Production and Marketing of Florida Citrus Fruit

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The Florida citrus industry, in common with agriculture in all sections, has been obliged to face constantly increasing costs during the past few years without compensating increases in the price of the product. The Florida and California citrus growers have been able to defer the evil day somewhat longer than producers in other sections, but the time has come when it is essential to give close attention not only to better methods of production and marketing, but also to the costs of these operations.

There has been a tremendous increase in the production of citrus fruit during the past few years. The extent of this increase from a total of 74,845 cars in 1920 to 106,614 cars during the calendar year 1923 can hardly be appreciated from a recital of the figures. A diagram would show that it is an increase of over 40 per cent. Florida shipments during the calendar year 1923 have increased over 55 per cent above shipments during the calendar year 1920.

The increase in shipments of citrus fruit, large as it is, is not the entire story. There has been during this same period an enormous increase in the production and shipments of all kinds of fruits and vegetables. Shipments of lettuce, for example, have practically doubled since 1920. Shipments of apples were approximately 25 per cent larger during the calendar year 1923 than they were in 1920, 1921 or 1922, and apples, most citrus men agree, compete strongly with oranges and grapefruit.

Furthermore, the reports of the State Department of Agriculture show that in 1922 there were approximately half as many non-bearing grapefruit trees in Florida as were already in bearing. The same report also shows that there were actually more non-bearing orange trees in the State in 1922 than were already in bearing, the number of bearing trees being 4,779,507, and the number of non-

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Later, Mr. Tenny, as secretary of the Florida Growers and Shippers League and as a member of the Advisory Committee of the Board of Control of Institutions of Higher Learning, had an important part in organizing the work of citrus canker eradication in the state.

bearing trees being 4,819,135. In California, the number of non-bearing orange trees in 1920 was approximately 25 per cent of those in bearing, according to the census figures; the number of bearing orange trees being in round numbers 10,000,000 and non-bearing trees 2,500,000. The number of non-bearing lemon trees was approximately 30 per cent of the number of bearing trees.

The rapid increase in production, and the further increase indicated by the large number of non-bearing citrus trees in both California and Florida create a situation which merits the serious attention of this Society and the assistance of State and Federal agricultural agencies. My talk will be confined principally tc a discussion of the costs which are assessed against the industry. When an industry is prosperous and prices are high, it is not easy to arouse much interest in a discussion of costs. After a season like the one that is now coming to an end, the importance of possible economies during the stages of production and marketing is brought to the foreground in the minds of the producers.

In my discussion of costs I do not intend to confine myself to what are commonly called "costs of production." Every charge assessed against citrus fruit between the grove and the consumer's table is a deduction from the consumer's dollar, and reduces the amount the producer receives. From this point of view, transportation charges and the margins of the wholesale and retail dealers are just as much costs of the grower as what he pays for fertilizer and labor.

It is necessary that these charges be studied and analyzed just as closely as costs of fertilizing, cultivating and spraying. They are relatively larger items than the costs incurred in producing the crop. A box of California oranges accumulates direct charges of approximately $2.80 between the orchard and the wholesale market. It costs approximately $2.20 to pick, grade, and pack a box of Florida oranges and deliver it to the wholesale receiver in New York City. This allows the grower nothing for his fruit or for the labor and expense he has been to in producing it. Before the fruit reaches the consumer's table terminal market charges must be added. These will be discussed later.

It is easy to see, therefore, that it brings the citrus grower no profit to save 10 cents a box in the cost of producing the fruit, if he loses 50 cents a box through wasteful methods in the terminal markets.

From 1917-1922 the Bureau of Agricultural Economics conducted studies of the cost of production and the net income from 100 fruit farms in Polk County. The cost of bringing an acre of citrus grove into bearing, as an average for those years, on the farms studied, was $524, including the cost of the land. Approximately one-half of this amount was in initial cost and the remainder maintenance costs. The net cost per acre of producing fruit on these 100 Polk County groves varied from $229 in 1917 to $357 in 1920, the average cost per acre over the six years being $311. Expressed on a per box basis it cost from $1.66 in 1919, to $2.36 in 1922, or an average over the six years of $2.03 per box for

oranges. Grapefruit, averaging a somewhat higher yield, added an average cost over the six years of $1.65 per box.

Fertilizer was the largest single item of direct cash cost, averaging $70.16 per acre over the period of the study. The next two items in order of their importance were hired labor, $45.11, and taxes and insurance $11.48 per acre.

