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TREE THINNING THE AVOCADO GROVE BY THE BLOCK SYSTEM

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It is a brave man who can calmly hear these words from another: "Your grove is far too crowded. You must cut out half of your trees now, and then prepare to cut out half of the remaining trees at some future time." The diagnosis sounds utterly fantastic, but it is not. If you have a grove under the influence of favorable climatic conditions, with deep soil, with good drainage, and favored with consistently good care, you will some day hear those words, or you will make the discovery yourself. When that time comes, you will have two alternatives: sell out and let the other fellow worry about the thinning problem, or do the worrying (and thinning) yourself.

It is impossible to lay down a fixed rule for thinning all groves, just as it is impossible to state fixed rules for the cultural care of all groves. In each case, each grower must solve his own problems in his own way. However, a great many groves have been planted on the square, with spacing of 20 or 25 feet between trees. It is such a grove, with 20-foot spacing, that we have been thinning under the program we call the "Block-System"—so called because the grove is considered in terms of groups of trees, or blocks. Refer to the accompanying grove chart. It will be observed that we have broken this grove of 174 trees into three separate and distinct blocks: No. 1, with 88 trees; No. 2, with 68 trees; and No. 3, with 18 trees.

These blocks have three basic purposes, or functions:

First, to take advantage of the non-producing spaces in the entire grove, and to maintain continuity in the planting.

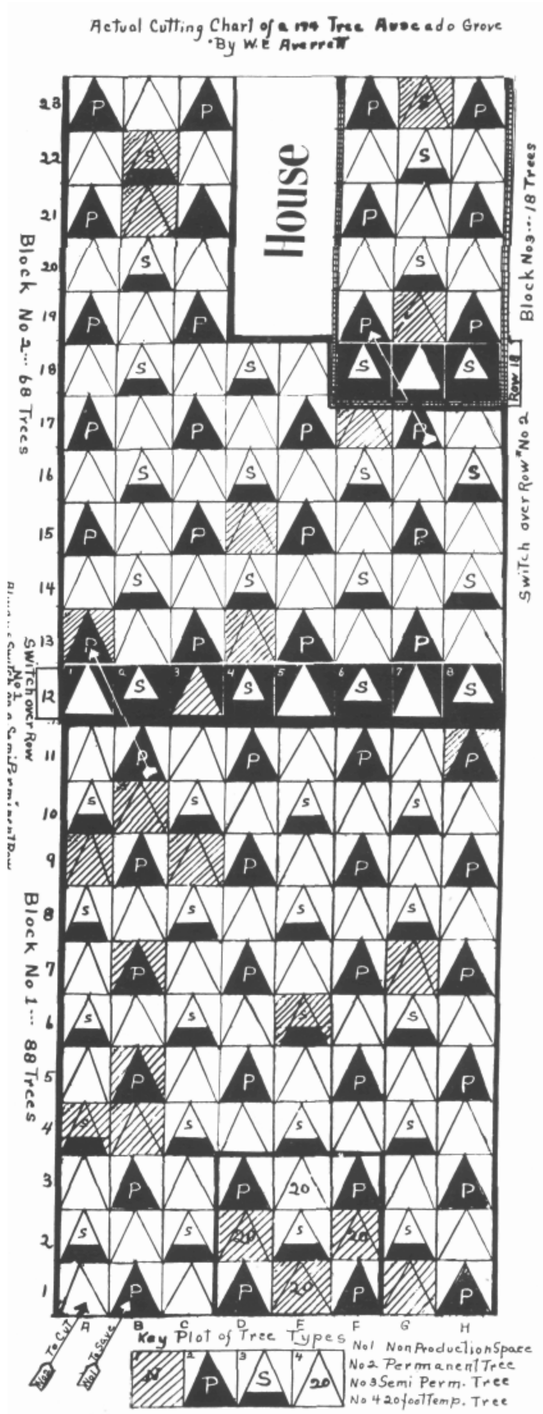
Second, to permit a change in continuity where advantageous to do so, with the least loss of productive trees.

