

A planting plan for avocados

When planting an avocado orchard, three objectives to consider are:

1. to maximize production during the early productive years of the orchard
2. to provide for cross-pollination, and
3. to provide for a systematic tree-removal program to maximize production at maturity.

Maximizing early production

Early production can be maximized by planting trees closer together than that which is considered ideal for the same variety at maturity. In so doing, all the land and solar energy are effectively and efficiently used. When trees are small and production is light, the production per acre is in proportion to the number of trees. Young tree population may be twice that of mature tree population, therefore production can be doubled. This situation may exist until trees start to crowd and the lower fruiting surfaces are lost due to shade.

Cross pollination

Field trials and grower observations continue to support the need for cross-pollination for avocados if maximum production is to be attained. Cross-pollination has three prerequisites;

1. varieties of both A- and B-type flowers must be present,
2. both varieties must bloom during the same period,
3. either bees or other large insects must be present.

In addition, optimum day and night temperatures are required for flowers to function properly, bees to perform adequately, and for the fertilization and development of the resulting embryo into a young avocado fruit.

Tree removal program

If an orchard is close set at planting time to maximize early production, then as the orchard matures the grower faces a problem of excessive tree crowding with reduced fruiting surface, resulting in lower production. Crowding also increases harvest costs since the only fruit produced is high above ground in the hard-to-reach canopy of remaining foliage.

Admittedly, orchard thinning - the removal of producing trees - is one of the more distasteful tasks for any grower. A serious grower must deal with tree crowding with positive steps, and these must be taken soon enough and with conviction.

There is no set rule for timing orchard thinning. When the orchard should be thinned depends on the original spacing and the rate and type of tree growth. The rate of tree growth, in turn, depends upon the variety, soil type and depth, and climate - while the type of growth varies with each variety. Thin out trees before crowding and before the loss of sunlight causes shading out of the skirts or lower fruiting surfaces.

The decision as well as the task of removing trees in crowded orchards is made easier if an orchard is originally planted with a plan which includes all three stated objectives.

A planting plan

The following is a planting plan suggested for avocado growers in Ventura County. It may also be applied to other areas with any suitable varieties.

The Hass and Bacon are the most commonly planted varieties in Ventura County. Both complement each other in this planting plan.

The Hass is a semi-spreading tree requiring at least a 40'x 40' planting distance at maturity. It is a precocious bearer. The flower type is A.

The Bacon is a tall, upright tree requiring less ground space at maturity. It is also a precocious bearer. The flower type is B.

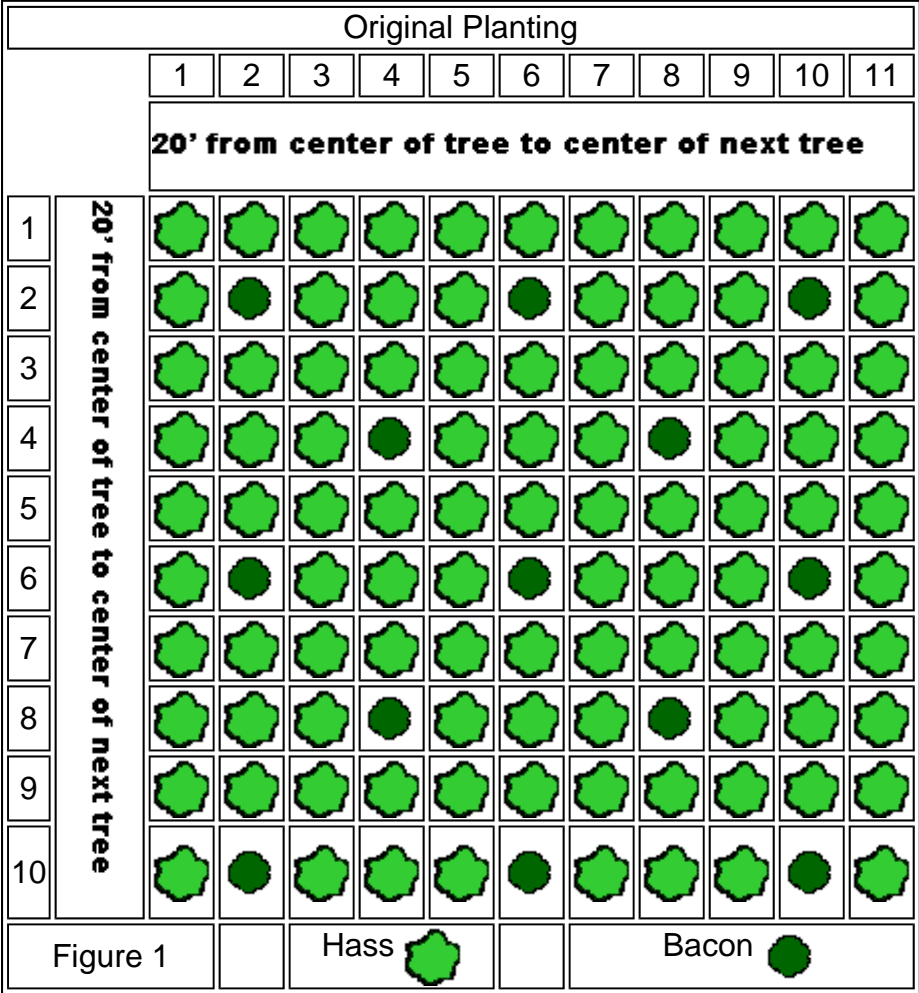
These two varieties complement one another as to flower type and growth habit. While Bacon fruit is of lower quality than the Hass, it does provide the necessary pollen for the Hass flowers and because of its growth habit, it can be planted between mature Hass without over-crowding.

