PLANNING FOR THE PLANTING OF AN AVOCADO ORCHARD

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I am an avocado grower, and I have a big stake in this business, I also have enough faith in the other growers to believe that with the tremendous crops of fruit ahead that must be marketed in an orderly fashion if they are to make satisfactory returns, that the producers will gel together and work towards a common goal which is a prosperous industry.

As an avocado grower have you ever been asked by a prospective grower, what spacing he should use in planting his orchard? Well, I have, and to answer this question intelligently in a simple manner is impossible. One of the major problems involved in the planning of an avocado orchard is that of tree-layout and tree-spacing. With the present narrow margin in growing avocados it becomes quite evident that in planning a new orchard one must plant in such a manner that he will receive the greatest possible return for the investment. It is my intention here to outline a method by which this may be achieved.

There are certain costs involved in owning an orchard that vary relatively little regardless of the number of trees planted or the amount of fruit produced. These costs are made up of such things as interest on land, management costs, taxes, equipment, fences, irrigation facilities, water, etc. Therefore, ¡n order to make this investment pay the highest rate of return it is important to plan the planting so that the production will increase rapidly in the early life of the orchard. In essence this is simple—just plant lot of trees; but how many trees does it pay to plant on an acre of land? This will vary with the size of the tree, the rate of growth and how much fruit the tree will produce before the planting will crowd. The object is to plant closely, but not so closely that the tree will have to be cut back or removed before the accumulated returns from fruit sales will have exceeded the accumulated costs attributed to that tree. Records on groves show that production will rise until the trees start to crowd, then the production may actually decrease. If the trees are then thinned so as to open up the grove the production will ultimately increase to even higher levels than before, with a fewer number of trees.

To the best of my knowledge there are no magic figures or formula that may be used to arrive at the proper spacing to use, so one must use good judgment in evaluating the performance of the particular variety in the area under consideration. If for example experience shows that a particular variety under specific conditions should require an ultimate spacing of "X" number of feet between trees for an uncrowded, mature orchard, then this would be considered as the basic planting distance for the orchard.

We cannot expect to achieve the desired efficiency, however, by only planting the trees that will ultimately be required to fill out the orchard in say, 25 or 30 years. Therefore, we must devise a method whereby we can figure out how many trees, and what spacing

we should use to fill in between the permanent trees in the interim. To accomplish this, we first observe trees of various ages of the same variety or growth habit, growing under similar conditions to those we intend to plant. From the past experience of these trees we can project the production of a tree in the new planting and multiply this by the expected price of fruit in the next several years. These return figures are plotted on a chart as in Figure 1, by accumulating the returns and plotting the accumulated total for each year. On this same chart, plot the accumulated costs for an individual tree, that is the cost of purchasing, planting and caring for that tree. The point at which the "returns" line crosses the "costs" line will show how many years it will take for the tree to pay for itself. With this information it is possible, by observing trees similar to those that are to be planted, how much space is the minimum that should be allowed for a "temporary" tree.
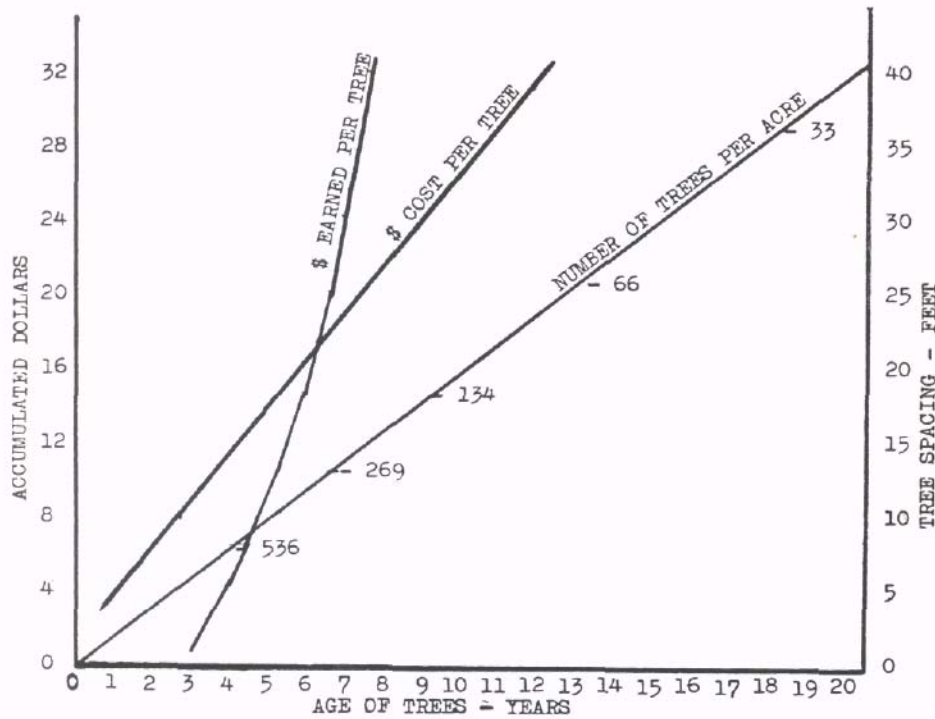

