

percent packout would only have to be 27%. The break-even F.O.B. prices for fresh and processed fruit as well as pound solids per box when varying one variable at a time and keeping the other variables constant are shown in Tables 3 and 4.

The value for the fresh-fruit market price can be seen to be critical in the allocation decision. The expected value of this variable could be a difficult one to estimate. The collective action of growers' decisions cannot be ignored. If a large change in allocation of fruit is made toward the fresh market, the resulting price could be lower than expected. Research has shown that the demand for fresh Florida oranges is inelastic. This means that a small increase in quantity shipped fresh would result in a larger than proportional decrease in price. The expected value for the bulk-concentrate selling price can also be seen to be important.

Summary and Implications

This paper has focused on one of many management decisions, the decision to allocate fruit between fresh and processed markets. The suggested decision framework provides an economically rational approach to grower decision-making. The sequential decision process has been discussed with examples using representative and realistic numbers for processed oranges. The sensitivity analysis provides a guide to the relative importance of factors affecting the decision. However, the decision must be made on the individual grove situation. The exclusive use of industry averages or data for only one variety could lead to decisions resulting in lower revenues. Instead, familiarity

with production records and grove capabilities is necessary. Thus, active grove management is necessary to provide inputs into this decision process.

If lower grower prices are realized in the 1990s due to projected world supply-demand conditions for orange juice, then management strategies designed to maximize profits will assume increased importance. In an economic environment where growers are working harder and managing more efficiently to maintain acceptable profit levels, every decision must be reviewed as critical. This paper has focused on one such decision that of fruit allocation between fresh and processed markets.

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UPDATE OF 1990 TREE CENSUS IN POLK, LAKE AND ORANGE COUNTIES

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Abstract. The ridge area of Florida traditionally has produced a good portion of the State's citrus crop, but it was greatly affected by the December, 1989 freeze. Total acres recorded by the 1990 Commercial Citrus Inventory for Polk, Lake and Orange counties was slightly over 122,000 acres. This was down from 152,100 acres recorded in 1988. More tree and acreage loss was anticipated because of continuing tree mortality and changing grower decisions as to rehabilitation or removal and resetting. A complete census of these three counties was conducted in the spring of 1991. Results show continued tree loss but also substantial resetting. Production from these counties has been greatly reduced, but the potential for a rebound exists, especially in Polk county. Polk county may regain its lead in citrus production over time, but planting trends in other counties and weather conditions will be the final determinate.

Polk county, until the 1990-91 season, was the State's leading citrus producing county. The southward migration after the freezes in the late 1800s resulted in the Lake,

Orange, Polk county ridge area becoming the center of the State's citrus belt. Freezes in the mid 1980's however, were very devastating to Lake and Orange counties in both fruit production and tree mortality. It seemed at that time that Polk county would be relatively safe; that it was below the "freeze line". But the Christmas 1989 freeze proved that hope wrong with tremendous loss of both fruit production and trees.

TREE CENSUS

The tree numbers and acreage counts of the Commercial Citrus Inventory dated and indexed in 1990 for Polk, Lake and Orange counties, while as accurate as possible, did not fully capture the full effects of the 1989 freeze. Because of tree mortality that continued even into early 1991, it was determined to conduct in 1991 a complete grove by grove recount to obtain more accurate and complete tree numbers for these counties. Results of this survey were published in September 1991.

Analysis of the tree number and acre changes and the composition of the remaining trees and acres give insight into not only the losses incurred, but the potential for future production. Total citrus acreage in 1988 for the three counties was 152,130 acres, an increase from 1986. The

Table 1. Commercial citrus acreage for Polk, Lake, and Orange counties changes between censuses.

Census Years	Two Year Change		Net Change	Total
	Gross Loss	New Plantings		
1986	—	—	—	135,208
1988	14,820	31,742	+ 12.5%	152,130
1990	47,680	17,641	-19.7%	122,091
1991	26,569	13,909	-10.4%	109,431

1990 survey recorded 122,091 acres. By 1991, just one year later, only 109,431 acres remained (table 1).

