The Importance of Rootstocks By LeeAnn Barton

Part of growing in experience came when I moved to Oklahoma and began gardening in what appears in many ways to be a hostile environment. Temperatures fluctuate to break record highs and lows in the span of a week; rain and humidity can jump from scarce to profuse. No longer was I able to choose plants simply for sun or shade exposure I entered into a crash course of gardening in extremes.

Basic botany brought me back to examine, analyze and put into practice principles essential to success. Today I want to address success with fruit trees. Working in retail nurseries for nearly twenty years, I often heard customers state, "I tried cherries (or apricots or whatever). They won't grow here." But when asked what rootstock the fruit was grafted on to, a blank look crossed their face.

It all comes down to common sense and basic botany.

The roots of a plant are the part that interacts with the soil. Roots, and in the case of fruit trees the rootstock, are the principal avenue of water and nutrient uptake. Roots do more than merely anchor a plant to the soil and while anchorage is an important function, it is but one of many.

Unlike a perennial propagated by vegetative growth, fruit trees are budded or grafted onto a rootstock. This allows a grower (and gardener) the opportunity to learn about a rootstock's traits and choose one that fills the requirements of a specific growing condition or region.

Traits bred into rootstocks that affect the viability of a fruit tree can be cold hardiness, tolerance to wet or dry soil or for resistance to disease. Rootstocks are chosen to determine the ultimate size of a tree and have a direct effect on how many years until that tree will bear fruit.

Understanding the basic functions of a plant's roots one can easily recognize why rootstocks may be the life or death of a tree. For instance, a rootstock that prefers dry soil is not going to flourish in soil that is frequently wet (be it by rain or sprinkler). On the other hand, a rootstock that requires moisture during the hot summer cannot be expected to survive in a field without supplemental irrigation. The same variety of apple or cherry tree can be a success on one rootstock and a failure on another.

Working with gardeners and orchardists on a daily basis, I am often asked why one (especially someone on a budget) would pay a higher price for a tree at an independent nursery when the big box store offers the same thing for $10-$15 less. I always ask about the rootstock. Is it identified and labeled with care instructions? Understanding how that information is instrumental in tipping the scales toward your tree being healthy in *your* zone and *your* soil, recognizing fruit within your lifetime is effected by the rootstock....would that knowledge, in the big picture be worth $10?

The old adage "Let the buyer beware" in the instance of purchasing fruit trees should read "Let the buyer be *aware*"! Price is not always everything.

Chill Hours

Chill hours or chilling requirement is a horticultural term specific to deciduous fruit trees. Different varieties of apples, cherries, plums and peaches need different amounts of cold to produce fruit. Chill hours are the number of hours after a tree goes dormant in winter that the temperature stays between 45° and 32°F. When the required number of hours is filled and the weather begins its spring warming, the fruit tree will open its blooms.

In warm winter areas like southern California, Arizona, Florida or Houston, fruit varieties need to be classified as "low-chill", having hours that fall between 100 and 400. Areas with colder winters can have 700-1000 chill hours.

Consider this calculation: Beginning December 1, temperatures fall below 45° degrees at 8pm and stay below 45° until 6am the following day. That is 10 chill hours. If it does this consistently through the month, at the end of the month, 300 chill hours are registered in the tree's biological computer. If this continues through January, 600 hours have accumulated.

Chill alone is not enough to send a tree into bloom; it must be followed by consistent warming during the day. A warm day here and a weekend there will not trigger the bloom. Consistent temperatures (in my mind) are a two or three week stretch with nighttime temperatures above 45°.

In January of 2009, Oklahoma temperatures registered in the 70's for about three weeks. It was wonderful for gardeners and puppies to play in the sun, but February turned back into a mild winter. Peach trees (with 700 chill hours) that normally begin blooming in late-March burst into color at the end of February. The tiny fruit tolerated the cool, but with the end of March came 17F°, followed a week later with another 17°F and a third "hard" freeze. I covered my trees and watched the outer fruit die first, and the inner peaches succumb during the final cold.

Oklahoma's inconsistent weather makes it more difficult to grow some fruit that can be easily grown farther north where spring temperatures arrive and vacillate. Fruit trees requiring less than 700 hours are a gamble.