Included in the costs of these 100 Polk County citrus groves, in addition to the usual cash items, were such non-cash costs as depreciation, operators labor which averaged $26.33 per acre, family labor, and interest on capital. Deductions totaling $8.74 per acre were made for receipts from other crops and for miscellaneous income from the groves. The average number of acres of bearing groves in these 100 farms was 18.2 acres, which I imagine is somewhat higher than the average for the State.

According to this study it cost the owners of these 100 groves $2.36 per packed box to produce oranges in 1922. We do not have similar studies covering the cost of packing and marketing oranges and grapefruit in Florida, but I note that one of the district marketing organizations in the State recently stated that the cost of packing, advertising and marketing the 1923-24 crop was 87 cents per box for oranges and 89 cents per box for grapefruit. Picking and hauling charges must be added to this and if costs are at all comparable with those in California I should judge that 20 cents per packed box would not be an excessive amount for both items. Therefore, to the production cost of $2.36 per box there must be added approximately $1.07 per box to cover picking, hauling, packing and marketing. Transportation charges from Orlando, Fla., to New York City are 87 cents per packed box, at the present time, and refrigeration costs, provided refrigeration is used, are a little more than 19 cents per box additional. A box of Florida oranges shipped without refrigeration, therefore, must sell for roughly $4.50 in New York City to pay the direct charges which have accumulated, and return the grower the cost of production, as determined for the 1922 Polk County figures.

As I have said, no studies have been made by the Bureau of Agricultural Economics of the cost of packing and marketing Florida citrus fruit. An analysis has recently been made of the expense connected with the marketing of California oranges and lemons through co-operative organizations. The items of expense under California conditions may not be entirely comparable to those in Florida, but the study shows, at least, the possibility of analysing such expense and effecting savings at certain points. The average packing house expense for oranges for the years 1917-1921, inclusive, was found to be a little less than 55 cents per box, as an average for the associations studied. The costs for 1921 was approximately 75 cents per box. To this must be added an average expense of 1 cent per box for the district exchanges, 4.1 cents per box for selling and 3.7 cents per box for advertising, or a total in round numbers of 86 cents per box, which is very close to the figure of 87 cents per box given by the Florida citrus organization I have mentioned. The

California figures, however, are for the year 1921, while the Florida figure is for the present season. Picking and hauling expense averaged approximately 20 cents per packed box for California oranges in 1921.

Averages, however, tell us little regarding the efficiency of the various organizations which make up the group. In analysing the expense of the California associations it was found that packing material was the largest item, with direct labor second and indirect expense the smallest item. Variations in the expense of packing house material were as much as 7 cents per box between a group of eleven comparable orange associations whose expenses were averaged for the three-year period 1919-1921. A part of this difference was due to the purchase of material of varying quality, but at least a portion of it was caused by wastage of such material as box shook and paper wraps, and deterioration of material stored from one season to the next.

However, the most important variations were discovered in labor expense. The analysis developed the interesting fact that labor economy was not necessarily correlated with volume of business. One association, for example, showed an average labor expense of a little less than 10 cents per box for the three-year period. On the other hand it cost four associations handling a greater volume of business 14 cents per box for labor, as an average for the same period, or 4 cents per box more. This may seem like a small item but, as a matter of fact, one association among the four mentioned, if it could have reduced its labor cost to the same amount as the association operating for 10 cents per box, would have returned to its members over $15,500 additional each year. The four associations mentioned would have made a total annual saving of over $50,000 provided they could have reduced their labor costs to the same level as the association operating at an expense of 10 cents per box for labor.

Low labor cost, of course, may be secured at the expense of real efficiency, as it is reflected by net returns received by members of the association. At the same time there was every indication in the California study, and I think the same will hold true in Florida, that low labor costs are secured, as a general rule, by efficient management, and only in exceptional cases as the expense of careful handling, grading and packing of the fruit.

Labor and material in the California organization studied were found to make up, as an average, 78 per cent of the total packing house expense. In spite of the fact that indirect expense was a relatively small item, however, there was variations in indirect expense between different associations which had an important bearing on the net returns to growers. For example, in 1921, we find one organization operating with a total indirect expense of 6½ cents per box. Another association handling approximately the same volume of business incurred overhead expense amounting to a little over 13 cents per box, or double the amount per box expended by the first organization. In absolute figures this means that the members of the second association

were charged over $14,000 more than the members of the first association for this one item of overhead expense.