The suggested planting distances for Hass are any combination using 18 and 22 feet as parameters. Hence, 18x18, 18x22, 20x22, etc., etc. depending on soil type and depth which affects the ultimate size of a tree. This planting plan can be used with any of the planting distances mentioned above.


























































A common planting distance is 20x20 feet. Remember in developing a planting plan, each group of four Hass trees, after two or three tree removals, should "see" a Bacon tree if adequate pollen is to be provided.

Original planting

At the time of the original planting (figure 1), the odd numbered rows are solid Hass. Every other even numbered row (2, 6, 10) starts with a Hass, then a Bacon, and three Hass, alternating down the row. The alternate even numbered row (4, 8, 12) starts with three Hass, then a Bacon, and alternates down the row. There are 100 trees per acre (97 Hass, 13 Bacon).

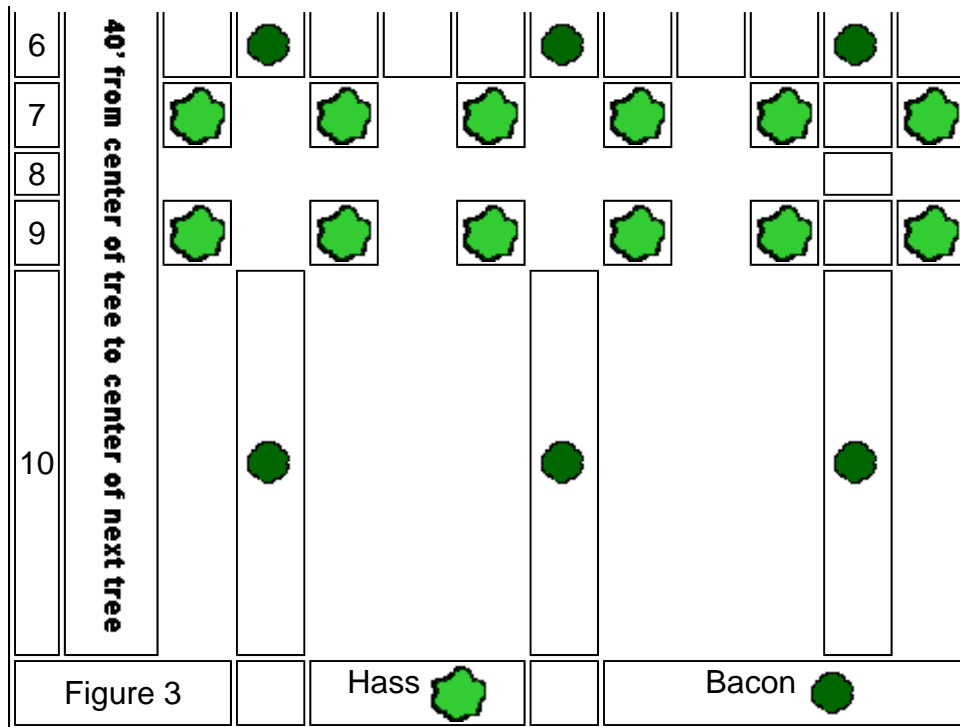


First removal

First Removal												
	1	2	3	4	5	6	7	8	9	10	11	
	40' from center of tree to center of next tree											
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
	Figure 2		Hass 		Bacon 							

