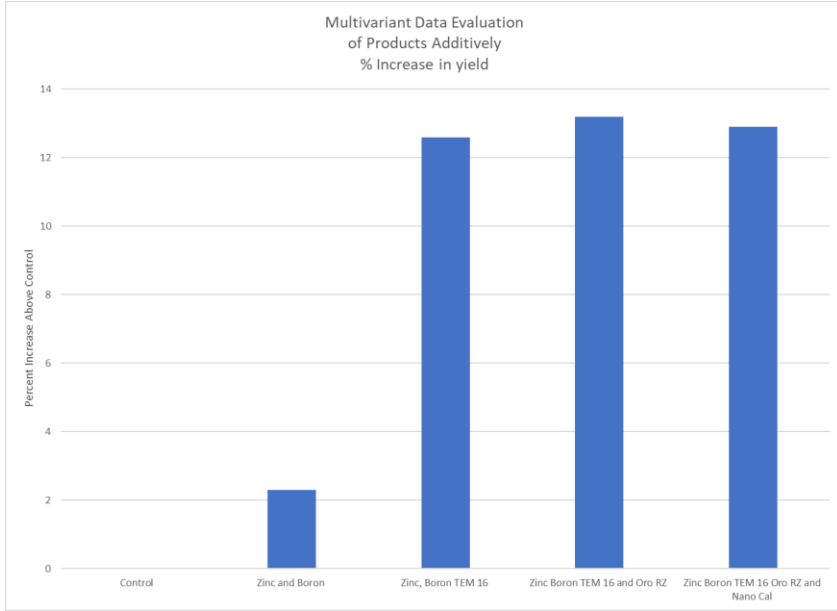
However, when the data parameters are evaluated in combination with the products used more interesting information can be found.

Using these products together have a far larger impact than the individual products alone.

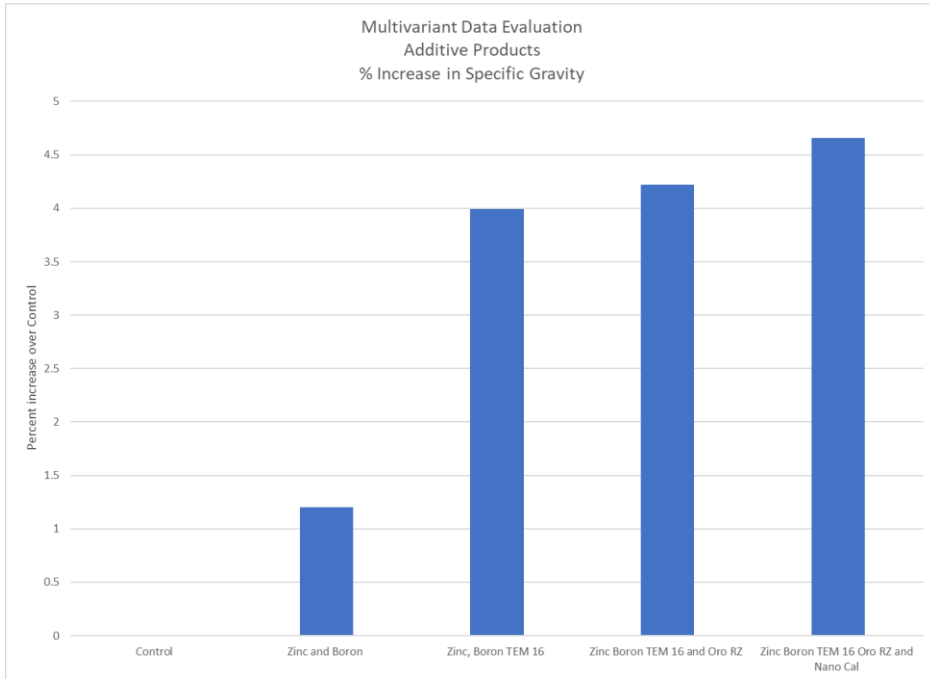


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### Percent increase in yield over control multiple products