There are, of course, many factors of expense beyond the control of the management. The California study was not undertaken primarily as a cost study, and the data which I have quoted are a little more than an indication of the opportunities for further analysis of the possibilities in packing house operations. It is evident that taking all factors into consideration there are a number of associations and other packing organizations that without disregarding in any way the proper handling of the first operate considerably economically than others. An industry which is concerned with a large increase in supplies and high operating costs must take into consideration all opportunities to reduce expense.

As I have stated, Florida oranges must sell in New York City at approximately $4.50 per box in order to pay accrued charges for handling and marketing and return to grower cost of production. Before these same oranges reach the consumer additional expense must be incurred. Data collected over a period of years by the California Fruit Growers Exchange show, as an average, that during the 5-year period 1917-1921, inclusive, the retailer obtained as a margin $1.88 per box for oranges. The wholesaler received 61 cents per box; transportation agencies $1.22; and packing and selling charges absorbed 64 cents. Expressed in another way, the grower received, as an average figure, $2.78 per box for oranges during this period; the value with packing and selling charges added was $3.42; transportation charges brought the per box cost up to $4.64; the wholesaler's margin increased it to $5.25; and the consumer paid $7.13 per box for this fruit. In other words, the retailer during this period, received an average margin equal to 67.7 per cent of the grower's net receipts for each box of oranges he handled. In 1921, the retailer received as an average margin $2.17 per box, while the average net return to the growers was 12 cents per box less, or $2.05. As an average for the 5-year period, more than half the total expense to the consumer was absorbed by transportation charges and wholesaling and retailing agencies in the terminal markets. It is unnecessary to emphasize the fact that the grower has a greater interest in the costs which accrue after the fruit leaves his orchard than he has in his production expense.

The Bureau of Agricultural Economics, in co-operation with the Port of New York authority, has been studying the terminal handling of fruits and vegetables in New York City. Florida's stake in the New York market is a considerable one. About 8 per cent of the 145,000 cars of fruits and vegetables consumed in the Metropolitan district in 1921 originated in the State of Florida. Conversely about one-quarter of all Florida shipments went to New York City. Eighteen per cent of the citrus fruit shipped from the State, according to this study, went to New York. During the year 1923, 32 per cent of the retail price paid by the New York consumer for Florida oranges was absorbed by city marketing agencies. This agrees very

closely with the California figures quoted for the period 1917—1921, representing data collected in approximately 40 markets. As an average for the 5-years, 35 per cent of the price paid by consumers for California oranges in these markets were absorbed by city marketing agencies.

In the face of these large city margins there is a temptation to shout "profiteering" as an easy explanation. However, large gross margins do not necessarily mean large profits; what they do point out is need for improvement in the system of distribution. By far the largest portion of the city margin goes to the retailer, and yet the retailer is not noted for his profits. Competition is keen, volume of trade small, and unit costs are high in the retail trade. The usual grocery store handles one package of a perishable product at a time. Fruit and vegetable markets trade in a somewhat larger volume and push-cart men and hucksters frequently handle five or six boxes or crates of one variety in a day. With the ordinary retailer catering to four or five hundred families, all desiring wide variety of selection and small units of purchase, the cost of handling a single unit is large. Staple groceries are sold at much smaller margins—bread at 15 per cent, sugar at 10 per cent, butter at 8 per cent.

The loss through shrinkage and deterioration in perishables is another large item. One important chain store allows a shrinkage of 10 per cent on barrelled apples, cabbage and sweet potatoes; 3 per cent on white potatoes, 6 per cent on onions, and 16 per cent on Boston lettuce, in charging retail branches with goods, as well as calculating an overhead loss of 15 per cent additional depreciation. Nevertheless, the field of retailing offers great opportunity for improvement in organization and method. Organized producers of perishable products can accomplish a great deal in demonstrating better methods of retailing and in encouraging the quicker turnover, at a lower gross margin, of the products which they produce and sell.

The work of the dealers' service branch of the advertising department of the California Fruit Growers Exchange is an example of what it is possible to accomplish in this direction. Some startling results have been reported of increases in retail sales brought about by demonstrations of the advantages of attractive display and small margins. The retailing problem is one that requires careful study by investigational agencies. However, the producers of perishable products themselves must give consideration to the problems of the retailer in so far as they are related to the products they produce.

