

RESEARCH



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Two things must happen before you can take a nickel out of your avocado grove: You have to produce fruit; you have to sell it. Research is the handmaiden to both of those functions. For convenience, then, let's consider that there are only two kinds of research: Production Research and Marketing Research.

You are all aware that production involves more than sticking a tree in the ground and picking the fruit. It requires research to help you produce enough fruit and the quality of fruit to make your enterprise profitable.

Without production, of course, you have no industry; without production research, you have a marginal or unprofitable industry.

Not everyone is aware that marketing involves more than separating avocados into "Ones" and "Twos", putting them in a box, and saying to a customer, "Here you are." It requires research to convert the avocados you produced into enough dollars to keep you in business and reasonably content.

Without marketing, you—again—have no industry. Without marketing research, you would not have a prosperous industry, or one that constantly attracts newcomers as is the case today. You would not be able, as you now are, to sell an avocado grove at \$4,000 and \$6,000 and more per acre, as is now being done.

The function of marketing, then, is to convert avocados into dollars. The function of marketing *research* is to convert avocados into *more* dollars.

Let's see what marketing research is and does.

First, perhaps, it involves equipment for the proper and most efficient handling of avocados. To compete in the market place with all the other things consumers can buy, and at the same time to profit the producer, it is essential to reduce handling costs. Mechanization is one answer to this problem, and research is called upon to provide that answer. Out of that research, in this industry, have come such devices as electronic

weighing apparatus, automatic box unstackers and inverters, mechanical branders, mechanical sizers, improved refrigeration equipment, and a number of others.

Research is involved in providing dependable quality to the ultimate consumer. There is a great variation in the quality of the too-many varieties of avocados we produce. There is further variation of quality within each of these varieties. If no effort were made to establish quality controls—if all avocados were offered "as is"—it is possible that some *temporary* improvement in price levels might appear in the lower-quality bracket. The inevitable final result, however, would be a deterioration of average prices, affecting *all* quality brackets.

To determine quality, countless tests are made—constantly. Laboratory tests are made of oil content of all varieties all through the season. Palatability, or flavor, tests are made by a group of "tasters", who have no knowledge of the identity or source of the fruit being tested. These two tests are correlated, and recorded permanently. Thousands of these records have been accumulated over the years, and provide valuable data for the researcher. Other tests are made to determine softening characteristics, storage life, and freedom from post-harvest diseases and physiological problems. Over the years, it becomes possible to separate the sheep from the goats among varieties and within varieties. Application of the knowledge assures the consumer of the quality paid for. Confidence in the product results and the consumer is willing to pay more for it because of confidence.

Maintenance of quality calls for more research. It is important to avoid so far as possible the deterioration of quality that time, temperature, and travel can cause.

To extend the life of the avocado, many things have been tried. The fruit has been wrapped in a great variety of tissues, foils, and plastic films—most of them costly to apply, and all having important drawbacks. It has been coated with a variety of plastics and waxes. After innumerable trials, research has found a wax coating that is inexpensive to apply and that does quite well what is required of it. Even so, research in this field continues. With the same objective, research is continually conducted in the field of packing materials. Many have been tried: Shredded paper, fibers of various kinds, common excelsior, and wood wool. At present, wood wool (a special kind of excelsior) is standard—but the research for a better material goes on. Even the quantity and placement of the packing material has a bearing on quality. So the researcher has to study these matters.

In order to conduct this kind of research, a knowledge of fruit characteristics is essential—as it is also to other research efforts. To gain that knowledge, the marketing researcher works with other researchers in specific fields to determine how avocados breathe, what effects certain gasses have on ripening and discoloration of the fruit, what chemical changes occur within the fruit, and so on.

This information also bears on the storage of avocados. In this industry, long storage is not practical or particularly desirable. Short periods of storage, however—even if only in transit to distant markets—are required. Research has taught us what temperatures are ideal and what temperatures will either advance or prevent softening. Because research never ceases, but makes constant use of new findings, we are now discovering better ways to use temperature for storage.

As an off-shoot of storage investigations, researchers are learning how to *control* the softening of avocados. When this work is concluded, it will be possible to speed or retard the softening, within reasonable limits.

To carry to market, avocados have to be packaged. Research developed the present wooden flat and its cushioning material. This container has proved quite satisfactory, but is becoming increasingly expensive. With the advent of improved corrugated paper containers, research has for some time explored their use in this industry. We have conducted elaborate tests on many kinds of such boxes, produced by a number of manufacturers. Most have fallen down, for one reason or another—some almost literally. One or two show promise, and are still under test.

