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Hawaii Macadamia Nut Company

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Holly B. Tompson^{***}

Owners of the Hawaii Macadamia Nut Company (HMNC) are facing an expansion opportunity. A land owner has property available that would enable the HMNC to expand its acreage and revenue by about 20%. To fully consider this opportunity the owners must decide 1) whether the expansion is strategically and financially viable, 2) how to raise capital to finance the expansion, and 3) whether they have the skills to manage the company's growth during expansion. This is a case study describing a real company facing a real opportunity in Hawaii. The names of the company and its principals have been disguised.

Introduction

While waiting in the Honolulu airport to board his flight, Andrew Davis pondered how his retirement "hobby" had become so complicated. Thirteen years ago, he was one of four founding partners in a macadamia nut orchard located on the big island of Hawaii. The business had grown to almost a million dollars in annual revenue. The Hawaii Macadamia Nut Company (HMNC) grew macadamia nuts on a 233 acre orchard and sold them to companies that would process the nuts and prepare them for a variety of end use products. While he did not reside in Hawaii, Davis traveled there several times a year and talked on the phone to the local managers monthly.

Recently, the company was given the opportunity to acquire 50 more acres of adjacent orchard land. Davis was not sure how to evaluate this opportunity, or how to value the existing business if he wanted to raise equity to finance the second orchard. He and his partners had already invested in the first orchard and were not ready to invest again. But they might be able to raise equity capital from people who were seeking a way to diversify their portfolios.

Background

In October of 1993, HMNC was established on the island of Hawaii in the state of Hawaii. Like the founders of many new ventures, the founding partners were acquainted with each other through past investments and professional associations. Two of the founders were physicians from Texas who were preparing to retire from their practices. In the early 1980s, Andrew Davis and William Hopkins had made small investments in a macadamia nut orchard in Hawaii that was fraught with mismanagement, high costs, and

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unexpected reduction in demand for the nuts. The orchard had some promising years of production, but never reached break even and was abandoned after about five years of operations. During the struggles with the orchard, Davis and Hopkins hired Harataki Manihera and Ken Gunman to advise them. Manihera and Gunman were local consultants who had developed expertise in the industry. By the end of 1987, however, the orchard was past the point of saving. Despite the failure of the orchard, the four remained friends.

Davis and Hopkins visited Hawaii regularly and remained interested in the macadamia nut industry. In early 1993, Manihera and Gunman had identified another opportunity in the industry, and in a series of meetings, the four decided to collaborate again. They had learned many lessons about the industry during their first attempt at becoming macadamia nut farmers and were eager to correct past mistakes. During the summer of 1993, they planned the details about ownership percentages, investment requirements, form of business, etc. The corporation was established in October 1993.

Manihera and Gunman agreed to manage the operations of the orchard in exchange for “sweat equity” of 10% each. They lived near the orchard, knew the local economy, and had spent many years working in the agriculture industry of Hawaii. Davis and Hopkins contributed cash to fund the start-up costs, and each retained 37% interest in the company. The remaining 6% was split among three investors who paid cash to acquire their ownership position. Ultimately, all the investors contributed a total of \$140,000 to found HMNC. Rather than investing the entire amount initially, the group funded the start-up costs and continued to fund the operating losses until the orchard reached break even. Acquiring the orchard was seen as a golden opportunity because the trees were approximately nine years old and were just coming into their years of prime production. The original tenant was growing macadamia nuts on the property but was unsuccessful, despite owning and operating the orchard for six years. The tenant sold the orchard to another owner from the mainland, who had sold his plumbing supply business in New Jersey and moved to Hawaii. He owned the orchard for three years but was also unable to make a profit. When HMNC acquired the lease to the orchard the trees were nine years old and according to estimates by Gunman and Manihera, approximately 75% of them were salvageable. See Table 1 for an explanation of the start up costs associated with establishing the new orchard.

Table 1
Start up costs for HMNC: 274 acres in 1993

Item unit cost	Total
Trees @ \$8.00 each	\$38,360
Labor for planting @ \$6.00/tree	\$28,800
Management fee @ 10%	\$ 6,700
Total	\$ 73,860

Assumptions

- Tree density = 70 / acre.
- 75% of existing trees are salvaged.

HMNC signed a 25- year lease for 274 acres of land. The start-up costs paid for labor to remove the unsalvageable trees, weeds and undergrowth, then fertilize the existing trees and purchase and plant new trees.