In New York City, however, terminal handling is an item of expense of more immediate concern than retailing because of the greater concentration of volume, the high fixed costs of movement, and the really serious problem of congestion.

Terminal handling in New York involves railroad yard switching, floating, and pier-station delivery; sorting, stacking, assembling, loading on the piers; trucking to outlaying jobbing markets, reassembling, repacking, and delivery to the retail store. To this service may be charged from 15—20 per cent of the con-

sumer's dollar for most commodities. Just how much these costs can be reduced is not easy to calculate. Studies of railroad traffic and cost show that unified terminals would result in savings of pier rentals and in smoothing out the traffic flow, and that properly designed market display, sale and assembling platforms would eliminate some expensive truck movement and faciliate handling.

A careful analysis of produce trucking operations shows that over 40 cents of the trucking dollar is lost in maintenance of idle equipment and in delay at terminals and stores. At present it costs 12½ cents to load a barrel of Florida potatoes from the pier platform to a horse truck and move it out to the tail-board of a motor truck waiting in the street. Lettuce and cabbage hampers pay 6 cents for the same per head delivery.

Another consideration, important to the grower, is that perishable products shall arrive at a time when wanted, and, it might be added, in such condition unit of quantity and type of package as is most desired. Too little attention has been paid to the consumer by the shippers of perishables. Naturally, it is harder to regulate the purchasing of an extremely perishable raw food than a manufactured one. However, serious losses to shippers, dealers and railroads alike might be prevented by more intensive study of the consuming markets.

Day-to-day demand is a factor along with supply in determining the prices in the terminal markets. For example, it has been found that demand for lettuce during the winter season, December to April, is affected largely by temperature, and to some extent, by consumers' habits of buying throughout the week and before and after holidays. Preliminary studies show that an increase of one car in the supply results in a decline of 1 per cent in price, other things being equal, and that a rise in average temperature of 1 degree results in a rise of 6 cents per hamper in price, other things being equal. If these conclusions are verified by further inquiry and can be combined and modified into workable tools of prediction, it will be possible to regulate shipments by diversion and reconsignment on the basis of advance calculations, so that the alternate over-and-under supply can be eliminated, and marketing hazards and costs reduced.

We are some distance afield from a consideration of the cost of fertilizing, cultivating and spraying citrus groves. But the costs which we have been discussing are just as truly cost of production to the citrus grower as those under his immediate control. It is just as necessary for him and his organizations that these costs should be studied and analysed in order that unnecessary services, duplication of services, and unnecessary charges may be eliminated.

The efficient producer will in the future study more and more closely the question of costs that affect his product. He will study this subject not only from the point of view of reducing operating expense, whether in production or marketing, but also from the standpoint of receiving the highest net return for his fruit.

Undoubtedly more attention will be given to the standardization of varieties,

the elimination of a great number of varieties which are at present produced, and concentration on those which are found to be best adapted to Florida conditions and most in demand in the markets. California, as you know, has arrived at this condition some years ago, and at present shipments from that State are mainly made up of Washington Navel and Valencia oranges. It will probably not be possible for Florida to concentrate on two varieties but I believe marketing conditions would be improved if possibly only three or four were shipped from the State in any volume.

At the same time the careful grower will give close attention to the quality of fruit which he produces and special attention to the spraying which is necessary to grow fruit free from insect and fungous disease. The Bureau of Entomology for many years has been demonstrating in Florida the results that can be accomplished through the careful and thorough spraying. Some of the Bureau's demonstrations, as I recall them, have shown that it is possible to raise the crop of an orchard a complete grade by proper spraying for white fly, rust mite, citrus scab, and the various other insect and fungous troubles that afflict the citrus grower.

A careful grower, as I have said, will carry on these operations to raise the grade of his fruit because he will come to realize, if he does not already realize, that under present conditions low-grade fruit, as a rule, will not return the cost of production. In other words, your No. 1 grade in many cases, must pay a portion of the packing, marketing and transportation charges incurred by the No. 3 grade.

From the same point of view, the grower will also take an added interest in the standardization of the grades under which his fruit is shipped. It is unnecessary here to discuss in detail the advantages of standardization which, no doubt, all of you appreciate. There are certain classes of oranges and grapefruit that cannot be marketed profitably under present conditions. Standardized grades make it possible to determine where the line must be drawn.

