

## Boron in tree fruit and nut crops

Boron is essential for all plant growth

Without enough boron, fruit and nut trees typically suffer dieback of branches, premature fruit drop, and poor nut or fruit development as well as cracked or misshapen fruit.

### Consistent quality

Profitability is based on high yields of quality fruits and nuts that store and ship well. Nutrition plays a vital role. Boron is the key nutrient for flowering, fruiting, and internal and external fruit quality. Research has related boron concentration in leaves to fruit quality and fruit set. Fruit and nut crops need a constant supply of boron during all growth stages, especially during flowering, and nut and fruit development.

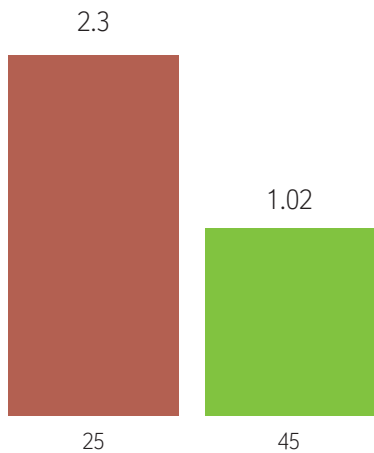
### Boron supply

Making sure that the crop has adequate boron will:

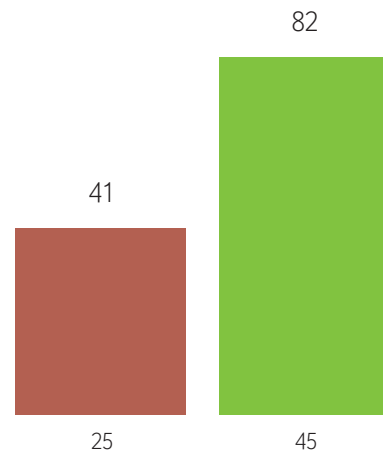
- Increase flowering, pollination, and fruit set
- Reduce losses from internal and external corking, fruit cracking, pitting, deformation, and discoloration
- Lessen bitter pit and gum spots
- Help move sugars and nutrients from the leaves to the fruit
- Ensure nut fill, and reduce premature nut and fruit drop

### Key Apple Findings

#### Fruit cracking index



#### Non-bitter pit



Leaf boron concentration (ppm)

Cracking Index: 0-normal, 1-light, 2-medium, 3-severe

Source: University of Maryland



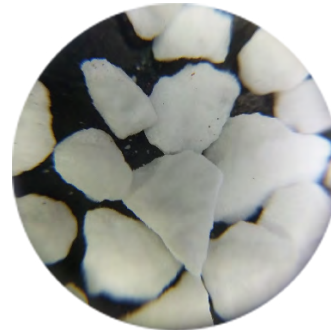
## The Difference Between Borate Sources

Unrefined borates  
(ulexite, colemanite and hydroboracite)



- High presence of impurities and arsenic (heavy metals)
- Irregular granulometry
- Incomplete solubility in water
- High hygroscopicity
- Inconsistent boron release
- High dust content, creating segregation and irregular distribution of the product in the field
- Limited field tests and certifications

Refined borates  
(*Granubor*)



- No impurities, dust, fillers, coatings, or added ingredients
- 100% water soluble
- Average particle size (2.8 mm) is perfect for blending with NPK fertilizers
- Very low hygroscopicity, again, ideal for mixing with NPK fertilizers
- Gradual boron release for consistent and long-lasting benefits
- Hard granules decrease dust formation during handling, application, and transport
- OMRI-listed and USDA-certified for use as a fertilizer in organic agriculture
- Mined and refined in the USA

*Granubor* delivers more water soluble boron to plants at a more affordable price

