

Avocado

Technical Assistance Curriculum

July 2009

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Overview of Trade Adjustment Assistance



What is Trade Adjustment Assistance (TAA) for Farmers and Fishermen

The Trade Act of 1974, as amended by the Trade Act of 2002, established Trade Adjustment Assistance (TAA) for Farmers. The Trade Act of 1974 was created by Congress to provide business owners and their employees relief from hardships created by foreign import competition.

The purpose of TAA for Farmers is to help agricultural producers and fishermen adjust to import competition. The amended program provides technical assistance and cash benefits to eligible farmers and fishermen from the U.S. Department of Agriculture (USDA), and access to Department of Labor (DOL) retraining and education programs.

Traditional TAA has provided technical assistance and labor retraining services to non-agricultural businesses and employees. TAA for farmers expands the benefits to include:

- Technical assistance from the Extension Service to assist producers and fishermen in exploring alternative commodities, marketing opportunities, and alternative enterprises.
- A cash payment of up to \$10,000, depending on the amount of product you harvested.
- Retraining and education to help producers and fishermen transition to a different career, including tuition for up to 104 weeks of full-time classroom education.

Establishing a Commodity's Eligibility for TAA

Commodities must be certified as eligible for TAA before individual producers can apply for benefits. The eligibility criteria for a commodity are:

- Average price of the commodity in the most recent 12 months must be less than 80% of the average price over the past 5 years in which data is available.
- Imports of directly competing products must have increased during the most recent 12 month period.
- Increase in imports must have “contributed importantly” to the price decrease.

Petitions to seek TAA eligibility may be filed by a group of agricultural producers or their representatives (grower groups) with USDA's Foreign Agricultural Service (FAS).

The TAA petition form is available at www.fas.usda.gov/itp/taa/FAS0930.pdf or may be requested by phone at (202) 720-2916 or by e-mail at trade.adjustment@fas.usda.gov. Petitions may be made on behalf of a state, region or the nation as a whole.

FAS does an initial eligibility screen. If the petition meets basic requirements, the information is posted in the Federal Register and FAS must announce the determination regarding a commodity's eligibility within 40 days of posting in the Federal Register.

Applying for Individual Producer or Fishermen TAA Benefits

Producer or fishermen are eligible to apply for TAA benefits once a commodity petition has been certified and if:

- They are an owner, operator, landlord, tenant, sharecropper, or fisherman who is entitled to a share of the commodity available for marketing from the farm or fishing operation.
- They harvested the commodity in the year for which TAA eligibility has been established.

Applying for Cash Benefits

Application must be made at a USDA Farm Service Agency (FSA) office within 90 days after the commodity has been certified as eligible for TAA. The application form is available at http://forms.sc.egov.usda.gov/eforms/Forms/FSA0229_030923V01.pdf or at local FSA offices. Information regarding the location of local FSA offices is available at http://oip.usda.gov/scripts/ndisapi.dll/oip_agency/index?state=us&agency=fsa. When you submit your application, you must provide:

- Verifiable documentation of the quantity of production of the commodity.
- Verifiable documentation that the net income was less than the last year in which no adjustment assistance was received.
- Proof that average gross revenue was less than \$2.5M for preceding 3 years.

You have until September 30 of the current fiscal year to submit documentation of having received training from the Cooperative State Research, Education, and Extension Service to the FSA office.

Applying for Technical Assistance Benefits

Technical assistance at no cost will be widely available through the Extension Service. Technical assistance must be completed within 180 days after the commodity has been certified as eligible for TAA. Sources for technical assistance are listed at <http://www.taaforfarmers.org> or can be obtained by contacting one of the four regional TAA centers:

Western Region	Washington State University	(800) 477-4012
Southern Region	Texas A&M University	(254) 968-4144
Northeast Region	University of Delaware	(302) 831-6540
North Central Region	University of Nebraska	(402) 472-2039

Technical assistance will help producers and fishermen evaluate opportunities to improve production efficiencies, alternative or improved marketing, and alternative enterprises potentially suitable for the geographic area.

Applying for Retraining and Education Benefits

To apply for Department of Labor retraining and education benefits contact your state department of labor. Links to your state department of labor TAA coordinators are available at <http://www.doleta.gov/tradeact/contacts.cfm>. The national Department of Labor TAA site is <http://www.doleta.gov/tradeact>.

The Department of Labor provides TAA employment counseling, case assessment, job development, and self-directed job search services. Education assistance (Trade Readjustment Allowances) pay tuition and travel for up to 104 weeks of full-time education, including classroom training, on-the-job training, and employer-based training.

Deadlines to Apply for Benefits

Application for cash benefits must be made with FSA within 90 days after FAS announces a commodity is approved for TAA.

Technical assistance must be received from the Extension Service within 180 days after FAS announces a commodity is approved for TAA.

Department of Commerce Assistance

Farmers and fishermen may also qualify for assistance as business owners through the U.S. Department of Commerce. Qualified applicants may receive 50% cost sharing for projects like developing business plans, creating new marketing strategies, research and new product development, or design of marketing materials. A separate application with the Department of Commerce is required. For more information go to www.taacenters.org/locations.html.

To Obtain Further Information

Extension's one-stop site for information on technical assistance is <http://www.taafarmers.org>. This site also provides links to obtaining cash benefits from FSA and retraining benefits from the Department of Labor. You can also obtain additional information at your local FSA or Extension county offices.

Alternatively, you can contact the Washington, D.C. Trade Adjustment Assistance Office, Foreign Agricultural Service, at (202) 720-2916 or write to USDA, Foreign Agricultural Service, Trade Adjustment Assistance, STOP 1021, 1400 Independence Avenue SW, Washington, DC 20250-1021, or e-mail at trade.adjustment@fas.usda.gov.



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-  **World, U.S. & Florida Avocado Situation and Outlook**
-  **Evaluating the Financial Viability of the Business**
-  **Inventory of Resources and Talents**



University of Florida
Tropical Research and Education Center

Where Am I?

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World, U.S. & Florida Avocado Situation and Outlook

World Situation and Outlook

Avocado is believed to be native to the tropical areas of the Americas. There are three main races of avocado: Mexican, Guatemalan, and West Indian. The fruit is a large berry consisting of a single large seed surrounded by a buttery pulp. Fruit color varies among green, black, red, and purple. Typically, avocados do not ripen until they are picked or fall to the ground. Mature fruit size varies considerably depending upon cultivar and growing conditions. Fruit is popularly eaten fresh, in salads, or used to make guacamole and other dishes. Although it originated in the Americas, the tree is now widely dispersed and can be found in several tropical and subtropical areas.



World production of avocados in 2006 was estimated at 7.24 billion pounds, less than the 7.39 billion pounds recorded in the previous year. Between 1998 and 2006, production grew at an average annual rate of 4.22%, increasing from 5.22 billion pounds in 1998 to the current level. Table 1 shows the world's top ten avocado producing countries. Together they accounted for about 77% of the world's production of avocados in 2006.

Mexico is by far the largest producer of avocados, accounting for 34.54% of global production in 2006. The 2006 Mexican crop was estimated at 2.50 billion pounds, about 250 million pounds higher than the previous year. The United States of America is the second largest producer of avocados, recording 545 million pounds in 2006, or 7.52% of world production. Next is Indonesia with a 2006 crop of 528 million pounds, accounting for 7.29% of global production. Other countries in the top ten and their respective shares of world production of avocados in 2006 include Colombia (5.63%), Chile (5.02%), Brazil (5.01%), the Dominican Republic (3.46%), Peru (3.45%), China (2.74%), and Spain (2.50%).

Regarding exports, global exports of avocados reached 1.28 billion pounds in 2006, up 10.79% over the previous year, and were valued at U.S. \$849 million. Table 2 shows the

top ten avocado exporting countries. As can be seen in Table 2, Mexico and Chile dominate the export trade with shares of 35.86% and 19.09%, respectively. Next are Spain (8.21%) and the Netherlands (6.52%). Other major exporters include South Africa, Peru, Israel, France, the Dominican Republic, and New Zealand.

World imports of avocados increased from 680 million pounds in 1998 to 1.35 billion pounds in 2006. The United States of America is the number one importer of avocados. In 2006, it imported 425 million pounds, or 31.38% of total avocado imports (Table 3).



In second position is France with imports of 209 million pounds (15.45%), followed by the United Kingdom (9.79%), the Netherlands (7.96%), and Japan (4.73%). Other major importers in the top ten are Spain (4.54%), Canada (3.56%), Colombia (2.88%), Germany (2.62%), and Honduras (1.9%) [FAOSTAT].

While less than 18% of all avocado production is exported, its global market share is expected to increase. Factors influencing the avocado export market include all-around improvements and innovations in post-harvest and shipping technologies, fewer trade barriers, strong global demand, health benefit advertisements, and increased acreage in some countries, particularly Mexico and Chile.

Table 1. World's top 10 avocado producers, 1998 - 2006 (million pounds)

Countries	1998	1999	2000	2001	2002	2003	2004	2005	2006	Share of 2006 (%)
Mexico	1,933	1,938	2,001	2,073	1,987	1,995	2,176	2,252	2,501	34.54
Indonesia	289	279	321	312	525	564	489	502	528	7.29
United States of America	319	367	479	447	399	467	359	625	545	7.52
Colombia	163	349	290	302	319	358	383	410	408	5.63
Chile	218	181	216	243	309	309	353	403	364	5.02
Brazil	186	191	190	340	383	345	376	373	363	5.01
Dominican Republic	187	157	180	245	325	603	482	250	250	3.46
Peru	148	172	184	206	208	220	239	228	250	3.45
China	112	154	154	164	165	179	185	187	198	2.74
Spain	163	146	141	165	164	169	168	165	181	2.50
World Total	5,223	5,495	5,926	6,267	6,574	7,035	7,005	7,390	7,239	100.00

Source: Food and Agriculture Organization of the United Nations

Table 2. World's top 10 avocado exporting countries, 1998 - 2006 (million pounds)

Countries	1998	1999	2000	2001	2002	2003	2004	2005	2006	Share of 2006 (%)
Mexico	157	122	197	158	208	274	300	482	459	35.86
Chile	106	83	124	127	172	210	250	301	244	19.09
Spain	124	82	86	87	88	77	117	95	105	8.21
Netherlands	28	36	32	35	31	42	45	77	83	6.52
South Africa	115	76	101	65	105	86	63	183	71	5.56
Peru	0	1	5	6	11	25	32	41	70	5.46
Israel	64	70	98	86	160	49	129	92	65	5.10
France	27	39	50	38	43	31	28	32	43	3.39
Dominican Republic	19	26	17	23	25	38	30	38	29	2.27
New Zealand	7	17	13	13	13	13	14	23	21	1.64
World Total	730	639	798	710	941	917	1,082	1,436	1,281	100.00

Source: Food and Agriculture Organization of the United Nations

Table 3. World's top 10 avocado importing countries, 1998 - 2006 (million pounds)

Countries	1998	1999	2000	2001	2002	2003	2004	2005	2006	Share of 2006 (%)
United States of America	134	122	173	162	262	311	320	582	425	31.38
France	224	183	232	218	219	198	227	227	209	15.45
United Kingdom	52	41	50	51	64	58	65	126	133	9.79
Netherlands	45	39	43	46	57	60	68	109	108	7.96
Japan	19	17	31	24	30	53	64	62	64	4.73
Spain	8	6	8	11	12	25	26	36	62	4.54
Canada	24	22	29	29	33	35	42	40	48	3.56
Colombia	3	18	21	15	23	24	37	37	39	2.88
Germany	35	28	24	30	33	34	36	40	35	2.62
Honduras	2	1	9	4	10	9	25	11	26	1.90
World Total	678	596	764	714	896	953	1,086	1,467	1,354	100.00

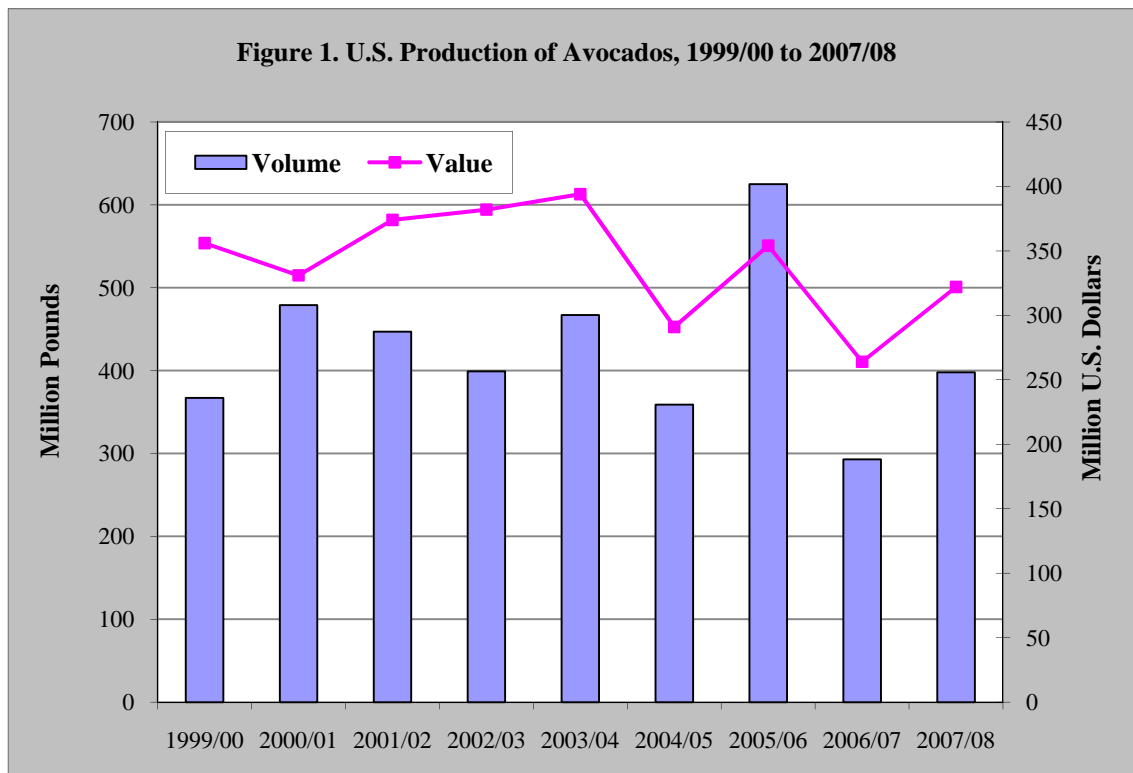
Source: Food and Agriculture Organization of the United Nations

U.S. Production, Imports, and Exports of Avocados

Production

The U.S. production of avocados occurs in three regions: California, Florida, and Hawaii. California is by far the largest producer, accounting for 85.96% of production, on average, followed by Florida with 13.82% and Hawaii with less than 0.25% in the 2007/08 season. Avocados grown in California are mainly of the Hass variety, characterized by “purplish-black skin”. Hass avocados are grown mainly in California’s southern coastal region in San Diego, Riverside, Ventura, and Santa Barbara Counties. Most Florida avocados have green skins and are grown mainly in the Miami-Dade County area.

The United States of America is the second largest avocado producer behind Mexico (Table 1). As can be seen in Figure 1, U.S. avocado production exhibits an erratic pattern, reflecting alternate high- and low-bearing years, which is characteristic of avocado production. In general, however, there has been a downward trend. To illustrate this, 367 million pounds of avocados were produced in the 1999/00 season, followed by 655 million pounds in the 2005/06 season, 293 million pounds in the 2006/07 season, and 398 million pounds in the 2007/08 season. The noticeable drop (53.12%) in U.S. production between 2005/06 and 2007/08, or about U.S. \$90 million, was due mainly to adverse weather conditions in the main production areas in California.

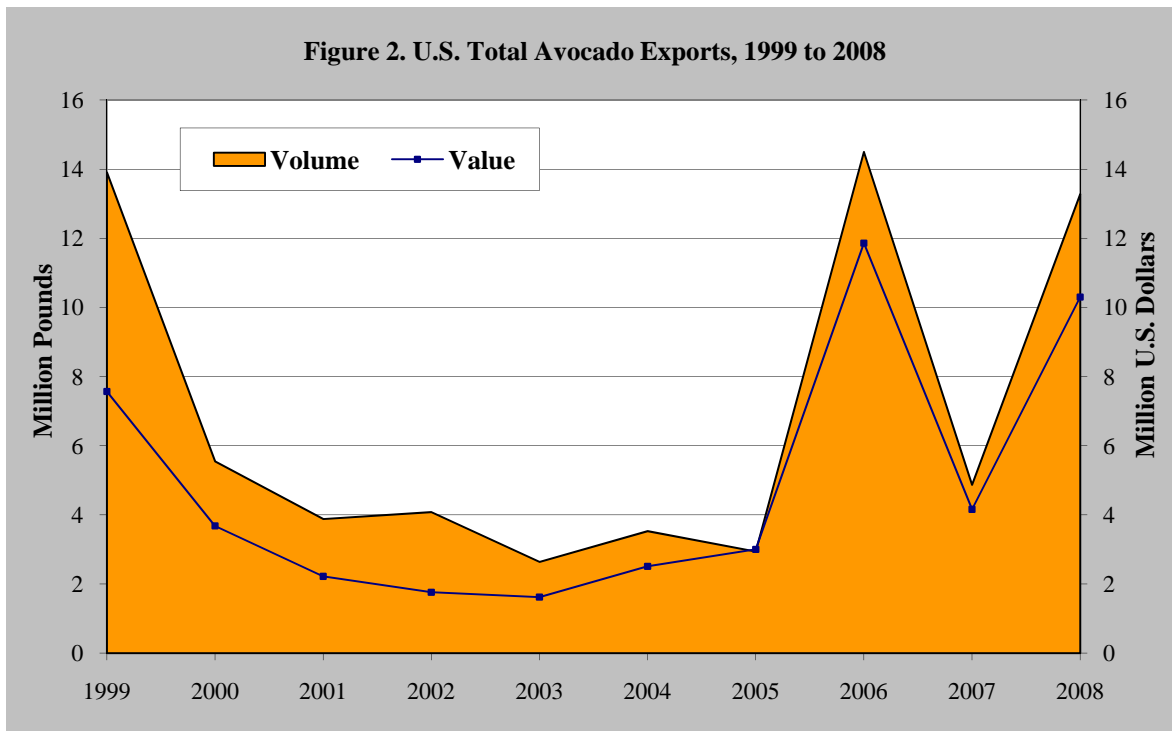


Source: National Agricultural Statistics Service, USDA

In the 2007/08 season, U.S avocado production, estimated at U.S. \$322 million, was U.S. \$58 million higher than the previous year because of increases in avocado production in Florida (96%) and California (30%). Increased domestic production added to record imports (discussed below) could cause a downward pressure on prices.

Exports

The United States of America is not a major exporter of avocados, accounting for a mere 1.13% of total exports in 2006 (FAOSTAT). Figure 2 shows that the volume of U.S. avocado exports since 1996 has trended downwards until 2006 when U.S. exports of avocados grew to 14.50 million pounds. In 2008, U.S. exports of avocados were estimated at 13.3 million pounds and valued at U.S. \$10.3 million. Only California avocados (and some from Mexico) are exported/re-exported, mainly to Canada, Japan, and Mexico.