We are forced to the conclusion that if production increases at the present rate in both Florida and California there will be a great increase in the quantity of citrus fruit that it will not be profitable to ship. Some provision should be made for the disposal of this low-grade fruit. Perhaps in time, like the packers, your profits will come from the sale of by-products made from the waste material of the industry, while the first grade fruit will carry the expense of production and marketing. I understand that grapefruit is being canned in the State with considerable success. Our representative in England advises that there are enormous possibilities for the sale of canned grapefruit in England, and in the Continental markets.

Some attention has been given to the manufacture of marmalade and similar products from cull oranges and grapefruit. I am not advised as to the success with which these ventures have met in Florida, but the California co-operative organization has given up the manufacture of marmalade, finding it an unprofitable method of disposing of their cull

oranges. One difficulty in California was that only 15 per cent to 20 per cent of the value of the finished product was derived from the oranges, the remainder was made up of glass, sugar, and labels; in other words, it was necessary to spend $80 to $85 to salvage $15 to $20 worth of oranges. After one or two failures the Exchange Orange Products Company, of San Dimas, Calif., a by-products company, affiliated with the California Fruit Growers Exchange, seems to be now on a basis that promises to offer a fairly profitable outlet for cull fruit.

The success of the enterprise in California depends first upon the ability of the company to work out the various processes that are still in the experimental stage, and secondly, upon its ability to manufacture by-products at a cost that will enable it to place a reasonable value on the culled oranges which it receives from the packing houses.

The Exchange Lemon Products Company has operated in California since 1915 and has, on the whole, been more successful than the orange products company. The Exchange Lemon Products Company has returned to the associations, for cull lemons, more than double the amount invested by these associations in the stock of the company.

I have said nothing about organization, the consolidated distribution and sale of shipments, and many other questions which are alive in Florida at the present time. I have simply attempted to show you something of the nature of the costs which the citrus industry of Florida must pay, the factors entering into these costs, and the necessity of carefully studying and analysing these factors.

It has occurred to me, however, as I have reviewed the situation, and possibly it has also occurred to you, that the individual grower or the average individual shipper is comparatively helpless in so far as his marketing costs are concerned. The problems involved are complex and require the co-operation of all agencies. This may or may not mean co-operative marketing, as we generally understand it, but at least it does mean some sort of concerted action between the producers of citrus fruit, their co-operative agencies, and other agencies engaged in the handling and marketing of the product. The Bureau of Agricultural Economics has carried on studies of the costs of producing and marketing citrus fruit, and at the present time is actively engaged in studies of terminal market costs and problems. This work is being done in the interests of the producers of oranges and grapefruit and can be made more effective and far-reaching through your active interest and support.

By Mr. Schoenfeld (following his paper:) I am going to venture a suggestion and thought which may not be entirely unsound. I have been thinking over how you can use these cull oranges. There is something wrong, some place, when these perfectly good fruit can't be utilized. I understand there has been some discussion as to shipping the extracted juice into the Northern States. I am not prepared to discuss that intelligently, but here's a thought that occurs to me. I think it may offer some pos-

sibility of relieving this volume of cull oranges.

As I know something of the handling of raw milk in cities through the large distributing agencies, as Sheffield Farms in New York, Wise Bros., in Washington, etc., it seems to me that they may have an organization that would lend itself as an outlet to orange juice. It may seem odd that you tie up milk distribution with orange juice, but I recall that my own child was brought back on his feet by the judicious feeding of milk and orange juice. I know that in hospitals they are constantly urging orange juice and milk drinks as a part of the diet. I know that it's a growing knowledge that orange juice should be used in the daily menu, so as to give the vitamines. Wouldn't it be entirely feasible if cull oranges were loaded into box cars this time of year, and in refrigerator cars in the winter time, and sent to milk concerns, where they could extract the juice from the oranges, by the juice extracting machines, running it through machines similar to their clarifiers for milk, which would extract some of the pulp and material, bottle it up in the regular way and distribute it through their milk distributing system.

I have every reason to believe that some arrangements like that could be worked out with some of the more aggressive milk distributors in the Northern States. If that could be sold for 12c to 15c a pint. I believe that ultimately your cull piles would begin to pay some profit. I am just offering this as a remark. I would like to see something done to work out this solution of reducing the cull pile.