



IFAS EXTENSION

Florida Avocado Production and Profitability Analysis¹

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The Florida avocado industry consists of about 6,400 bearing acres, 737 growers, and 35 registered avocado handlers and shippers (Census of Agriculture, 2002). Of the 6,400 acres, more than 99% are located in southwest Miami-Dade County. In the 2004/05 season (from May 2004 to March 2005), an estimated 1.12 million bushels (61.6 million pounds) of avocados were produced, valued at approximately \$14.45 million. Since the bulk of the avocados produced are sold outside the state, the industry is an important revenue generator for Florida. However, sustainability of the industry requires that it remain a profitable enterprise.

Although avocados produced in South Florida look similar due to their “green skin” and are easily distinguishable from the “purplish-black skin” varieties grown in California, they differ somewhat and fall into one of three main categories: West Indian, Guatemalan, and Mexican. These three categories comprise some 60 major and minor commercial varieties that mature at different times during the season in various weights and sizes. As a consequence, yields per acre vary among producers, depending on the production techniques and varieties grown. There is also a tendency of *alternate-year bearing*, implying high yields one year and lower yields the next. In recent years, there has been an

upward trend with respect to average yields. Trees are being replanted with higher-yielding varieties and closer planting density. This practice began after the devastation to the industry in 1992 caused by Hurricane Andrew.

This article provides an estimate of the costs and returns associated with avocado production in Miami-Dade County and a brief analysis of the profitability of the industry. The budget is based on a 5-year average yield of 8,000 pounds per acre (assuming a pack-out rate of 94%) and on estimates of the current average F.O.B. price in South Florida of \$0.85 per pound. The budget does not make any provision for establishment costs. Although the assumptions made in computing the costs reflect the practices of the avocado growers in the area, the information provided here is intended only as a guide to facilitate estimating the financial requirements of maintaining avocado groves. Data used in the analysis were obtained from interviews with growers and Extension specialists.

Cost of Production

Table 1 illustrates a sample budget, indicating a total *pre-harvest cost* of \$2,017 per acre, or \$0.25 per pound of avocados produced (on the tree). Of the

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total pre-harvest cost, operating costs totaled \$1,151 and fixed costs were estimated at \$866 per acre. The main operating costs were fertilizers, fungicides, and herbicides, with shares of 36.9%, 19%, and 13.3%, respectively. This is not surprising, given that many of the trees in Miami-Dade County are grown in calcareous soils and require generous applications of fertilizers. In addition, precautionary measures taken to prevent foliar and fruit diseases caused by fungi usually mean that all susceptible parts of the plants must be thoroughly coated with an expensive fungicide before infection occurs (Crane, et al., 2001). Included under fixed costs were land rent, supervision, and overhead expenses. Although the majority of farmers own the land, it was decided to include an opportunity cost for the land equal to the existing land rental rate. This reflects the standard practice of valuing the contribution of the land. However, if the true opportunity cost of the land were to be used, based on the current market value for the land (\$100,000 per acre) times an interest rate of 3%, it would amount to \$3,000 ($.03 \times \$100,000$).

When *harvesting and marketing* costs are added to production costs, the total per acre cost increases considerably from \$2,017 to almost \$6,700, or 232%. This translates into a cost of \$0.84 per pound to produce, harvest, and market avocados (\$0.59 per pound is added to the \$0.25 per pound cost of production to cover harvesting and marketing costs). The main contributor to the harvesting and marketing costs is the cost associated with picking, hauling, and packing, including the cost of the packing material. Together they account for 85% of the harvest and marketing costs and as much as 60% of the overall cost to produce and market avocados. The high harvest and marketing costs are due to avocado harvesting methods and federal regulations. Because the fruit is easily bruised and scratched, avocados are hand picked, which makes harvesting a highly labor-intensive operation. Federal Marketing Order 915, in existence since 1954, regulates production practices and harvesting procedures, such as the size and quality of the fruit, packing and shipping containers, and shipping dates. The Order is aimed at increasing grower returns by promoting orderly marketing conditions while at the same time ensuring consumer satisfaction.

Returns and Profitability Analysis

Currently, average yield is estimated at about 8,500 pounds (4.25 short tons) per acre. With a pack-out rate of about 94% the quantity of saleable avocados is estimated at 8,000 pounds per acre. Assuming an F.O.B. price of \$0.85 per pound the gross revenue is calculated at \$6,800 per acre. Subtracting the total cost of production and marketing (\$6,700) from the net revenue (\$6,800) gives a net return to the growers of about \$100 per acre (Table 1). This represents a return of 1.52% on the total cost of producing and marketing avocados. Total net return for the majority of growers is less than \$1,000 per annum, with 61% (450) of all Florida avocado growers producing on farms less than 5 acres and 88% (650) producing on farms less than 10 acres. It should be pointed out that many of the growers who own their land tend to ignore the fixed costs and focus on the net returns in relation to variable costs (operating and marketing costs). Following such an approach implies a net return of about \$0.12 per pound after adding in a fixed cost of \$0.11 per pound, or about \$960 per acre. While such a return appears more favorable, it is only a short-term strategy that is insufficient for maintaining a full-time operation. It easily can be assumed that growers remain in the industry for land speculation and more than likely have other sources of income.