Third, to cause the greatest number of low-production or otherwise undesirable trees to fall in 20-foot spaces within each block—to be removed.

It may sound rather wild and confusing to talk about causing poor and undesirable trees to fall into "temporary" spaces. We cannot move the trees; we cannot move the spaces. However, we can shift the thinning pattern, and so adjust the continuity of the grove and the individual status of every tree in the grove. This is the function and accomplishment of the "Block System."

A *block* consists of a number of *units* (or *part units);* a *unit* consists of nine trees. These units are made up of four types of trees: permanent trees, 20-foot trees, non producing trees (or spaces), and a semi-permanent or 28-foot tree in the center of four permanents. All of the 20-foot trees between the permanents must, of course, come out at once, as the first step in the conversion of a 20-foot planting to a 40-foot planting.

Refer again to the chart. In the bottom center, a complete unit of nine trees is indicated within heavy outline, and shows all types of trees we have to deal with. In this particular unit, there are four permanent trees, three low-production 20-foot trees, one 20-foot good-production tree, and one semi-permanent tree. At a glance, it is easy to see that a thinning program for this unit is almost a perfect set-up. In cutting out the 20-foot trees between each permanent, we lose only one good tree. The three to be removed are low producers (actually, all three were sun-blotched).



It is not just coincidence or good luck that these three low-producers just happened to be in those particular 20-foot locations. It may surprise you, but we put them where they are. We did it by carefully picking our *key tree* to use as a permanent tree from which all permanents and all other trees in the 88-tree block (Block No. 1) will swing into place.

The *key tree* was not the corner tree as would naturally be expected. It was the second from the corner—Tree #1-B. You will note that in row #9-B we turned the same trick: three of the 20-foot trees surrounding a permanent were low-producers, and therefore of little value.

Now, let's see what would have happened if Tree #1-A had been used as a *key tree,* and compare it with what did happen when we learned from a study of our chart that Tree #1-B should be the *key tree.*

RESULTS: ROWS 1 AND 2

Using corner tree #1-A as the *key tree*	Using tree #1-B as the *key tree*
Two low producers in Row 1 would both be permanents.	Two low producers in Row 1 fell into 20-foot locations, and were removed without loss.
Two good producers would have to be removed.	Two good producers were saved.
Row 1 would have only two producing permanents.	Row 1 has four good-producing permanents.
Continuity would have been broken.	Continuity was maintained.

In the overall, this is what we did in Block No. 1, comprising 88 trees: First, we had fourteen low-production locations. By selecting Tree #1-B as the *key tree,* we caused nine of the fourteen low-producers to fall into 20-foot locations, which were no loss. Two low-producers fell into semi-permanent locations—resulting in partial loss, because they are eventually scheduled for removal anyway. Only three low-producers fell into permanent locations—a complete loss. We kept perfect continuity from Row 1 to Row 12 for the 40-foot planting except for the three lost permanents. These could be replanted, but it does not seem advisable—the old story of a new tree in an old grove.

AND NOW WE COME TO BLOCK NO. 2—68 TREES

What is it that calls for a new block at Row 12? Why not continue on as in Block No. 1? Refer to the chart, and let your eye continue on up our row of permanents (Row B) in Block No. 1. You will discover that, if this continuity is maintained, we shall have only a single row of six permanents from Row 13 to Row 28—one of them being a low producer, which nets us only five good permanents for the block.

Furthermore, with relation to these permanents, both outside rows are necessarily 28-foot trees—or semi-permanents. It would never be possible to get 40-foot trees with this set-up. The block would remain a 40 x 28-foot planting.

The problem is answered by establishing a new block. A change in the pattern of continuity is made in Row 12—a "switch-over" row. This is indicated on the chart by the white arrow.