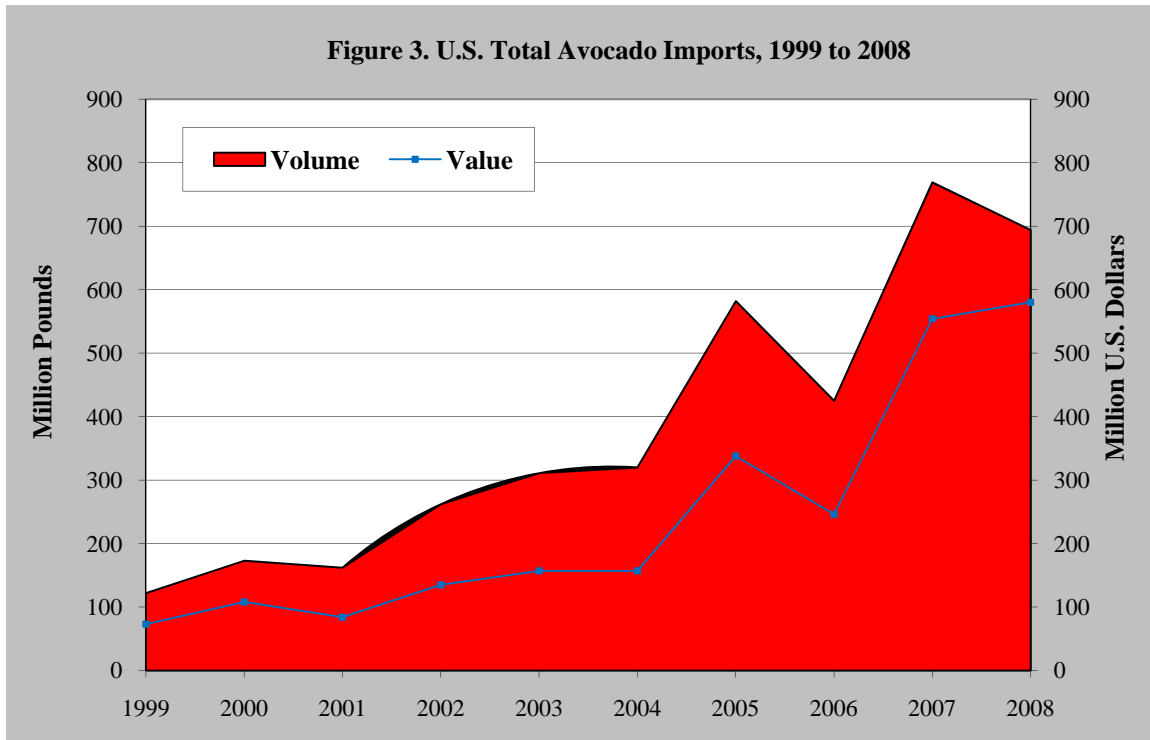


Source: Foreign Agricultural Service, USDA

Imports

Since the late 1980s, the United States of America has shifted from being a net exporter of avocados to becoming a net importer. Moreover, in 2002, the United States of America overtook France to become the world's number one importer of avocados (Table 3). Figure 3 shows the trend in U.S. imports of avocados over the period 1999 to 2008. The graph indicates a steep rise in the volume of avocado imports in 2005 and 2007. Between 1999 and 2008, imports increased from 122 million pounds to 694 million pounds, an average annual growth rate of approximately 30%. The largest (by volume) single-year

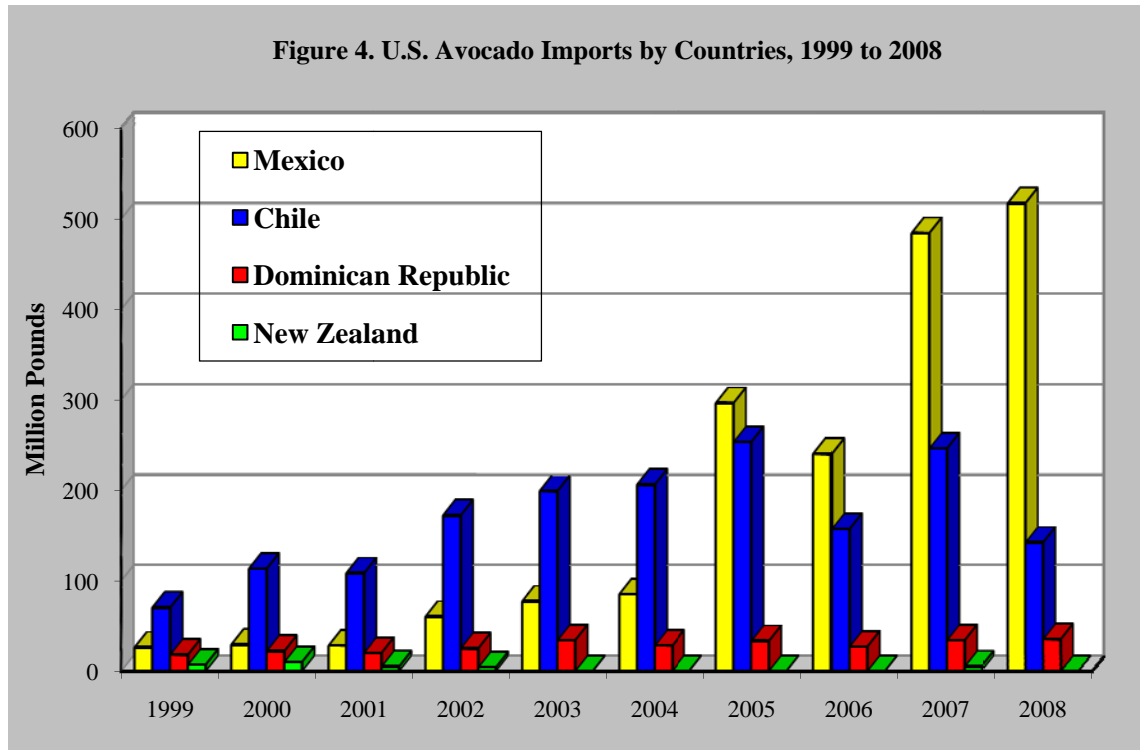
increase occurred in 2007, with imports increasing by 344 million pounds (from 425 to 769 million pounds). This was due to sizeable increases in the volume of avocados imported from Mexico (discussed below). In 2008, avocado imports were valued at about U.S. \$580 million.



Source: Foreign Agricultural Service, USDA

The main sources of U.S. imports of avocados are Mexico, Chile, the Dominican Republic, and New Zealand (Figure 4). Most of these imports are the Hass variety coming from Mexico, Chile, and New Zealand. Dominican Republic exports are mainly of the green-skin type similar to those produced in Florida. Mexico and Chile, with shares of 74.49% and 20.53%, respectively, dominate the U.S. avocado import market, accounting for 95.02% of total imports in 2008. As illustrated in Figure 4, before 2004, Chile was the main supplier of avocados to the United States of America, followed by Mexico. However, the situation now has been reversed. In 2008, Mexico increased almost twenty times the amount of avocados it ships to the United States of America, from 26 million pounds in 1999 to 517 million pounds in 2008. This represents big increases by 211 million pounds (247.29%) from the previous year to reach 296 million pounds in 2005 and by 243 million pounds (101.30%) from the previous year to 484 million pounds in 2007. In comparison, imports from Chile increased by 47 million pounds (22.70%) from the previous year to reach 253 million pounds in 2005 and by 89 million pounds (56.62%) from the previous year to 246 million pounds in 2007. Although substantially less than those from Mexico and Chile, avocado imports from the Dominican Republic almost doubled between 1999 and 2008, from 18 million pounds in 1999 to 35 million pounds in 2008.

The main driving force behind the sharp increase in imports of avocados entering the United States of America is the elimination of trade restrictions on imports from Mexico. Before 1993, Mexico was shut out of the U.S. market for phytosanitary reasons. Beginning in 1993, the ban against Mexican agricultural products was gradually lifted until full market access was granted in 2007.



Source: Foreign Agricultural Service, USDA

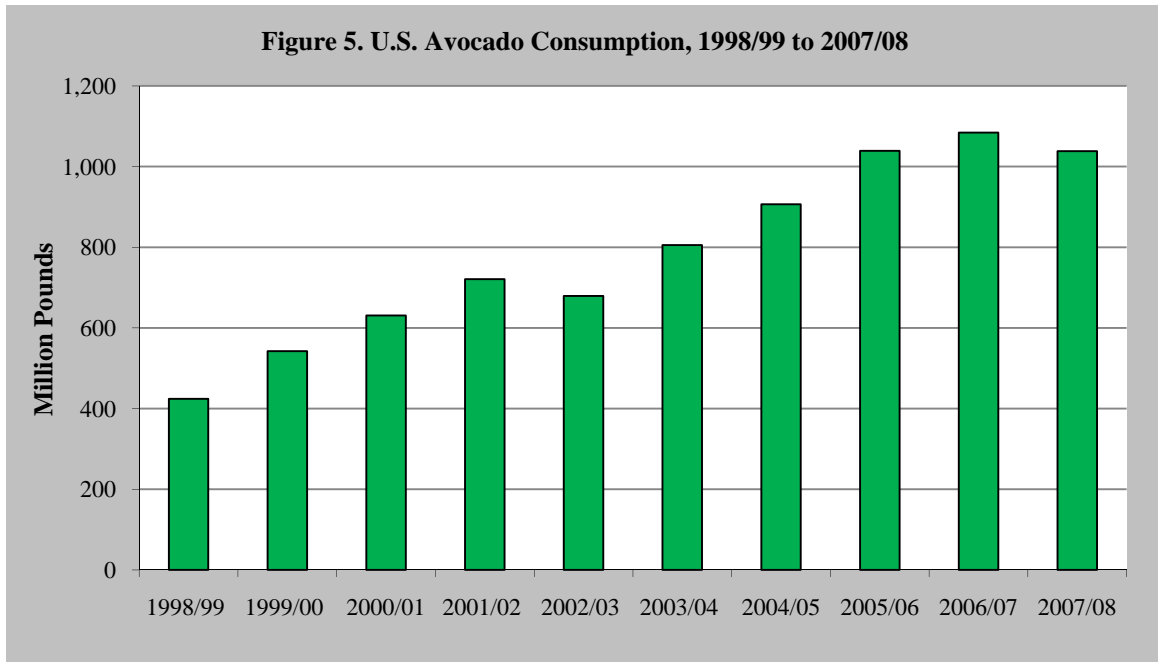
The upward trend in avocado imports is expected to continue due to strong U.S. domestic demand and available supplies. Mexico is expected to increase its avocado production due to increased acreages, better agricultural practices to control pests, and unrestricted harvesting. Chile and the Dominican Republic are increasing their avocado productions to compensate for falling prices and lost market shares to Mexico.

U.S. Consumption of Avocados

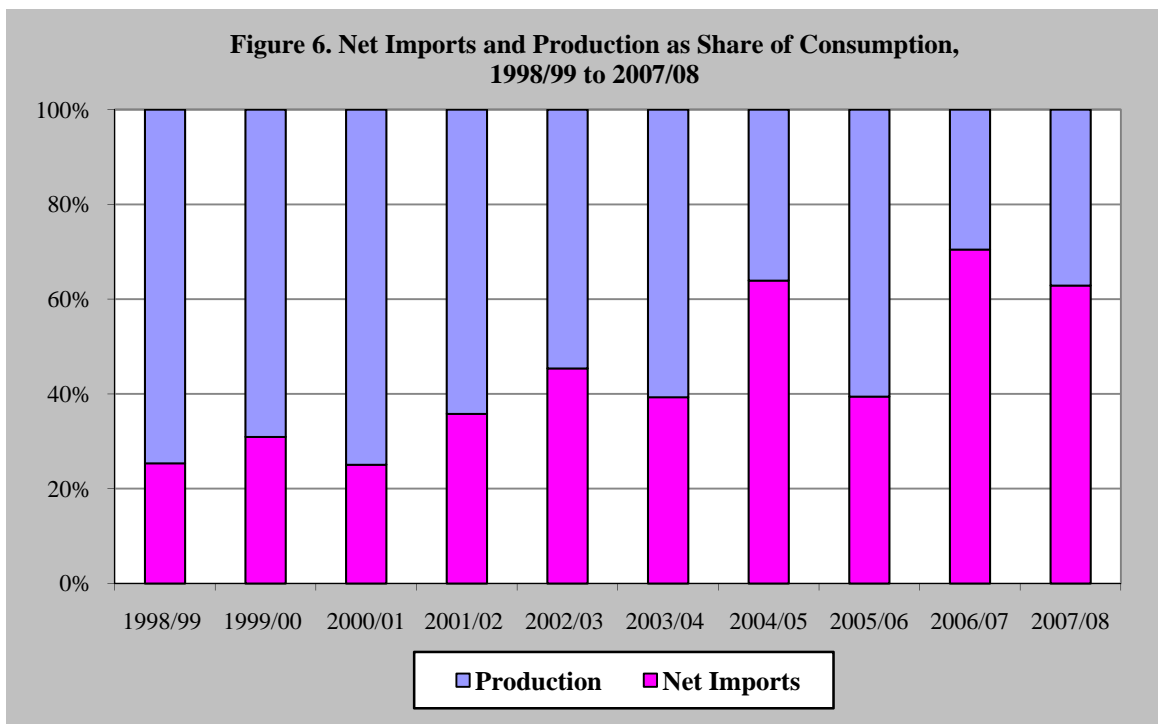
Figure 5 shows that U.S. consumption of avocados has increased considerably within recent times (from 438.3 million pounds in the 1998/99 season to 1,051.1 million pounds in the 2007/08 season). Several factors are responsible for the increased domestic demand for avocados, including year-round availability due to imports, lower avocado prices, a rapidly growing U.S. Hispanic population, health benefit advertisements, and increased disposable income.

A larger portion of the current domestic demand is being satisfied from imports. Figure 6 illustrates the changes in share of domestic consumption (production plus net imports)

due to increased imports over the period of 1998/99 to 2007/08. The share of imports increased from 25.39% in 1998/99 to 62.89% in 2007/08.



Source: Economic Research Service, USDA



Source: Economic Research Service, USDA

The Florida Avocado Industry

Production

The Florida avocado industry consists of about 6,862 bearing acres, 951 growers, and 35 registered avocado handlers and shippers (Census of Agriculture 2007). Of these 6,862 acres, more than 99% are located in southwest Miami-Dade County. In terms of production structure, the avocado industry is comprised of a large number of small producers and a few large producers. As shown in Table 4, 92.53% of avocado farms of less than 15 acres account for 37.73% of total bearing acreage, while 4.63% of farms with 25 acres or more account for 55.29% of total bearing acreage.

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 do differ, falling into two main categories: West Indian and Guatemalan. These two 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. As in the case in California, there is a tendency of alternate-year bearing, implying high yields one year and lower yields the next.

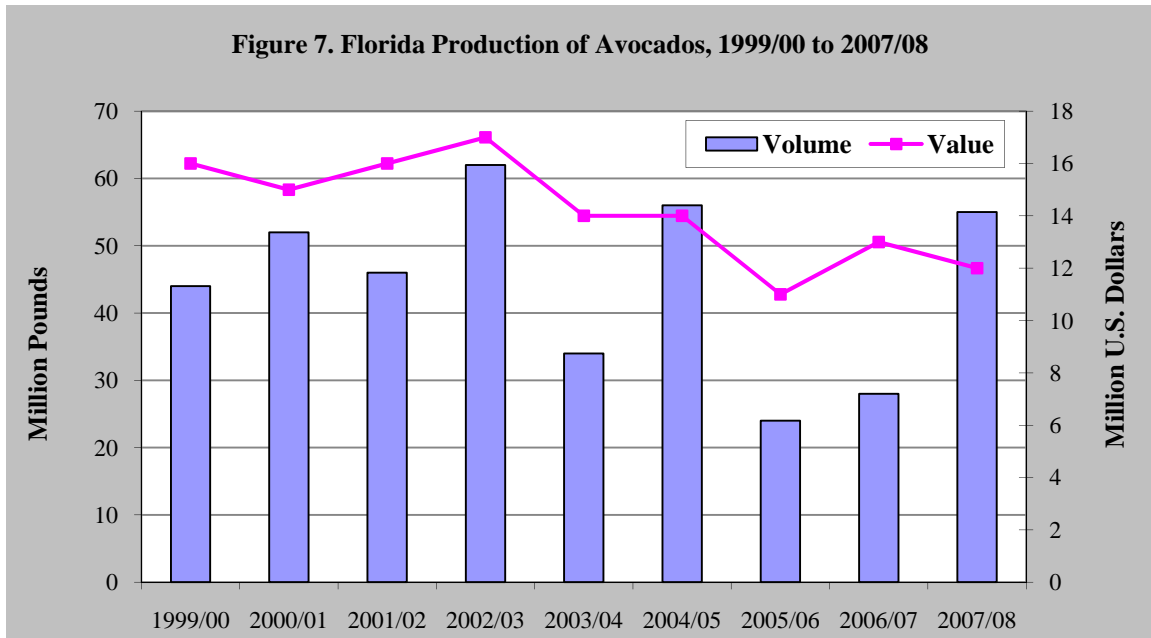
Table 4. Structure of the Florida avocado industry 2007

Avocado Acres Harvested 2007	Number of Farms	Total Acres Harvested	Average Acres/Farm	Cumulative % of Farms	Cumulative % of Acres
0.1 to 0.9	174	72	0.41	18.30	1.05
1.0 to 4.9	525	1157	2.20	73.50	17.91
5.0 to 14.9	181	1,360	7.51	92.53	37.73
15.0 to 24.9	27	479	17.74	95.37	44.71
25.0 to 49.9	27	905	33.52	98.21	57.90
50.0 to 99.9	10	653	65.30	99.26	67.41
100.0 acres or more	7	2,236	319.43	100.00	100.00
Total	951	6,862	7.22		

Source: Census of Agriculture, National Agricultural Statistics Service, USDA

Figure 7 highlights the trends in volume and value of Florida avocado production over the period 1999/00 to 2007/08. In general, production remained relatively flat until 2002/03 when it increased 34.78% over the previous season. The increase was due to replanting groves with higher-yielding varieties and increasing the planting density. This practice began after the devastation to the industry caused by Hurricane Andrew in 1992. The sharp decline in the 2003/04 crop was due to extreme cold temperatures during the flowering season, which badly affected fruit settings. The avocado industry suffered another major setback due to hurricane damages in 2005. The 2005/06 crop was

estimated at 24 million pounds, a 57.14% decrease over the previous season, and the 2006/07 crop was estimated at 28 million pounds. As can be seen from Figure 7, the 2007/08 crop, was estimated at 55 million pounds, or U.S. \$12.1 million. This represents a 96.43% increase over the previous season.



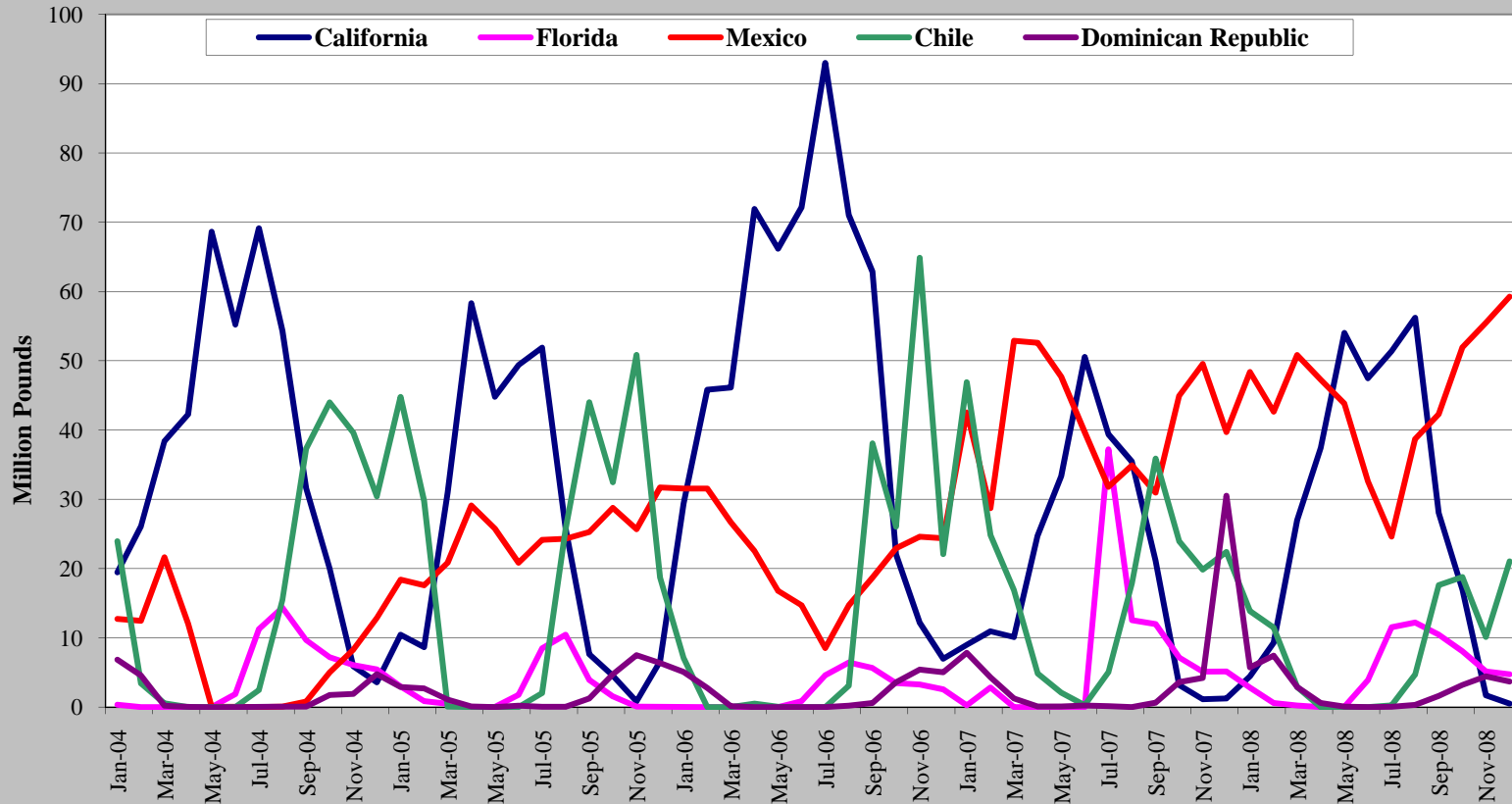
Source: National Agricultural Statistics Service, USDA

Farm Gate Price

The bulk (80%) of the avocados produced in Florida is sold outside the state; hence the industry is an important revenue generator for Florida. 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 ensuring consumer satisfaction. Permits must be obtained by anyone selling over 55 pounds of avocados per day. As a consequence, most of the avocados grown in Florida are sold to the packinghouses.

