

**From:** Denny Wildman <denny@advancedageast.com>  
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**To:** 'adagwildman@embarqmail.com'  
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## ▶ **Roots, Shoots, and Fruit**

*Agronomic Tips from Denny Wildman*



### Plant Reproduction – Part TWO, the **METALS**

**Hello all.**

In Part One in our discussion about plant reproduction, we talked about FLOWERS, and their important role in setting up the plant for quality fruit production.

We also talked about the importance of managing Cytokinin and Auxin, the two hormones that work together to set up the reproductive phase for quality yield.

Each hormone action is powered by or impacted by metals.



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**During flowering three metals are essential for the flower to progress through the seed, flower, pod, and into fruit development. These metals are:**

**Calcium – Boron – Manganese.**

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**Manganese** extends the presence of Cytokinin/Auxin – which is essential for enacting proper cell division and arrangement when the two hormones meet.



When bacterial spot on fruit becomes visible, it is often traced back to the early reproductive action during flower formation.

Also, when bacterial spot appears on the foliage it typically is due to insufficient manganese. This impacts reproductive activity – and the delicate balance of cytokinin to auxin.

**Boron** is closely associated with Auxin and Calcium, so close in fact, that it is hard to talk about one without the other. For example, consider alfalfa...

When soils have sufficient calcium, stem production is more active and it's easy to notice more stems per crown, and with sufficient Boron to Calcium, more leaves per stem. It is not easy to accomplish this goal with Boron - and soil application alone will not accomplish this feat.



**Calcium:** A well known researcher calls calcium the second messenger. Calcium's role in the reproductive phase is to enhance the transport of sugars through the action of cytokinin. You might think of calcium as giving the sperm enough energy to crack the egg.

Put another way, think of a tube with sugar crystals hanging to the inside of the tube – then when pollen speeds down the tube, it grabs the sugar which provides the energy to crack that egg when the two meet for action.



Calcium and Boron are important for effective pollination of corn. We've all seen the "tip back" problem on corn. The "tip back" problem is more pronounced when insufficient level of calcium and boron are not present to support cytokinin and auxin during pollination.

Also, Calcium and Boron insufficiency causes fewer kernels on boss ears and most likely, lower seed weight. As well, the mid and shrunk ears have fewer total kernels and of course lower weights in seeds. The strength of pollination is referred to as "Nick" ([Click HERE for more information](#))

Your Stoller toolbox is well equipped with products to balance cytokinin/auxin levels as well as provide the adequate levels of metals to help manage the reproductive phase for maximum fruit production..

#### **Products to consider:**

- Sett Enhanced - for Calcium and Boron
- Calcium 5X - for Calcium
- Nitrate Balancer - for Boron
- Keylate Manganese - for Manganese
- X-Cyte - supports Cytokinin levels

#### **Crop Recommendations:**

- **Grain crops:** Nitrate Balancer – Keylate Manganese – Calcium 5X or X-Cyte
- **Veg crops:** Sett Enhanced – X-Cyte – Manganese
- **Soybeans:** Sett Enhanced – X-Cyte – Manganese
- **Fruits:** Sett Enhanced – Calcium – Manganese

The above recommendations provide a good foundation for effective management of the reproductive phase but they may be adjusted for your specific region.

As always, your calls are welcome.



**Denny Wildman**

**330.507.1838**

[Denny@AdvancedAgEast.com](mailto:Denny@AdvancedAgEast.com)

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**Our mailing address is:**

Advanced AG East

10161 S.t Route 193

Farmdale, OH 44417

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