Note carefully that the "switch-over" row (No. 12) is a row of semi-permanent trees that will eventually come out. Never make a switch-over across a permanent row.

Now let your eye continue up Row B (the row of permanents in Block No. 1), and you will see a different picture. In Block No. 2, where there was one row of permanents flanked by two rows of semi-permanents, we now have one row of semi-permanents flanked by two rows of permanents—at 40-foot spacing. If the continuity in Block No. 1 had continued into Block No. 2, we would have had only five permanents in the three long rows making up this group of trees. Instead, by changing continuity, we have eleven permanents in Block No. 2. It is true that we lost one permanent on the switchover; but that is the loss of only one battle, and I think you will agree that we won the war on the problem we faced.

AND NOW, BLOCK NO. 3—WITH 18 TREES

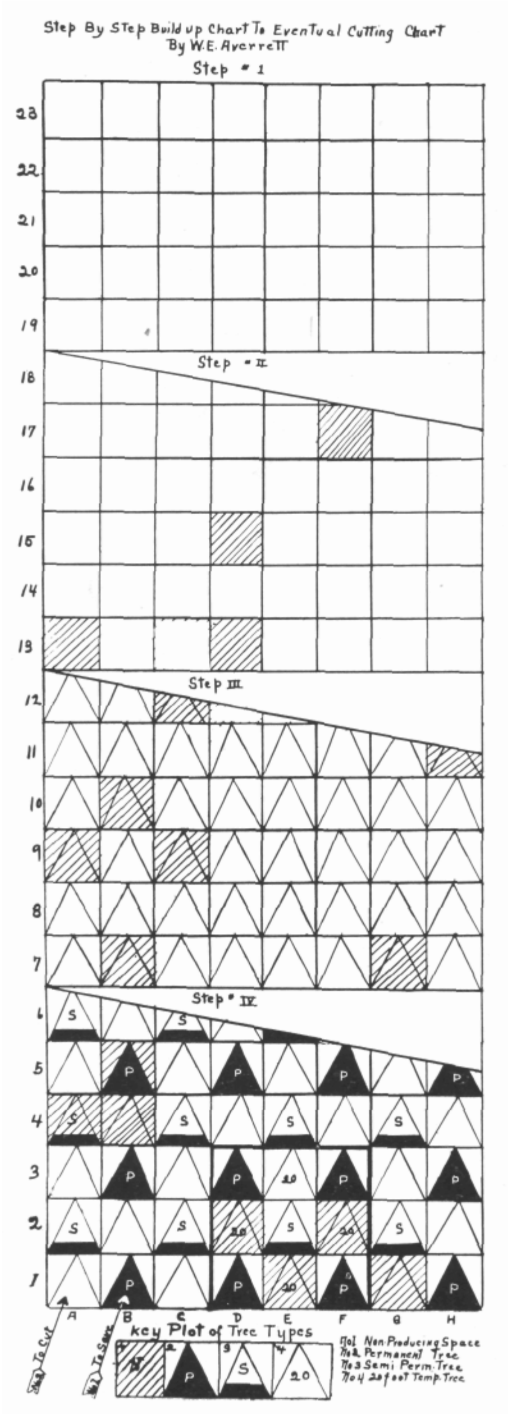
This block requires a duplication of the switch-over from Block No. 1 into Block No. 2. If we were to continue the continuity of Block No. 2 into Block No. 3, we would have one center row of permanents flanked by two rows of semi-permanents, or 28-foot trees, as was the problem in Block No. 2. In addition to this dilemma, two of the three permanents in this center row would be low-producing trees. We would therefore have only one good permanent in the entire row, flanked by four 28-foot semi-permanents; five trees left in the entire block—one permanent and four semi-permanents. An unpleasant set-up, but one that can be solved by establishing a new block. At Row 18 (white arrow)—a semi-permanent row, again—cross the switch-over row and start a new continuity for our permanents with Key Tree No. 19-F. This time we will win the war without losing even one battle. Let's see what the picture looks like now.