The avocado marketing season begins in May and ends in February or early March, with the bulk of shipments occurring from July through September. Figure 8 shows the shipping patterns for Florida, Mexico, Chile, the Dominican Republic, and New Zealand. The pattern of shipments reveals that, prior to 2005, the bulk of Florida's avocados were marketed in a "window of opportunity" that enabled growers to obtain favorable prices because the bulk of the commodity was sold after the peak shipping period for California and before the peak shipping period for Chile. After 2005, this "window of opportunity" eroded because Mexico is being allowed to ship avocados year-round to U.S. markets. As Figure 8 indicates, the quantity of avocados on the market has increased from 85.95 million pounds in 2004 to 537.77 million pounds in 2008. This will no doubt add downward pressure to the prices that Florida growers receive.

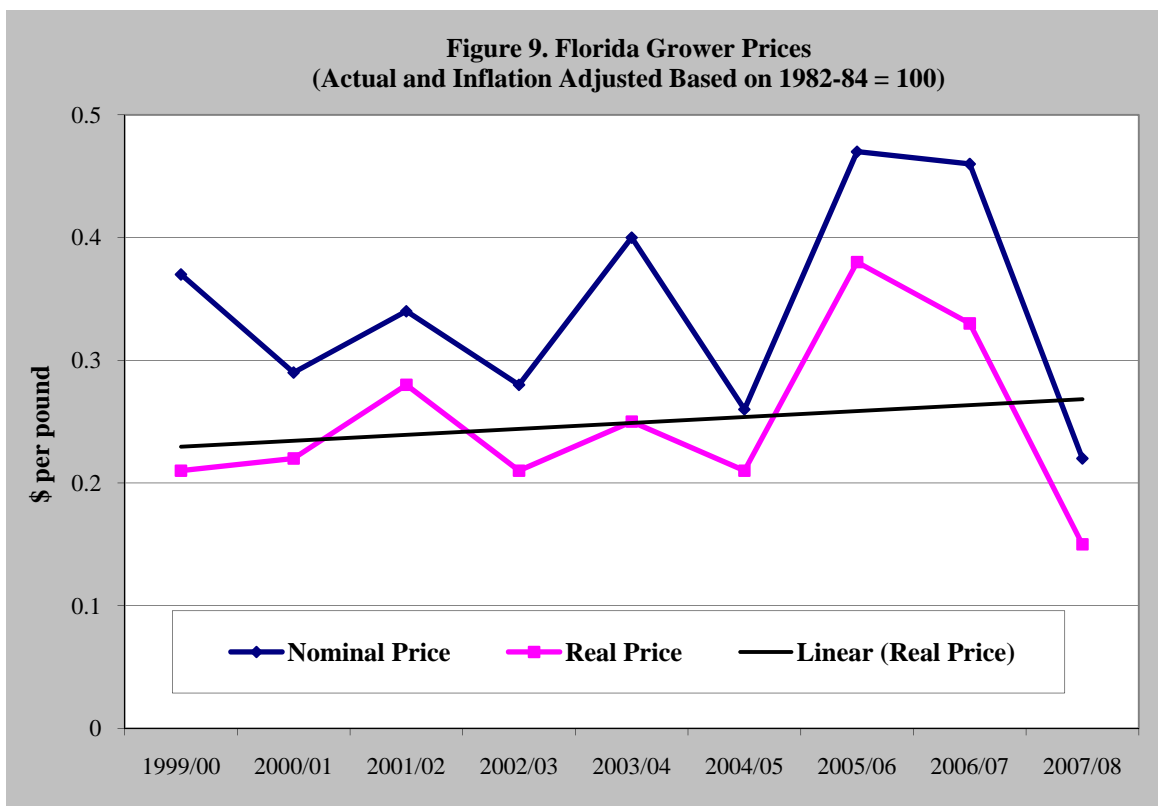
Figure 8. Monthly Avocado Shipments, January 2004 - December 2008



Source: Fruit and Vegetable Market News, USDA

Figure 9 shows the actual and inflation-adjusted trends of the prices that avocado growers received over the period 1999/00 to 2007/08. In the 2007/08 season, growers received a price of U.S. \$0.22 per pound, only 48.25% of the previous year. As shown in Figure 9, the upward trend in prices becomes more obvious when they are adjusted for inflation.

Price changes seem less responsive to production levels when production decreases than when production increases. For example, in the 2003/04 and 2005/06 seasons, when production decreased by 45.16% and 57.14%, prices increased by 45.32% and 82.17%, respectively, from the previous year (implying that a 1% reduction in quantity resulted in only 1%, and a 1.44% increase in price). On the other hand, in the 2004/05 and 2007/08 seasons, when production increased by 77.61% and 96.43%, prices decreased by 36.14% and 51.75%, respectively, from the previous year (implying that a 1% increase in quantity resulted in 0.56% and 0.54% reduction in price). The implication is that consumers are no longer willing to pay high prices when there is a shortage of Florida avocados, since total supplies remain adequate as a result of imports. The point being made is that growers can no longer expect to make up revenues from higher prices in years where there are significant shortfalls in production.



Source: National Agricultural Statistics Service, USDA

References

FAOSTAT Online. The Food and Agriculture Organization of the United Nations, Rome, Italy. <http://faostat.fao.org>.

FAS Online. U.S. Trade Internet System. United States Department of Agriculture, Foreign Agricultural Service, Washington, D.C. <http://www.fas.usda.gov/ustrade>.

USDA/AMS. 2008. Fruit and Vegetable Market News. United States Department of Agriculture, Agricultural Marketing Service, Washington, D.C. <http://marketnews.usda.gov/portal/fv>.

USDA/ERS. Fruit and Tree Nuts Outlook/FTS-320/January 26, 2006. United States Department of Agriculture, Economic Research Service, Washington, D.C. <http://usda.mannlib.cornell.edu/reports/erssor/specialty/fts-bb/2006/fts320.pdf>.

USDA/NASS. 2007. Census of Agriculture. United States Department of Agriculture, National Agricultural Statistics Service, Washington, D.C. <http://www.agcensus.usda.gov>.

USDA/NASS. 2005. Table B.9—Avocados: Production, season-average grower price, and value, by state, 1980/81 to 2003/04. United States Department of Agriculture, National Agricultural Statistics Service, Washington, D.C. <http://usda.mannlib.cornell.edu/data-sets/specialty/89022/tableb-09.xls>.

Photos by Ian Maguire, Tropical Research and Education Center, University of Florida Homestead, Florida.

Developed by Edward Evans and Sikavas NaLampang, Tropical Research and Education Center, University of Florida, Homestead, Florida.

Evaluating the Financial Viability of the Business



Just as it is important to construct a new building on a strong foundation, it is important to build the economic future of your business on a sound financial base. Evaluating the financial viability of your business will help you understand the financial strengths and weaknesses of your business position. With knowledge of your financial situation, you are in a better position to respond to current economic forces within the industry.

There are three major financial objectives that businesses usually monitor to track their financial performance:

- Solvency, to track changes in the net worth of the business;
- Profitability, to monitor the earnings of the business; and
- Liquidity, to estimate cash flow available for short-term payments.

Solvency

Solvency analysis compares the capital (assets) invested in the business with the sources of capital, debt and equity. In almost every business, one of the primary goals is to grow net worth or equity over time. In periods of low profits, a strong equity position helps the business survive and may also provide the borrowing capacity needed to make business adjustments.

The balance sheet is the financial tool used to evaluate solvency. It provides the foundation for all of the remaining financial analysis. It is very difficult to evaluate where you are and what resources you have available for adjusting to economic forces without an accurate balance sheet.

If you do not have a current balance sheet, you may be able to get a copy from your lender. Otherwise, you can build one from scratch. There is a set of financial statement forms at the end of this section that includes a balance sheet format. It is available in PDF format at <http://www.extension.iastate.edu/Publications/FM1824.pdf>. Other possible sources include:

- FINPACK Farm Financial Software, available through many local Extension offices
- Assessing and Improving Your Farm Solvency, <http://www.agnr.umd.edu/MCE/Publications/PDFs/FS540.pdf>

Asset Valuation

It is becoming more and more common for agricultural balance sheets to include Cost and Market valuations for capital assets.

- Cost – capital assets are valued at their original purchase cost less depreciation. Cost value balance sheets are most useful in evaluating year-to-year progress.
- Market – capital assets are valued at their estimated current market value. This is most useful in evaluating the financial soundness of the business and borrowing capacity.

Market value balance sheets are still the standard used by most agricultural lenders. For the purpose of this analysis, it is probably most useful to value assets at their conservative market value net of selling costs.

Measuring Solvency

The Debt to Asset Ratio is the most common measure used to evaluate business solvency.

$$\text{Debt to Asset Ratio} = (\text{Total Liabilities} / \text{Total Assets}) * 100$$

Simple rules of thumb for evaluating solvency (Debt to Asset) position are:

Strong	Under 30 %
Caution	30 to 60 %
Vulnerable	Over 60 %

Businesses that are in a **Strong** solvency position have a firm foundation upon which to build or change their operations. They may be experiencing profitability or cash flow problems because of the current economic situation, but their financial position should open up doors to alternatives and borrowing capacity that allow them to survive and adjust to more profitable strategies.

Businesses whose debt to asset ratio raises the **Caution** flag need to do some serious financial planning to assure, as much as possible, that their net worth position is not going to continue to erode. If so, they need to look at their options. Their lender should still be willing to work with them, but may not be willing to lend enough money to make major changes in facilities or equipment. In the worst case, they may need to consider exiting the business while there is still substantial net worth left.

Businesses in a **Vulnerable** solvency position have limited ability to borrow additional funds. They need to look at options that improve net worth growth without investing more money in the business. Some examples might include using existing facilities more fully and/or improving operating efficiencies. Other options could include adding non-farm income and reducing family living costs.

Profitability

Profitability analysis involves analyzing how much money the business is making. Profitability is measured using an Income Statement. Most non-farm businesses are required to complete an accrual income statement for tax purposes, so it is relatively easy to evaluate their profitability.

Farmers and ranchers, unless they are very large, are not required to do accrual accounting for tax purposes. While cash accounting provides flexibility for tax management, it leaves agricultural producers in a position of evaluating their profitability based on a system whose general purpose is to reduce income. Therefore, for many growers, tax statements do not provide a reliable source of information for evaluating farm business profitability.

Accrual Adjusted Income Statement

An accrual adjusted income statement adjusts the cash income and expenses reported for tax purposes for changes in inventories of crops, growing livestock, and assets that would have been included in taxable income had they been sold during the period covered. It also adjusts for changes on prepaid expenses, accounts payable and other items that would have been recorded as expenses had they been paid.

The set of financial statements included at the end of this section includes an accrual adjusted income statement format. The FINPACK Farm Financial Software, available through many local Extension offices, also includes a tool to calculate accrual net farm income.

Using Schedule F Tax Statements

It may be impossible to complete an accurate accrual adjusted income statement. In that case, the only option may be to use tax information. If so, it is recommended that you use the average net farm income from several years' Schedule F tax forms. In theory, the average of the net income from three or more years' taxes will wash out the effects of year-to-year inventory changes. Livestock producers should add the income from sales of raised cull breeding livestock to the Schedule F net income.

The bottom line of the income statement, Net Farm Income, is the amount of money the business contributed during the period for owner withdrawals for family living and taxes. If, over a period of time, net farm income it is not enough to cover owner withdrawals, other sources of income will be needed or net worth will decline.

Measuring Profitability

The most common measure of profitability is the Rate of Return on Assets (ROA).

$$\text{ROA} = \frac{\text{Net Farm Income} + \text{Interest Expense} - \text{Value of Unpaid Labor \& Management}}{\text{Total Farm Assets}}$$

Value of Unpaid Labor and Management is an estimate of the amount of income unpaid farm operators could have earned from off-farm employment.

Rate of Return on Assets can be directly related to interest rates. The goal when borrowing capital is to earn a higher return than the interest rates being paid. Businesses with low debt to asset ratios can operate with a lower ROA because they are paying interest charges on a smaller portion of their assets.

Business profitability can vary a great deal from one period to the next. Managers should take care when basing decisions on results from only one period. With that in mind, some simple rules of thumb for evaluating your Rate of Return on Assets are:

Strong	Over 8 %
Caution	3 to 8 %
Vulnerable	Under 3 %

A **Strong** ROA indicates that the business is operating efficiently. If there are cash flow problems, it may be that the business is not large enough to support the number of people or families drawing from it. Or it may be that there is too much short-term debt placing undue pressure on cash flows. In that case, maybe debt repayment schedules can be restructured.

If the ROA raises the **Caution** flag, take a closer look at business efficiencies. Are there adjustments that could be made to control costs, improve marketing, or use facilities and equipment more intensively?

For businesses where the ROA analysis comes up **Vulnerable**, managers need to dig deeper to try to figure out why the business was not profitable. It is human nature to blame problems on factors beyond management control, like foreign competition. The management challenge is to position the business so that it can react to those outside forces.

Liquidity

Liquidity deals with how much cash the business could convert or generate in the short term, usually one year, to meet financial obligations. Holding inventories of cash and liquid assets is a risk management strategy to cushion the business from short-term financial downturns. Unfortunately, cash flow pressures often prevent businesses from holding liquid assets. And even if they can, it is difficult to invest those liquid assets in

places that yield a high rate of return. So there is often a conflict between liquidity and profitability.

The Cash Flow Statement is the most common tool for analyzing the liquidity of your business. It can be either a summary of sources and uses of cash from the past period or a projection of cash flows for the future. Many agricultural lenders require a cash flow projection as part of any credit application.

The set of financial statements included at the end of this section includes a cash flow statement. Other sources of projected cash flow formats include:

- FINPACK Farm Financial Software, available through many local Extension offices
- Cash Flow Projection and Operating Loan Determination, <http://www.oznet.ksu.edu/library/agec2/mf275a.pdf>

Measuring Liquidity

The most common measure of liquidity is the Current Ratio. It is useful for businesses that have substantial current assets. Businesses with limited current assets have little liquidity, no matter what the current ratio says.

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$$

Simple rules of thumb for evaluating your Current Ratio:

Strong	Over 1.75
Caution	1.1 to 1.75
Vulnerable	Under 1.1

Businesses with a **Strong** Current Ratio have established a healthy risk management cushion for difficult economic times. Their challenge is to make sure they are earning a reasonable return on their liquid assets.

If the Current Ratio raises the **Caution** flag, management needs to monitor cash flows carefully. A low current ratio will not make the business unprofitable, but it might make it difficult to take advantage of opportunities as they arise.

Businesses with a **Vulnerable** Current Ratio are in a precarious position. Businesses don't usually go out of business because they lose all their net worth; they go out because they can't pay their bills. Businesses that fall in this category need to take immediate action. First, determine if there is a profitability problem, a solvency problem, or if owner withdrawals are putting too much strain on the business. Maybe adding non-farm income is an option. Operators in this position should work very closely with financial

advisors, creditors and others to craft a plan that will get their operation back on the road to financial security.

Adding Up the Evidence

Financial analysis is a diagnostic, but not necessarily a prescriptive process. In other words, it may reveal a problem, but it may not point to a specific solution. The remainder of the resources available through this site will help business managers dig deeper into their operations to look for adjustments and creative options for their individual situations. Producers who understand “Where Am I?” financially are in a much better position to evaluate alternatives for generating more income, controlling costs, and improving their bottom line.

Developed by Dale Nordquist, Center for Farm Financial Management, University of Minnesota.

Statement of Cash Flows

Name _____

Date _____

Cash Farm Income and Expenses		
Total Cash Income		
Total Cash Expenses		
Capital Assets		
Sales of Capital Assets		
Purchases and Net Cost of Trades		
Financing		
New Loans Received		
Principal Paid		
Nonfarm		
Nonfarm Income and Receipts		
Nonfarm Expenditures		
Cash on Hand, Farm and Nonfarm		
Beginning of Year		
End of Year		
Total		

If all cash transactions are included correctly, the totals for the two columns will be equal.

Balance Sheet

Name _____

Date _____

FARM ASSETS	Cost Value	Market Value	FARM LIABILITIES	Market Value
Checking and Savings Accounts			Accounts payable	
			Farm taxes due	
			Short-term notes and credit lines	
Crops held for sale or feed			Accrued interest - short	
Invest in growing crops			- intermediate	
Commercial feed on hand			- long-term	
Prepaid expenses			Due in 12 mo. - intermediate	
Market livestock			- long-term	
Supplies on hand			Other	
Accounts receivable				
Other				
Total Current Assets			Total Current Liabilities	
Unpaid Patronage Dividends			Notes and contracts, remainder	
Breeding livestock			Other	
Time certificates				
Farm securities				
Other				
Machinery and Equipment				
Total Intermediate Assets			Total Intermediate Liabilities	
Buildings/improvements			Notes and contracts, remainder	
Farmland			Other	
Farm Securities				
Other				
Total Long-term Assets			Total Long-term Liabilities	
A. Total Farm Assets			B. Total Farm Liabilities	
Current Assets (market) = _____ Current ratio			C. Farm Net Worth, Cost Value (A - B)	
Current Liabilities				
Total Liabilities = _____ Debt to asset ratio			D. Farm Net Worth, Market Value (A - B)	
Total Assets (market)				

Balance Sheet (continued)

PERSONAL ASSETS		PERSONAL LIABILITIES	
Bank accounts, stocks, bonds		Credit card, charge accounts	
Automobiles, boats, etc.		Automobile loans	
Household goods, clothing		Other loans, taxes due	
Real estate		Real estate, other long-term loans	
E. Total Personal Assets		F. Total Personal Liabilities	
G. Total Personal Net Worth (E - F)			
H. Total Net Worth, Market Value (D + G)			

Income Statement

Name _____

Date _____

INCOME			EXPENSES	
Cash income			Cash Expenses	
Sale of livestock bought for resale			Breeding fees	
Sales of livestock, grain, other products			Car and truck expenses	
Patronage dividends			Chemicals	
Agricultural program payments			Conservation expenses	
Crop insurance proceeds			Custom hire	
Custom hire income			Employee benefits	
Other cash income			Feed purchased	
Sales of breeding livestock			Fertilizer and lime	
A. Total Cash Income			Freight, trucking	
Income Adjustments	Ending	Beginning	Gasoline, Fuel, Oil	
Crops for sale or feed			Insurance	
Livestock held for sale			Interest paid	
Accounts receivable			Labor hired	
Unpaid patronage div.			Pension and profit-share plans	
Breeding livestock			Rent of land, buildings, equipment	
Subtotal of Adjustments	B.	C.	Repairs, maintenance	
D. Home Used Production			Seeds, plants	
E. Gross Farm Revenue (A + B - C + D)			Storage, warehousing	
F. Net Farm Income From Operations (F - N)			Supplies purchased	
Sales of farm capital assets			Taxes (farm)	
Previous cost value or new purchase			Utilities	
Cost of capital assets sold			Veterinary fees, medicine	
G. Capital Gain or Loss			Other cash expenses	
			Livestock purchased	
			I. Total Cash Expenses	

Income Statement (continued)

		Expense Adjustments	Beginning	Ending
		Investment in growing crops		
		Prepaid expenses		
		Feed and supplies on hand		
			Ending	Beginning
		Accounts payable		
		Farm taxes due		
		Accrued interest		
		Subtotal of Adjustments	K.	L.
		M. Depreciation		
H. Net Farm Income (G + H)		N. Gross Farm Expenses (J + K - L - M)		

Source of financial statements: Farm Financial Statements, William Edwards, Iowa State University, <http://www.extension.iastate.edu/Publications/FM1824.pdf>

Inventory of Resources and Talents



One of the purposes of TAA Technical Assistance is to help business owners find a profitable future direction for their business. The direction you take your business will depend on several factors, including:

- What you want to do (your goals)
- What is happening within the industry, and
- The package of skills, resources, and talents you and the other stakeholders in your business can pull together to implement a change.

