

## Post-Harvest Nutrition For Stone Fruit Trees



*Photo above: Peach trees in South Carolina. If no leaves, how do we apply immobile micronutrients?*

A major challenge for stone fruit growers is delivering the right nutrients at the right time to support reproductive development and sustain a heavy fruit load.

The macronutrients nitrogen (N), potassium (K), phosphorous (P), calcium (Ca), magnesium (Mg) and sulfur (S), should always be managed through the soil, unless there are absorption problems caused by pH or other impacts like nematode that could impact root effectiveness. Many times when we apply certain foliar micronutrients, they have the capacity to be stored in local fruiting branches but they don't have the ability to be mobilized and stored in the roots like potassium or nitrate can be. As you can see from the peach trees above, we also don't have sufficient leaf area present during bloom, so whichever micronutrients that we wish to have in the fruiting branches need to already be present to impact bloom, leaf development and early fruit development. This is why if you cut/remove a stone fruit branch during bud swell and place it in a vase with warm water it will actually still bloom without any additional nutrients in the vase water within 2-4 weeks of removing it. For micronutrients that are needed in high concentrations in buds/fruiting wood or for those that are relatively immobile, post-harvest foliar sprays can be a critical tool. Three important micronutrients to address post-harvest are **boron, zinc, and manganese**.



3-18-0, 5.7 Zn 2.5 Mn



5.7 B, 0.35 Mo

**Boron (B)** is needed early in the season for new growth; root and shoot tips, pollen tube growth and fruit set (Wojcik and Wojcik 2006) and early fruit development and quality (Cheng and Raba, 2009). Studies have also shown that post-harvest fall sprays increased fruit set and yield in plum (Chaplin et al., 1977). Applied B appeared to move from leaves to flower buds in the fall and into flowers the following spring (Hanson et al., 1985). These studies indicate that post-harvest applied B may move in a similar manner in other tree fruit species to help support fruiting functions.

**Zinc (Zn)** shortage may seriously impair tree performance if there is a deficiency between bud break and fruit set. A short supply of Zn leads to poor growth of the leaves and new shoots, as well as abnormal development of pollen tubes. Since zinc is not readily mobile within the tree, applications must be timely for optimal response. Foliar Zn application during the growing season can cause fruit russetting in certain species. This gives way to post-harvest being one of the "right times" to make a foliar zinc application. Apricots are the only exception in stone fruit when it comes post-harvest foliar zinc sprays as past studies have revealed significant injury following application. Zinc deficiencies are especially a problem in sweet cherries.

**Manganese (Mn)** does many things to support tree health, photosynthesis and plant metabolism. Mn is not very phloem-mobile in the plant so storability in the roots prior to dormancy and ability to translocate Mn to bud wood is very small. Therefore, a post-harvest/pre-dormancy spray of Mn may be a good option to store adequate levels of Mn in the fruiting wood to ensure strong shoots and leaves as well as improve photosynthetic abilities. Manganese also plays a role in respiration, scavenging of reactive oxygen species (ROS), pathogen defense, and hormone signaling (Alejandro et al., 2020).

Improving utilization of these micronutrients is also an important factor to maximize productivity. The technology found in our **Fertileader** line-up (SEACTIV Complex, IPA) can benefit beyond nutrition, and helps nutrient absorption and translocation while combating abiotic stresses like heat, drought and heavy rainfall.

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