A CHANGING PICTURE—THE TROPICAL FRUIT INDUSTRY
IN DADE COUNTY

SEYMOUR GOLDBEGER
Assistant County Agent
Homestead

With a subtropical to tropical climate, and soils on which the farmer can grow almost any warmth-loving crop with proper management, Dade County produces a variety of tropical and subtropical fruits acclaimed throughout the United States. Even on Miami Beach, the tourist mecca, some of the earliest plantings of avocados and citrus in the county produced heavy crops which were transported to the mainland by boat before the first bridge was built.

Immediately following World War II the tropical fruit industry in Dade County surged ahead with an impetus given it by high returns on low cost, low taxed lands. It was further pushed by active interest exhibited by newcomers to the area who had spent some time during the War in this area or other tropical areas and came to know some of the fruit crops which could be produced here. Avocados, limes and mangos increased from a total yearly average value of $954,974 in the 1944-49 period to a total yearly average value of $3,276,280 in 1954-59. The 1959-60 total fruit crop value was $1,952,000.

The major fruit crops of Dade County are avocados, limes and mangos. Some minor fruit crops are also produced. Among the latter are lemons, grapefruits, oranges, tangelos, kumquats, papayas, Barbados cherries, lychees, and several others. Of these minor fruit crops some show promise as a major crop for the future. Subtropical to almost tropical in response to climate, the trees producing the three major fruit crops require well drained soil not subject to flooding, although the mango is more tolerant of flood conditions of short duration than the other fruit trees. The cold tolerance of the major and most minor fruit crops is practically equal. Below freezing temperatures of more than a few hours can cause slight to severe injury to well established trees and can kill weaker ones. Since damaging freezes may occur when the trees are in bloom there have been several instances in which blooms and fruits have been destroyed.

The situation here develops as one of the ecology of subtropical fruit production as affected by the urbanization and development of the Metropolitan Dade County area. The highest, most well drained soils are most desirable for planting groves. Also these same lands are most highly prized for real estate development. In addition, the high well drained soils nearest the bay are generally warmer locations making them most desirable for subtropical tree crops. Again these locations are the most desired by the real estate developers since these areas give access to boating and fishing, particularly after the digging of canals from the bay to the ridge paralleling it.

Historically, much of the crop production in Dade County initially came from areas nearest the original settlements. These settlements were all located relatively near the coast and water transportation. With the development of these areas and the extension of the railroad, the fruit growers began to develop areas of the hinterlands with the present fruit producing area located west of the coastal ridge north and south of Homestead to the edge of the Everglades.

In fifteen years and in almost direct proportion to the rate of urbanization, the land values have increased from as low as $50 per acre to $5,000 per acre in some areas, to instances of more than $10,000 per acre in other areas. Needless to say, the fruit production from land worth $5,000 to $10,000 per acre has decreased considerably as that land is removed from production and converted to use for housing developments.

Within the continental limits of the United States, only a few counties of south Florida can successfully produce many of these tropical fruits. Dade County produces 90% of these fruits in Florida. California does produce an avocado, but it is an entirely different type from those produced in Florida and their production of avocados is only slightly greater than the production in Florida.

It is evident that in order to maintain a balanced economy and a diverse society in
Dade County definite action must be taken to preserve the agricultural economy. This points to planning and the resultant zoning necessary to preserve agricultural lands for agriculture. Much of the land now in fruit and vegetable production is so used while the owner-speculators wait for the expanding housing developments to reach their land area to sell. As mentioned, these latter areas are located in or near highly desirable residential areas and probably will soon be urban in nature. Therefore it is imperative that a realistic land use plan and necessary zoning be implemented.

Accidental land development in lieu of a workable land use plan has not been demonstrated as evidence of progress except temporarily in most areas. If a workable land use plan had been used in most communities in the past, today there would be no need for the tremendous urban renewal and farm relocation programs being undertaken in so many areas throughout our country. These hindsight programs are carried out only after expenditures of large quantities of dollars.

At the present time the proposed development of two large industrial areas (approximately 75,000 acres in all) is again creating a trend to speculate with desirable fruit producing land. Although these two proposed industrial areas will affect only a few thousand acres of vegetable producing land, the impact will be felt by fruit producers whose groves are on land of higher elevations most desired for the construction of housing for the estimated 14,000 employees of the two new industries. Then, additional housing will be needed for the many thousands more who will be employed in the necessary services for the increased industrial population.

