

## PLANTING PLANS FOR AN AVOCADO ORCHARD

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The avocado, while well known, and widely grown in tropical countries, has nowhere been cultivated in extensive orchards on a commercial scale. No literature or experience is available to guide the grower in the laying out of the orchard. The oldest trees in California are still young, twenty to twenty-five years of age, and thus little evidence is obtainable here to indicate how large avocado trees will normally grow in California. Again, in all fruits the trees of different varieties may differ considerably in their size, and judging from the rate of growth observed in the different varieties now being grown, the varieties of avocado apparently present no exception to this rule. It is clearly evident that nobody at the present time can do more than hazard a guess at the distance apart the trees should stand in a permanent orchard. Furthermore, it is evident that satisfactory information on this point cannot possibly be obtained for a number of years—probably at least ten years.

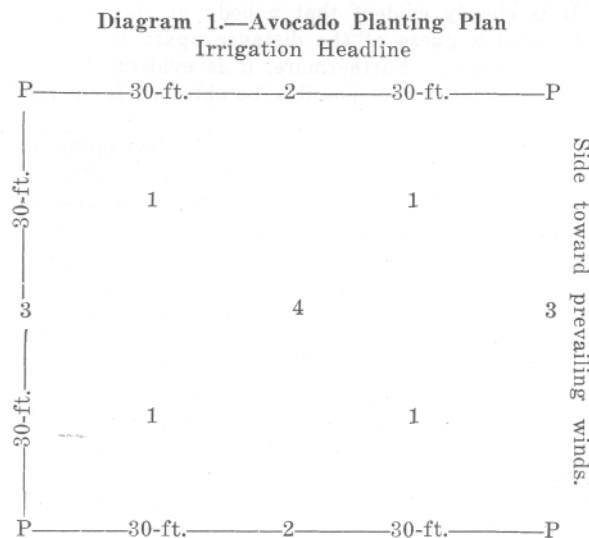
In the meantime, the avocado industry is developing rapidly, and it is very probable that serious mistakes may be made that will be difficult to correct. Are there any precautionary measures that can be taken? It seems to the writer that the only thing to do to guard against loss is to plant the orchards on some flexible plan that will provide for changes in distance without loss, and this, it seems to me, is possible by carefully planning the orchard in advance. The writer would not assume to be able to make a plan that would fit all conditions, but the suggestions made below may be of value in stimulating growers to devise even better plans.

The largest tree in the state, known to the writer, is the Chappelow tree, twenty-two years old, which has a spread of about 60 feet. The Challenge tree, 19 years old, has a spread of 38 to 40 feet, and the Taft tree, sixteen years old, about 35 feet. A number of trees of a size equal to the two last mentioned exist in the state. All of these trees are comparatively young and give an indication of the size the trees may reach. True, we may keep them down in size by pruning, but it has not been determined that this is feasible. It seems to the writer that no distance of less than 50 to 60 feet apart can at the present time be safely adopted for the permanent orchard. At the present time 25 to 30 feet apart is the space at which the trees are most commonly planted. This plan will allow the taking out of every other row and every other tree in the permanent rows, leaving the final spacing 50 to 60 feet.

The plan the writer desires to present (see diagram No. 1) is based on the permanent trees being placed 60 feet apart. These permanent trees are indicated with the letter P in the accompanying diagram. It will be seen from an examination of this diagram, that in the first planting the rows are placed 30 feet apart, with a filler tree in the centre of each square. The trees indicated by the figure 1 in the diagram are to be the first filler

trees, to be removed when the planting becomes crowded.

These first filler trees should be of some precocious variety similar to the Lyon. The removal of the first fillers will leave the trees 30 feet apart each way in squares. When the trees next become crowded, remove the second filler trees indicated with the figure 2 in the diagram. This will allow the permanent trees to spread out into the space occupied by the second fillers, 2. When now the trees become crowded again, remove the third fillers, 3 in the diagram, which will leave the permanent trees in squares 60 feet apart, with a filler tree in the center of each square. (4 in diagram.) These center trees should have been planted with some good variety desired permanently, and are designed to remove if the trees again become crowded. Fillers 1 and 2 should be planted with quick fruiting varieties, as they will certainly require to be removed. Fillers 3 and 4 should be planted with varieties permanently desired, as they may not require to be removed.



