ALABAMA A&M AND AUBURN UNIVERSITIES

ALABAMA COOPERATIVE Extension SYSTEM

ANR-53-E

Fruit Culture in Alabama

Fruitfulness and Pollination

To better select fruit for planting, growers should become familiar with the terms used to describe pollination characteristics and fruitfulness of different fruit types. Some of the most basic terms that need to be understood are *pollination, self-pollination, cross-pollination, self-fruitful, cross-fruitful, parthenocarpic,* and *perfect-flowered*.

Pollination refers only to the transfer of pollen from the anthers (male structure) of one flower to the stigma (female structure) of the same or another flower. The processes of pollination and subsequent seed formation are generally necessary for fruit set and development of most fruit plants.

Self-pollination occurs when flowers are pollinated by pollen within the same horticultural variety from the same or different trees. Most peach varieties, such as Redhaven, are fruitful when self-pollinated and therefore can be planted in very large blocks without using a second variety.

Cross-pollination occurs when flowers of one variety are pollinated by pollen from a second variety. For example, Golden Delicious varieties are often used in apple orchards to cross-pollinate Red Delicious varieties.

Self-fruitful implies that a single variety of a given fruit type will produce satisfactory fruit crops when grown by itself. This may occur because the variety is self-pollinating (such as peach) or because they are parthenocarpic (such as some persimmons, figs, and satsumas).

Cross-fruitful implies that cross-pollination is required among two or more varieties to produce satisfactory crops. Red Delicious apple varieties, for example, are cross-fruitful when cross-pollinated with varieties of Golden Delicious.

Parthenocarpic basically means fruit are produced without complete seed development, resulting in seedless fruits. Satsuma, for example, has sterile pollen, mostly nonviable ovules, and is highly parthenocarpic, which results in the production of seedless fruit.

Perfect-flowered means that flowers of that variety have functional male and female parts. Carlos is a perfect-flowered muscadine grape that is self-fruitful and is used as a pollinator for female type varieties such as Fry.

Insects, especially bees, are essential pollinators of most fruit plants, such as rabbiteye blueberries shown here.

Pollination and fruiting characteristics of fruit plants are described in Table 1.

Whether a fruit type is self-fruitful or requires cross-pollination influences how varieties are arranged in a planting. For self-fruitful plants, single varieties perform well when planted alone. For fruit types requiring cross pollination, two or more varieties of each type should be planted. Planting entire rows with the same variety makes management of cultural practices and harvesting much easier and more cost effective. When only the minimum number of pollinators is desired, a pollinator variety should be planted as every third plant in every third row.

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Table 1. Pollination and Fruiting Characteristics of Fruit Types

Fruit Type	Characteristic	Description
	Tree Fruit	
Apple	Cross-pollinating	Plant two or more varieties of each type for cross-pollination. Golden Delicious apple varieties tend to be at least partially self-fruitful when planted alone.
Pear	Cross-pollinating	Use a second variety every two to four rows. Plant only two to three rows of the same variety.
Asian pear	Cross-pollinating	Some varieties appear partially self-fruitful, but a minimum of two varieties should be used.
Peach	Self-fruiting	
Nectarine	Self-fruiting	
Quince	Self-fruiting	
Plum	Cross-pollinating	Plant two or more varieties of each type for cross-pollination. Exceptions to this general rule are Methley, Homeside, and AU Producer plums, which are generally self-fruitful.
Cherry, sweet	Cross-pollinating	Sweet cherries are not recommended in Alabama because of freeze problems. Pollination requirements are also very exacting.
Cherry, sour	Self-fruiting	Montmorency sour cherry is self-fruitful.
Oriental persimmon, astringent	Self-fruiting	
Oriental persimmon, nonastringent	Self-fruiting or cross-pollinating	Nonastringent persimmon varieties, such as Fuyu, are self-fruiting but can shed excessively and may require the use of pollinators, such as Gailey, to ensure full cropping.
Pomegranate	Self-fruiting	
Fig, common	Self-fruiting	
	Small Fruit	
Bunch grape	Self-fruiting	
Muscadine grape, perfect-flowered	Self-fruiting	
Muscadine grape, female	Cross-pollinating	Female muscadine grape varieties must be planted with perfect types for cropping.
Blackberry	Self-fruiting	
Raspberry	Self-fruiting	
Blueberry, rabbiteye, highbush, and southern highbush	Cross-pollinating	Two or more varieties of the same type, such as rabbiteye, must be planted for cross-pollination. Rabbiteye blueberries generally fruit best when a varietal sequence of two to one is used across the planting, such as two rows of Tifblue and one row of Premier. Highbush blueberry varieties are more self-fruitful but usually benefit from interplanting two or more varieties.
Strawberry	Self-fruiting	A few of the varieties available, such as Apollo, require cross-pollination.
	Subtropical and Exotic Fruit	
Satsuma	Self-fruiting	
Kumquat	Self-fruiting	
Meyer lemon	Self-fruiting	
Kiwifruit	Cross-pollinating	Kiwifruit have male and female varieties that must be interplanted to ensure cropping. One male is used for every five to ten female plants.
Feijoa	Cross-pollinating	