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Why Fruit Trees Fail to Bear

Where apples, pears, plums or sweet cherries are to be grown, plant two or more varieties side by side or graft two or more varieties on one trunk to permit cross-pollination. For the home garden that has limited area, grafting two varieties on the same tree where it can be done easily (apples, for example) is a procedure to insure proper pollination.

The cross-pollination varieties must bloom at the same time and be compatible. The length of the blooming season varies from 7 to 15 days depending on the fruit, varietal strain and weather. Cold, windy and wet weather may prevent bees from flying during fruit bloom so the flowers are not cross-pollinated.

Sour cherries and most grapes and peaches set fruit with their own pollen. Remember, pear pollen is not effective on apples, plum pollen is useless on cherries, and so on. Japanese and European plum varieties are not effective pollinators for each other and Burbank will not pollinate Shiro. Sour cherries are not effective for sweet cherries.

Apples: There are a number of apple varieties that we call "triploids" which do not have viable pollen. Examples of such varieties include Baldwin, Rhode Island Greening, Winesap, Stayman, Gravenstein, Mutsu, Jonagold, etc. These varieties produce little or no good pollen and are not only highly self-unfruitful, but are worthless for pollenizing other varieties. If you plant one of these varieties, it should be interplanted with two other varieties that produce good pollen. Early blooming varieties, such as Lodi, are not satisfactory pollenizers for a late-blooming variety like Northern Spy, because in most seasons, there is not enough overlapping of the blooming season. Plant early bloomers with early- or mid-season bloomers.

Pears: Only Flemish Beauty and Dutchess d'Angoulene seem to be self-fruitful. And only Bartlett and Seckel will not pollinate each other.

Plums: Japanese-type varieties must be cross-pollinated by another Japanese-type variety. Therefore, Shiro and Santa Rosa will cross-pollinate each other because of their common Japanese derivation. Imperial Epineuse and Damson are European types that will cross-pollinate. Our two most popular varieties, Stanley and Fellenberg, are self-fruitful, but seem to bear better when planted together.

Peaches: Nearly all peach varieties are self-fertile, yet they all seem to benefit from cross-pollination. The J.H. Hale is self-infertile and must be cross-pollinated. In other words, the grower must get a second variety in his peach planting to pollinate the J.H. Hale. June Elberta is another self-infertile variety.

Apricots and Nectarines: All common varieties appear to be self-fruitful.

Sweet Cherries: Sweet cherry varieties are highly self unfruitful. Further, Bing, Lambert, Emperor Francis, and Napoleon are inter-unfruitful.

Two groups that are inter-unfruitful are Black Tartarian and Early Rivers and the other group is Abundance and Windsor. The new variety "Stella" is self-fruitful. This is the only self-fruitful sweet cherry.

Sour Cherries: No cross-pollination is necessary for sour cherries; they will set fruit with their own pollen. This statement is true for Montmorency and Morello -- the common tart cherry varieties. There are a few tart cherry varieties like MC 15 or "Shook" tart cherries which genetically are a sweet cherry type that needs to be cross-pollinated with a sweet cherry like Hedelfingen.

Other Factors: Other than pollination, the following are factors which may be the reason why some trees fail to set fruit:

1. Winter injury to dormant blossom buds.
2. Frost damage to blossoms in the spring
3. Extremely weak trees caused by overbearing (fail to thin fruit the previous season), unfavorable growing conditions, defoliation by insects and disease the previous year.
4. Over-vigorous trees caused by too much fertilization and/or too heavy pruning.
5. Poor nutrition, especially lack of nitrogen and moisture during the blooming period.
6. Disease, such as brown rot of stone fruits, apple scab, fire blight (often-called blossom blight), will prevent pollination.
7. Insect damage to blossoms.
8. Temperature too low during the bloom period for pollen tube growth.

Agents of Pollination: There are many agents of pollination other than bees. However, bees for commercial growers are most important. That is the reason commercial fruit growers rent bees in their orchards for pollination purposes. Insects other than bees visit flowers and serve as pollinating agents. Flies, wasps, beetles, butterflies, moths and other insects work flowers for pollen and/or nectar and help pollinate those flowers. The better a flower of an apple tree, for example, is pollinated, the more seeds it will have and the more uniform and larger the fruit will be.

Resource: *Homeowner's and Part-time Farmer's Fruit Guide*, by Richard Norton, Cornell Fruit Specialist, Revised March 1979.

TK 11/2008