Your resources come in at least two forms: 1) the hard assets and financial resources that are included on your balance sheet and 2) the knowledge, interests, and abilities that you can draw on from your management team. This section will focus on these personal attributes. It will ask a series of questions that are intended not to highlight weaknesses, but rather to help you build on your strengths and avoid the pitfalls of mapping a direction for your business that does not match your skills, likes, or values.

Production and Operations Management Yes _____ No _____

Are your skills best suited to high volume commodity production?

- Do you have a history of producing high yields or rates of production per unit? _____
- Are you a low-cost producer? _____
- Do you stay on top of new technologies? _____
- Do you get things done on time? _____
- Is expansion an option or interest? _____
- Do you gain your competitive advantage by producing more per unit at a lower cost? _____

Or, are your skills best suited to niche market or value added products?

- Are you good at juggling multiple production schedules? _____
- Do you monitor production activities and quickly make adjustments if problems surface? _____
- Do you have a history of producing high-quality products? _____
- Do you gain your competitive advantage by marketing multiple products at a high margin? _____

No matter the type of operation, efficient production is important. But it may be more important for some than for others. For producers of traditional agricultural commodities, the goal is to be the lowest cost producer. If you can keep costs per unit down and produce enough volume, you can generally be successful in commodity production.

For direct marketers, value-added producers, and other non-traditional operations, efficient production is still important. But product quality and efficient marketing may well be more important than producing the highest production rates at the lowest costs. The world is full of stories of companies that have been very successful just because they out-marketed the other guys. Producing these types of products takes a different mindset. You may spend more of your time outside of production activities while managing others. You will spend more time in your office and less time on your tractor. If you can be happy doing these activities and you have skills in those areas, you may want to consider a transition into this type of operation.

Marketing

Yes

No

Are your skills best suited to marketing traditional agricultural commodities?

- Would you rather be out in the field or in the production facilities than negotiating with buyers? _____
- Do you feel time on the phone is wasted time? _____
- Do you have the option to contract your production? _____
- Do you negotiate input costs? _____
- Do you lock in a profit when it is offered to you? _____

Or, do you have skills suited to marketing niche market, value added, wholesale, or retail products?

- Do you like to negotiate deals? _____
- Are you good at closing a deal? _____
- Do you know how to estimate the market for a product? _____
- Do you develop good relationships with buyers and sellers? _____
- Do you have skills in advertising and promotion? _____
- Are you good at making pricing decisions? _____
- Do you know who your competitors are? _____
- Do you target your products at a specific market? _____

Is there a market for your product? Most commodity producers have not had experience with estimating market size, target marketing, advertising and promotion, and pricing. These are skills that may be needed if you plan to move into a “niche” market or if your

plans include direct marketing or processing of farm products. Many commodity producers have the ability to move into these areas but they may need to educate themselves on the techniques. There are classes and other resources in community colleges and other institutions in most communities to help you improve these skills.

People Skills

Yes

No

Are your skills best suited to managing a sole proprietorship?

- Do you feel a need to be actively involved in all or most production activities? _____
- Would you rather be out doing than directing others? _____
- Do you feel frustrated training employees? _____
- Do you worry about others getting things done right? _____

Or, do you have the skills needed to manage multiple employees?

- Do you like to work in a team setting? _____
- Are you comfortable delegating tasks to others? _____
- Are you able to constructively criticize employees? _____
- Do you have specific hiring procedures? _____
- Do you have specific training procedures for new employees? _____
- Are you comfortable with firing employees? _____
- Do you get satisfaction out of seeing someone else succeed? _____
- Do you like to delegate production tasks to others? _____
- Are you good at training others to do production tasks? _____

Many feel that they have to grow to be competitive in today's business world, but there are still many very successful small businesses. Moving from a business with few employees to a multiple employee business is one of the biggest challenges for most business managers (inside and outside of agriculture). Those who successfully make the transition tend to be very happy with the change. They find that they can get away with assurance that things are getting done while they are gone. They build managerial capacity in the next generation and they get a great deal of satisfaction out of seeing others grow and be successful. But not everyone has the skills to be a people manager. If you are not comfortable with your skills in this area, there are two options: 1) get help and training in personnel management; or 2) stay small and look for other ways to improve profitability.

Money Management Skills

Yes

No

Should you consider hiring accounting and financial services?

- Do you use your records only for tax purposes? _____
- Do you let accounting functions slide as long as possible? _____
- Does your lender complete your balance sheet for you? _____
- Do you place financial reports in your files without examining them? _____
- Would you rather do just about anything else but accounting? _____
- Do you lack trust in your lenders? _____

Or, do you have the skills to manage the finances of the business?

- Do you know your production costs per unit? _____
- Do you like to do your own accounting? _____
- Do you read and understand financial reports? _____
- Do you develop a financial plan at the beginning of each production or accounting cycle? _____
- Do you monitor deviations from your financial plan and make mid-term adjustments to your plans? _____
- Do you periodically analyze the financial performance of your business? _____
- Do you work well with your lenders? _____
- Do you cover risks with adequate insurance and other risk management tools? _____
- Do you know your living costs? _____
- Do you know your net worth? _____

Financial management is an area where many agricultural producers feel least comfortable. Again, there are a lot of resources within the Extension Service and local community and technical colleges to help you improve these skills. This is also an area where you might consider hiring outside help or joining a farm management group if one is available in your area. Hiring accounting and tax services, however, may not provide you with a great deal of management information. You still need to understand the reports and monitor financial performance.

Other Resources

Other resources include the physical assets you own, the other assets you can acquire through lease or other means, and the financial resources that you can access in terms of equity capital and borrowing capacity. If you are considering a major business adjustment, consider how well adapted each of these resources is to your new business plan. Is the business large enough to support you and other stakeholders? Is your land base suited to high yield and high quality production of your selected products? Are production facilities and equipment adequate? Has asset replacement been adequately considered in your financial plans? Is an adequate and well educated labor force available? These are among the questions that you should honestly answer before you commit to investing more in your business operation.

Summary of Strengths and Weaknesses

After considering the resources, talents, and interests of the operation and the management team, it may be helpful to summarize the strengths and weaknesses of the operation. The worksheet on the following page provides a framework for this summary.

Summary of Resources and Talents

Strengths	Weaknesses
Production and operations	
Marketing	
People skills	
Money management	
Other resources	

Other Publications

Checking Your Farm Business Management Skills, Farm Business Management for the 21st Century, Purdue Extension, West Lafayette, Indiana, by Michael Boehlje, Craig Dobbins, and Alan Miller.

Are Your Farm Business Management Skills Ready for the 21st Century?, Self-Assessment Checklists to Help You Tell, Farm Business Management for the 21st Century, Purdue Extension, West Lafayette, Indiana, by Michael Boehlje, Craig Dobbins, and Alan Miller.

Building a Sustainable Business, A Guide to Developing a Business Plan for Farms and Rural Businesses, Minnesota Institute for Sustainable Agriculture, St. Paul, Minnesota, by Gigi DiGiacomo, Robert King, and Dale Nordquist.

Developed by Dale Nordquist, Center for Farm Financial Management, University of Minnesota.



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Section 2

Where Do I Want To Be ?

- 🥑 **Business Options Available to Improve Profitability**
- 🥑 **Goals**
- 🥑 **Enterprise Budget**
- 🥑 **Production Efficiency**
- 🥑 **Marketing Opportunities**
- 🥑 **Transitioning Out of the Business**



University of Florida
Tropical Research and Education Center

Where Do I Want To Be?



- **Business Options Available to Improve Profitability**
- **Goals**
- **Enterprise Budget**
- **Production Efficiency**
- **Marketing Opportunities**
- **Transitioning Out of the Business**

Business Options Available to Improve Profitability



Options to Improve Profitability

When faced with financial stress due to low prices, agricultural producers and fishermen have several options to improve profitability. There are four general options available to increase profits. They are:

- Improve the profit margin
- Expand the business
- Create innovative niches
- Exit and transition to a new business or job

The first two options are described by one of the most basic equations in economics:

$$\text{Profit} = (\text{Price} - \text{Cost}) \times \text{Volume}$$

Profits can be improved by increasing the margin between the market price received for a product and the cost to produce the product or by increasing the amount of the product produced.

Improving the Profit Margin

There are two components to increasing the profit margin:

- Reducing the cost of production
- Increasing the market price received

Economic forces are squeezing profit margins, but successful managers continue to pry the profit margin apart with a critical eye toward cost control practices and improved marketing.

Controlling the cost of production is always an essential management function of successful businesses. Data shows that there is rarely one area where significant cost reductions can be attained, but rather the more profitable businesses manage many costs two to five percent more efficiently than their competitors.

With tight profit margins, marketing actions that improve the sales price even a few cents may increase profits by a significant percentage.

Expanding the Business

Expanding the business is an option that many producers have pursued. As profit margins have tightened, expanding the size of the business has been the most feasible option for many producers.

Additional sales volume may be necessary to cover the overhead costs of the business and to allow the families involved to meet their financial needs. But when considering an expansion, care should be taken when doing financial planning to verify that the expansion will improve your financial situation. If the profit margin is in fact negative, or the added volume will cause overhead costs to increase, an expansion may just put your business in a deeper financial hole.

Creative and Innovative Strategies

Over time, agricultural producers have developed many creative and innovative strategies to help increase profitability. These range from adding value to their products through cooperatives or on-farm processing, direct marketing, niche products and markets, marketing recreational and agri-tourism opportunities, and contracts with businesses and municipalities.

Today's producers need to determine which strategy they will pursue—a commodity production strategy or a creative alternative strategy. The commodity strategy generally involves expanding to an adequate size and focusing on being a low-cost producer. The creative alternative strategy generally means focusing on markets, customers, and innovative niches. Some high-capacity producers are able to pursue both of these strategies.

Transitioning to a New Career

Exiting the business is always an option, although not one that many people want to consider. Commodities that have been certified as eligible for Trade Adjustment Assistance (TAA) are facing financial challenges. Some producers may elect or need to exit the business. Producers should evaluate the skills and resources available or needed to transition to a different business or career. For some, finding off-farm employment or downsizing by selling some assets may also be options.

TAA provides retraining and educational resources to help producers who are transitioning to a different career. The Department of Labor provides TAA services through which eligible producers and fishermen may receive reemployment and educational assistance. Reemployment services include employment counseling, case assessment, job development, and self-directed job search services. Education assistance (Trade Readjustment Allowances) pay for up to 104 weeks of full-time education, including classroom training, on-the-job training, and employer-based training.

Developed by Kevin Klair, Extension Economist, Farm Management, University of Minnesota.

Goals

Most of us would not leave home on a trip to an unfamiliar destination without a road map. We would want to know where food, gas, and lodging were available. Family members would discuss the best route. An arrival time would be estimated to inform family and friends. What about an agricultural business or fishery that is considering a new business model? Before launching into a new business plan, a well-developed “road map” is needed. A successful “road map” starts with discussion of where you want to go—personal and business goals. Steps for generating goals to guide your business decision-making follow.

What Are Goals?

A goal is a statement of what an individual or family wants to achieve. Through goals, each person, family, or business unit identifies its aspirations for the future. Goals change with circumstances and time, and they must be reevaluated and updated periodically.

How To Use Goal Setting

Goals provide focus and direction for management. Attaining high-priority goals takes precedence in management decisions. They serve as reference points to monitor how well a business is doing and as a motivation if deadlines are specified. Goals help aid decision-making in the face of uncertainty. Finally, achieving goals can serve as a rallying point for the family or business management team.

Steps in Goal Setting

Goal setting requires creative thinking. Goals can be tangible and intangible, short-term and long-term, monetary and non-monetary. Goals are personal and unique to the family since they reflect values and beliefs, the resources available, and the opportunities and limitations faced. Because achieving goals often requires the cooperation of family, the goal setting process should involve discussion and compromise among family members. Seven steps for setting goals follow.

- Assess where the operation was in the past.
- Assess family and farm resources (including self) and planning restrictions.
- Develop a general management plan.
- Identify and establish specific goals or objectives.
- Prioritize goals.

- Develop plans for action and implementing goals.
- Measure progress and reassess goals.

Developing SMART Goals

Other tips for goal setting are to make them SMART: Specific, Measurable, Action-oriented, Reasonable, and established in a Time frame. Write goals down to make them visible and increase commitment. Goals should be measurable—for instance, to increase income by \$8,000 per year. Goals should be challenging, but achievable. To be most effective, set family and business goals jointly—that is, set goals with family members rather than for them. Using realistic deadlines, specify when the goal is to be attained.

Prioritizing Goals

Goal priorities can provide clear guidelines for management decisions and make possible a level of consistency that otherwise is difficult to maintain. To help establish goal priorities, ask these questions:

- Which goals are most important for family well-being? Farm well-being?
- Which short-term goals, if attained, would help achieve long-term goals?
- Which short-term goals conflict with, or impede, long-term goals?
- Which short-term goals do not support any long-term goals?
- Which goals are so important that they should be attained even if it prevents reaching other goals?

High-priority goals should not receive all the attention and resources while other goals are ignored. Priorities should not be completely either/or decisions, and priority decisions need not be permanent. In prioritizing goals, weigh the importance of each task for long-term and short-term goals. Consider personal life goals as well as business aims. Group similar activities wherever possible and identify links between goals.

Implementing Goals

To effectively set and implement goals, the business manager must invest time and energy in mapping out goals. A thorough job of planning, with a commitment to the goal-setting process, will help ensure positive results. Make the goal known to others. Relate individual goals to family or team goals. Try to anticipate problems and plan strategies for overcoming them. Do not ignore potential conflicts or restrictions that might prevent reaching goals. Identifying possible problems in the planning stage will allow time to resolve conflicts or channel efforts to feasible objectives. Beware of the following potential pitfalls:

- Making goals too lofty
- Trying to do too many things at once
- Overemphasizing quantitative aspects

- Vulnerability to unexpected events
- Failing to use all information or include all decision makers
- Ignoring good plans

Summary

Goal setting, although important for all individuals and families, is especially important for family farms and small businesses because of family and business interrelationships. The development of individual goals, discussion and negotiation of family goals, and business and family priority-setting give structure to the management process. Setting goals as a family at least annually (or whenever circumstances change significantly) should become part of the business management routine. By helping individuals and families work smarter, goal-directed management can improve business efficiency. Achievement of goals should result in a feeling of accomplishment and pride. Use the following worksheet to begin specifying goals for family and business.

Reprinted from Goal Setting for Farm and Ranch Families, Damona Doye, Oklahoma Cooperative Extension Service, Oklahoma State University.

Goal Setting Worksheet

Short Term
 Intermediate term
 Long-term
 Farm/business
 Family/personal

Goals	Priority (High, Med. Low)	Potential Conflicts or Restrictions	Ways to Resolve Conflict	Resources Needed	Assigned Person(s)	Deadline
Most important goal?						
Second most important goal?						
Other goals?						

Provide each family member or person involved in farm management with a copy of this worksheet. Ask each person to complete it, without input from others initially. When everyone has completed the worksheet, discuss it with family and/or business associates. Use additional copies of the worksheet to document your family or farm management team's best thinking and mark it as such. Short-term goals should include those that will allow you to attain your long-term goals. An additional sheet detailing activities necessary to achieve a goal may be needed, along with an associated time line.

Enterprise Budget

An enterprise budget is a useful tool to quickly evaluate current costs and returns and/or to quickly evaluate the cost effectiveness of changes in production practices. It collects all costs of production and sales information into one “snapshot” of your operation. Once completed, your enterprise budget net return/revenue is a base against which returns from alternative enterprises, management or sensitivity analyses can be compared.

Enterprise budgets are only as good as the information put into them. When constructing an enterprise budget for your operation, you’ll need to use your farm records, and if you do not have the needed information it is a signal that you may need to start keeping records for these missing items. The point is to put the most accurate information possible into the enterprise budget so its results are meaningful and helpful. Thus, record keeping is critical in developing an enterprise budget, but once developed it can help you better understand your operation and, through identification of higher input expenses, help you in controlling your costs of production. It can also give you an understanding of your operation’s short- and long-term viability. Using computer spreadsheet software to enter your information into the enterprise budget is very helpful, as you can quickly change one or more items and see their impact on your operation. The following website has been developed to help create and analyze your own budget: Tropical Research and Education Center Agricultural Economics website, <http://agecon.centers.ufl.edu/CostandReturn.htm>.

Enterprise Budget Structure and Analysis

Elements of the Budget

The structure of the enterprise budget that we used in this analysis comprises the following main sections: revenue, operating costs, fixed costs, and harvest and marketing costs. The **revenue section** includes receipts from the sale of the crop and is calculated by multiplying yield by the price. In our example, we used what is called the F.O.B (free on board) price, which is the price you would receive if you were responsible for producing the commodity, harvesting, packing it and shipping it. It would be the price you would receive “on the dock.” Since most avocado growers don’t do their own harvesting and marketing of the crop, it can be viewed as the price the packers/packing houses receive. Out of this price, they (packing houses) would subtract their charges for harvesting, packing and transporting the commodity together with a service fee (about 10% of the F.O.B. price). The balance is what is paid to you, typically called the “farm gate” or the grower’s price. It is important, therefore, that you keep this in mind as you go through the remainder of this chapter, since the analysis is based on the estimated F.O.B price and not the farm gate price. Hence, when we speak of the minimum price that is necessary to ensure the business is profitable it is in reference to the price that is necessary to cover production and marketing expenses.

Costs are broken down into operating, fixed, and harvesting and marketing costs sections. The **operating costs** section comprises those costs that will be incurred only if the crop is produced. Hence, such costs can vary (variable) and are entirely under the control of the producer. For instance, the producer can reduce them to zero by not producing the crop. Included under this category are items such as the costs incurred for fertilizers, herbicides, pesticides and irrigation. We also include an estimate for interest expense to account for capital (money) that is tied up in operating expenses, which otherwise could have been deposited in the bank, for example, and earned interest.

The **fixed costs** section includes those costs that the owner would incur once the business exists, even if no crop were produced. Such costs come as a result of ownership of machinery, equipment and land used in crop production, as well as any overhead charges such as farm liability insurance and taxes. The sum of the operating costs and fixed cost is usually referred to as **pre-harvest cost** and implies the total amount that is required to produce the crop before harvesting and marketing expenses are added.