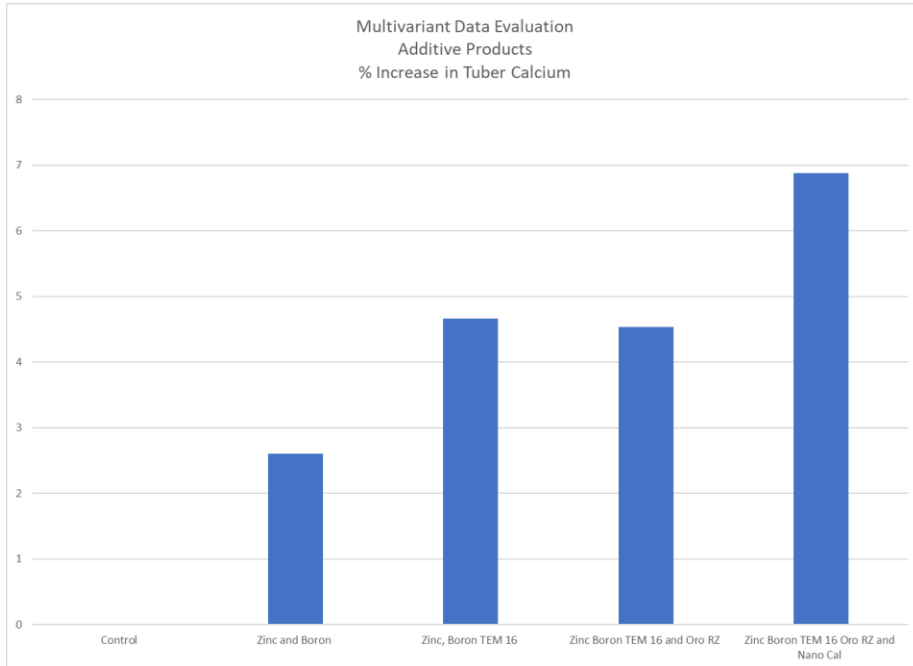
### Percent Increase in Specific Gravity





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### Percent increase of Tuber Calcium



Yield specific gravity and tuber calcium were affected by the addition of the products evaluated in these research trials.

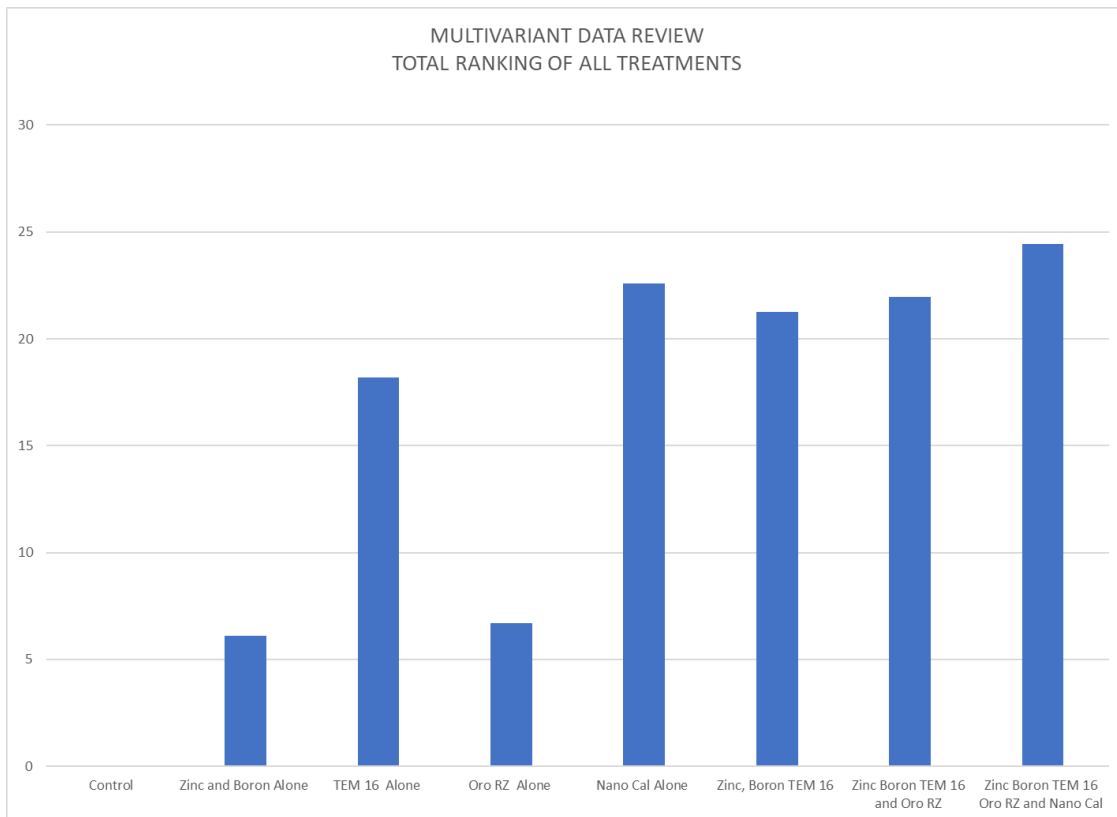
The controls that did not receive any of the products evaluated showed the lowest yield, specific Gravity and Tuber Calcium