Sensitivity Analysis

Table 2 presents a sensitivity analysis of net returns to a grower on a per acre basis. In the best-case scenario where both price and yield are assumed to increase by 10%, net return per acre would increase from \$102 to \$1,107. For a 10-acre grove, net annual return would be \$11,070. However, this best-case scenario is unlikely due to increased imports of avocados from the Dominican Republic and Mexico. Between 2001 and 2004, avocado imports from the Dominican Republic increased from 0.4 million bushels (19.9 million pounds) to 0.55 million bushels (27.93 million pounds), an approximately 11% per annum growth. Imports from Mexico over the same period tripled, from 0.52 million bushels (28.33 million pounds) to 1.55 million bushels (85.27 million pounds). Future decreased profits are estimated based on free trade

agreements which will allow year-round imports of foreign-grown avocados in all 50 states. A more likely scenario will be that yields will increase to 8,400 pounds per acre and prices will decline by 5%, from the current base price to about \$0.81 per pound. This would result in a net loss to growers of about \$127 per acre, or an overall loss of \$1,270 for a 10-acre grove. Further price declines will be devastating, requiring growers to heavily subsidize the cost of their avocado operations.

<http://usda.mannlib.cornell.edu/data-sets/specialty/89022/tableb-09.xls>.

Concluding Remarks

Due to increased foreign competition, Florida's avocado growers most likely will experience dwindling net profits similar to those of other agricultural producers in South Florida. With the free trade agreements, prices are expected to decline further or, at best, remain stagnant. This means that more domestic avocado growers will likely find it necessary to subsidize their operations with off-farm earnings. Those choosing not to remain in the business may be tempted to switch to the most profitable alternative, which in Florida is real estate development. The sample budget presented in Table 1 reveals a net return of about \$100 per acre, or a return of less than 1.5% on total cost of production, ignoring establishment costs. The one bright spot for the Florida avocado is that it has fewer calories per unit than the main variety sold in the United States. Advertising its health benefits could help increase the demand for Florida avocados and stave off further price declines.

References

Census of Agriculture. 2002. National Agricultural Statistics Service, United States Department of Agriculture, Washington, D.C. <http://www.nass.usda.gov/census/>.

Crane, J.H., C.F. Balerdi, and C.W. Campbell. 2001. The Avocado. Electronic Data Information Source (EDIS) Circular 1034 [MG213]. Department of Horticultural Sciences, University of Florida, Gainesville, FL. <http://edis.ifas.ufl.edu/MG213>.

National Agricultural Statistics Service. 2005. United States Department of Agriculture, Washington, D.C.

Table 1. Sample budget for avocado production (one acre).

Item		Value per Acre (\$/acre)	Value per Pound (\$/pound)
REVENUE			
Yield (pounds/acre)	8.000		0.85
Total Revenue		6,800.00	
OPERATING COSTS			
Fertilizers	425.00		
Fungicides	220.00		
Herbicides	150.00		
Insecticides	11.00		
Tree Removal & Site Preparation	4.00		
Tree Replacement	12.00		
Top, Head, & Prune Trees	60.00		
Set Trees	2.00		
Irrigation	49.50		
Mow Middles	80.00		
Grove Work & Hand Labor	25.00		
Growers Association Fees	8.00		
Interest @ 10% per Annum	104.65		
Total Operating Cost		1,151.15	0.14
Income Above Operating Cost (Gross Margin)		5,648.85	
FIXED COSTS			
Land Rent	446.00		
Supervision	140.00		
Overhead (Taxes, Insurance, Utilities, Etc.)	280.00		
Total Fixed Costs		866.00	0.11
PRE-HARVEST COST			
Total Pre-Harvest Cost		2,017.15	0.25
HARVEST & MARKETING COSTS			
Sales Charge @ 10% F.O.B. Price	680.00		0.09
Pick, Haul, & Pack	4,000.00		0.50
Total Harvest & Marketing Costs		4,680.00	0.59
TOTAL COSTS		6,697.15	0.84
ESTIMATED PROFIT		102.85	0.01

Table 2. Sensitivity analysis, net returns per acre.

Yield		Wholesale Price				
		0.77 (-10%)	0.81 (-5%)	0.85 (base)	0.89 (+5%)	0.94 (+10%)
7,200	(-10%)	-685	-397	-109	179	539
7,600	(-5%)	-611	-307	-3	301	681
8,000	(base)	-537	-217	103	423	823
8,400	(+5%)	-464	-127	209	545	965
8,800	(+10%)	-389	-37	315	667	1,107