



## Foliar Ca during Fruit Development in Cherries

### Agronomics / Background

Fruit calcium (Ca) level is one of the most important factors relating to fruit quality in cherry production. Calcium plays a critical structural role in the formation and stability of both cell walls and cell membranes. High fruit calcium levels have been shown to decrease incidence of skin cracking during rain events. This is believed to be due to the increased tensile strength of cell walls in the fruit skin with higher Ca concentration.

High fruit Ca will also give cherries better flesh firmness, better stem retention, and reduced stem shrivel. These advantages occur due to stronger cell walls at harvest and a decrease in activity of enzymes that degrade pectins. As a result, high Ca cherries can have a higher proportion graded suitable for the export market. Soft rots that occur post-harvest like *Botrytis* and *Monilinia* will also be less prevalent.

### Conditions Leading to Ca Deficiencies

Most soils used for cherry production have adequate levels of calcium for leaf development. Ca related fruit disorders occur due to the lack of mobility of Ca within the plant. Early in fruit development, Ca will move through the transpiration stream via the xylem directly from the soil into the fruit. Excess early season vegetative growth due to high nitrogen levels can lead to an imbalance of too much Ca going to the leaves and not enough into the fruit. Low soil moisture and/or high heat will also diminish Ca uptake from the soil.

As the fruit gets larger, the xylem delivery into the fruit will be cut off and only the phloem will be able to supply the fruit. Calcium is completely immobile in the phloem so from this point forward only foliar calcium applications that directly contact the fruit will be able to increase fruit Ca levels.

### Desired Ca Tissue Test Values

During the summer, leaf Ca levels should be around 1.2-2.4%. However, this may not be a good indicator of how much calcium actually got into the fruit where it is most needed in cherries. Analyzing fruit calcium levels can be helpful in predicting Ca related disorders but it varies significantly between varieties. It is much more reliable to examine past effects of cultural and fertility practices on actual fruit quality parameters like firmness.

### Key Application Timings and Rates

Foliar calcium applications can begin as early as petal fall. Early applications may be especially advantageous if conditions for soil uptake are impaired or if there is excess early season shoot growth. Most cultivars will benefit from at least 2-3 foliar applications. For varieties and/or locations more susceptible to soft fruit and rain cracking, 6 or more sprays may be needed. These should be spaced out throughout the fruit sizing period in order to maintain adequate fruit Ca concentration as the fruit get larger. Effects on reduced fruit cracking will be stronger if foliar applications are made proactively throughout fruit development, rather than a single spray a day or two before a rain event.



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## BRANDT Products

BRANDT has several foliar calcium formulations that are highly effective and provide good crop safety:

**Foli-Cal<sup>®</sup>**

**BRANDT<sup>®</sup> Manni-Plex<sup>®</sup> Cal Zn**

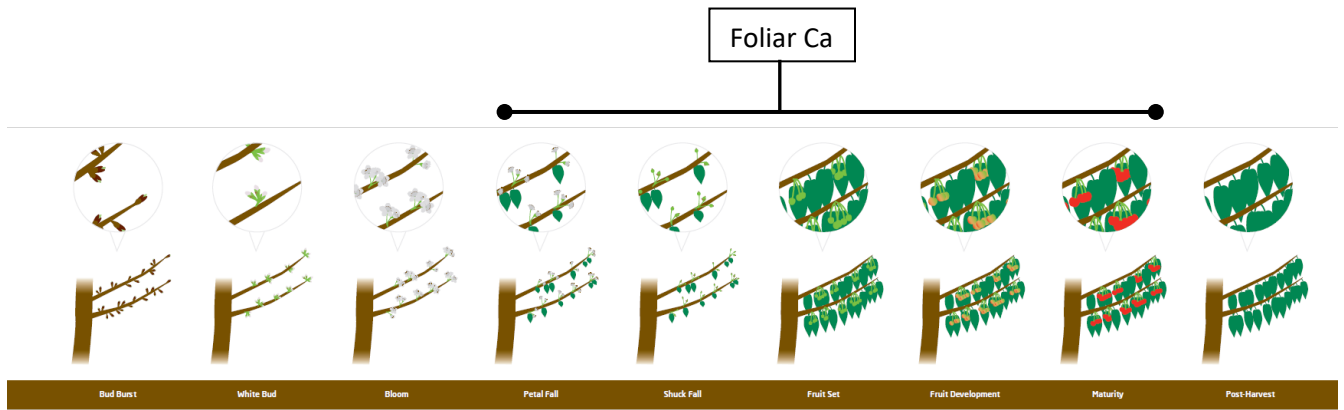
**BRANDT Manni-Plex Cal Mag**

**BRANDT Manni-Plex Cal-B**

These formulations are all complexed with sugar alcohols to improve nutrient delivery.

**BRANDT<sup>®</sup> Organiplex<sup>®</sup> 8% Ca** is an amino acid complex and is approved for organic use.

For all these formulations, 1-2 quarts per acre per application will work well.



**Cherry rain cracking** (source Oregon State University Extension Service)