Results

The company had several successful years. Beginning in 2000, the trees were producing in good volumes, market demand was strong, and the orchard managers were controlling costs well. Table 2 shows an overview of the operating results of HMNC since inception.

Table 2
Operating History of HMNC: 1993 - 2006

Crop year*	Pounds harvested ⁺	Revenue	Operating Costs	Pre Tax Net Operating Profit
1993 – 94 [#]	197,145	\$118,604	\$67,883	\$50,722
1994 – 95	255,920	\$164,555	\$181,176	\$(16,622)
1995 – 96	273,075	\$186,231	\$252,854	\$(66,623)
1996 – 97 [^]	365,299	\$259,985	\$223,438	\$ 36,547
1997 – 98	433,684	\$269,428	\$259,352	\$ 10,076
1998 – 99	654,965	\$377,321	\$342,701	\$ 34,620
1999 – 00	680,115	\$330,276	\$352,179	\$(21,903)
2000 – 01	637,437	\$298,454	\$291,868	\$ 6,586
2001 – 02	858,231	\$376,097	\$411,339	\$(35,242)
2002 – 03	784,846	\$366,911	\$349,228	\$ 17,682
2003 – 04	803,950	\$480,971	\$477,379	\$ 3,592
2004 – 05	864,249	\$656,793	\$481,459	\$175,335
2005 – 06	771,221	\$612,208	\$404,316	\$207,892

* Crop year runs from July to June

+ pounds of nuts-in-shell

First year of operations was only 9 months (Oct `03 – June `04)

[^] State of Hawaii bought 41 acres, so orchard size reduced to 233 acres

The Macadamia Nut Industry

History & growing conditions. Macadamia nut trees are native to Australia but were introduced to Hawaii in 1881. They are named after a chemistry professor at the University of Melbourne, John MacAdams. Commercial development began in Hawaii in 1949. At maturity, the trees are 30-40 feet tall, and almost as wide. They grow heavy, dark-green foliage with leaves that are quite large – usually at least a foot long. When planted as seedlings, macadamia nut trees usually require 7 years before they bear a crop but will produce 30 – 50 pounds of nuts by their 10th season. Typically, the trees become even more productive after 10 years of growth and can maintain productivity for 50 years or more.

Macadamia nut trees are sensitive to frost, so they are grown only in tropical areas. They require a mild climate with regular rainfall throughout the year. In fact, a

typical orchard requires at least 60 inches of rainfall (or irrigation) per year. According to the “Farmer’s Bookshelf” and the University of Hawaii, “macadamia trees should receive about 0.20 inch of water per day from rainfall and/or irrigation (5,500 gal./acre/day).” The optimum temperature range is 55 – 90 degrees Fahrenheit. The main commercial production occurs in Hawaii, Australia, Brazil, Costa Rica, Guatemala, and southern Africa (Kenya, South Africa, and Malawi). See Tables 6 and 7 in the appendix for information about import and export volumes. Macadamia nut farming is classified under NAICS 111335 (Tree Nut Farming).

Characteristics of the nut. Mature macadamia nuts “resemble small green limes with a husk that opens along one crevice revealing a single brown seed inside. The brown seed coat is commonly called the shell and is approximately one inch in diameter. Within the shell is the kernel, or the nut, which contains about 80 percent oil and 4 percent sugar when dry” (www.mlmacadamia.com).

All nuts are high in fat content, but macadamia nuts have the highest portion of “good” fat compared to other nuts. Research has shown that eating both polyunsaturated and monounsaturated fats (instead of saturated fats) helps to lower overall cholesterol levels, and increase the “good” (HDL) cholesterol (Curb, et al., 2000; Garg, et al., 2003). Table 3 shows a comparison of the fat composition of oils commonly found in a western diet. Macadamia nut oil is 88% poly and monounsaturated fat but only 12% saturated fat. This composition compares favorably to other healthy fats like canola, almond, and olive oil. See Table 9 in the appendix for a full illustration of the nutritional content of macadamia nuts.