Some grove land is now used for vegetable production as the result of extreme damage and financial losses from natural disasters of the past four years. The most recent occurrence was Hurricane Donna (September 9-10, 1960), whose high winds reduced the fruit crop on the trees to zero and whose heavy rains helped set a rainfall record and flooded slight depressions, even in our highest well drained land. The high water table eliminated many acres of trees by causing root rot in avocados and limes. Tree damage due to breakage and uprooting accompanied this disaster.

Three freezing nights (January 22, 23, and 24 of 1960) caused heavy tree damage away from the coast and reduced the avocado, mango and lime crops by at least half, when it had appeared that the fruit growers might recover some of the losses experienced in the freeze of 1958 (February 4-5).

However, the fruit growers of Dade County, with full knowledge of these problems, feel that the fruit industry here is still a significant portion of the county's economy. This attitude points up the need for realistic land use planning and zoning, with a realistic tax on agricultural lands. The tentative land use plan of the County Planning Department has the tacit approval of many growers, provided necessary zoning laws are passed to carry out the plan.

The loss of grove acreage is reflected in a changing cultural program. In the past the preparation of land for tree planting has run the gamut from hand hewn or grubbed out tree holes, through scarifying the land with early steam tractors (to loosen or break up the surface rock) for planting; dynamiting for tree holes and most recently, since the early 1940's, cross trenching the rock with a special rock plow pushed by the largest available track type tractors. Trees are planted at the intersections of trenches which gives straight, evenly spaced rows. Trees are planted on this soil, Rockdale sandy loam limestone complex, which is well drained, but are not planted on our relatively deep marl soils which are subject to flooding and soil compaction.

The reduction in grove acreage further points to more intensive cultural practices, i.e. (1) closer planting in rows, (2) improved pruning practices, (3) improved harvesting methods, (4) improved disease and pest control practices, (5) more economic fertilizer practices, (6) need for as much low cost mechanization as possible, (7) low cost weed control, and (8) irrigation particularly on limes and other crops.

Two recent surveys indicate that the present acreage planted to fruit crops is avocados 7,000, limes 5,280, mangos 1,650, and other fruits 1,200 acres.

Tied to the improved cultural practices is the need for research to develop the aforementioned methods and materials, research into (1) disease and pest control by means of chemicals and resistant varieties, (2) higher
yielding varieties, (3) resistant and vigorous rootstocks, (4) slowly soluble long residual fertilizer materials, etc.

Some progressive fruit growers have already initiated their own research into some of the cultural practices with resultant increase in yield per acre. Increased numbers of trees per acre are evident even in some old groves where growers are interplanting young trees between older trees to take advantage of any available planting spaces.

Even on some rocky land once considered too low for tree crops, some attempts at planting trees on raised beds is in progress.

Decreasing acreage with increased numbers of trees per acre is returning higher net profits per acre to the grower. Those who are not faint of heart can expect proportionately higher returns in spite of increased production costs. As some growers drop from the production scene the returns are divided among fewer entrepreneurs.

Although individual diseases or insect pests take on the role of primary enemy at one time or another, new chemical materials for control appear on the scene and are economically used by the grower. Of course there are exceptions, i.e., papaya virus and root rot of avocado. At one time, e.g., papayas could not be grown profitably because of the papaya fruit fly. DDT controlled that pest and the papaya industry flourished until virus appeared. In spite of this virus the papaya industry still flourishes on the rocky soils of Dade County. All this indicates the need for continued research in these areas.

Quality control is a controversial issue and dirty words to some individuals but it means assurance of a market which will buy more than once or twice instead of buying only one time and never buying again because some fruit had reached the market immature, diseased or overly ripe. A Federal marketing agreement is in existence now for avocados and limes. The purpose of these agreements is to set regulations to establish minimum quality standards for avocados and limes shipped from our area.

Factors which influence net returns on fruit crops in the subtropical fruit industry can be classified as production and marketing. Production factors include weather, insects and diseases as well as cultural practices and varieties planted. Some market factors are seasonal and terminal market distribution, consumer awareness and buying power, and quality of the product. These can be directly related to the maturity dates of many varieties of avocados and mangos.