Total acres lost since the 1988 census was 74,249 acres or almost 50 percent. Replanting added back 31,550 acres for a net loss of 42,699 acres or 28 percent. Oranges suffered the most loss with over 62,400 lost, almost 50 percent. With replanting 91,567 acres remained in 1991.

BEARING ACRES

But this does not tell the full story. The loss of bearing acreage is just as dramatic. All citrus bearing acreage in the three counties has declined to 77,000 acres, a loss of almost 36,000 acres or 32 percent (table 2). Orange bearing acreage declined 30 percent since 1988, grapefruit 46 percent and others 27 percent (table 3).

Although the 1989 freeze affected Lake and Orange counties, the majority of losses and subsequent reduction in production in these counties occurred because of the mid 1980 freezes. Polk county however, while losing some trees in the mid 1980's, suffered greater losses from the 1989 freeze. Orange and Lake counties had the highest percent declines from 1988 but Polk county at 29 percent, lost the most in total acres and trees.

Grapefruit losses in Polk county were heavy with a 45 percent reduction in acres since 1988. As occurred in Lake and Orange counties in the mid 1980's, the greatest losses were of rough lemon rootstock trees. Grapefruit losses from the 1989 freeze were heavy also in Lake and Orange counties.

Even more dramatic is the changes of bearing acres in age groups (table 4). Bearing acres of trees 24 years and older have declined 51 percent since 1988. Acres of trees 14 to 23 years have declined 49 percent. Other bearing age groups have increased because of shifts and new plantings,

Table 2. Bearing acres, Polk, Lake, and Orange counties.

Census	1988	1990	1991
Oranges	90,500	74,000	63,500
Grapefruit	14,400	10,900	7,700
Other	7,900	6,400	5,800
Total	112,800	91,300	77,000

Table 3. Percent change in bearing acres since 1988.

Type	Polk	Lake	Orange	Total
Oranges	-27	-32	-50	-30
Grapefruit	-45	-66	-65	-46
Other	-21	-25	-52	-27
Total	-29	-33	-51	-32

Table 4. Comparison of bearing acres by age groups.²

Age group	1988 Census	1991 Census	Percent change
V	69,000	33,900	-51
IV	15,200	7,700	-49
III	6,700	7,900	+ 18
II	6,900	10,800	+ 57
I	15,000	16,700	+ 11
Total	112,800	77,000	-32

²I 3-5 years, II 6-8 years, III 9-13 years, IV 14-23 years, V 24 and older.

but it is the loss of these older bearing trees that has and will affect production for several more years.

YOUNG TREES

As important as the reductions in bearing trees are to current production, even more important and interesting is nonbearing trees and acres. Tables 5 and 6 show the relationship of bearing to nonbearing acres and trees in the three counties. Polk County has 27 percent of the acres nonbearing. This however, represents 32 percent of the trees. Lake county now has half its acres nonbearing and 54 percent of its trees. If weather is favorable, increases in production from this county can be expected. Orange county citrus continues to decline with fewer acres reset following the 1989 freeze than Lake County. The three counties together have 65 percent of the trees bearing and 35 percent nonbearing. This is the highest proportion of young, nonbearing trees in these counties in many years.

Conclusion

The impact of these young trees on production will not be noticed for several years. Even with excellent care and ideal weather, only limited amounts of fruit can be harvested from young bearing trees. But Polk County will recover. Growers seem to have replanted faster following a destructive freeze than in any other time or area of the state. Other factors will also have an impact on the recovery however, including world production, government trade policy and of course, the weather.

Table 5. 1991 acres Polk, Lake, Orange counties.

	Bearing	%	Nonbearing	%	Total
Polk	63,500	73	23,400	27	86,900
Lake	7,200	50	7,300	50	14,500
Orange	6,300	78	1,800	22	8,100
Total	77,000	70	32,500	30	109,500

Table 6. 1991 trees Polk, Lake, Orange counties.

	Bearing 1,000 Trees	%	Nonbearing 1,000 Trees	%	Total 1,000 Trees
Polk	5,834.5	68	2,768.6	32	8,603.1
Lake	854.2	46	987.9	54	1,842.1
Orange	621.4	72	236.5	28	857.9
Total	7,310.1	65	3,993.0	35	11,303.1