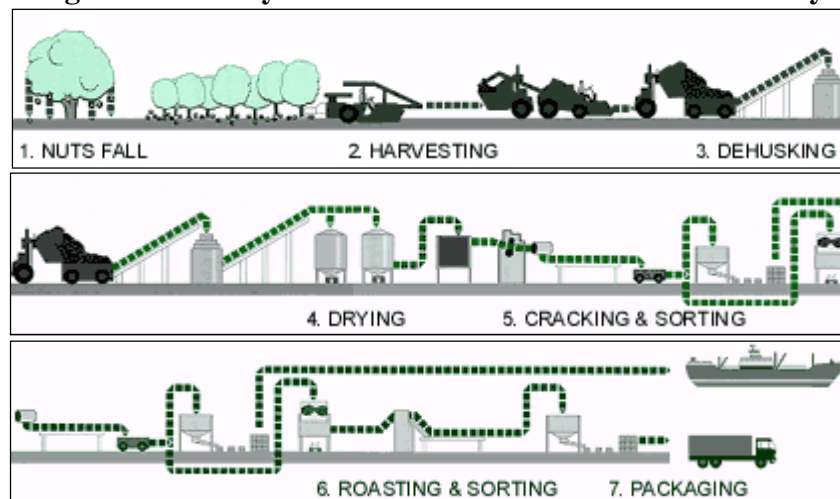
Table 3
Content Comparisons of Common Fats

Fat Source	Unsaturated Fat		Saturated Fat
	Poly	Mono	
Macadamia nut oil	4%	84%	12%
Almond oil	25%	65%	10%
Animal frying oil	5%	45%	50%
Butter	7%	36%	57%
Canola oil	30%	63%	7%
Olive oil	10%	76%	14%
Peanut oil	36%	45%	19%
Safflower oil	77%	14%	9%
Soybean oil	62%	23%	15%

Economics of the industry. At the time of harvest, macadamia nuts are encased in a greenish brown husk. Mature nuts fall from the trees and are harvested right off the ground. See Figure 1 for an illustration of the harvesting process. In Hawaii, approximately 35% of the annual harvest is collected by hand (Kawate & Tarutani, 2006). In large commercial orchards, mechanical devices collect the nuts. The nuts are sent immediately to the de-husking facility, where the husks are removed and ground into organic mulch. After de-husking, the kernels are still encased in a hard brown shell,

which also must be removed. At harvest time, nuts typically contain about 30% moisture, so the next step is to allow the nuts to dry, usually for at least 2 weeks. During the drying phase the moisture content is reduced to less than 2% and the kernel shrinks away from the inside of the shell. After then nuts have dried, they move into a mechanical, cracking processor that splits open the hard shells without damaging the nut inside. The kernel represents only about 15% of the total weight of the nut, shell, and husk. The final stage of processing is usually to roast the nuts and add salt (or other flavoring as the market demands).

Figure 1: Activity Chain for the Macadamia Nut Industry



According to Kawate & Tarutani (2006), Hawaii remains virtually the sole producer of macadamia nuts in the United States. See Tables 8 and 10 in the Appendix for information about the size of the US macadamia nut industry. Hawaii was the world's largest producer of macadamia nuts until 1997 when Australia took the lead. In Hawaii, over 90% of the orchards are 10 acres or less; however, a few large farms account for most of the acreage in production. Almost all of the orchards are located on the Big Island (Hawaii) at the southeast end of the Hawaiian Island chain. The macadamia industry is the major employer in the South Kona District of the Big Island.

Flowering of macadamia trees occurs over several months, so nuts will mature over an extended period, and multiple harvests are required to gather the entire season's crop. Most trees are propagated by grafted seedlings. Weed management is an important component in macadamia nut production because weeds compete for water and nutrients. They also provide shelter for insect pests and their predators and can enhance or reduce insect damage. Weeds can make rodent management more difficult and also can interfere with harvesting.

Australia completed Free Trade Agreement (FTA) negotiations with the U.S. in early 2004, with the agreement taking effect on January 1, 2005. Under the FTA, the U.S. tariff on macadamia nuts-in-shell was eliminated immediately and the tariff on macadamia products will be phased out over five years.

From 1993 to 1998, Australia's production increased by 129 percent to 27,500 metric tons. According to the United States International Trade Commission (USITC) in 1998, 25% of Australia's macadamia nut trees were not yet producing because they were too young. Within 10 years, it was expected that all of Australia's capacity would begin producing nuts.

