



## Retailer Bulletin

# What Goldilocks can teach us about boron application in crops

Producers who have grown cotton, alfalfa or a number of root or vegetable crops know that Boron is an important nutrient. The role it plays in the plant is so central to cell wall formation that a lack of boron leads to a collapse in the plant's ability to lay down new cells and create new structures. This can in turn lead to catastrophic yield loss in crops where cell walls ARE what is harvested (like cotton, broccoli, sugar beets, etc).

Unlike most other nutrients, with boron there is a fine line between having too much and not enough. Like the story of Goldilocks and the Three Bears, growers need to have "not too much", and "not too little", but an amount of boron that is "just right". Getting the rate of boron wrong can mean suffering yield loss. Ideally, growers should aim for between 1 and 2 ppm of plant-available B in the soil.

### New research studying plant available Boron

Wolf Trax has completed a study comparing plant-available boron levels in soil for a granular boron application versus Boron DDP as a fertilizer coating. The experimental design, commonly used by soil scientists, allows you to track the amount of plant-available boron over time, as well as study distribution of the nutrient in soil bands. Treatments included Granular boron (15%) applied at a commonly-recommended rate (1 lb/acre), Boron DDP coated onto a macronutrient blend at 0.8% w/w, and an untreated check. Plant available (Hot water-extractable) boron levels were measured in four-inch segments of the simulated seed bed to track distribution of the nutrient, every week for 4 weeks.

### Results:

- Untreated check - The four "slices" of the seed bed band all had 0.4 to 0.5 ppm of boron. That can be a fairly low level for sensitive crops. This level did not change over time.
- Wolf Trax Boron DDP - The four slices of the band from the Boron DDP treatment all had roughly 2.2 to 2.6 ppm boron after 7 days, showing even distribution throughout the seed bed. That level is a near perfect amount of boron for the growing seedling. Levels of plant-available boron stayed in the 1 to 2 ppm range right to 28 days after initial incubation.

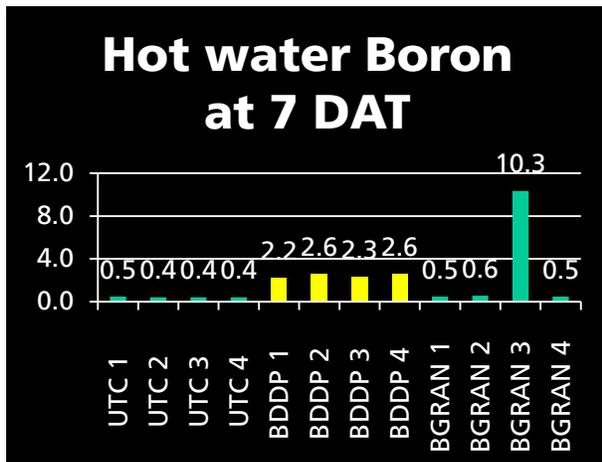
(continued)

- Treatment with Granular boron – After 7 days, there was no boron in three of the four slices, and a massive (ie. toxic) amount of boron (10.3 ppm) in only one of the four segments. By 28 days of incubation, there was some boron showing up in one neighbouring segment.

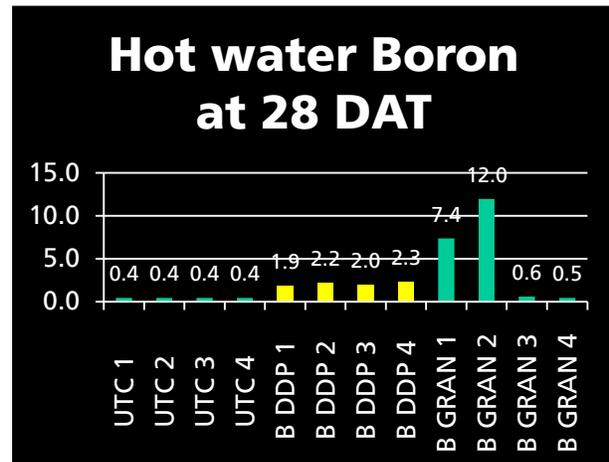
**What this means:**

The strategy of using granular boron resulted in having either “too little” boron in the soil at four inches to the side of the segment where the granule fell, or “too much” boron where granule fell. It is evident that the immediate area around a boron granule holds too much boron. We expect this commonly occurs in the field. These levels of too-little, or too-much would be further compounded by irregular distribution in the field caused by inconsistent blends of granular boron and heavier N, P and K granules. A study measuring granular boron distribution in the field with a floater applicator attempting a rate of 1 lb/ac resulted in variability of over 4000% in boron levels from point to point in the field.

The strategy of using Boron DDP as a Fertilizer Coating on a macronutrient blend allows for a gentle and even 2 ppm level of plant available boron throughout the band. This level of boron is ideal for plant growth. Or as they say in the Goldilocks story – an amount of boron that is “just right”.



**Figure 1** 7 days after application, Boron DDP as a fertilizer coating delivers between 2.2 and 2.6 ppm plant available (Hot water-extractable) boron throughout the seed bed. In contrast, granular boron results in massive dosage where granule falls, but is not available 4 inches away.



**Figure 2** 28 days after application, Boron DDP as fertilizer coating continues to deliver between 1 and 2 ppm plant available (Hot water-extractable) boron throughout the seed bed. In contrast, granular boron results in massive dosage where granule falls; movement of boron is detected in one direction.

*You and Wolf Trax...Growing Forward® together.*

For more information on the Wolf Trax DDP family of Innovative Nutrients, please call 204-237-9653, or visit us at [www.wolftrax.com](http://www.wolftrax.com).