To transport the fruit to market, some kind of conveyance is necessary. Research is called upon to determine what kind. Rail transportation offers certain advantages; truck transportation offers others. Air transportation is hardly in the picture at present. Neither rail nor truck (both of which are heavily used) provided what was required, at the outset. It took cooperative research to produce the improvements in both required by the industry. To illustrate: The so-called "fan" refrigerator car, which is now in quite common use, was first developed in cooperative tests involving the manufacturer, a railroad company, and Calavo Growers of California. We were the guinea pigs, and had a large part to play in this research program that has since benefited many industries.

It is the job of marketing research to decide not only which form of transportation to use, but which line to use—considering transit time, costs, equipment available, and services provided. This embraces both physical and statistical research.

It is the job of marketing research to determine where to ship the fruit, in what quantity, and of what kind and quality. This involves economics, population trends, competition of other commodities, racial and religious considerations, and so on. These factors change with the passage of time, and research must keep up with the changes. That phase of research also extends into the problem of proper pricing to move the production to the best advantage of the producers.

Let me emphasize here that statistical research is of the 'greatest importance to every avocado grower. It isn't spectacular—it doesn't use test tubes and microscopes and atom smashers, and at times it is hard to see the results except at long range. Nevertheless, the success of this industry—and it is successful—can be attributed in great degree to what is done with statistical research.

A related kind of research is involved in advertising and promoting your product. This work tells us where to advertise and when. It tells us which medium will produce the best results per dollar of cost. It tells us what to tell the potential customer about avocados.

And that brings in other research. What can we tell the public about our fruit? Cooperative research produces the story. It provides information about the nutritive values of the avocado. It determines the vitamin content, the mineral content, the digestibility, and other aspects of the avocado as a food. Work in these fields has been done over the years, both by ourselves and by agencies made interested in the questions. It continues today. In those few words, incidentally, I have summarized work

costing a lot of money and a lot of time. Today's entire program could be used to discuss these and other research activities if you would listen that long.

We must tell the public not only what is in the avocado, but how to use the fruit. More research. Vast numbers of recipes are created in the kitchens of researchers specializing in the field. These recipes utilize the avocado in every conceivable way. A respectable amount of money is spent each year on this particular form of research. The expenditure, fortunately, pays handsome dividends when the research results are converted—as they are—into publicity.

In making these comments, I have purposely followed a line from the packinghouse to the consumer. In doing so, it has been necessary to pass over many research activities that didn't fit into my train of thought. Some of those activities will have to stay "skipped", because of lack of time. I want to refer to others.

This industry is alive and growing. It is necessary to plan ahead— for packinghouses, for sales facilities, for personnel, and for possible other uses for the fruit than fresh consumption. There are additional interesting problems to which we don't yet have the answer, and which need research.

Fundamental to planning is a continuing inventory of the industry, on which we can project into the future. Such an inventory is a tool of marketing research. We maintain on file a record of every known avocado grove in California, complete with the number of trees in it, by age and variety. The record is not absolutely accurate, of course; but it serves, and is kept up to date. Through research into those records, we can make some kind of forecast of future production. We can determine variety trends. We can plan to be ready for any marketing eventuality. Because of this research, the avocado industry has the enviable record of having always sold all of the crop produced, regardless of its size. We have never had to dump a part of the production for lack of a market.

On the other hand, there may come a time when it will be advantageous to process some part of the crop into some product. I won't go into the reasons, but there is that possibility. Research has already prepared the way for us if that situation develops.

We have for many years investigated the potential products and byproducts of the avocado. Most of them have been rejected or filed away, for various reasons. One product, avocado oil, has been manufactured on a limited commercial scale, and is being maintained as a minor product for sale. We are continuing production research on this product to make it better and less costly to produce, and we are continuing marketing research into additional uses for it. At present, avocado oil is used both as a cosmetic and a culinary oil. This product has special importance, because it provides an outlet for fruit in the case of such a disaster as a major freeze. It has already so served.

Another field of research relates to freezing the avocado for later consumption. Not much success has been had yet with freezing the whole fruit, but research has developed a quite satisfactory frozen avocado spread. This product was marketed in commercial quantities in one city, a couple of years ago, on an experimental basis. The results were not completely satisfactory, but did show what the problems were. The experiment showed us the direction toward which to point our research.

I have by no means exhausted the list of research in the realm of marketing. Those

items I have mentioned deserve elaboration. What I have tried to do is to demonstrate that research is a very important part of the marketing story, just as it is of the production story. There is, however, one more point to be made before I conclude.

Research costs money. It repays itself with dividends to boot, but the original investments in research cost more money than the *individual* grower, or even small groups of growers, can afford. The extensive research that has been done, and is still being done, has been made possible only because a large segment of the avocado industry has cooperated in the financing of the work, with each grower having to carry only a small part of the burden. The evidence is clear that cooperative effort has produced results.