

POLLINATION

Pollination, flower fertilization and fruit set

While pollination may seem almost overwhelmingly complicated, the ground rules are actually quite simple. There are exceptions, but for all practical purposes they are as follows:

- 1. For self-pollinating fruit trees, pollination requirements need not be considered.**
- 2. For fruit trees requiring pollinators, plant at least two viable pollen varieties blooming in the same season for best results.**
- 3. In an average season, most varieties of a fruit type will overlap enough in bloom time for good pollination; however, avoid relying on extremes in the bloom chart to pollinate each other (i.e., an early bloom season diploid to pollinate a late bloom season diploid).**

Fruit trees are either self-pollinating or require pollination by another variety.

<u>Self-Pollinating</u>	<u>Requires a Pollinator</u>
<i>Tart Cherries</i>	<i>Apples</i>
<i>Peaches</i>	<i>Sweet Cherries</i>
<i>Nectarines</i>	<i>Pears</i>
<i>Apricots</i>	<i>Plums</i>

Certain varieties set a better crop with separate pollinators, but are still listed as self-pollinating. With these varieties, the crops produced with self-pollination are generally not as large, in volume and fruit size, as when another variety is used as a pollen source.

For best results with apples, sweet cherries, pears, plums and apricots, always plant at least two different varieties capable of cross-pollination. See the following pages for details on sweet cherries (page 20), pears (page 32) and plums (page 35).

A few popular apple varieties have an extra set of chromosomes. These are called triploids, and among the traits associated with these varieties are large size and sterile pollen. Consequently, triploids can never be used as a pollinator. They are noted with PS (pollen sterile) in our bloom chart on page 14.

You will often see the statement “any diploid in its season” listed as a pollinator reference. Varieties with a normal chromosome count are known as diploids and generally are acceptable as pollen sources.

Season of bloom is the other important factor when considering pollination needs for apples. Any early season diploid will pollinate any other early season variety, and is true of mid and late season diploids. See the bloom chart on page 14 for which varieties bloom together. You will notice there is a great deal of overlap. In fact, in a warm spring because the bloom times are compressed, almost all apple varieties will overlap and, therefore, pollinate each other. In a cooler spring where the bloom season is extended, bloom time relationship is more important. Pear, plum and cherry bloom times are similar enough that bloom sequence need not be considered, except as stated in those sections.

Flowers produce the pollen. Without pollination, fruit will not set and develop. In an apple flower, the pollen germinates after it is transferred from the stamen (male) to the pistil (female). This pollination results in fertilization and the seed develops. Normal fruit develops only after this has taken place.



Planning with pollinators for varieties that need, or do better with, cross-pollination

Use solid pollination rows for easier cultural and harvesting practices, with one pollinator for every four trees of the primary variety.

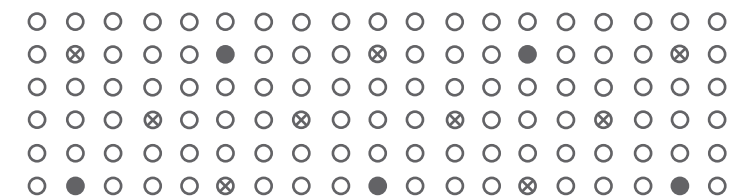


Generally, in orchards of less than 10 acres with multiple varieties, pollination is not a problem. A safe rule is to plant varieties in blocks not to exceed two rows wide on the edges of the orchard or four rows wide in the center.

For best production, the tree to be pollinated should never be more than two or three trees away from the pollen source. Crab apple pollinators should be 10-15% of the total number of trees and no more than 50' apart, as a rule of thumb. Pollination may also be done by budding or top grafting the pollinating variety on to an existing tree.

In unusual circumstances, controlled pollination through the use of bouquet placement, beehive inserts and pollen dusting or spraying are effective.

If cross incompatibility or cross unfruitfulness exists, such as in pollen sterile (triploid) apples or sweet cherry varieties, then plant at least 3 varieties.



Alternate Crab Pollination Planting Plan
 ⊗ = early blooming ● = late blooming

A good alternative plan is using an early blooming crab variety along with a late blooming crab apple variety to cover the bloom period. These would be best trained as slender spindle trees planted between rows.