

Is It Still Profitable to Grow Lychee in Florida?¹

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Introduction

The top five world lychee producing countries are China, India, Taiwan, Thailand, and Vietnam. Lychee is also grown commercially in many other subtropical areas, including Israel, Australia, Madagascar, parts of Africa, and at higher elevations in Mexico and Central and South America. A relatively small amount is produced in the United States (FAO, 2002).

World production of lychee is estimated to be around 2.11 million tons, with more than 95% of the world cultivation occurring in Asia. Total production in the Southern Hemisphere (mainly Africa, Madagascar, and Australia) is about 50,000 tons. The production season in the Northern Hemisphere extends from about April to mid-August, and in the Southern Hemisphere from November to February.

In the United States, commercial production of lychee takes place in Florida, Hawaii, and California. Florida is the largest U.S. producer (1,200 acres) of lychee, followed by Hawaii (300 acres) and California (60 acres). Total annual production of lychee fruit in the United States is estimated at 433 tons, which is considered minuscule compared to world production.

Production of lychee in Florida expanded rapidly in the 1990s following Hurricane Andrew in 1992. From about 200 acres pre-hurricane, acreages increased to slightly over 500 acres by 1996 and to the current level by 2000 (Degner, Stevens, and Morgan, 2002). Growers were drawn to the high returns and the prospects driven by strong demand from an increasing U.S. Asian population. However,

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with the current prices plummeting well below those obtained three to five years ago and with costs of production continually rising, many growers are questioning if it still makes sense to grow lychee. In the following analysis, we examine developments within the U.S. lychee industry and focus on the costs and returns of producing lychee in Florida to determine whether farmers can still make a profit from growing this commodity.

Demand for Lychee

The demand for fresh lychee in the United States has increased considerably within recent years. This has been due in part to increases in Asian ethnic populations in the United States and to health-conscious consumers who purchase fruit in specialty stores (Figure 1). In the past, the demand was mainly for the frozen and canned fruit, but the demand for the fresh fruit has increased substantially. The main lychee suppliers to the United States are Taiwan, Mexico, China, and Israel. In recent years, lychee production in the United States has been facing heavy competition. Between 1998 and 2003, lychee imports grew from 967.9 tons to 3,345.8 tons, with the bulk of the increase in imports from Taiwan. In 2002, Taiwan doubled its exports to the United States, and has now overtaken Mexico as the main supplier to the U.S. market. In 2003, Taiwan increased its lychee exports to an all-time high of 2,373 tons, or 70% of total U.S. imports of lychee (which has caused the U.S. domestic price for lychee to plunge to new levels).

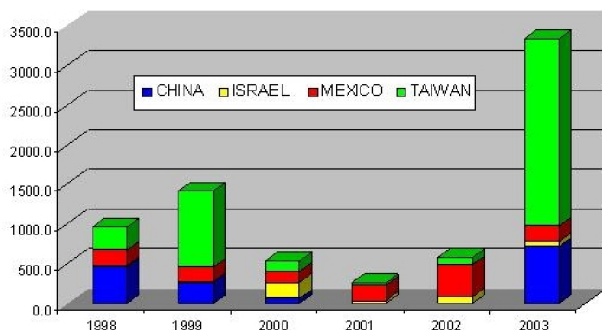


Figure 1. U.S. imports of lychee, 1998-2003 (tons).

Farm Gate Prices

Apart from a slight recovery in 2002, farm gate prices trended steadily downwards over the period 1998–2003 (Figure 2). From a high of \$5.10 per pound received by the growers in 1998, prices fell to approximately \$1.10 in 2003, or by 78.7%.

The biggest decline in prices was recorded in 2003, with growers receiving a price that was only 33.4% of the price received in the previous year, and 36.4% of the previous five-year average price of \$2.96 per pound. For the first time, farmers had to apply for trade adjustment assistance, also known as TAA (the Trade Act of 2002 established the Trade Adjustment Assistance for farmers, which provides technical assistance and cash benefits to eligible farmers and fishermen from the United States Department of Agriculture). As noted earlier, the sharp decline in price in the marketplace has been attributed to the surge of lychee imports from Taiwan and to a lesser extent from Mexico. Although imports from Taiwan should stabilize at current levels, U.S. domestic farm gate prices are expected to remain weak in the foreseeable future due to the prospect of China re-entering the U.S. market.

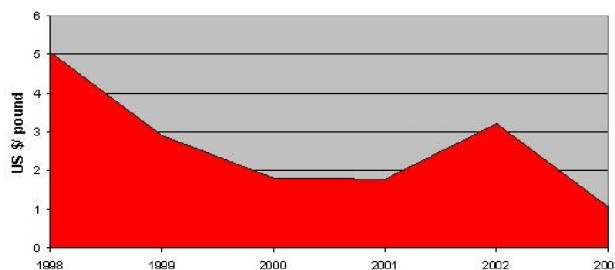


Figure 2. U.S. domestic farm gate prices for lychee, 1998-2003.

