

## TANK MIXING METALOSATE PRODUCTS WITH AGRICULTURAL CHEMICALS

### **Metalosate<sup>®</sup> Amino Acid Chelated Minerals**

All of the micronutrients contained in the Metalosate<sup>®</sup> products are truly chelated with amino acids. This means that the elements are generally protected from interaction with other materials in the spray tank and yet remain available for absorption into the foliage of the crop. Metalosate products are compatible with most fertilizers and agricultural chemicals, however the following factors should be considered before tank mixing.

### **Environmental Conditions During Foliar Applications**

The best responses to Metalosate product applications are obtained under conditions which are optimal for plant growth. Metalosate products should not be applied to crops under stress because of the increased possibility of injury. Crop stress can result from drought, extreme temperatures, disease or insect damage, and many other factors.

### **Buffering Capacity of the Metalosate Products**

The Metalosate products have the capacity to lower and buffer the pH of the spray water. The final pH of the spray solution will depend on the particular

products in the mix, their concentrations, and the acidity or alkalinity of the source water.

A more acidic spray solution has the effect of increasing the activity and lifespan of many agricultural chemicals. This can lead to a greater effect of the chemical on the target pest, but may also increase the possibility of phytotoxicity to the crop. Be careful of maximum rates of chemicals when applied in combination with Metalosate products, especially on crops known to be sensitive or under conditions where phytotoxicity is likely to occur.

The Metalosate amino acid chelates have the ability to associate or complex with other materials in a spray solution and carry them into the plant along with the minerals. This effect will increase the rates of absorption of these materials or cause the absorption of compounds that would otherwise remain on the surfaces of plants. The result is a magnification of the effect of any chemical that can cause phytotoxicity on its own.

### **Phosphorus Materials**

Phosphorous fertilizers which have a pH of 6 or less are compatible with Metalosate products. Phosphorous fertilizers with a pH greater than 6 are not compatible with the Metalosate products unless the pH of the spray solution is adjusted to be less than a pH of 6 prior to the addition of the Metalosate products to the spray solution. The Metalosate products are compatible with phosphite materials; however, care must be taken to avoid ending up with a tank mix



solution which is too low in pH. In the case of Aliette® manufactured by Bayer CropScience®, the aluminum contained in this product can become toxic if the pH is extremely low (<3).

## **Agricultural Chemicals Containing Heavy Metals**

Tank mixes of Metalosate products with chemicals containing heavy metals will result in foliar absorption of these metals by the crop. For example, many fungicides contain copper or tin as their active ingredient. Do not apply a combination of Metalosate products with these products where absorption of these metals will cause phytotoxic effects.

## **Sulfonylurea Herbicides**

The sulfonylurea group of herbicides is manufactured primarily for broadleaf weed control on dry land cereal grains. All products in this class of herbicides are very sensitive to acid hydrolysis. The acidic buffering capacity of the Metalosate products will cause the breakdown of these herbicides in the spray tank over time and reduce their effectiveness. Storage of a tank mix of sulfonylurea herbicides and Metalosate products for any length of time is not recommended. In addition, certain members of this group are physically incompatible with Metalosate products.

## **Tank Mixing Instructions**

Any unknown combination of chemicals to be tank mixed should be tested first by blending a small quantity of the ingredients together in the proper proportions. If a precipitate or separation forms in the solution, or any other adverse reaction takes place, then these chemicals should be applied separately.

The spray tank should first be filled to at least one half capacity with clean water and start agitation. Add the

total amount of the Metalosate product to the tank and allow it to completely dissolve in the water. Then add the chemicals in the following order:

1. wettable powders
2. flowables
3. emulsifiable concentrates
4. oils
5. surfactants and other spray adjuvants.

