Yields in Relation to Profitable Avocado Culture

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The problem of profitable agriculture, whether it be figs, tomatoes, potatoes, broccoli, calavos, or avocados, is all summed up in that plain and simple formula that I have used over and over again.

$$(Y \times P) - C.O.P. = P \text{ or } L$$

To state the problem in plain English:

Y = Yield per acre or per tree
P = Price received
$C.O.P.$ = Costs of production
P = A profit
L = A loss

The yield, times the price received, minus the cost of production, equals a profit or loss.

That would seem to be a simple enough statement of the problem. The solving of it is not so simple, as you all know. There are **many** factors involved, much too complicated to attempt to analyze in such a short talk as this is going to be. Mr. Barrett has given you much to think about. I am going to confine my I remarks today to the first part of this equation. The first factor is the "Y" or "yield per unit (acre or tree)". (I prefer acre. It is time that we got away from too fine distinctions in our avocado industry.) I propose to state the problem, not to solve it. (I wish I could.)

To begin with, we must have a few facts and figures. Mr. H. E. Wahlberg, County Agricultural Agent for Orange County, in cooperation with twenty-six progressive, far-sighted and public-spirited avocado growers, has provided us with some facts and figures that we can use. These facts and figures represent a lot of hard, consistent work that we should appreciate. The complete facts and figures obtained by Mr. Wahlberg and his group of cooperators is well worth an intensive study on your part. Today, I want to use only a small part of them. Mr. Wahlberg and his cooperators have worked out the last part of our problem —the C.O.P. or "Cost of Production".

Mr. Wahlberg has found that the cash returns necessary to pay all "Costs of Production", including cash costs, interest, and depreciation, amounts to $511.64 per acre. We hope that you are going to net ten cents per pound for your fruit this year (we are a little doubtful, however), but if you do, what must your yield per acre be? Wahlberg

has it figured out—5116 pounds. But suppose you only net five cents per pound; then how many pounds per acre must you get to break even? Wahlberg has **that** figured out too—10,232 pounds, or if you are standard in your planting distances—twenty-four by twenty-four (I'm not sure that's right), 133 pounds per tree. That is not an excessive yield for trees approaching maturity, but "try and get it" every year.

What are the factors that affect yield? First, an acre of good-sized trees, with none missing or in poor condition. It takes a large, healthy tree to bear a large crop. To have large, healthy trees, you must, of course, have had a good soil and have given them intelligent cultural care, so I am not going into detail on those points.

Second, I believe that your orchard must be reasonably sheltered from strong, prevailing winds. This shelter may be natural or artificial. This brings us up to the vexatious problem of pollination, and frankly, I know nothing about it, and apparently no one else does. Why in some years trees will bloom and set heavily, and in others will bloom as heavily but set almost nothing; why certain trees have the habit of bearing in alternate years; why some varieties bear well in one locality and not in another; why some varieties will bear every year and in almost any place (generally inferior varieties, however), are all problems that must be solved before we can have heavy annual yields that will guarantee a profit.

We all have our guesses on pollination and set of fruit. My first one is that it is very distinctly tied up with weather conditions. Warm, rather dry weather, with lack of winds, I believe to be the best conditions to secure pollination. My second guess is that it is also quite directly tied up with certain phases of plant nutrition, particularly in the cases where trees bear a heavy crop one year and bloom very lightly the next year. The avocado tree appears to have the ability of storing a relatively large amount of plant food in its branches, trunk and roots. It would appear that in years of heavy production this stored supply is used in producing the crop to supplement the plant food being manufactured by the leaves. In some of our better varieties, this may be carried to such an extent that the tree, to protect itself, may not provide for blossom buds for the next year. Extra heavy fertilization early in the year of heavy production may help to overcome this situation. I only offer this as a suggestion, not a conclusion. Possibly some judicious thinning in years of heavy production may also help the situation, and induce the tree to bear a fair-sized crop annually rather than a heavy crop one year and none the next.

I also believe that intelligent pruning and training of the tree may help to secure more uniform production. Pruning which removes much wood is wasteful of plant food. On the other hand, if you do not prune to some extent, the tree will. It does this by shading out the inside branches and twigs. I believe that you can do a more intelligent job of pruning for your purposes than the tree can. Your purpose is to secure a fair crop of fruit, conveniently located for picking. If the tree is left to itself, it tends to develop a thin shell of young bearing wood on the outside of the tree, with practically nothing on the inside. Your purposes are better served if the bearing wood is distributed on the inside of the tree as well as on the outside. To encourage young growth on the inside, you must see that there is sufficient light to permit this inside growth.

New varieties of good bearing habit will also help solve our yield problems. Of course,

such varieties must be as good or better than the standard market varieties of today. There is no point in getting a large yield of fruit that will not sell.

To summarize: The profitable orchard of the future must have a fairly uniform yield of a reasonable amount of fruit. According to Mr. Wahlberg's figures, that means, at five cents a pound, 10,232 pounds per acre to pay expenses. We know that much higher yields per acre are possible.

Good yields are dependent on good, healthy trees, free from insects and disease, well fertilized, intelligently irrigated, thoroughly pollinated, and judiciously pruned. At least, that is my opinion.