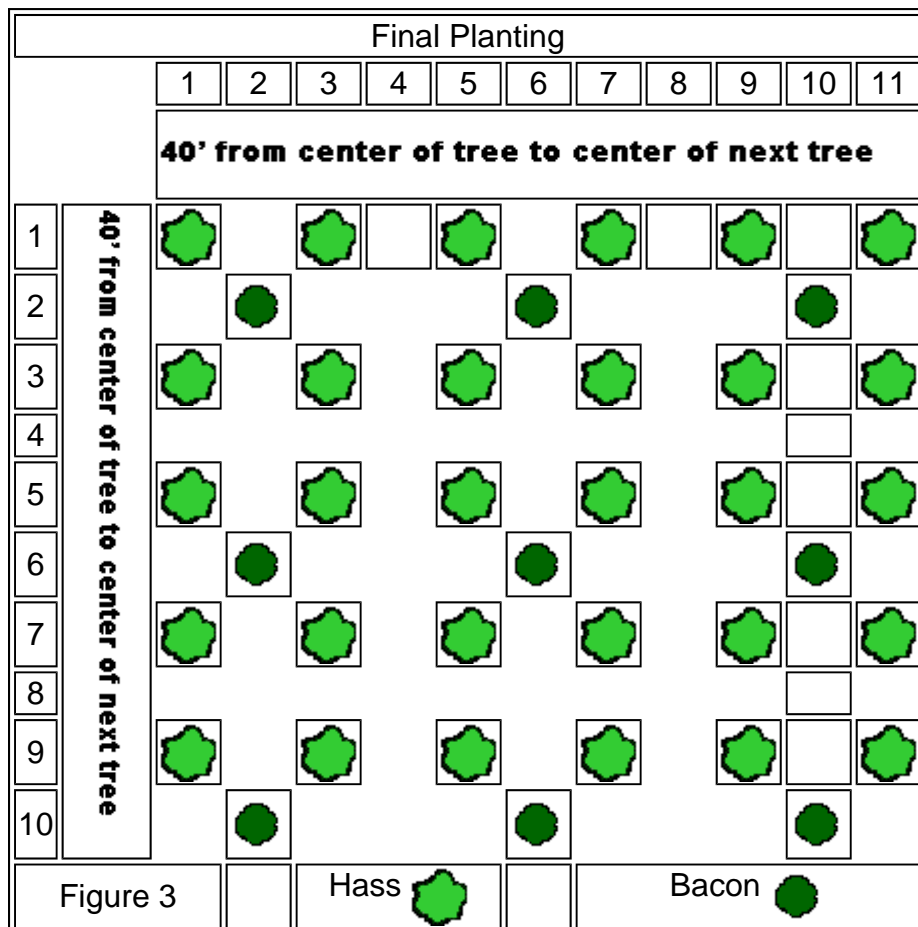
Normally, a second tree removal is necessary about four years after the first. Figure 3 is a plot plan after the second removal of trees. Here all trees in every fourth row (4, 8, 12, etc.) are removed to provide drive rows. Also, the remaining Hass trees in the even numbered rows (2, 6, 10, 14, etc.) are removed.

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Final Pattern

Figure 4 is the plot plan after the second removal. Trees are 40 feet apart each way with a Bacon tree in the center of each group of four Hass trees. Every fourth row is a drive row. There are 43 trees per acre (30 Hass and 13 Bacon).



If conditions are such that trees start to crowd again after several years at the final planting plan (Figure 4), a number of alternatives may be used to again prevent crowding, namely:

1. stumping by blocks,
2. stumping by rows
3. stumping and topworking,
4. topworking to different varieties,
5. thinning to hedgerows, and
6. hedging and topping

This planting plan for Hass and Bacon, if rigidly adhered to, and if tree thinning is done at the proper time, will accomplish the original objectives of:

1. maximizing early production,
2. providing for pollination, and
3. maximizing production at maturity through a systematic tree removal program.