Fig. 1 — ACCUMULATED COSTS vs ACCUMULATED INCOME

For the purposes of an example let us take the ultimate spacing of the orchard to be 36 feet on the square. The number of trees in this type of planting may be doubled by adding one tree in the middle of the square, this will increase the number of trees from 33 trees to 66 trees per acre with the closest distance between trees being 25½ feet. This pattern may again be doubled by planting in the center of the squares, resulting in 134 trees per acre on an 18 foot square. If you go one step Further repeating the planting in the center of the square again the results will be 269 trees per acre on a 12¾ foot square.

Let us now plot the "number of trees per acre" on a graph as in Fig. 1, using the diameter of the tree as the Ordinate and the number of years from planting on the Abscissa. We know that trees in this example must be at least 6 years old before they have covered their costs, and if trees are planted at more than 269 per acre they will crowd before this time; therefore, 269 trees per acre is the most that it will pay to plant.

Let us next consider the economics of the orchard as a whole and see what the effect of planting at these various spacings will be. In figure 2 the accumulated net income per acre is shown on the vertical axis, that is the accumulated income less accumulated costs including interest on investment and all current costs. The horizontal axis represents the age of the grove in years. As we plot each of the four planting spacings we find that although the 269 tree per acre curve dips lower, representing a greater investment, it does recover at a faster rate than the more sparsely planted orchards. As indicated in Fig. 1 the 269 tree planting must be thinned at seven years, so the cost of removing half of the trees is represented by a drop in income, then the income continues to climb at the rate of the 134 tree curve until again thinning becomes necessary at nine years. This process is repeated until the 13th year when half of the remaining trees are once more removed, and the curve continues at the rate of the 33 tree planting.

If the projections shown in Fig. 2 prove to be accurate, my making the original planting at 269 trees per acre the orchard will become a profitable entity about one year sooner than it would have had only 134 trees per acre been planted, four years sooner than with an original planting of 66 trees per acre, and eight years sooner than by starling out with 33 trees per acre.

SUMMARY

A method has been outlined whereby a grower may project for himself the greatest number of trees per acre that it is feasible to plant in planning a new avocado orchard. It must be borne in mind that the figures used in this outline are not necessarily applicable to or accurate for any given area, but that they merely illustrate a principle. In order to produce the proper results for any given area it would be necessary to use figures pertinent to a specific area, variety, economic and other conditions.
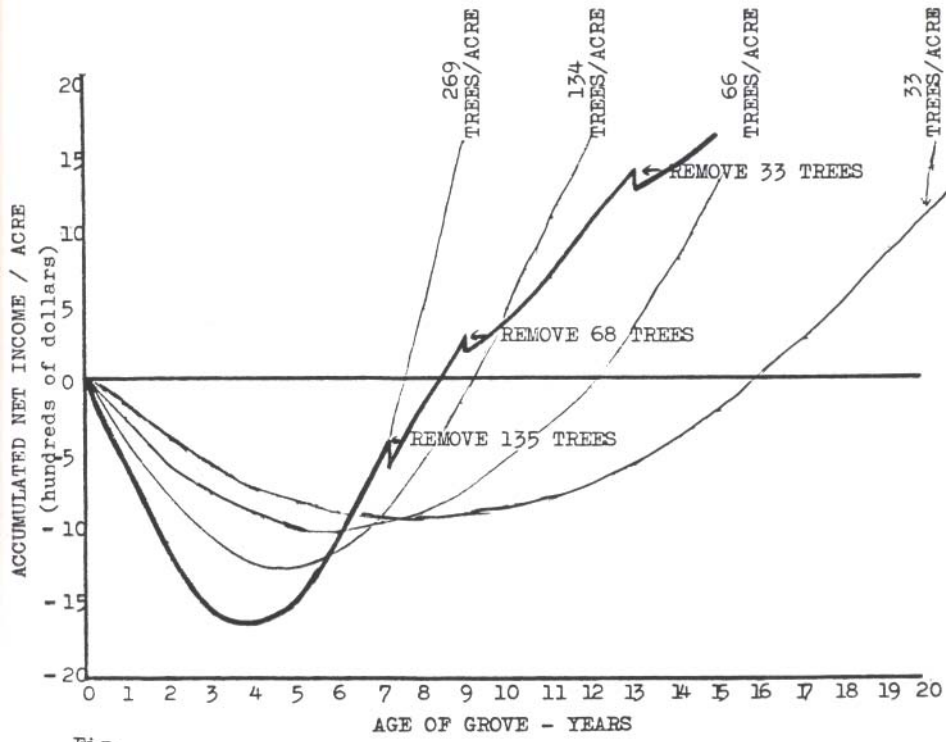
Fig. 2