In addition to having higher growth rates and more trees than the U.S., Australia has a lower cost of production. "For US growers, the break-even price ranges from \$1.21-\$2.03 per kilogram, compared with an Australian range of \$0.58-\$1.28. Possible explanations for the difference include the relatively younger ages of Australian orchards; the higher costs caused by Hawaii's volcanic terrain; and yield-augmenting effects of horticultural research on macadamias in Australia funded through mandatory levy collections" (USITC Publication 3129: xviii).

A New Opportunity

On his most recent trip to Hawaii, Davis met with the landlord to discuss the option for HMNC to sign a new lease and develop a new macadamia nut orchard on the adjacent 50 acres of land. Ken Gunman prepared estimates of the costs associated with planting a new orchard on the property. See Table 4 for details on the cost estimates.

Over and above these costs listed in Table 4, the partners would need to raise money to pay the "carrying cost" of the orchard, until the orchard produced enough revenue to cover the operating expenses. See Table 5 for an estimate of the additional investment.

Table 4
Projected expansion costs for HMNC
3500 trees on 50 acres in 2007

Item unit cost	Total
Trees @ \$9.00 each	\$31,500
Labor for planting @ \$6.00/tree	\$21,000
Land preparation @ \$830/acre	\$41,500
Windbreaks @ \$50/acre	\$2,500
Management fee @ 20% of costs	\$18,800
Hawaii GET tax @ 4.16% of costs	\$4,800
Total	\$120,100

Table 5
Projected Deficit Until Breakeven on Fifty Acre Expansion
(assume \$.80 per pound selling price)

Year	Deficit (\$)	Cumulative Deficit (\$)
2007	25,045	25,045
2008	27,483	52,528
2009	34,733	87,261
2010	29,324	116,585
2011	30,854	147,169
2012	26,456	173,625
2013	17,639	191,264

Preliminary Thoughts

Andrew Davis and William Hopkins met at their favorite local coffee shop to gather their thoughts. Both felt positive about the last several years' results from the existing orchard. The new orchard, when fully producing, should produce similar or better operating results. Still, they both knew that factors had changed in the supply and demand for the nuts. They talked about the risks that applied to both orchards. William noted that the landlord had offered to renew the lease on the existing 233 acre orchard for twenty five years if HMNC leased the additional fifty acres for a twenty-five year period. Additionally, they felt that the landlord would give them an option on an additional twenty-five year lease on the new orchard. The new leases would be non-cancelable for five years and then the lessees could cancel with a one year notice.

They made some pretty good money the last couple of years on the existing orchard. The partners thought about the downside and upside risks to the new and existing orchards. They agreed that they should examine the supply and demand. William noted that the Australian supply was about to kick into a higher gear. Worldwide supply was definitely going up. Moreover, the cost advantage to Australian production was compelling. Hawaii had terrific weather but high costs. Australia had much lower costs. In fact, William noted that the high end of the Australian cost was at the low end of their costs. They needed help from strong prices.

Andrew, and to a lesser extent William, were both hopeful that, in spite of a spike in supply, prices would return to reach eighty cents per pound and above. Andrew noted the health benefits of Macadamia nuts and a rising worldwide attention to the dangers of saturated fats. Still, he knew that, so far, the demand growth for Macadamia nuts lagged that of other types of nuts. Both hoped that an industry marketing campaign would make their product's advantages clearer. In addition, there were rumors that the industry and the state of Hawaii were considering a branding campaign with a "Made in Hawaii" tag and claims of the superiority of Hawaiian Macadamia nuts. In spite of the Australian challenge, Andrew and William felt that the emerging world-wide trend toward market economies and the emergence of the BRIC (Brazil, Russia, India, and China) countries, south Asia, and Eastern Europe may dramatically improve the demand and price for Macadamia nuts.

The partners both thought that the risk from weather or tree disease was minimal. The professional care that the orchards received, the history of the existing orchard, and the location of the orchards made them comfortable with those risks.

Using Gunman's projections, they noted that the upfront costs of \$120,100 (Table 4) and the coverage of a deficit over the first six years of \$191,264 (Table 5) required a total cash outlay of \$311,364. At a price of eighty cents per pound and a 300,000 pound (nut in shell) output at maturity, the new orchard would produce revenues of \$240,000 in the fifteenth year of operation. At that level, the total operating costs were expected to be \$100,099 and the pre-tax profit would be \$139,901. That would yield a pretax profit margin of fifty-eight percent. The partners believed that those results at maturity were more positive than their current results even adjusting for the increase in budgeted price compared to current actual price for the nuts. Andrew ran a regression of operating costs on revenue for the years eleven through twenty on his Excel model that indicated, for the mature stage of operations, that fixed costs were \$34,164 and variable costs were 28% of revenues at an eighty cent per pound selling price. The income statement projections for the twenty-five year lease appear in Table 11.