Harvesting and marketing costs include the costs to pick, pack, transport and sell the crop. Since these costs depend on the business producing the crop they are sometimes added to operation costs to give total variable costs. As noted before, this operation is usually carried out by the packing houses on behalf of the producers.

The **total cost** represents the total amount that is required to produce, harvest and market the crop. It is calculated as the sum of pre-harvest costs (operating and fixed costs) plus harvesting and marketing costs.

By noticing which operations or activities are the main contributors to the cost of producing and selling the crop, attempts can be made to reduce those costs through the adoption of improved technology and management practices, making better use of existing resources, or trying to reduce the cost of inputs purchased by bulk buying. Additional information on how to reduce cost of production can be found at <http://edis.ifas.ufl.edu/FE569>.

Short-Run Viability

The short-run indicator of your operation's financial viability is the **Gross Margin** line in the enterprise budget. This is the gross receipts (revenue) minus all operating and marketing costs. When this short-term measure is positive, it's an indication that you are covering all cash costs associated with producing and selling the crop and you have additional funds available to cover (pay) some or all of the fixed costs. If the gross margin line is negative, then your operation is not viable in the short run and changes to make the operation profitable will be needed. Of course, this could occur due to unusually low prices received for your product in one year and could be abnormal or not. However, if this pattern persists for more than one period, it is a clear indication that you should get out of the business. In other words, the minimum requirement to stay in the business, at least in the short term, is that you can cover your operating and marketing costs.

Long-Run Viability

The long-run indicator of your operations viability is the **Net Revenue or Net Returns** line in the enterprise budget. This is the gross receipts (revenues) minus operating and fixed costs. When this long-term measure is positive, it's an indication that you are covering all cash and non-cash costs associated with production. Non-cash costs are those that account for usage of equipment in the production process and account for your labor and management above what you pay yourself. In other words, it is the amount you have left over from which you can pay yourself, family labor and equity capital that you used in the business. A negative net revenue along with a positive gross margin indicates you should continue operating in the short run, but changes that will increase net returns will have to be made for your business to stay in operation over the long run. A negative net revenue and a negative gross margin indicate you should stop producing, as you are losing money for every pound of avocado you produce. It is time to get out of the business.

Breakeven Price Analysis

Another useful analysis that can be performed after you have prepared your enterprise budget is a breakeven price analysis. These indicators are calculated and indicate the price you must receive for your avocado to cover or pay for all costs. Once calculated, the breakeven price is compared to the actual price received (in our case, the F.O.B. price). If the breakeven price is less than the price received, then you know how much money you are making for every pound of avocado sold; and if the breakeven price is greater than the actual price received, you know how much money you are losing for every pound of avocado produced.

Sensitivity Analysis

A sensitivity analysis of the enterprise budget can help you see how profitable your operation is under various price changes. Sensitivity analysis can be done with respect to changes in input and output prices and yields. Usually it is done for likely changes in output prices and yields. A sensitivity table showing different combinations of prices and yields can help you see what effects these changes would have on your bottom line. If your operation's net return is positive, you can quickly see at what prices the net return would become negative.

Sample Avocado Enterprise Budget

Provided below is a sample budget for an avocado enterprise, which will illustrate and further clarify some of the concepts mentioned above. The information contained in the budget reflects that of a representative orchard and is based on a 5-year average marketable yield of 8,000 pounds per acre (assuming a pack-out rate of 94%) and the F.O.B. price in South Florida estimated at \$0.52 per pound (the actual price you received plus the costs to harvest and market the commodity). The data used in this analysis to estimate production costs were obtained from interviews with growers/packing houses and Extension specialists. 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. No provision has been made for establishment costs. Moreover, and as you are aware, yields and costs for individual operations can vary widely. For instance, yields have been known to range from a low of 2,000 pound per acre in a very bad year to a high of about 10,500 pounds per acre in an extremely good year. Hence, as stated earlier, it is important that you develop your own enterprise budget to reflect your particular circumstances.

Costs

The table below reveals that the **total cost** to produce and market an acre of avocados is estimated at \$4,094, or about \$0.51 per pound. **Pre-harvest cost**, comprising operating and fixed costs, is estimated at \$2,017 per acre, or \$0.25 per pound. Of the total pre-harvest cost, **operating costs** totaled \$1,151 or 28.1% of the total cost of production. **Fixed costs** were estimated at \$866 per acre or 21.1% of total cost.

With respect to **operating costs**, the major cost items were fertilizers, fungicides, and herbicides, with shares of 36.9%, 19%, and 13.3% of the total operating costs respectively. Hence, our fertilizer practices might be one area we could focus attention on if we are concerned about reducing the cost of production. Short-term interest on operating capital was calculated at 10% of the value of operating expenses.

Regarding our **fixed costs**, the biggest cost item included was land rent. Although the majority of farmers own the land, it was decided to include a cost for the use of the land equal to the existing land rental rate. This reflects the standard practice of valuing the contribution of the land. The rate used in the analysis is the average rental price. An alternative, but less commonly used, approach would be to calculate the interest that could be obtained if the land was sold and the funds deposited in a fixed account. If this approach were to be used, the land cost would be much higher. For example, on the basis of current market value for the land (\$100,000 per acre) and an interest rate of 5% per annum, the true opportunity cost of the land would be about \$5,000 ($.05 \times \$100,000$).

Harvesting and marketing cost was estimated at \$2,077 per acre, which is equivalent to a charge of 26 cents per pound of avocados sold. It represents about 50% of the total cost to produce and market the crop. The main contributor to the harvesting and marketing costs is the cost associated with picking, hauling, and packing, including the cost of the packing materials. Together they account for 81% of the harvest and marketing costs and 41% of the total cost to produce and market avocados.

Estimated costs and returns for Florida green skin avocados

Item		Cost per acre (\$/acre/year)	Value/Cost per acre (\$/acre/year)	Value/Cost per pound (\$/pound)
Marketable Yield (pounds/acre)	8,000			
F.O.B Price in South Florida				0.52
Farm gate price				0.26
TOTAL REVENUE			4,160	
Operating Costs				
Fertilizer		425		
Fungicide		220		
Herbicide		150		
Insecticide		11		
Tree removal and site preparation		4		
Tree Replacement		12		
Top, Head and Prune		60		
Set Trees		2		
Irrigation		50		
Mow middles		80		
Grove work and hand labor		25		
Growers association fees		8		
Interest on operating capital		105		
Total Operating Cost			1,151	0.14
Fixed Costs				
Land Rent		446		
Supervision		140		
Overhead		280		
Total Fixed Cost			866.00	0.11
TOTAL PRE-HARVEST COST			2,017	0.25
Harvest and Marketing Costs				
Sales Charge @10% of f.o.b price	0.1	416		
Pick, Pack and Hall		1,661		0.21
Total Harvest and Marketing Cost			2,077	0.26
TOTAL COST			4,094	0.51
GROSS MARGIN			932	0.12
NET REVENUE (Total Revenue - Total Costs)			66	0.01

Returns and Profitability Analysis

The five-year average yield is estimated at 8,500 pounds (4.25 short tons) per acre. With a pack-out rate of about 94%, the quantity of marketable avocados is estimated at 8,000 pounds per acre. Using the estimated F.O.B. price of \$0.52 per pound (about \$6.62 per single flat), the **gross revenue** is calculated at \$4,160 per acre. In order to compute the **gross margin**, we subtract the total operating costs and total harvest and marketing costs from the gross revenue. This gives us a return of \$932 ($\$4,160 - \$1,151 - \$2,077$) per acre, or \$0.12 per pound of avocado sold. Recalling our earlier discussion of this indicator, it implies that in the short run the enterprise is profitable, since we are able to cover the operating and marketing costs and still have \$932 dollars per acre to use toward covering fixed costs and the cost of management. Since most of the growers own their land, there is a tendency to ignore the fixed costs and focus only on this indicator. However, while such returns appear favorable, as pointed out earlier, it is only a short-run indicator, and it is better to focus on the longer-run net revenue (returns) indicator.

Net revenue is calculated by subtracting fixed costs from gross margin. In our example, net revenue is calculated as \$66.00 ($\$932 - \886) per acre, or about one cent per pound of avocado sold. This represents a return of 1.61% on the total cost of producing and marketing avocados ($\$66 \div \4094×100), or a return of 3.27% on the pre-harvest cost ($\$66 \div \$2,017 \times 100$). Again referring to our earlier discussion of net revenue, this implies that the operation is profitable in the long run, since we are able to cover all our expenses and still have an amount left over from which we can pay ourselves and increase our equity in the business. It should be pointed out, however, that while positive net revenue indicates that the enterprise is profitable in the long run, it implies so in the sense that the revenues generated are capable of covering all costs. A real test of the profitability of the enterprise would depend on comparisons of rates of returns that could be obtained if the same level of investments were made in other feasible enterprises, including the interest that could be earned from depositing it into a fixed account.

Sensitivity Analysis

The table below presents a sensitivity analysis of net returns to a grower on a per acre basis. Here we focus on the two variables (price and yield) that are most likely to change in order to see the effects such changes would have on our bottom line (net revenue per acre). The table presents the net revenue that would result from various combinations of prices and marketable yields. For example, at an F.O.B price of \$0.52 per pound and yield of 8,000 pounds per acre, the table shows net revenue of \$66 per acre. This is the same as our example. Now, assume that the price increased by 20%, from \$0.52 per pound to \$0.62 per pound, while the yield remained the same, at 8,000 pounds per acre: what effect would this have on our net revenue? To get the answer from the table, read down the column with the price showing \$0.62 and across the row showing yield of 8,000 and stop at the intersection. The result indicates that our net revenue would increase to \$786, or by \$720 ($\$786 - \66) per acre. Next assume the opposite, that our yield increased by 20%—that is, going from 8,000 pounds per acre to 9,600 pounds per acre—but that price remained the same, at \$0.52 per pound. Reading down the column with price listed at \$0.52 and stopping

at the intersection of the row indicating a yield of 9,600 reveals that net revenue increased to \$483 or by \$417. Of interest is the fact that a 20% increase in price had a greater impact on the net revenue than a 20% increase in marketable yield (compare \$786 with \$483, which gives a difference of \$303). This suggests that, although efforts should be made to increase yields, influencing the price received through improved quality and marketing can result in more profit.

You can use our interactive tool located at <http://agecon.centers.ufl.edu/CostandReturn.htm> to assist you with your sensitivity analysis. After choosing the commodity type and commodity, click on the button marked “Get Price and Yield Analysis.”

Estimated net returns for various price and yield combinations

	-----Price (dollars/lb.) F.O.B. Homestead-----		
	\$0.42	\$0.52	\$0.62
Yield (lbs./acre)	Net Returns/acre (\$/acre)		
6,400	- 926.00	-350.00	225.00
8,000	- 653.00	66.00	786.00
9,600	- 381.00	483.00	1,347.00

More generally, it should be pointed out that while increasing yields can be positive for an operation, it is extremely critical you do not lose sight of the fact that higher production generally only comes at a cost. The ultimate objective of the operation is not to generate as high a yield as possible, but rather to generate as high a profit as possible. A fundamental economic principle to keep in mind is that as long as inputs into the production process cost something, maximizing profits and maximizing production will not be the same. To maximize your profit, you need to make sure that any additional amount spent to increase yields results in an increase in net revenue that is equal to or greater than the amount spent. To understand this concept further, you might wish to read the article at <http://edis.ifas.ufl.edu/FE565>.

Break-Even Price Analysis

As discussed earlier, the break-even analysis shows the minimum price you must receive for your avocados to cover or pay for all costs (operational, marketing and fixed). The table below shows the break-even prices for different levels of output. For example, with a marketable yield of 8,000 pounds per acre, the minimum F.O.B price that must be received to allow us to just clear all expenses is \$0.51. Anything above that is profit. However, with a yield of 9,600 pounds per acre, the minimum price becomes \$0.47.

Break-even analysis

Yield (pounds per acre)	Break-even F.O.B prices (\$ per pound)
6,400	0.57
7,200	0.54
8,000	0.51
8,800	0.49
9,600	0.47

You can use our interactive tool located at <http://agecon.centers.ufl.edu/CostandReturn.htm> to assist you with your sensitivity analysis. After choosing the commodity type and commodity, click on the button marked “Get Break Even Analysis.”

Developed by Edward Evans and Sikavas NaLampang, Tropical Research and Education Center, University of Florida, Homestead, Florida.

Production Efficiency

Pests and Disease Management

The purpose of the following material is not simply to provide strategies for increasing production. The real objective is to assist producers in achieving more cost-effective production, thereby improving the profitability of their avocado operations.

Arthropod Management in Avocados

Arthropod management in avocados is a strategy which encourages the reduction of pesticide use by using a variety of controls in combination to contain or manage pests. It is based on proper identification of the pest, monitoring, action levels and appropriate action. Avocado growers should have a good training and understanding of pest management techniques. Monitoring pests and their natural enemies is a vital component of pest management. Monitoring can be carried out by a commercial pest scout or by the grove manager. In either case, it must be done in a systematic manner. Action must be taken to control pests before the point at which they cause economic loss. Action levels are usually based on research and experience. When action levels of a pest are reached, the most appropriate control strategy must be selected, e.g., release of parasites, use of a selective pesticide. If a pesticide is to be used, its effect on natural enemies must be considered first.

Suggested Control Program

Because of variations in the development of harmful insect infestations, it is necessary to determine if and when pesticidal treatments are needed. It is not only unnecessary, but wasteful or even harmful, on occasions, to apply insecticides unless they are needed.

- December, January, February:
 - Control avocado red mites, if needed.
- January, February, March:
 - Control bloom-infesting insects—mirids, thrips, caterpillars—if needed.
- May, June, July:
 - Look for infestations of avocado loopers.
 - Control scale insects, mealybugs or insect infestation on fruit, if needed.
- August, September, October:
 - Control greenhouse thrips, if needed.
 - Control fruit-scarring caterpillars, if needed.

List of Insecticides Registered for Use on Avocado

NOTE: The following insecticides are listed by the EPA as being cleared for use on avocados (see Table below for details on use):

- Bacillus thuringiensis (Biobit, Cutlass, Dipel, Javelin, Vault, XenTari)
- carbaryl (Sevin); malathion (Cythion)
- metaldehyde (slugs and snails); methomyl (Lannate)
- permethrin (Ambush, Pounce); pyrethrins + rotenone (Pyrellin)
- oils (Sun Spray, Volck oil); rotenone (Rotacide)
- soap, insecticidal (M-Pede); sulfur (Thiolux, SuperSul)
- diatomaceous earth + pyrethrin + pbo (Diatect Organic Plus)

Pesticides registered for avocado in Florida

Chemical Name	Brand Name	Pests Controlled
azadirachtin	Align, Azatin	General insecticide
spinosad	Spint Tor 2 SC	Lepidoptera
abamectin	Agri-mek	Thrips, mites
Pyrethrin + rotenone	Pyrellin	Aphids, lepidoptera, thrips
sulfur	Sulfur 6L, Sulfur Flowable, Thiolux	Mites
malathion	Malathion	Thrips, scales, lepidoptera
permethrin	Pounce, Ambush	Thrips, lepidoptera, lacebug, mirids, soft scales
Various refined horticultural oils	Sunspray, citrus spray oil, crop oil, FC435-66, FC 455-88, others	Aphids, mites, scales mealybugs
Potassium salts of fatty acids	Safer Soap	Aphids, lacebug, mites, thrips, scales, mealybugs
methomyl	Lannate	Lepidoptera
Bacillus thuringiensis	Dipel, others	Lepidoptera
Beauveria bassiana	Mycotrol	Lacebug
pymetrozine	Endeavor	Aphids, whiteflies
kaolin	Surround	Barrier and irritant to various insects
pyriproxyfen	Knack	Scales, thrips, ants
S-methoprene	Extinguish	Ants
hydramethylon	Amdro	Ants
bifenazate	Floramite	Mites
fenpropathrin	Tame	Various insects, mites
hexythiazox	Savey	Various insects, mites
bifenthrin	Talstar	Various insects, mites

Source: Crane, J., and M. A. Mossler. 2005. Pesticides Registered for Tropical Fruit Crops in Florida. University of Florida, IFAS Extension, HS 929, Fact Sheet HS177

These materials are sold under various trade names. The individual labels often differ from each other. Labels for some of these pesticides were not available at the time of printing. In order to find the individual label that has specific directions for your use, contact the local County Agricultural Extension office or agricultural supply dealer. Under the FIFRA amendment of 1978, the grower may use a material (insecticide) that is legal and EPA-approved for a pest on a crop for other non-listed pests as long as the user follows the label directions and rates for the approved pest.

Precautions and Restrictions

Lannate is especially toxic and is not recommended for dooryard avocado trees. **Lannate should also be handled with great caution.** They should be used only by trained and properly equipped operators. Oil emulsion sprays may injure trees if applied during a very cold, dry period or a hot (90°F) period. Do not mix sulfur with oil emulsion, or apply either material within 3 weeks of the other. Do not apply malathion within 7 days of harvest. Do not apply Lannate within 7 days of harvest. There is no required waiting period for oil emulsion or sulfur.

General Information on Pests

Avocado Tree Girdlers

The adult is a snout beetle. Small trees up to 6 inches in diameter at the ground level are most susceptible. Reddish-colored frass is extruded by the larvae from the feeding burrows and is observed near the ground level.



Avocado trunks damaged by tree girdler larvae

Control

Two or more annual examinations of the tree bases for frass is recommended. Remove the larvae and paint the wounds with good tree wound paint.

Caterpillars

Several kinds of caterpillars may infest avocado bloom, clusters and leaves. One is a web-spinning caterpillar that feeds on buds, blooms and leaves. An outstanding characteristic of infestation is masses of bloom webbed together. Secondly, there are several loopers that feed on avocado leaves in Florida. The most common of these is *Epimeces detexta*. This looper is the larva of a medium-sized grey or greyish-white moth. Young larvae are 1/4 inch or less in size and usually grey or greyish black; they grow rapidly to 1 1/2 inches or more in length. Older larvae are generally tan or greenish-yellow in color. Larvae feed also on flower panicles and even fruit, but prefer the tender growth in the upper part of the tree. Looper infestations appear to be somewhat seasonal and are more severe in spring and summer, generally becoming less of a problem in fall and winter.

Life Cycle

The adult moth is short-lived and mates and oviposits soon after emergence from pupa. Eggs are laid in narrow, elongated masses, preferentially on needles of Australian pine (*Casuarina* sp.) They hatch in about 5 days. The larvae grow rapidly and pupate 17-22 days after egg hatch. The pupal stage can last 10 days. Thus, a full generation is expected to last between 34-37 days. Pupae drop to the ground and the adult emerges in 12 days to start the cycle over. Some avocados are culled because of damage from feeding on the fruit by two or three kinds of small caterpillars.



Larvae of Avocado looper



Foliage damage from avocado loopers



Damage to fruit caused by avocado loopers

Action Levels

Young trees are more affected than mature trees. If 20 larvae or more are observed feeding on trees, and trees are severely defoliated, there is need for control. For older trees, if there are small fruits in the grove and more than 30 larvae are collected during a 30-minute inspection of foliage, there is need for control. If there are no fruits, the tree can stand defoliation of at least 40% of the tree canopy.

Control

Apply malathion. Lannate 90 WP, Lannate 1.8 L liquid have been cleared for Avocado Leafroller, Avocado Looper, and omnivorous leafroller. Pyrellin (pyrethrins + rotenone) is legal for use against caterpillars. The WP is applied at 1/2 - 1 lb 90% powder/acre. The liquid 1.8 is applied at 2-4 pints per acre. *Bacillus thuringiensis* (B.t.s) is sold under several trade names and has affect on certain types of caterpillars. The grower should discuss labels and specific recommendations with the local pesticide dealers. Permethrin (Pounce 3.2 EC and Ambush 2 EC) is cleared for use on avocados. See label for specific instructions.