Cost of Production

Table 1 illustrates a sample budget based on a five-year average yield of 5,000 pounds of lychee per acre (assuming a pack-out rate of 70%) and on estimates of the current average F.O.B. price in South Florida. It should be pointed out that yields and costs for individual operations can vary widely. For instance, lychee yields have been known to range from a low of 600 pounds per acre in a bad year to a high of 10,000 pounds per acre in a good year.

Additional assumptions include charges of 50 cents per pound for picking, hauling, and packing. Packers are assumed to assess a sales charge of 10% of the F.O.B (free on board) sales price.

Table 1 also reveals an average per acre total cost of production and marketing of \$6,385 and gross revenue of \$8,750, giving a net return of \$2,365. This represents a 37% return on investments and recurring costs. Total pre-harvest costs are estimated at \$3,010 per acre (about \$0.60 per pound) while total harvest and marketing costs amount to \$3,375 per acre (roughly \$0.68 per pound). From Table 1, it is apparent that the greatest costs are *harvesting and marketing*, accounting for as much as 52% of the total costs of production. Reducing these costs would contribute to improving the returns.

In addition to reducing production costs to improve profitability, improving fruit quality could influence market prices. Returns can be vastly improved by increasing yields per acre (discussed later). Table 2 shows the estimated net returns for various price and yield combinations in South Florida. The yields chosen reflect expected average yields in low, medium, and high years, while prices reflect the range paid in recent years. Table 2 reveals that with a yield of 3,000 pounds or less, the grower would operate at a loss if the F.O.B. price were \$1.50. However, if the F.O.B. price were to increase from \$1.50 to \$2, net returns would improve considerably even if yields remained at this level. In situations where yields are high (7,000 pounds per acre) and price is close to the \$2 per pound level, growers could achieve net returns in excess of \$6,000. As Table 2 indicates, returns to lychee can vary considerably, depending on the type of year and the price received. It also shows quite clearly that a relatively small increase (decrease) in the market price tends to have much more impact on net return than would a similar increase (decrease) in yield. For example, increasing the price from \$1.50 to \$2.00 at 5,000 pounds per acre (33.3% increase) causes the net profit to increase by \$2,250, whereas increasing yields from 5,000 to 7,000 pounds per acre (40% increase) results in the net profit increasing by \$1,700 (from \$1,240 to \$2,940). Notwithstanding, realizing such improvements through cost reductions would be extremely difficult.

Conclusions

Our analysis shows that with a yield of 5,000 pounds per acre and a F.O. B. price of \$1.75, it is possible to realize a net return of \$2,365 per acre, or returns to investment and recurring costs of 37%. On the surface, such returns appear fairly attractive. However, when one considers that the present value of a string of such returns over a 20-year horizon (assuming a constant interest rate of 6% per annum) amounts to only about \$27,000 as opposed to the current market value of \$55,000 per acre for agricultural land in the area, one can understand why many growers are beginning to question the profitability of this enterprise. Viewed from a slightly different perspective, a grower taking out a loan today (assuming an interest rate of 6% and a payback period of 20 years) to purchase an acre of land for the purpose of growing lychee would be required to pay \$4,795 per annum over the next 20 years. This payback amount would far exceed the \$2,365 net returns [\$2,815 if rent is added back ($\$2,365 + \$450 = \$2,815$)]. Moreover such calculations do not make allowances for establishment costs and the early years when the trees are not bearing. Hence, such an investment could only be justified on the grounds of speculation on land prices.

Our analysis also shows that the net returns to growers are more sensitive to changes in market prices and yields, and less so to efforts to reduce the cost of production.

References

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Table 1. Estimated costs and returns for lychee in Miami-Dade County, FL, 2004.

Category	(\$)/Acre/Year	(\$)/Pound
Marketable Yield (5,000 pounds per acre)		
F.O.B. Price in South Florida		1.75
TOTAL REVENUE	8,750	
Operating Costs	1,041	
Fertilizer	429	
Fungicide	260	
Herbicide	85	
Insecticide	117	
Interest on Operating Capital	150	
Miscellaneous	689	
Tree Removal and Site Preparation	8	
Tree Replacement	14	
Top, Head, and Prune Trees	219	
Set Trees	4	
Irrigation	135	
Mow Middles	80	
Gove Work and Hand Labor	229	
Fixed Costs	1,280	
Land Rent*	450	
Supervision	176	
Overhead	304	
Equipment Repairs, Depreciation	350	
TOTAL PRE-HARVEST COSTS	3,010	0.60
Harvest and Marketing Costs	3,375	
Pick, Haul, and Pack (\$0.50/pound)	2,500	0.50
Sales Charge (@ 10% of \$1.75 F.O.B.)	875	0.18
TOTAL COSTS	6,385	1.28
NET RETURNS (Total Revenue minus Total Costs)	2,365	0.47
* Land rent reflects more the returns to agriculture than it does the current price of agricultural lands.		

Table 2. Lychee estimated net returns for various price and yield combinations, South Florida, 2004.

	F.O.B. Price, Homestead (<i>dollars per pound</i>)		
	\$.150	\$1.75	\$2.00
Yield (<i>pounds per acre</i>)	Returns Per Acre (<i>dollars</i>)		
3,000	-460	215	890
5,000	1,240	2,365	3,490
7,000	2,940	4,515	6,090