As they discussed this growing complexity (and the inherent uncertainty of the future) the partners began to realize another option. They were at the end of their careers, not the beginning. The orchard had been a fun hobby and investment for them, and they had made some money too. Instead of expanding or even maintaining the orchard, maybe they could sell it to their minority partners or someone from the mainland who also loved Hawaii. They could take their profits and not worry any more about price fluctuations and the threat of low cost Australian competitors.

Whether they put up a "For Sale" sign or sought an investor to finance the new acreage, Andrew and William knew that any interested person would discount the future cash flows at their required rate of return to determine if the investment made sense for them. William felt that the low range of discount rates was realistic for the type of investor, a passive "gentleman farmer" who would like a business interest in Hawaii. Andrew was not so sure and thought that the small size of the venture and the long string of negative cash flows before break even suggested a high level of risk. They asked their financial advisor to draw up a table that showed a "build-up" model for the potential "Gentleman farmer" discount rate and the discount rate for a higher level of risk. They received the estimates in Table 6 below.

Table 6
Discount Rate Scenarios for an Investor or Buyer

Build up Factor	“Gentleman Farmer” Rate	Comment	Riskier Rate	Comment
Risk Free Rate	4.39%	10 year Treasury Bond at 12/31/05	4.39%	10 year Treasury Bond at 12/31/05
General Equity Risk Premium	4.80%	Per McKinsey & Co. (4.0% - 5.5%)	8.50%	Common historical premium used
Small Company Risk Premium	2.00%	Lower end of increased risk (0%-2%)	5.00%	Moderate estimate of increased risk for size
Specific Company Risk Adjustment	- 0.94%	Negative adjustment due to stability of orchard and world commodity market	5.00%	Moderate estimate of increased risk due to long growth period and negative cash flow
Discount Rate	10.25%		22.89%	

Both owners felt that if investors demanded returns similar to the 22.89% then achieving a positive Net Present Value on the investment would be difficult. They decided to examine the investment at their “gentleman farmer” rate initially. Their investment advisor also told them that since they would only sell up to 49%, then a buyer might also apply a “minority interest” discount to compensate for the lack of control over the business affairs. There was also the possibility of taking a “lack of marketability discount” due to the time and expense of selling an illiquid privately held venture. Andrew and William determined to keep those concerns to a minimum through a set of strong agreements that protected the minority owner(s).

The owners suspected that the ownership form of the venture was likely to be a “pass through” entity such as an LLC. The “gentleman farmer” discount rate was after tax. Using an estimated tax rate of 30%, Andrew converted the after tax rate of 10.25% to a pre-tax rate of 14.64%. The pre tax rate would match the pre tax cash flow forecast they would present to investors.

Andrew summed up what they thought were their five main questions:

- How should the partners weigh the risks in the new venture?
- Should the partners proceed with the new orchard?
- If yes, should the partners seek additional investment partners?
- If yes, what should the price be for a forty-nine percent share in the new orchard?
- If not expansion, should the partners sell the entire company?

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APPENDICES

Table 7: US imports of macadamia nuts (1000 pounds)

	2000	2001	2002	2003	2004	2005
Australia	6,487	4,288	2,846	3,676	5,798	4,935
South Africa	3,257	3,198	3,296	4,246	3,732	3,982
China	33	745	553	817	1,886	2,427
Guatemala	1,007	1,026	928	1,225	1,586	1,940
Kenya	32	328	376	1,291	2,878	1,516
Others	2,080	1,987	1,860	2,991	3,102	3,151
Total US Imports	12,896	11,572	9,861	14,246	18,981	17,950

Source: National Agricultural Statistics Service, USDA

Table 8: US exports of macadamia nuts (1000 pounds)

	2004	2005
Canada	245.0	542.0
China	26.5	88.1
Germany	1.0	13.2
France	183.0	94.7
Hong Kong	92.5	127.8
Israel	26.5	0
Japan	513.5	403.3
Mexico	15.5	50.7
Netherlands	77.0	22.0
Niger	0	72.7
Saudi Arabia	0	17.6
Singapore	11.0	15.4
South Africa	0	26.54
South Korea	125.5	88.1
Taiwan	37.5	86.0
Total US Exports	1,389	1,728