Mirids

A number of species of small, sucking insects known as mirids (*Dagbertus fasciatus*, *D. olivaceous*) feed and insert their eggs on opening buds, leaves, flowers and small fruit. Attacks seem to affect especially flowers and recently-set fruit, causing them to drop. Wounds on fruit may serve as a point of entry for decay organisms. These insects are comparatively small, about an inch in length, and their nymphs can pass through several instars, during which the size increases greatly. Color patterns change from a variety of green and brown. Mirids usually appear during bloom and early fruit-setting stage. It is suggested that weeds and grass in and around the grove be mowed as closely as practicable in order to reduce harboring places for mirids. Mirid populations are most common from January through April, when avocado flowers are fully open.



Adult of an avocado mirid



Different stages of development of avocado flowers. Mirids and flower thrips are found in opened flowers, developmental stages 8 and 9

Monitoring and Action Levels

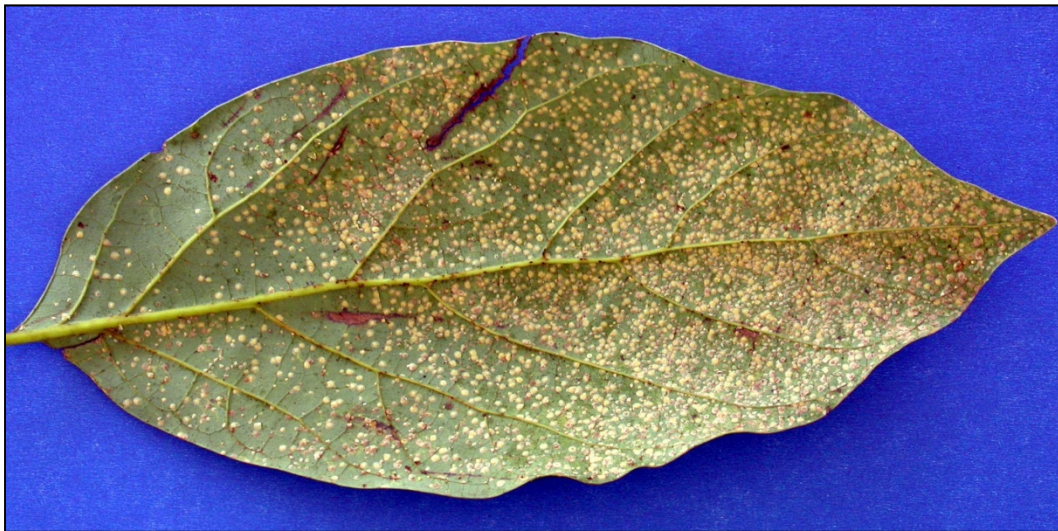
If excessive flower drop is observed and coincides with numbers higher than 30 mirids per panicle, chemical control might be warranted.

Control

Malathion is the material that can be used on avocados and is most likely to have controlling effects on mirids. During flowering, spray applications should be applied in later afternoon to reduce losses of honey bees.

Scales

Several kinds of scales, including latania, pyriform, Florida red, dictyospermum and Floridawax, may infest avocado. Check for scales and, if needed, apply control measures during May, June or July.



Aspidiotus destructor an armored scale, infesting avocado leaves

Control

Apply one of the following in 100 gallons of water: (1) 4-5 quarts of 90-92 percent oil emulsion concentrate; (2) 1 1/2 pints of malathion 5 liquid; (3) 3 quarts of 90-92 percent oil concentrate plus 1 pint of malathion 5 liquid; (4) 2.5 fl oz per gallon of insecticidal soap (this last option is probably safest). When applying Permethrin (Pounce) on scale crawlers, use 8 oz of 3.2 EC per acre.

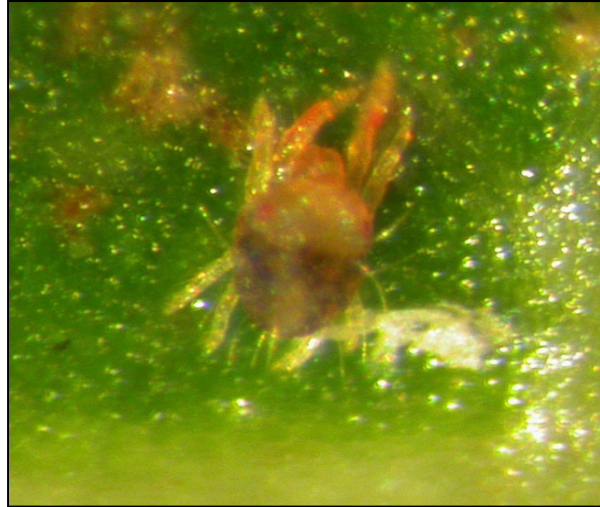
Spider Mites, Oligonychus yothersi (McGregor)

The avocado red mite is a common pest of avocados in Florida. Feeding is first confined to the upper surface of avocado leaves; it is found first along the midrib, then along secondary leaf veins. The areas along the veins become reddish-brown. During heavy infestations, leaves can be covered with mites' cast skins. Damage to the leaf area is regularly observed from October through March, causing up to 30% reduction of photosynthetic activity of the leaves. Leaves affected by this mite regularly drop earlier (45-60 days after infestation) than

leaves that have not been infested. This mite is an occasional pest in some orchards and is seldom observed in others. Periodic inspections are recommended during December, January and February. Control measures may be started when the population reaches 6 or more mites per leaf.

Life Cycle

The eggs are spherical and stalked. Adults have a pinkish color, with their middle area covered by many purplish-brown blotches. The duration of the life stages varies from 14 to 15 days. Females are capable of laying 40 to 50 eggs during their life span.



Avocado Mite



Bronzing caused by the avocado mite

Monitoring and Action Levels

Select 10 trees at random. Observe damage and mite densities using Hand lens. If higher damage is observed near borders or roads and not in the entire grove, apply control only to the first 3 rows. For young trees showing more than 60% bronzing to the leaf area or if the damage is uniform throughout the grove, apply control.

Control

Few miticides are registered for use on avocados when fruit is present. Apply sulfur dust or spray with sulfur using 10 pounds of wettable sulfur per 100 gallons of water, or use oil emulsion sprays made by mixing 3 quarts of 90-92 percent oil concentrate per 100 gallons of water and apply thoroughly. Also see instructions on labels for various brands of oil. Pyrellin (pyrethrins + rotenone) is registered at 1-2 pts/A.

Thrips

Red-banded thrips feed on leaves and fruit. Infested leaves are spotted on the upper surface, with dark, reddish-brown fecal pellets. Heavy feeding on fruit causes a russeted appearance, cracking and decay. Greenhouse thrips damage fruit and tend to feed on the larger and more mature fruit. They are found most frequently where two fruits are in contact or where a leaf contacts the fruit. Fruits are damaged by slight russetting, then by cracks followed by decay.

Monitoring and Action Levels

Check leaves and fruit for red-banded thrips during summer and fall for any developing infestation. Frequent inspections of fruit are recommended for greenhouse thrips beginning in early August and continuing until fruit harvest. The following materials are labelled for use against thrips: malathion (various labels), permethrin (Pounce, Ambush), pyrethrins + rotenone (Pyrellin).

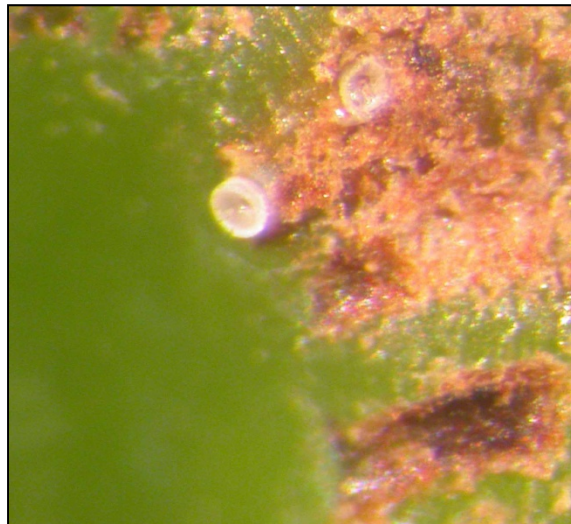


Full-grown larva of the red-banded thrips on avocado: Flower Thrips, *Frankliniella kellyae* and *Frankliniella bispinosa*

Flower thrips are yellowish, about 1.5 mm long, with yellowish legs and two pairs of wings fringed with narrow hairs. Larvae are pale yellow. The small eggs are laid singly in the panicle or fruit tissue. They hatch into larvae which are almost transparent. The complete life cycle takes around 4-5 weeks. These thrips are present during the dry season and are noticeable when flowering starts; infestations can be in huge numbers, causing excessive flower drop or fruit deformation. Infestations on avocado are usually the result of adult thrips invading abruptly and in very large numbers from a large number of hosts, such as mango, litchi and a range of subtropical fruits and other flowering plants. Sampling for thrips requires beating at least 10 panicles selected at random or hanging sticky traps from the tree canopy. The economic threshold for thrip control is unknown.



Adult of a flower thrip



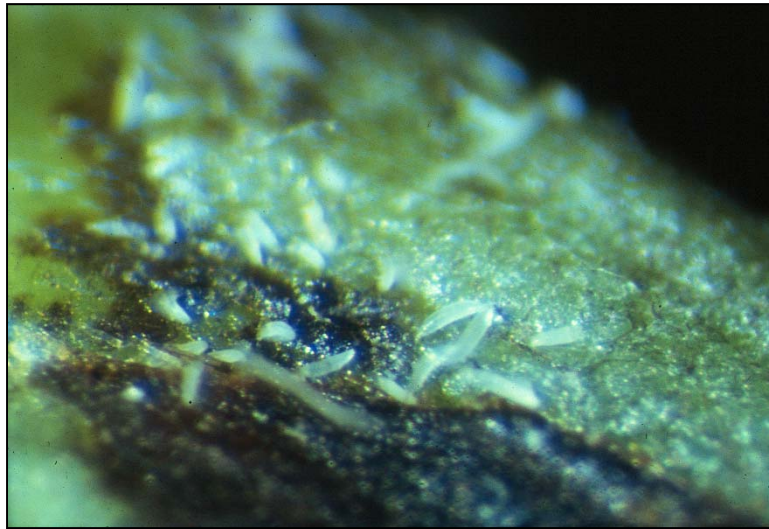
Eggs of flower thrips inserted into an avocado fruit

Action Levels

If excessive flower drop is observed and coincides with numbers higher than 100 thrips per panicle, chemical control might be warranted.

Avocado Bud Mite, *Tegolophus perseiflorae* (K.)

The avocado bud mite is regularly found on buds, but also feeding on developing fruit. The mites cause necrotic spots—subcircular, irregular openings on apical leaves. Feeding by this mite may cause fruit deformation and discoloration. The adult avocado bud mite has a yellowish appearance. Its life cycle has not been determined. Avocado bud mite populations begin to increase from March to May.



The eriophyid mite, *Tegolophus perseiflorae* in avocado buds



Necrosis caused by the eriophyid mite on buds and newly expanded leaves



Random holes on older leaves are the result of feeding of *T. perseiflorae* on unopened buds

Avocado Lace Bug, *Pseudacysta perseae*

The avocado lace bug was considered a minor pest of avocados until severe outbreaks were observed during the 1990's. The adults (Figure 16) are oblong shaped, brownish with numerous, small "lace-like cells" in the thorax and wings; they are observed on the leaf underside, where they feed, extracting juices from the plant. They usually live in colonies, depositing eggs in irregular rows in clusters on the lower-leaf surface. The eggs are covered with a dark, sticky secretion from the adults. The extraction of juices from the foliage causes a gradual localized destruction of the plant cells. The resulting chlorotic areas will become brown (Figure 17), and they are an indication of the presence of the lace bugs. Lace bugs begin a steady build-up in January and March.



Adult of the avocado lacebug



Damage caused by the avocado lace bug

Action Levels

Presence of the avocado lace bug and damage of more than 30% to the foliage would merit application of pesticides. The pesticide M-Pede (soap) provides control of the avocado lace bug.



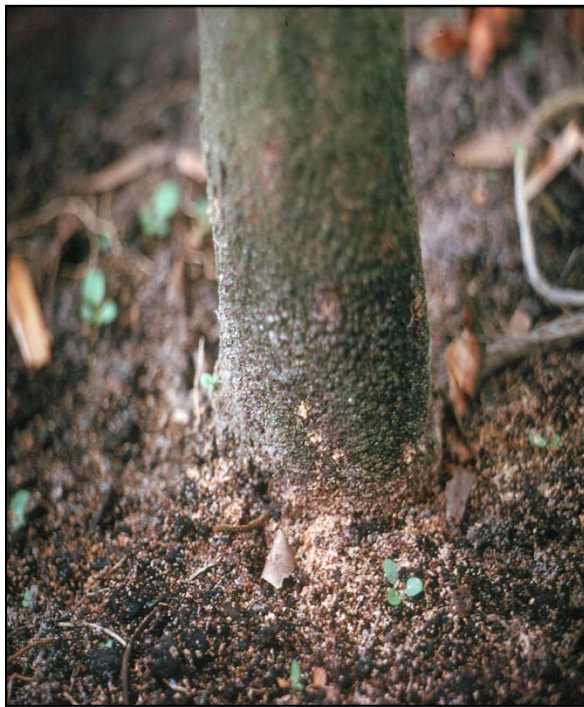
Avocado tree with 40% to 60% damaged by avocado lace bug

Ambrosia Beetles

Ambrosia beetles, *Xylosandrus* sp., burrow into tree trunks, stems and branches. Infested trees are regularly stressed before the attack, but frequently the trees appear to be healthy and vigorous. Fungi accompany the beetles and develop mycelia in tree tissues, which constricts branches and trees. As a result, the portion of the tree terminal to the burrow entrance usually dies. White crystals of sap about the burrow entrances are evidence of infestation. Beetles are brownish to almost black and small, about 1/50 inch in diameter and 1/20 inch long. Eggs and beetle larvae are white and found in the galleries. Larvae feed on the mycelia of "ambrosia" fungi growing in the galleries.



Adults of Ambrosia beetles



Frass exuding from avocado trunks infested with ambrosia beetles

Developed by Jorge Pena, Tropical Research and Education Center, University of Florida, Homestead, Florida.

Disease Management of Avocado

Many diseases are known to affect the avocado tree, leaves, flowers, and fruit. The following is a description of diseases found to be most economically important for South Florida avocado growers. Diagnostic symptoms with pictures and management recommendations are included.

Without following proper control recommendations, these diseases can result in significant loss to both quality and quantity of avocado yield.

- Phytophthora root rot
- Anthracnose
- Cercospora spot/blotch
- Avocado scab
- Powdery mildew

Description of Disease: Phytophthora Root Rot

Phytophthora root rot is the most important disease of avocado, and the limiting factor for production in many regions throughout the world.

Phytophthora cinnamomi Rands attacks and rapidly kills avocado roots in poorly drained soil. Areas with less than 10-foot elevation get high ground water during the rainy season, which favors the pathogen. Severely infected trees show sparse foliage with pale green, often wilted leaves, and dieback occurs in advanced stages. Feeder roots become blackened and decayed, and may be almost entirely absent in advanced stages of the disease.



Severely infected trees with sparse foliage, wilted leaves and dieback caused by *Phytophthora cinnamomi*

Management Recommendations

Be certain to choose only disease-free nursery stock. Do not plant in areas that are subject to flooding. Avoid the introduction of soil or water from infested areas to clean fields on equipment or plant stock. For chemical control, use one of the following pesticides according to the manufacturer's label:

- Aluminum phosphonate salt (Aliette)
 - be certain not to mix with copper
- Phosphorous acid or Potassium phosphite (Fosphite; Helena Prophyt; Agri-Fos)
 - for best results, apply when the leaves are hardening off (e.g., during May in South Florida)
- Mefenoxam (Ridomil Gold EC)

Description of Disease: Anthracnose

Anthracnose (black spot) is the most common rot of mature fruit, but also affects leaves and young fruit.

Colletotrichum gloeosporioides Penx., which lives as a saprophyte or weak parasite on numerous plants in Florida. The fungus is considered a weakly aggressive pathogen found growing on dead or dying leaves, twigs and fruit surface. Infection occurs as fruit ripens and latent infection on fruit can be a problem when the fruit starts to soften if it goes untreated. The fungus infects wounds, rind cracks, or lesions caused by *Pseudocercospora*. Infections are slightly sunken and nearly circular, dark brown to black and vary from tiny to 2 inches in diameter. Spore masses appear pinkish orange when active.



Severe symptoms of anthracnose on leaves and fruit

The salmon-colored spores of *Colletotrichum gloeosporioides* oozing from the black lesions.

Management Recommendations

Wind- and insect-damaged fruit should definitely be treated with copper or azoxystrobin to prevent infections from the fungus. On late maturing varieties—such as Nabal, Taylor, and Choquette—a fall application of fungicide is recommended.

Description of Disease: Pseudocercospora Spot/Blotch

Pseudocercospora spot/blotch is a disease of warm, humid, and rainy climates and, as a result, it is a common problem on avocado in South Florida.

Pseudocercospora purpurea (Cook) Deighton causes leaf spots that are angular in shape, 1/16 inch in diameter, brown-to-chocolate indistinct, and scattered, though often coalescing to patches. Grayish spore-bearing tufts on either leaf surface are present during moist conditions. On fruit, spots are 1/4 of an inch or less in diameter, irregular in shape and slightly sunken. The fruit surface sometimes becomes cracked or fissured. The fungus is carried over on old leaf infections and can get more severe if no control measures are taken. Critical infection periods are May through July, but can go to September. Damage is limited to the rind, but as the rind cracks other invaders move in.



Symptoms of *Pseudocercospora purpurea* on fruit and leaves

The leaf spots are brown, angular in shape, and scattered; the fruit spots are dark brown to black, irregular in shape and slightly sunken.

Management recommendations

Pseudocercospora is controlled readily by timely applications of copper or azoxystrobin sprays. Be careful to cover both foliage and fruit. Application in early May and June gives effective control on varieties maturing in summer and fall. A third application is recommended in mid July for winter-maturing varieties.

Description of Disease: Avocado Scab

Avocado scab can be a serious problem in South Florida, as a result of fruit drop and lowered market value of affected fruit.

Sphaceloma perseae Jenk. is carried over one season to the next on leaf and stem lesions. When moisture and temperature are favorable, the fungus readily infects young, succulent tissues of avocado leaves, twigs, and fruits, forming the characteristic scab lesions in which spores are produced. These spores are readily spread through the grove by wind, rain, dew, and most likely insects. Young leaves are susceptible, but become resistant once they mature and the tissues become more hardened. Fruits are extremely susceptible just after the petals fall and become more resistant as they develop. Individual spots on leaves are purplish to dark brown, fading to grayish brown with age. They are visible on both surfaces and often the center weathers away to leave small, irregular holes. Infection on the underside of leaves is confined mainly to the midrib and veins. On fruits, the spots are at first raised, circular to oval, and dark brown to purplish brown. They are scattered, but many coalesce to form irregular extended areas that often cover the entire fruit surface. Eating quality is not impacted, but under severe infection the fruit is very unattractive. Varieties vary in susceptibility to scab. Lula is the most susceptible commercial variety. Fuschsia, Pollock, Booth 1 and Waldin are quite resistant.



A close-up of scab symptoms on fruit and entire fruit surface covered with symptoms of scab caused by *Sphaceloma perseae*.

The raised, circular to oval, and dark brown to purplish brown spots that appear scattered.

Management recommendations

Copper fungicides seem to give good control and Folpet is also labeled for controlling avocado scab. The *Pseudocercospora* spray program works for scab, but if you're growing Lula it requires 3 additional sprays timed as follows: just as the bloom bud opens (late January); near the end of the main bloom period (mid February-March); and 3-4 weeks after all the fruit have set in a normal season.

Description of Disease: Powdery Mildew

Powdery mildew is considered by most to be a minor disease problem, but too often it becomes serious enough to warrant chemical sprays.