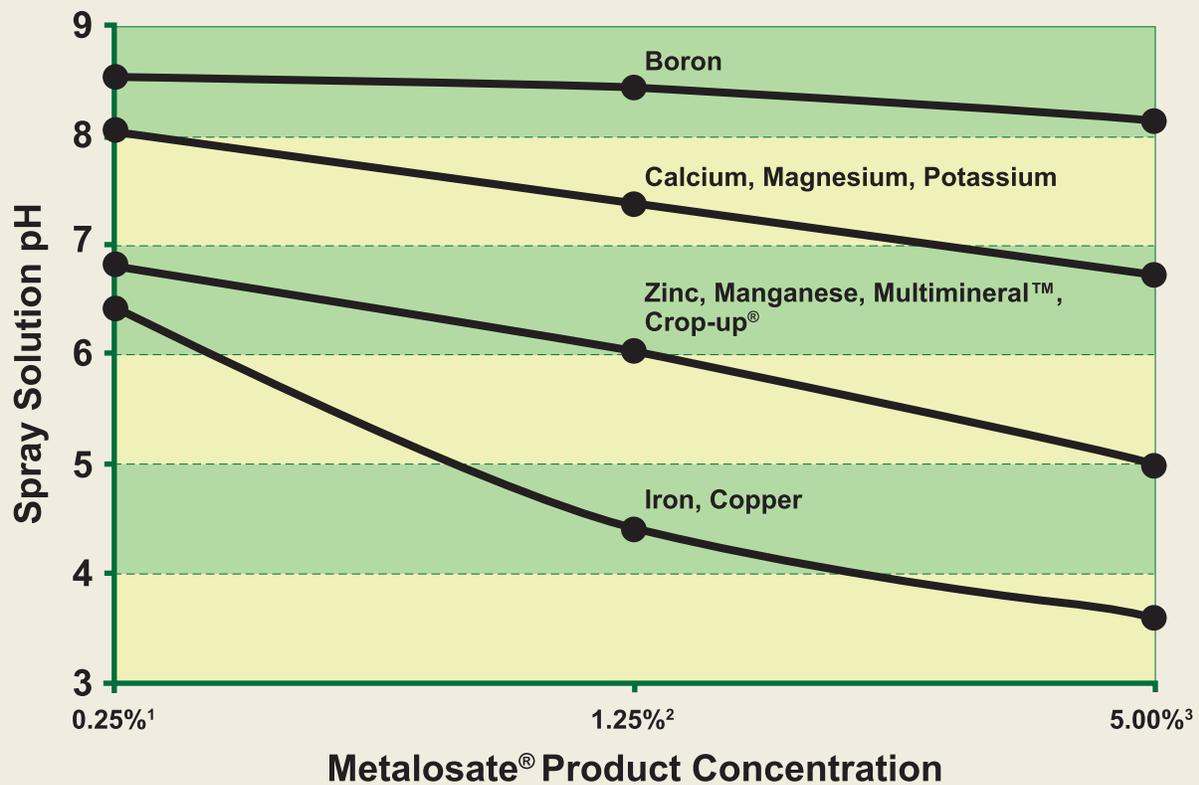
Allow each chemical to completely disperse in the solution with good agitation before adding the next one. Finally, finish filling the tank and immediately spray the crop while maintaining good agitation. Because it is impossible to know all of the different components that may go into the various tank mixes and conditions under which they may be applied, this technical bulletin should be used only as a guide. It is advisable to conduct trials on a small scale to determine the specific effects that may be encountered in each region before recommending Metalosate product blends across large areas. For more information about foliar applications of tank mixes with Metalosate products, contact the Albion Plant Nutrition representative in your area.



## Buffering Capacity of Amino Acid Chelates

Effect of Metalosate® Product Concentration

On pH 8.5 Source Water



<sup>1</sup> 0.25% = 1 quart per 100 gallons water = 250 ml per 100 l water

<sup>2</sup> 1.25% = 1 quart per 20 gallons water = 1250 ml per 100 l water

<sup>3</sup> 5.00% = 1 quart per 5 gallons water = 5 l per 100 l water

## Metalosate®

### Liquid Foliar Products

- » Boron
- » Calcium
- » Copper
- » Iron
- » Magnesium
- » Manganese
- » Potassium
- » Zinc
- » Crop-Up®
- » NPK
- » Multimineral™
- » MZ™
- » Tropical™
- » Zinc Plus™

### Organic Foliar Products

- » Calcium
- » Calcium Boron
- » Copper
- » Iron
- » Magnesium
- » Manganese
- » Zinc
- » Crop-Up®
- » Multimineral™



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