Source: National Agricultural Statistics Service, USDA

Table 9: Size of the US Macadamia nut industry

Year	Bearing acreage Acres	Yield/acre Pounds	Production 1,000 pounds	Grower price Cents/pound	Value 1,000 dollars
1998	19,200	2,990	57,500	65.0	37,375
1999	18,900	2,990	56,500	67.0	37,855
2000	17,700	2,820	50,000	59.0	29,500
2001	17,800	3,150	56,000	59.0	33,040
2002	17,800	2,980	53,000	57.0	30,210
2003	17,800	2,980	53,000	61.0	32,330
2004	17,800	3,170	56,500	73.0	41,245
2005	18,000	3,330	60,000	74.0	44,400

Source: Noncitrus Fruits and Nuts Summary, various issues, National Agricultural Statistics Service, USDA.

Table 10:
Nutrition information – 1 oz serving = 10-12 nuts = 28.3 gm

Energy	204 calories
Cholesterol	0 mg
protein	2.2 gm
Fat	21.5 gm
total carbohydrate	4 gm
fiber	2.4 gm
calcium	24 mg
phosphorus	53 mg
potassium	104 mg
total sugars	1.3 gm

Source: [International Nut & Dried Fruit Council \(nutfruit.org\)](http://InternationalNut.org)
 Research provided by USDA, 2004

Table 11: Comparison of US nut tree crops (000s acres & dollars)

Season	Almonds		Hazelnuts		Walnuts		Macadamias		Pistachios		Total *	
	acres	\$ value	acres	\$value	acres	\$value	acres	\$value	acres	\$value	acres	\$value
1998/99	460	703,590	29.5	14,942	198	238,350	19.2	37,375	68.0	193,640	774.73	1,187,897
1999/2000	485	687,742	29.2	35,603	197	250,738	18.9	37,855	71.0	163,590	801.10	1,175,528
2000/01	510	666,487	28.7	20,039	200	296,360	17.7	29,500	74.6	245,430	830.95	1,257,816
2001/02	530	740,012	29.0	34,700	204	341,600	17.8	33,040	78.0	162,610	858.80	1,311,962
2002/03	545	1,200,687	29.2	19,500	210	329,940	17.8	30,210	83.0	333,300	885.00	1,913,637
2003/04	550	1,600,144	28.0	39,037	213	378,160	17.8	32,330	88.0	145,180	896.80	2,194,851
2004/05	570	2,189,005	28.4	54,000	214	451,750	17.8	41,245	93.0	464,980	923.20	3,200,980
2005/06	580	2,337,140	28.3	61,824	215	539,600	18.0	44,400	105.0	577,320	946.30	3,560,284

* Excludes Pecans
Source: *Noncitrus Fruits and Nuts Summary*, various issues, National Agricultural Statistics Service, USDA.

Table 12, Panel A: Projections for years 1-10

Production & Revenue	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Pounds NIS Harvested	-	-	-	6,580	13,160	19,740	32,900	59,220	92,120	131,600
Revenue	0	0	0	5,264	10,528	15,792	26,320	47,376	73,696	105,280
Average price per lb	\$.80									
Operating Costs										
Mowing	5,500	5,500	5,500	4,500	3,750	3,750	3,750	3,750	3,750	3,750
Weed Control	3,750	3,750	3,750	4,750	5,250	5,250	5,250	5,250	5,250	5,250
Fertilize	2,000	3,200	4,800	7,200	9,000	9,000	9,000	9,000	9,000	9,000
Pest Control	628	628	628	628	628	628	628	628	628	628
Leaf Blowing	0	0	0	0	1,000	1,000	1,000	1,000	1,000	1,000
Replant	0	750	750	750	750	750	750	750	750	750
Brush Clearing & Pruning	0	0	1,000	1,000	500	500	500	500	500	500
Crop Log	200	200	200	200	200	200	200	200	200	200
Other Cultivation	250	250	250	250	250	250	250	250	250	250
Harvesting & Hauling	0	0	0	724	1,448	2,171	3,619	6,514	10,133	14,476
Management	2,466	2,856	3,376	3,928	4,410	4,483	4,628	4,917	5,279	5,713
Land Rent	3,500	3,500	3,500	3,500	6,750	6,750	6,750	6,750	13,750	13,750
Overhead & Administrative	5,750	5,750	5,750	5,750	5,750	5,750	5,750	5,750	5,750	5,750
General Excise Tax	1,002	1,099	1,229	1,409	1,706	1,765	1,884	2,122	2,711	3,068
Depreciation	0	0	0	0	0	0	0	0	0	0
Total Operating Costs	25,045	27,483	30,733	34,588	41,392	42,248	43,959	47,382	58,952	64,086
Operating Profit (Loss)	(25,045)	(27,483)	(30,733)	(29,324)	(30,864)	(26,456)	(17,639)	(6)	14,744	41,194
Cumulative Profit (Loss)		(52,528)	(83,261)	(112,585)	(143,449)	(169,905)	(187,544)	(187,549)	(172,805)	(131,610)

