Cross-Pollination Planting Plans[1]

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Self-incompatibility is a problem with several of the citrus hybrid varieties. The problem is due to slow pollen tube growth and/or resultant inadequate cross pollination. Fruit set is often quite low and productivity is compromised. One means of overcoming self-incompatibility is cross-pollination with a compatible pollen. This is the most common corrective measure used in Florida; however, this results in seedy fruit. The variety used as a pollen source is the pollenizer and the honeybee, which carries the pollen between the 2 varieties, is the pollinator or vector. A good pollenizer for a self-incompatible variety should have the following characteristics:

1. Sexually cross-compatible
2. Overlapping bloom period
3. Produce large amounts of pollen
4. Produce flowers every year
5. Produce commercially marketable fruit
6. Be as cold tolerant as the main variety

At times one must accept a less than perfect pollenizer variety; however, the limiting factors (1, 2 and 4 above) cannot be compromised.

Pollenizer Planting Plans

Plan A (Table 1) and Plan B (Table 2) are usually satisfactory for trees with space on 4 sides and less satisfactory for tight hedgerows. Plan C (Table 3) is suggested for hedgerows but it requires more pollenizer trees. In the plans, P is the pollenizer, while M is the primary or main variety.

Two basic plans are used when trees are maintained as individuals, i.e., pruned on 4 sides. Plan A uses 20% pollenizers and Plan B about 11%. This takes into account the habit of bees to work back and forth between about 2 rows. These plans may not work as well where trees are hedgerowed because bees tend to limit flights up and down the hedgerows instead of crossing over 2 adjacent rows. The best solution to this problem is not known but Plan C should suffice, however, it results in the use of 33% pollenizers.

It is noteworthy that Robinson produces very little pollen. Robinson works satisfactorily with Orlando if most of the trees are Robinson and a few are Orlando. Under this situation both fruit well. Robinson does not produce sufficient pollen to effectively cross-pollinate a large number of Orlando. Also, Orlando is such an excellent pollenizer that alternating rows of Robinson and Orlando may result in excessive fruit setting of Robinson and subsequent limb breakage. Temple requires scab control. Thus, it should be planted in pollenizer rows, instead of using individual trees interspersed with the main variety in order to facilitate

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spraying. Minneola is not a satisfactory pollenizer, even though it is cross-compatible with some self-compatible varieties because it tends to have low flower production in some years. However, it may work satisfactorily if the ratio or quantity of Minneola is increased, as either paired rows of Minneola or equal numbers of Minneola and the other cultivar (Sunburst).

There is yet one other alternative to the previous planting plans. Plan D (Table 4) is used by some growers to facilitate harvest of pollen cultivar. Boxes can be placed for a set of 4 trees.

Table 1. Plan A is usually satisfactory for trees with space on 4 sides and less satisfactory for tight hedgerows. P is the pollenizer and M is the primary or main variety.

Plan A										
P	M	M	M	M	P	M	M	M	M	P
P	M	M	M	M	P	M	M	M	M	P
P	M	M	M	M	P	M	M	M	M	P
P	M	M	M	M	P	M	M	M	M	P

Table 2. Plan B is usually satisfactory for trees with space on 4 sides and less satisfactory for tight hedgerows. P is the pollenizer and M is the primary or main variety.

Plan B					
M	M	M	M	M	M
M	P	M	M	P	M
M	M	M	M	M	M
M	P	M	M	M	P
M	M	M	M	M	M

Table 3. Plan C is suggested for hedgerows but requires more pollenizer trees. P is the pollenizer and M is the primary or main variety.

Plan C						
P	M	M	P	M	M	P
P	M	M	P	M	M	P
P	M	M	P	M	M	P
P	M	M	P	M	M	P

Table 4. Plan D is used by some growers to facilitate harvest of pollen cultivar. P is the pollenizer and M is the primary or main variety.

Plan D													
P	P	M	M	M	M	P	P	M	M	M	M	P	P
P	P	M	M	M	M	P	P	M	M	M	M	P	P