1. Zinc and Boron at 2 quarts per acre each
2. Zinc and Boron, and TEM 16 at 2 quarts per acre
3. Zinc Boron, TEM 16, and ORO RZ
4. Zinc Boron, TEM 16, ORO RZ, and Nano Cal showed the highest yield, specific gravity, and tuber calcium on individual grower, variety, and year



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Over all ranking of products individually and in combination



The data above shows to get the biggest impact on yield, specific Gravity and Tuber Calcium the application of TEM 16 first and foremost. For a crop that is highest in yield, specific gravity and tuber calcium all products should be used. Using these products will give you the best result regardless of variety, soil type, fertility practices and environmental condition.

**GAB DG 101** was a unique treatment and some what of an outlier

GAB was shown to increase root mass on every trial

GAB showed an increase set on every trial

GAB showed the largest increase in yield with the trials that have the longest growing season

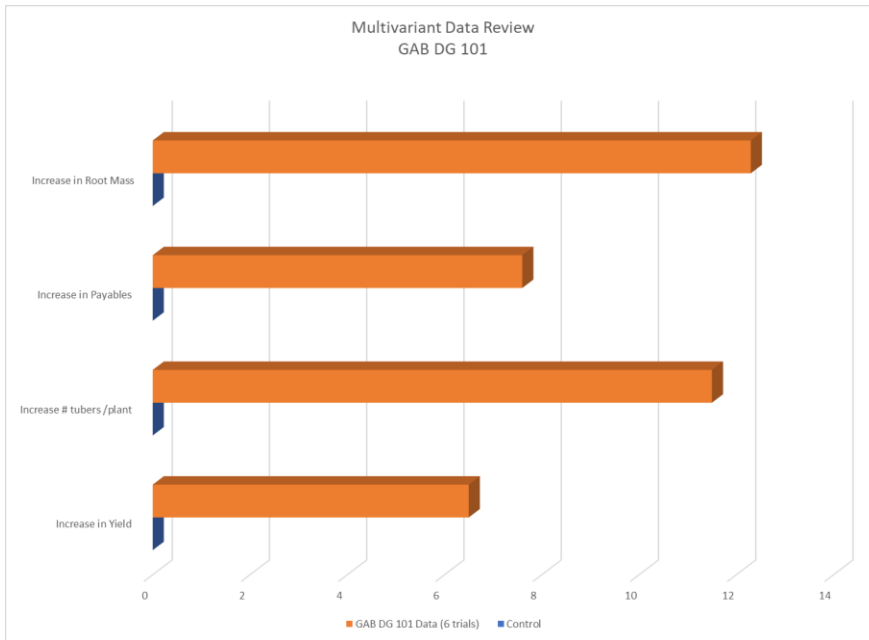
GAB showed the largest increase in yield with trials that have the best fertility.

GAB was shown to increase yield on trials that had the lowest soil organic matter and the highest soil organic matter.



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### GAB impact on crops







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### Multiple Boron Applications

There was an increase in specific gravity and tuber calcium when there were multiple applications of boron through out the season. These differences were small.

There was little effect on yield with the additional applications of Boron but there was an improvement of size distribution with the addition boron.