Table 12, Panel B: Projections for years 11-20

Production & Revenue	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Pounds NIS Harvested	171,080	197,400	256,620	296,100	300,000	300,000	300,000	300,000	300,000	300,000
Revenue	136,864	157,920	205,296	236,880	240,000	240,000	240,000	240,000	240,000	240,000
Average price per lb	\$.80									
Operating Costs										
Mowing	3,000	3,000	3,000	3,000	3,000	2,500	2,500	2,500	2,500	2,500
Weed Control	5,750	5,750	5,750	5,750	5,750	6,250	6,250	6,250	6,250	6,250
Fertilize	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Pest Control	628	628	628	628	628	628	628	628	628	628
Leaf Blowing	1,800	1,800	1,800	1,800	1,800	2,000	2,000	2,000	2,000	2,000
Replant	750	750	750	750	750	750	750	750	750	750
Brush Clearing & Pruning	500	500	500	500	500	1,500	1,500	1,500	1,500	1,500
Crop Log	200	200	200	200	200	200	200	200	200	200
Other Cultivation	250	250	250	250	250	250	250	250	250	250
Harvesting & Hauling	18,819	21,714	28,228	32,571	33,000	33,000	33,000	33,000	33,000	33,000
Management	6,857	7,147	7,798	8,233	8,276	8,516	8,516	8,516	8,516	8,516
Land Rent	13,750	13,750	18,477	21,319	21,600	21,600	24,000	24,000	24,000	24,000
Overhead & Administrative	5,750	5,750	5,750	5,750	5,750	5,750	5,750	5,750	5,750	5,750
General Excise Tax	3,603	3,841	4,573	5,048	5,095	5,155	5,255	5,255	5,255	5,255
Depreciation	0	0	0	0	0	0	0	0	0	0
Total Operating Costs	73,657	77,080	89,704	97,799	98,599	100,099	102,599	102,599	102,599	102,599
Operating Profit (Loss)	63,207	80,840	115,592	139,081	141,401	139,901	137,401	137,401	137,401	137,401
Cumulative Profit (Loss)	(68,403)	12,437	128,029	267,109	408,510	548,411	685,812	823,214	960,615	1,098,016

Table 12, Panel C: Projections for years 21-25

Production & Revenue	Year 21	Year 22	Year 23	Year 24	Year 25
Pounds NIS Harvested	300,000	300,000	300,000	300,000	300,000
Revenue	240,000	240,000	240,000	240,000	240,000
Average price per lb	\$.80				
Operating Costs					
Mowing	2,500	2,500	2,500	2,500	2,500
Weed Control	6,250	6,250	6,250	6,250	6,250
Fertilize	12,000	12,000	12,000	12,000	12,000
Pest Control	628	628	628	628	628
Leaf Blowing	2,000	2,000	2,000	2,000	2,000
Replant	750	750	750	750	750
Brush Clearing & Pruning	1,500	1,500	1,500	1,500	1,500
Crop Log	200	200	200	200	200
Other Cultivation	250	250	250	250	250
Harvesting & Hauling	33,000	33,000	33,000	33,000	33,000
Management	8,516	8,516	8,516	8,516	8,516
Land Rent	24,000	24,000	24,000	24,000	24,000
Overhead & Administrative	5,750	5,750	5,750	5,750	5,750
General Excise Tax	5,255	5,255	5,255	5,255	5,255
Depreciation	0	0	0	0	0
Total Operating Costs	102,599	102,599	102,599	102,599	102,599
Operating Profit (Loss)	137,401	137,401	137,401	137,401	137,401