Oidium sp. frequently occurs on avocado foliage. It can become serious on untreated trees if favorable conditions persist. Infections on young leaves appear as dark green areas with a powdery, white, spore-bearing growth on the undersides. Underside of infected areas on mature leaves is generally purplish brown and covered with white, powdery growth. The upper side of leaves has a yellowish-green discoloration.



Symptoms of powdery mildew on leaf

The chlorotic (yellow) spots on the upper side of the leaf and powdery growth of an *Oidium* sp. on the underside causing necrosis (dead tissue).

Management recommendations

Be certain to scout trees for symptoms when conditions are cool and humid, especially during early spring in South Florida. For chemical control, apply sulfur fungicides according to the manufacturer's label.

Additional information

Pesticides labeled for Avocado- <http://crane.ifas.ufl.edu>

Florida Extension Plant Diagnostic Clinic- <http://treclinic.ifas.ufl.edu>

Additional Pesticide info can be found at CDMS- <http://www.cdms.net/manuf/manuf.asp>

Developed by Aaron Palmateer, Tropical Research and Education Center, University of Florida, Homestead, Florida.

Site selection for avocado groves

Site selection for avocado groves outline

1. Soils
2. Elevation
 - a. Surface water
 - b. Ground water
3. Bedding and mounding
4. Row orientation
5. Wind breaks

Soil characteristics of the production area of South Florida

Krome

1. 0-7 inches very gravelly loam
2. 7+ inches weathered bedrock
3. 15-20% clay at 0-7 inches
4. Permeability (drainage fast)
5. 0-7 inches, 0.6-2.0 in/hr
6. 7+ inches, 2.0-20 in/hr
7. Water holding capacity
8. 0.08-0.12 inches/inch
9. Soil pH, 7.4-8.4
10. 3-10% organic matter
11. On average the water table is at 40-60 inches below the soil surface.

Chekika

1. 0-5 inches very gravelly loam
2. 5+ inches weathered bedrock
3. 15-20% clay at 0-5 inches
4. Permeability (drainage fast)
5. 0-5 inches, 0.6-2.0 in/hr
6. 5+ inches, 2.0-20 in/hr
7. Water holding capacity
8. 0.08-0.12 inches/inch
9. Soil pH, 7.4-8.4
10. 3-10% organic matter
11. On average the water table is at 12-36 inches below the soil surface.
12. Generally found in lower elevation areas (west and south).

Soils and elevation

- In our area the surface and ground water are one in the same (i.e., connected).
- Drainage depends upon depth to water table and varies with management and rainfall.
- Permeability is generally good if the water table is lowered.

Recommendations:

- Plant in areas with elevations 7 ft and above; higher is better.

- Avocado groves already subjected to flooding and tree damage/death should be avoided or strongly considered for planting of another crop (e.g., mango, guava) or other use.

Low areas with potential for flooding

- In general, avocado trees are intolerant of excessively wet or flooded soil conditions.
- Presence of *Phytophthora cinnamomi* (root rot) in conjunction with wet soil conditions causes a rapid decline/death of the trees.
- Symptoms include:
 - Leaf and stem wilting
 - Leaf curling, drying, browning (death)
 - Leaf drop
 - Fruit shriveling and drop
 - Tree dieback to tree death
 - Declining trees may put out repeated weak new shoots and leaves and continue to slowly dieback.

Recommendations for slightly low areas

1. Fill in with native rock material (if economically feasible).
2. Form 3 to 5 ft high and 6 ft wide beds.
3. Form individual mounds of 3 to 5 ft high and 6 ft in diameter.

Tree row orientation

1. In general, north-south rows are advantageous for maximum light exposure.
2. However, if the property is longer in the east-west dimension, then rows should be in an east-west direction for maximum efficiency in grove operations.

Wind breaks

Positives

1. Affords some wind protection to trees (especially young trees).
2. There may be some early tree growth response.

Negatives

1. Takes up land area.
2. Roots may be invasive and compete with avocado trees for nutrients and water.
3. Wind break trees will compete for light with avocado trees adjacent to them.
4. Trees may topple into the avocado grove, causing additional storm damage to trees and the irrigation system.

Summary

1. The most important site selection consideration is land elevation—higher is better. Lowlands <7 ft should be avoided if possible.
2. Bedding or mounding may improve plant survival in some slightly marginal areas, i.e., only slightly low.
3. North-south row orientation is best.
4. Temporary wind breaks may be of some benefit for young tree growth.

Avocado cultivar selection

Considerations in selecting an avocado cultivar

1. Production (yield): Inherent predisposition for high yields of good quality fruit.
2. Flower type (A or B): Cultivars with known flower behavior allow for optimizing the layout of A-and B-type avocado cultivars and subsequent high yields.
3. Season: Florida has early, mid- and late-season cultivars; each season has its advantages and disadvantages.
4. Fruit quality: Selection of high-quality cultivars is necessary for optimizing marketing of Florida avocados. Quality parameters include:
 - a. Size: Florida is known for production of high-quality large fruit in contrast to the very small ‘Hass’ types which predominate in most other production areas.
 - b. Shape: Influences packing characteristics and cultivar identification.
 - c. Eating characteristics are a conglomerate of color, texture, olfactory, and flavor.
5. Storage life and shipping characteristics influence harvest through postharvest handling. Cultivars with tolerant handling characteristics (e.g., rough handling), high disease resistance postharvest, long storage tolerance, and even ripening are best.
6. Disease resistance in the grove and during storage enhances marketability.
7. Marketability characteristics include season of availability, fruit quality, and storage and shipping characteristics.

Suggested early season cultivars

Cultivar	Yield ¹	Flower type	Size ² / rating	Shape	EC ³	Disease rating, C/S ⁴
Dupuis	L-M	A	M-L/ good	Attractive, obovate	E	R/R
Simmonds	H	A	M-L/ good	Attractive, obovate to slightly pyriform	G-E	R/R
Donnie	M-H	A	L/ good	Attractive, oval to obovate	G	R/R
Bernecker	H-VH	A	M-L/ good	Attractive, oval to obovate	G-E	R/R
Miguel	VH	B	M-L/ good	Attractive, oval to obovate	G-E	MS/R
Nesbitt	H	A	M-L/ good	Attractive, obovate to slightly pyriform	G	R/R

1, Yield: L, low; M, moderate; H, high; VH, very high.

2, Size: S, small; M, medium; L, large; VL, very large.

3, EC, eating characteristics; E, excellent; G, good; F, fair.

4, Psuedocercospora/scab resistance; R, resistant; S, susceptible; MS, moderately susceptible.

Suggested mid-season cultivars

Cultivar	Yield ¹	Flower type	Size ² / rating	Shape	EC ³	Disease rating, C/S ⁴
Beta	VH	B	M-L	Attractive, oval to obovate	G	R/R
Melendez	H	B	L	Attractive, oblong to pyriform	E	- /R
Semil 34	H	A	M	Attractive, slightly pyriform	G-E	- /R
Semil 43	H	B	M	Attractive, oblong	G-E	- /R

1, Yield: L, low; M, moderate; H, high; VH, very high.
2, Size: S, small; M, medium; L, large; VL, very large.
3, EC, eating characteristics; E, excellent; G, good; F, fair.
4, Psuedocercospora/scab resistance; R, resistant; S, susceptible; MS, moderately susceptible.

Suggested late-season cultivars

Cultivar	Yield ¹	Flower type	Size ² / rating	Shape	EC ³	Disease rating, C/S ⁴
Monroe	H	B	L/good	Attractive, oval	E	S/MR
Choquette	M-H	A	L/good	Attractive, oval	G-E	S/MR

1, Yield: L, low; M, moderate; H, high; VH, very high.
2, Size: S, small; M, medium; L, large; VL, very large.
3, EC, eating characteristics; E, excellent; G, good; F, fair.
4, Psuedocercospora/scab resistance; R, resistant; S, susceptible; MS, moderately susceptible.

Suggested niche market cultivars

Cultivar	Yield ¹	Flower type	Size ² / rating	Shape	EC ³	Disease rating, C/S ⁴	Cultivar
Russell	H	A	L/ good	Curiosity, elongated pyriform	G	R/R	Difficult to pack; good price in ethnic market
Catalina	L-M	A	L/ good	Attractive, obovate to pyriform	E	R/R	Low yields; good price in ethnic market.
Kampong ⁵	M-H	B	M-L	Attractive, round	E	R/R	Season: November-February.

1, Yield: L, low; M, moderate; H, high; VH, very high.
 2, Size: S, small; M, medium; L, large; VL, very large.
 3, EC, eating characteristics; E, excellent; G, good; F, fair.
 4, Psuedocercospera/scab resistance; R, resistant; S, susceptible; MS, moderately susceptible.
 5, No commercial experience.

Potential very-late-season cultivars

Cultivar	Yield ¹	Flower type	Size ² / rating	Shape	EC ³	Disease rating, C/S ⁴	Comments
Alfa ⁵ (patented)	L-M?	A	M-L	Attractive, ovate to obovate	E	R/R	Very late season: March-April.
April ⁵ (patented)	H	B	M-L	Attractive, obovate	E	R/R	Very late season: March-April.

1, Yield: L, low; M, moderate; H, high; VH, very high.
 2, Size: S, small; M, medium; L, large; VL, very large.
 3, EC, eating characteristics; E, excellent; G, good; F, fair.
 4, Psuedocercospera/scab resistance; R, resistant; S, susceptible; MS, moderately susceptible.
 5, No commercial experience.

Flowering types and pollination: “A” and “B” type avocados

Complementary, synchronous dichogamy. Interplanting A and B type avocado cultivars is necessary for optimum fruit production of many cultivars. A few cultivars—such as ‘Taylor,’ ‘Waldin’ and ‘Lula’—do not appear to need cross pollination to be productive (these cultivars are not recommended for commercial planting).

- Individual avocado flowers open twice over a 2-day period—first functionally as female, and second as functionally male.
- Each avocado cultivar or seedling displays a consistent pattern to their sequence of female and male opening.
- Avocados are insect pollinated (bees, flies).
- However, there is some evidence that under certain environmental conditions (warm, subtropical) some cultivars (WI types) are wind pollinated.
- Cool temperatures can result in overlapping of female/male opening.
- Cool nights with warm, overcast days may result in overlapping.
- High temperatures may reduce the length of the flowering cycle.

Pollination

- Generally, complementary flower types are inter-planted to “improve” fruit set and crop yields.
- For example, with ‘Dupuis’ (A) it has been observed that yields improve when it is planted with ‘Hardee,’ ‘Beta,’ and ‘Miguel’ as B-type pollinators.

Advantages of early-season cultivars

- Historically higher prices during this time, due to fewer avocados in the market.
- Lower fruit production maintenance costs because of fewer spray applications than mid- and late season cultivars.
- Early season harvest usually avoids hurricane season and its potential to defruit trees and cause fruit damage.
- Many early season cultivars have good disease resistance.
- Tree size control optimum because they may be topped and hedged early, allowing the tree to vegetatively recover and bloom the following spring.

Advantages of mid- and late-season cultivars

- Market continuity: continuous Florida fruit in the marketplace.
- Most mid- and late-season avocados are good-quality Florida avocados.
- Potential for very early spring (very late cultivars) Florida fruit in the market, which would receive higher prices.

Disadvantages of mid- and late-season cultivars

- More fungicide applications and higher fungicide costs.
- Potential loss of fruit due to tropical storms or hurricanes.
- Potential cold/freezing damage.

- Historically, prices are lower unless for very late cultivars.
- Tree size management may be more difficult because pruning in late fall and winter causes trees to potentially remain vegetative the following spring and not flower and fruit.

Advantages of niche market cultivars

- Good to high quality cultivars.
- Usually command higher prices than common cultivars.
- Potentially less competition because they are targeting a direct demand niche.
- Potential good prices for very late (March/April) avocados.

Disadvantages of niche market cultivars

- Potentially moderate to low yields of some of these cultivars.
- Must find and maintain specialty markets.
- Potential for overplanting, with subsequent reduction in prices.

Summary

- Florida grows numerous cultivars of avocado. This sometimes makes identification of a Florida-produced avocado difficult.
- Quality of Florida cultivars varies, and planting of improved cultivars is warranted.
- Perhaps one more mid-season and a few improved late and very late or very early season types may be advantageous to the industry.
- Florida is known for its large avocados, and this identity should be maintained to differentiate Florida from the 'Hass' market.

Developed by Jonathan H. Crane, Tropical Research and Education Center, and Carlos F. Balerdi, Miami-Dade Co. Coop. Ext. Service, University of Florida, Homestead, Florida.

Plant spacing and tree size control

Factors to consider with plant spacing

Established groves

1. Climate: The warmer the climate and the longer temperatures allow vegetative growth, the greater the vegetative growth and potential for decreased flowering and crop yields.
2. Current irrigation system setup may interfere with optimum plant spacings and either the irrigation system will need modification or adjustments need to be made to the proposed plant spacing.
3. Cultivar growth, habit and vigor. Some cultivars are more vigorous than others and grow more vegetatively in response to pruning (e.g., 'Lula' vs. 'Booth-8').
4. Size of equipment and ease of movement. In general, 6 to 8 ft row middle is required for efficient movement of grove equipment and harvest.
5. Mechanical and/or hand pruning program. Hand pruning may allow slightly narrower plant spacings than use of mechanical pruners. Intensity (size of wood cut) and frequency (yearly, bi- or tri-yearly) of the pruning program will influence subsequent crop yields. Closer plant spacings generally require more frequent or intense pruning than wider plant spacings.
6. Want to achieve ultimate tree size desired or that is feasible and still maintain production. Some cultivars may be more adaptable to smaller tree sizes and plant spacings than others.
7. Life expectancy of the grove. Groves planted with a purpose or removal in 10 to 15 years may be planted more closely than groves planted with the intention of 15+ year life span.
8. Effect on light exposure. The more closely planted a grove is, the sooner competition for light among trees occurs. Therefore, wider between-row spacings and moderate in-row spacings are more desirable than close between-row spacings.

Proposed groves

1. Climate: Same as above.
2. Proposed irrigation infrastructure/layout: There is an opportunity to match the irrigation system(s) to the plant spacing when establishing new groves.
3. Cultivar growth habit and vigor should be taken into account when deciding plant spacing of new groves.
4. Size of equipment: Same as above.
5. Proposed mechanical and/or hand pruning program. Same as above.
6. Ultimate tree size desired: Same as above.
7. Life expectancy of the grove. If business planning allows for projection of the grove's life, this may allow closer spacings to be utilized or configured for optional widening in the future.
8. Effect on light exposure. In addition to plant spacing, configuration of the planting such as a diamond pattern or a pattern that allows for eventual removal of some trees may be made when establishing new groves.

Climate and plant spacing

In South Florida's humid, subtropical climate of relatively warm to hot temperatures and abundant rainfall from April through October, avocado trees have 2 to 3 potential vegetative flushes:

- After flowering and during fruit set
- During the summer (summer flush)
- After pruning

Thus, there is potential for a substantial increase in the canopy size each year.

Other factors which influence plant spacing

1. During the late fall/winter, tree growth slows or stops, thus reducing the chances for fall/winter flushing. Similarly, dry soil conditions (usually fall/winter/early spring) also limit tree growth.
2. Potential freezing conditions occur from Nov. through Feb., therefore tree size control is important for cold protection practices with high-volume irrigation.
3. From June through November, we have the potential for tropical storms and/or hurricanes—thus a potential for tree damage, toppling, and uprooting; therefore, tree spacing and its effect on tree size and canopy management are critical to minimize the effect of high winds.

Irrigation infrastructure

Established avocado grove

1. With an established high volume overhead or under-tree irrigation system, close plant spacing may interfere with the wetting pattern and negatively affect cold protection practices.
2. The irrigation system may need to be modified to accommodate the desired spacing, thus adding cost to using the system.
3. Plant spacing may affect the irrigation rate and frequency necessary for optimum fruit production.

Re-established grove*

The established irrigation system may:

- restrict or dictate the plant spacing options.
- interfere with movement of grove equipment.
- need to be modified to accommodate the desired spacing, thus adding cost to using the system.
- result in utilizing an undesirable plant spacing and result in excessive tree competition and tree pruning.

*The grove was planted to a different fruit crop previously.

Proposed new groves

1. There is an opportunity to design the irrigation system to the spacing desired.
2. For cold protection, the high volume system should be designed to completely cover (with overlap) the grove.
3. For irrigation and fertigation, a low-volume system may be designed to reduce energy costs and improve irrigation efficiency.

Cultivar growth habit and vigor

1. Upright vigorous growth habit -
 - a. 'Lula' (not recommended for planting)
2. Moderately upright -
 - a. 'Dupuis'
 - b. 'Monroe'
3. Spreading growth habit -
 - a. 'Bernecker'
 - b. 'Beta'
 - c. 'Catalina'
 - d. 'Choquette'
 - e. 'Donnie'
 - f. 'Simmonds'
 - g. 'Marcus'
 - h. 'Melendez'
 - i. 'Miguel'
 - j. 'Nesbitt'
 - k. 'Russell'
 - l. 'Semil 34'
 - m. 'Semil 43'

Effect of light exposure on photosynthesis (sugar/nutrient production)

Adequate light is required for:

- Maintenance and retaining lower productive tree canopy.
- Flower production, fruit set and fruit development.
- Stimulating new shoots and fruiting wood within the lower areas of the tree.

Plant spacing in Florida

1. A general rule of thumb is that the tree height should not be allowed to be more than two times the drive middle spacing. For example:
 - a. for an 8 ft drive middle, the tree height should not exceed 16 ft.
 - b. for a 6 ft drive middle, the tree height should not exceed 12 ft.
2. Range in plant spacings found: 15 to 25 ft in-row; 24 to 25 ft between-row.
3. Recommended: 20 to 25 ft in-row and 25 ft between rows.

Plant spacing and tree density in Florida

In-row spacing (ft)	Between-row Spacing (ft)	No. trees per acre
25	25	69
24	25	72
22	25	79
20	25	87
18	25	96
15	25	116

Close plant spacing

Advantages

- More efficient light interception on a per acre basis and higher production per acre during the first 5-6 years or more.
- More efficient use of fertilizers, pesticides, and irrigation, which is based on a per acre basis.
- Faster canopy closure and reduced weed pressure.
- After a hurricane, potentially more trees remaining.
- Potential faster return on investment.

Disadvantages

- Increased cost of trees (more trees), angoring, and microsprinklers.
- Earlier and increased competition for light, nutrients, and water among plants.
- Potentially, tree size management more critical and difficult, must start earlier, and potential for higher cost.

Moderate to wide spacing

Advantages

- Decreased cost of trees (fewer trees), angoring, and microsprinklers.
- Less competition for light, nutrients, and water among plants.
- Tree size management less critical and less difficult (up to a point), and may be delayed slightly.

Disadvantages

- Less efficient light interception on a per acre basis, and lower production per acre during the first 5-6 years.
- Less efficient use of fertilizers, pesticides, and irrigation, which is based on a per acre basis.
- Slower canopy closure and more prolonged weed pressure.
- Potential slower return on investment.

Avocado growth habit

- Architecturally, avocado is a polyaxial species with a synchronous growth pattern characterized by alternating root and shoot growth and vegetative and reproductive growth separated in time.
- Fruit generally held on the outer 3-5 ft of canopy.

1. Tree training and tree size control

- Training of young trees is not common but is important, especially in close spacings. Heading back to force lateral development and removal of misplaced and V-crotched limbs will reduce problems later.
- Tree size control may be maintained by hand pruning and/or mechanical machinery (more common).
- Suggested tree size (14 to 16 ft) varies with environment, plant spacing, available technology, frequency of hurricanes, and cultivar growth habit and harvest season.
- Reasons for tree size control: maintain light levels and lower productive canopy, improve crop production by increasing the number of shoots, increase air movement through the canopy and therefore reduce disease incidence, facilitate grove traffic, and reduce the potential for hurricane damage.