The bulk of the lime crop is harvested during three major production periods beginning in May and running through September. In late summer and early fall the major portion of limes harvested goes into processing for juice.

There is still a great need for consumer education. Few of the markets in the United States actually know many of our fruits and these few markets can soon become saturated with even limited production when we have a bumper crop. However, consumer education is useless, even damaging, without production.

Another area for education, and considered by some to be more important than educating the consumer, is the enlightenment of the wholesaler and retailer as to handling conditions which will best maintain quality of the fruit.

A better economic situation might be achieved for the growers and handlers through a more unified marketing program. This could be more readily implemented by elimination of undesirable varieties and a more evenly distributed flow of fruit to market.

Production costs have increased generally since 1950. Compared with wages of 40c to 60c an hour at that time, the minimum hourly wage for labor is now 75c and the minimum price per box for harvesting limes is 25c when the fruit is plentiful and pickers are paid by the box. When lime fruits are scarce, pickers are paid by the hour or day and fruit prices are correspondingly higher. Avocado and mango harvest prices are lower per box because of the larger size of the fruit.

The cost of material such as fertilizers and spray chemicals has increased only slightly in the last ten years while land preparation costs have changed little. The price for clearing, scarifying, cross trenching and covering trenches prior to tree planting was approximately $150 per acre in 1950, which was a relatively high figure at that time. This price is practically the same today and varies with the number of trenches which need to be prepared.

The cost of planting a new grove varies considerably with the fruit crop. Although lime trees for grove plantings may be purchased for 90c to $1.25 each, ready to plant
trees certified to be disease free at $1.75 each are proving to be most economical. The certified trees outgrow the non-certified trees (90c-$1.25) and become productive a year or two before the latter. A newly planted lime grove usually pays for its own annual maintenance cost in the third or fourth year from planting.

Young avocado trees usually cost $1.25 each and a newly planted avocado grove becomes self-sustaining in about the sixth year. The cost for planting a mango grove approximates that of the avocado.

Annual production costs for limes have increased from a range of $200 to $250 per acre in 1950 to $300 to $400 per acre in 1960. These figures include everything from labor to harvesting costs but do not include costs of planting, taxes, nor interest on investment. Lime trees which were planted at the rate of 100 to 120 trees per acre are now planted in numbers of 150 to 200 trees per acre. Avocados, which do not pay their annual maintenance cost until about the sixth year, cost $175 to $200 per acre per year to be brought to that point. Avocado trees number from 60 trees to the acre to 85 trees to the acre and in some cases, 100 trees to the acre. Mango production costs fall between avocados and limes but the mango more closely parallels the limes in that they pay their annual maintenance cost in four to five years after planting.

Costs of rehabilitating groves, subsequent to freezes or hurricanes, vary with the degree of damage suffered. However, this cost is one which must be added to the loss which the grower sustains from loss of current crop and loss of production for as long as a two or three year period.

Fruit production, a year round business, requires a stable labor force. Many fruit producers maintain regular crews, usually from offshore, for their groves but harvesting sometimes presents a problem in that good harvest crews are not always available. This is especially true when there is competition with vegetable production for crews.

The future of fruit production in Dade County is tied directly to a long range workable plan, a plan which is designed for the good of the entire community, which must include agriculture as an integral part of the society and economy of Dade County. The disease, "creeping subdivisions," has eliminated agriculture in other communities in the country and has resulted in a loss which amounts to more than mere dollars and cents and which is not limited to the farmers, but affects the rest of the community as well.

Other fruit crops lending themselves to more intensive cultural practices and more intensive land utilization have been planted by some growers in experimental production plots. These crops include the Acerola (Barbados or West Indian cherry) an extremely high yielding source of Vitamin C, and imported guava varieties which are of extreme interest to processors and also have a high level of Vitamin C.

The future of fruit crops in Dade County is not a matter of "how long will it last against urbanization," but a matter of production of certain fruit crops with (1) a realistic agricultural land use plan and tax roll, (2) intensive production practices, (3) elimination of undesirable varieties, (4) proper marketing, (5) selection of improved varieties and (6) development of by-products for complete utilization of crops.

Acknowledgments

The author expresses appreciation to all those growers, handlers, personnel of associated agricultural services, Sub-Tropical Experiment Station personnel and to his associates in the County Agent's Office who provided all of the information for this article.