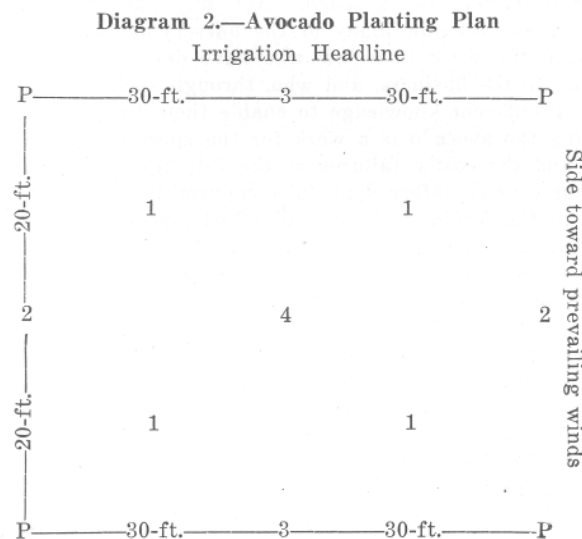
A variation of this order of removal would be to take out the fourth fillers, 4 in diagram, before the third fillers are removed, leaving the rows 60 feet apart and the trees 30 feet apart in the rows. If the trees then should not grow so large as to require further thinning, this will give an orchard arranged on a plan similar to some of the best lemon groves — a plan favored by some good growers. In this case the trees will come close together in the rows, and if the rows are run in opposite direction to the prevailing winds, each row will form a windbreak for the next row. Again, this plan leaves a good space between the rows one way to accommodate the hauling of fruit and the distribution of water.

This plan of planting will give approximately 96 trees per acre when first planted, 48 trees per acre with the first fillers removed, 36 trees per acre with the second fillers removed, 24 trees per acre with the third fillers removed, and 12 trees per acre with the fourth fillers removed.

Another interesting variation of this plan would be to use a tall, upright growing variety, like the Lyon, for the third fillers—figures 3 and 3 in diagram—in order that they may remain longer without interference and delay the thinning. The permanent trees should be planted with those varieties believed by the grower to be the best.

Other filler trees than avocados might be used in some of these places, as for instance, for the first fillers—figures 1 in diagram—such trees as peach or apricot. In view of the probability, however, that the method of handling an avocado orchard is pretty certain to include mulching under the trees, the use of other fillers than avocados may not be desirable.

It may be that 60 by 60 feet is slightly farther apart than necessary for the permanent trees, and a second scheme placing the permanent trees with rows 60 feet apart and the trees in the row 40 feet apart, may also be worthy of consideration. This will give 18 trees per acre in the permanent planting and still leave a space 60 feet wide between the rows one way to provide for irrigation and working space. This plan is indicated in the diagram below. In this diagram P again stands for permanent trees, 1 for the first fillers to be removed, 2 for the second fillers to be removed, 3 for the third fillers to be removed, and 4 for the fourth fillers to be removed. The permanent trees would thus be in rectangles. (See diagram 2.)



If this plan is followed, it would seem to the writer that the first and second and third fillers—1, 2, and 3 in diagram—should be of some precocious, early-fruiting variety, like the Lyon, and that the permanent trees P and the fourth fillers 4 should be planted with the varieties desired for the permanent orchard.

The principle feature that recommends the adoption of some planting plan similar to those here suggested is the advantage it gives of using several different varieties, any one of which may be used ten years later as the permanent trees. Either plan suggested would permit of using four different varieties and yet when the fillers are

removed leaving a uniform solid orchard of one good variety. If, for instance, after ten years, it was found that the variety used as the first fillers (1) had proven to be the best sort in the orchard, these could be left to form the permanent orchard. In view of the impossibility of judging at the present time which varieties are likely to prove the most satisfactory, some such system of planting may prove helpful.