By the switch-over we threw the two low-producers which would have been permanents into 20-foot tree locations, thereby taking no loss.

As the picture would have been had we followed Block No. 2 into Block No. 3:	As the picture is by making the switch-over:
One permanent tree in the center, surrounded by four semi-permanents.	Six permanent trees, all in continuity.
A totally off-balanced unit with regard to spacing and continuity.	A totally balanced unit, with regard to spacing and continuity.
Production from five trees; one of them permanent, and four of them semi-permanent.	Production from eight trees; six of them permanent, and two of them semi-permanent.

In my own grove of 430 trees, there were 66 low- or non-producing locations. By the use of three blocks, we caused 55 of the 66 non-producers to fall into the 20-foot locations, which of course meant no loss to the grove.

I will leave it up to you—Do we move our trees in the Block System of tree thinning, or do we not?



CHARTING THE GROVE FOR THINNING—STEP BY STEP

Step 1: Lay out your entire grove into squares of half an inch or an inch. Show one square for every tree space, regardless of whether it is occupied by a good tree, a poor one, or no tree at all.

Step 2: Go over the entire grove, chart in hand, and shade or cross-hatch every square representing a low-producer, a diseased tree, a poor variety, or a vacant space.

Step 3: Make a triangle in every square representing a tree or a vacant space. (Note progress: Step one shows no trees, just locations. Step two shows the poor trees or vacancies. Step three segregates the good trees from the poor trees.)

Step 4: This is the most important step in planning tree thinning by the Block System. Pick the *key tree* to be the permanent tree in a particular block. It is this *key tree* that determines the continuity for the entire block. It is this *key tree* that forces low-producers or vacant spaces into 20-foot locations. As all 20-foot trees surrounding a permanent are to be removed, the more non-producers there are forced into these locations, the fewer the number of good trees to be lost. It is obvious that it is low- or non-producing spaces that will determine the location of your key, permanent tree in each block. In the case of Block No. 1 in the accompanying chart, the *key tree* is tree 1-B.

When the *key tree* is definitely chosen, fill in with solid black the triangle representing it. From here on, every tree in the block will automatically fall into place, as to tree type: permanents (40-foot trees), semi-permanents (28-foot trees in the center of each group of four permanents), and 20-foot trees between each permanent—these, of course, to be cut out. Fill in each triangle to show the type of tree, and you are well on your way to crystallizing your thinning program.

Step 5: At Row 11, in the grove used as an example, the continuity had to be switched into a new block (Block No. 2). The reason is obvious: continuation of the Block No. 1 continuity would leave, in the section under consideration, only one row of permanents and two rows of semi-permanents. A new *key tree* is selected (Tree 13-A), even though this tree itself is a non-producer. Charting continues by filling in with solid black each permanent space.

Step 6: At tree 17-G in Block No. 2, a situation occurs similar to the situation found at Tree 11-B in Block No. 1. Continuation of continuity into Block No. 3 leaves only one row of permanents up the center, with two rows of semi-permanents. In fact, uninterrupted continuity yields only one permanent surrounded by four semi-permanents for the entire block.

Step 7: Continuity is broken again, in the case of the example grove; and tree 19-F is selected as the *key tree.* The triangle representing this tree is filled-in in black, and the new continuity is carried to conclusion.

Step 8: The chart is completed; the grove should now be marked to agree with the chart. A green band should be painted around the trunk of every permanent tree; an orange band is painted around the semi-permanents; the 20-foot trees are left unmarked. You are ready to thin. It is not necessary to cut every second tree consecutively and immediately. If a 20-foot tree has a good crop and does not crowd too badly, hold back on the cutting until the crop is off. The job of thinning may take two or even three years—though it should not be delayed past the time when damage from crowding will off-set the temporarily additional gain in production.