2. Tree training and tree size control

- In general, the warmer the climate, the more vigorous the tree growth.
- In general, for terminally bearing species, pruning of large diameter stems/wood results in excessive and continuous vegetative flushing.
- The wider the spacing, the longer it takes to require regular pruning. The closer the plant spacing, the earlier a pruning program is required and the more frequently trees are pruned.
- In general, designing a pruning program for closely spaced trees is more difficult than for more moderately spaced trees, because of the amount of wood necessary to remove during the pruning process.
- In general, designing a pruning program for cultivars with a vigorous, upright growth habit is more difficult than for less vigorous, spreading growth habit cultivars.
- Recommendation for Florida: top trees to 14-16 ft and maintain a 6-8 ft middle.
- Recommendation for Florida: hedge trees at a 5 to 10 degree angle (wider at the bottom).

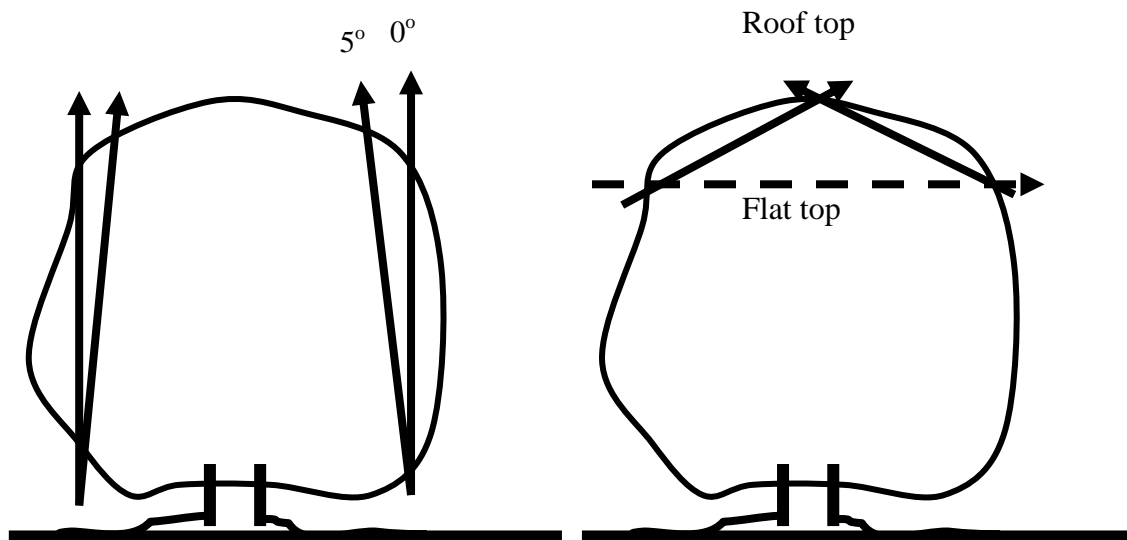
3. Tree training and tree size control

- There is more (and sufficient) time for early-season cultivars pruned immediately after harvest to mature the vegetative flushing after pruning than for mid- and late-season cultivars.
- Recommendation is cultivar dependent: prune early-season cultivars immediately after harvest (some mid-season cultivars too), and for mid- and late-season cultivars design a program of periodic pruning, e.g., every third row canopy side every third year, top every third year.
- Selective pruning to thin out inner canopy limbs will increase light penetration, help maintain the lower productive canopy, may re-establish production on the inside lower areas of the tree, and improve air movement to reduce fruit/leaf disease problems.

Advantages to tree size control and maintenance

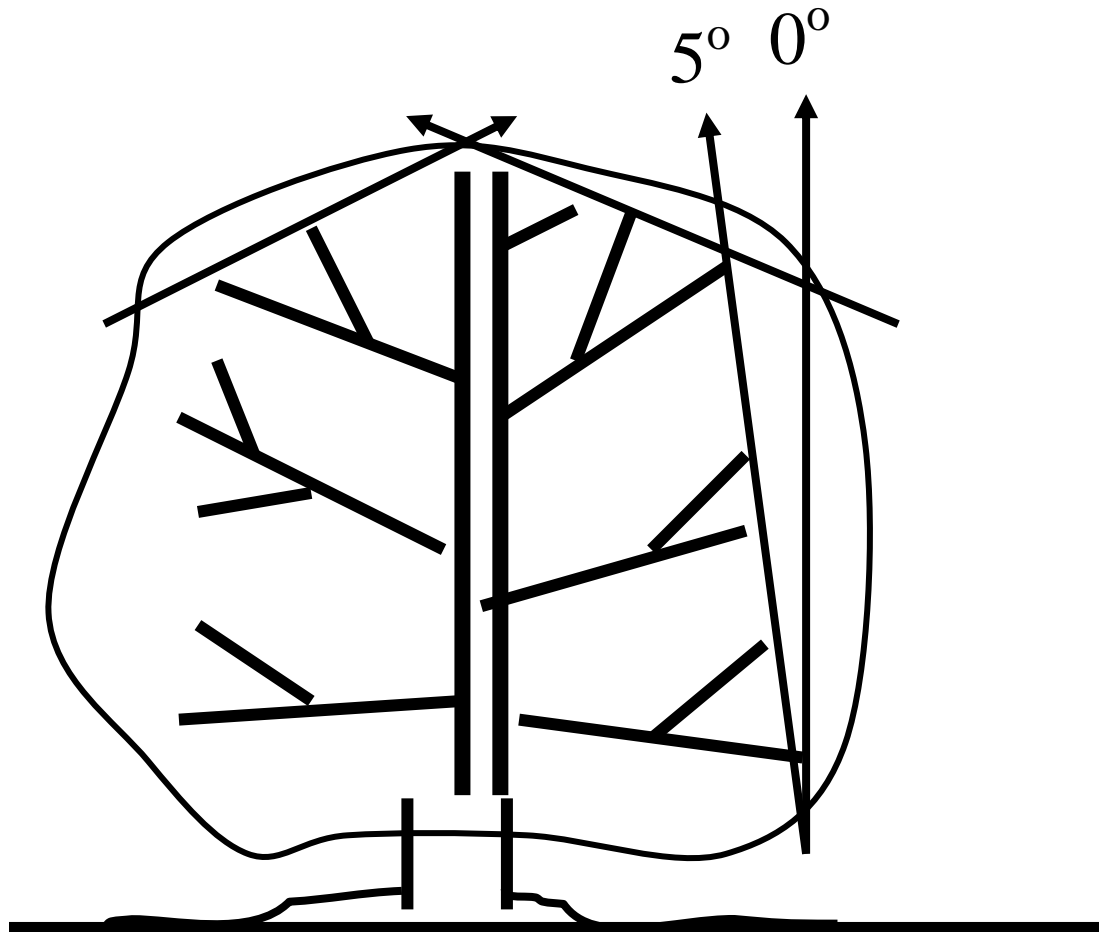
- Maintained and/or increased light levels along the entire canopy and thus potential for greater fruit production.
- Increased and/or maintained light exposure to the lower and inner tree canopy with potential for increased fruit production.
- Improved foliar spray penetration: improved nutrient and fungicide efficacy.
- Increased disease control.
- Decreased wind resistance and potential damage from strong winds. Allows wind to move through the canopy and not push the tree over.
- Improved high volume irrigation cold protection: better coverage of the entire tree canopy.
- Increased ease and efficiency of harvest. Reduced time and effort in harvesting.

Hedging angle and topping options



Selective pruning

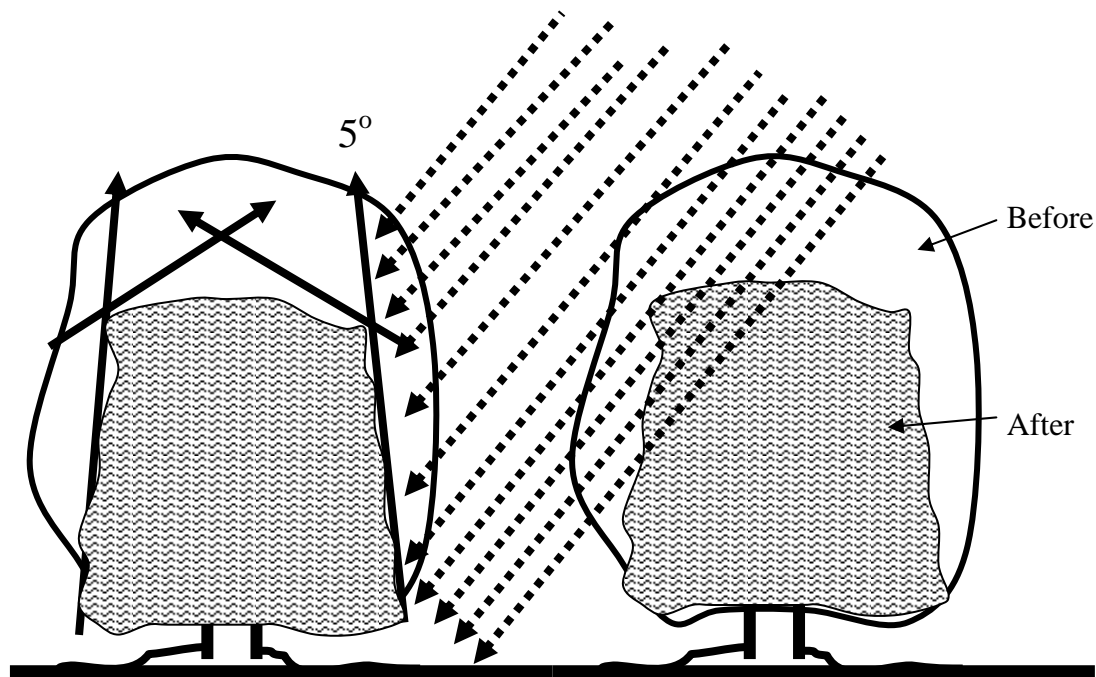
1. Selectively remove secondary limbs back to their origin to limit tree height and spread.
2. Open up the inner canopy to maintain or increase light penetration within the canopy.
3. Again, the idea is to slightly taper the canopy to increase light levels and maintain a lower and inner canopy.



Tree size control and maintenance

Selective pruning and rejuvenation of the inner and lower canopy

- Maintenance of the lower tree canopy depends upon the tree height, light intensity and number of hours of light per day, and number of days of light exposure.



Rejuvenation of inner/lower canopy

1. Purpose: to re-establish fruit production through re-establishing a “new,” lower canopy and smaller tree.
2. Entails severe cutting back to major limbs (hatracking) or to a stump with or without “nurse” limb.
3. Crop production begins in 2-4 years depending upon cultivar. However, with nurse limb some production is maintained.

Hurricanes and avocado tree size

A survey post Hurricane Andrew of 5 groves

- 2 to 80 acres in size
- 10 to 46 years old
- 15 to 25 ft in height prior to the storm

Found

1. 87% of the trees survived
 - a. 10% toppled
 - b. 10% stumped
 - c. 67% standing
2. 13% of the trees destroyed
3. The percentage of standing trees increased with tree age and decreased with tree height.

Rejuvenating non-productive avocado groves

A 4 year avocado rejuvenation research project

34-year-old 'Lula' and 'Booth 8' trees

1. 'Lula' >40 ft tall; 'Booth 8' >25 ft tall
2. 20 ft x 20 ft spacing
3. Lower 1/3 to 2/3 canopy lost
4. <1 bu/tree yield (~108 bu/A)
5. 'Booth 8' trees were topped at 9' (12'+TR), 16'+TR, 22'+TR, and 22' (TR=every other tree removed). Treatments were applied in March.

Results for 'Booth 8'.

Trt*	Yield yr 2 (bu/A)	Yield yr 3 (bu/A)
9' (12'+TR)	0	130
16'+TR	140	329
22'+TR	178	286
22'	119	130
*, Crop production resumes 18 months after pruning.		

6. 'Lula' - Topped at 9' (12', 14'+TR), 11' (16'+TR), 22'+TR, and 22' (TR=every other tree removed). Treatments were applied in March.

Results for 'Lula'.

Trt*	Yield yr 3 (bu/A)	Yield yr 4 (bu/A)
9' (12', 14'+TR)	0	43
11' (16'+TR)	0	86
22' (22'+TR)	0	119
22'	0	108
*, Crop production resumes on the 4th year after treatments.		

Economic analysis for ‘Booth 8’ found

- Highest positive returns from 16'+TR and 22'+TR.

Economic analysis for ‘Lula’ found

- Highest positive return from 22' trt only.

Avocado crop production in Florida

1. Young trees begin to produce on a commercial scale after 3 to 4 years.
2. Historically, the recent industry average (all reported groves) has been ~200 bu/A or 110 lbs per tree. The range has been less than 55 lbs to close to 400 lbs per tree (~90 bu/A up to ~600 bu/A).
3. Yields from mature trees should average 110-165 lbs per tree; however, 275-385 lbs per tree are possible.
4. There is a biannual cycle of higher and lower (“on” and “off”) production years in Florida.

Summary

1. Plant spacing has a profound effect on tree size management strategies and potential crop yields.
2. Tree size management is necessary to maintain and/or improve crop production, improve the efficiency of foliar spray applications and fruit harvest, and reduce potential damage from high winds.
3. Tree size management may be done mechanically and/or by hand.
4. Rejuvenating non-productive groves should be conducted in stages and take into consideration the ultimate tree size management strategy to maintain production.

Developed by Jonathan H. Crane, Tropical Research and Education Center, and Carlos F. Balerdi, Miami-Dade Co. Coop. Ext. Service, University of Florida, Homestead, Florida.

Quality management for Florida avocados

Introduction

In the past decade, the number of separate food items in produce departments has increased to well over 500, a reflection of the changing consumption patterns of American consumers. Tropical fruits are now commonly found in supermarkets from Atlanta to Omaha to Anchorage. Competition in produce departments, however, is intense due to the number of choices of products and the availability of products from other production areas. For these reasons, several commodity groups have initiated “value-added” programs in recent years to provide a differentiated product that the consumer can readily identify.

Successful programs have centered on identification of a “premium-quality” product. California growers have taken the lead in this area for many commodities, including stone fruits and avocados. For example, avocado growers initiated a “Ripe-tonight” program several years ago, which involved treating the avocados with ethylene gas to hasten ripening. The implementation of a premium-quality program involves careful coordination of all the steps from production through harvest, packing, cooling, and distribution operations. In order to be successful and develop consumer demand, the crop must consistently meet minimal acceptability standards.

Florida avocados can be marketed as a premium-quality product. Avocados are unique among fruits in that they do not begin to ripen until picked. However, this convenience creates difficulty in marketing avocados with uniform ripeness, since the fruits ripen at differing rates, depending upon the stage of maturation at harvest and variety.

Definitions

Horticultural Quality

Horticultural quality is assessed by those characteristics which consumers associate with a particular commodity, such as:

- Flavor/aroma
 - Sweetness (mango, strawberry)
 - Tartness
- Texture
 - creaminess (ripe avocado, canistel)
 - tenderness (snap beans, sweet corn)
 - crispness (carrots, celery)
 - juiciness (watermelon)
- Freedom from defects such as blemishes, mechanical injury, disorders, diseases and shrivel
- Nutrition (see Table on next page)

Table 1. Nutrient value of raw Florida avocado fruit (3.5 oz or 100 g of fruit). (Crane et al., 2001)

Constituent	Approximate value	Constituent	Approximate value	Constituent	Approximate value
Water content	80%	Carbohydrate	8.91 g	Phosphorus	39 mg
Calories	112 kcal	Total dietary fiber	5.3 g	Potassium	488 mg
Protein	1.59 g	Calcium	11 mg	Sodium	5 g
Fat	8.87 g	Iron	0.53 mg	Vitamin C	7.9 mg
Cholesterol	0.0 mg	Magnesium	34 mg	Vitamin A	612 IU

Horticultural Maturity

Horticultural maturity marks the stage of development when the commodity possesses the quality parameters demanded by the consumer (green vs. ripe mango; pickling vs. slicing cucumbers).

Ripening

Ripening is the process in which fruits attain reasonable aesthetic and/or food quality. Fruits are classified into two groups, depending on the ripening pattern.

- Climacteric – upon completion of growth, these enter a distinct ripening phase that can continue after harvest (avocado, banana, mango, guava)
- Non-climacteric – must remain attached to the plant until ripe (lime, orange)

Main Causes For Postharvest Loss

- Mechanical injury has been determined to be the leading cause of quality loss at wholesale and retail levels for several crops. Injuries accelerate ripening, senescence (aging) and the growth of pathogens. Types of mechanical injury include bruising from impacts and compression, abrasion, cuts and punctures.
- Senescence due to ripening, moisture loss, decay.

Harvest, Handling and Cooling Operations

The goal of postharvest handling is to maintain quality while minimizing losses during the series of handling steps from harvest until consumer level. Postharvest losses can be minimized by careful harvest, timely transport to packinghouse, rapid cooling (precooling), consistent grading, packing into appropriate containers, and palletizing.

Avocado harvest dates are regulated by the Florida Avocado Administrative Committee (<http://www.ams.usda.gov/FV/mocommodities/915.htm>). Harvest dates are set according to variety.

Avocados should be cooled to appropriate temperature (dependent upon type) as soon as possible after harvest. Proper cooling involves rapid removal of 7/8 of the field heat during the cooling operation. Hydrocooling is the most efficient cooling method, and under ideal conditions can remove field heat within 30 minutes. Forced-air cooling can also be used, although it is slower and may cause some moisture loss. The lowest safe storage temperatures are 54°F (13°C) for West Indian types and 40°F (4°C) for most other Florida varieties. Maintaining relative humidity at 85% to 90% will also reduce moisture loss during handling and shipping. Storage below these temperatures leads to development of chilling injury, which is characterized by a browning or darkening of the skin and/or grayish-brown discoloration of the flesh.

Other Postharvest Treatments

Ethylene Pretreatment for Uniform Ripening

A series of experiments were performed during the 1998-99 production season to determine the effects of postharvest application of ethylene gas on avocado ripening and fruit quality (Jeong et al., 1999). These preconditioning treatments were tested on early-season ('Simmonds'), mid-season ('Booth 7') and late-season ('Monroe') varieties. Overall results indicated that avocados from preconditioning treatments ripened more uniformly and quickly than those from ungasped treatment (control). Although the peel of gassed fruits was significantly more yellow than that of ungasped fruits, the pulp of preconditioned fruits had acceptable appearance and was palatable. There were no significant differences in dry matter content or oil content of the pulp during fruit ripening due to gassing. It was not possible to estimate pulp oil content using dry matter content, due to wide variability of oil content between individual fruits.

From the tests with 'Simmonds' avocados, it was determined that fruits which were gassed immediately after harvest (100 ppm ethylene) had more uniform ripening and better pulp quality than fruit stored for several days prior to gassing. Accelerated ripening by gassing did not prevent chilling injury of fruit stored at 50°F and 53.5°F.

Tests with 'Booth 7' avocados revealed that best fruit quality was obtained with immediate preconditioning at 68°F for 12 hours. After subsequent storage at 54°F in air for 14 days, fruit from this treatment developed no chilling injury, remained acceptably firm and ripened normally. Gassing for 48 hours at 54 or 68°F, followed by ripening at 68°F caused pulp (mesocarp) browning, peel discoloration, non-uniform ripening and stem-end rot.

'Monroe' avocados preconditioned at 68°F for 12 hours, ripened more uniformly and quickly than those that were ungasped. After 14 days storage at 54°F and ripening at 68°F, fruit from this preconditioning treatment had no chilling injury and ripened normally while maintaining marketable fruit firmness.

Delayed Ripening Pretreatment

Several years of studies have culminated in the recent approval of SmartFresh™ (Agro-Fresh, Inc.) for application to fresh horticultural crops. SmartFresh (1-methylcyclopropene, or 1-MCP), has been shown to delay ripening and extend the postharvest shelf life and

quality of numerous fruits and vegetables. In particular, apple, tomato, and avocado fruits have shown remarkable results.

Avocado softening and loss of green color was delayed through the use of SmartFresh compared to untreated fruit (Huber et al., 2003). Application of 400 parts per billion for 12 hours delayed softening and ripening of 'Simmonds' avocado fruit (Figure 1), giving it nearly twice the time before reaching the full, ripe, edible stage. As shown in Figure 2, the external color of avocado fruit (shown after 6 days at 68°F) was maintained longer after exposure to 1-MCP.

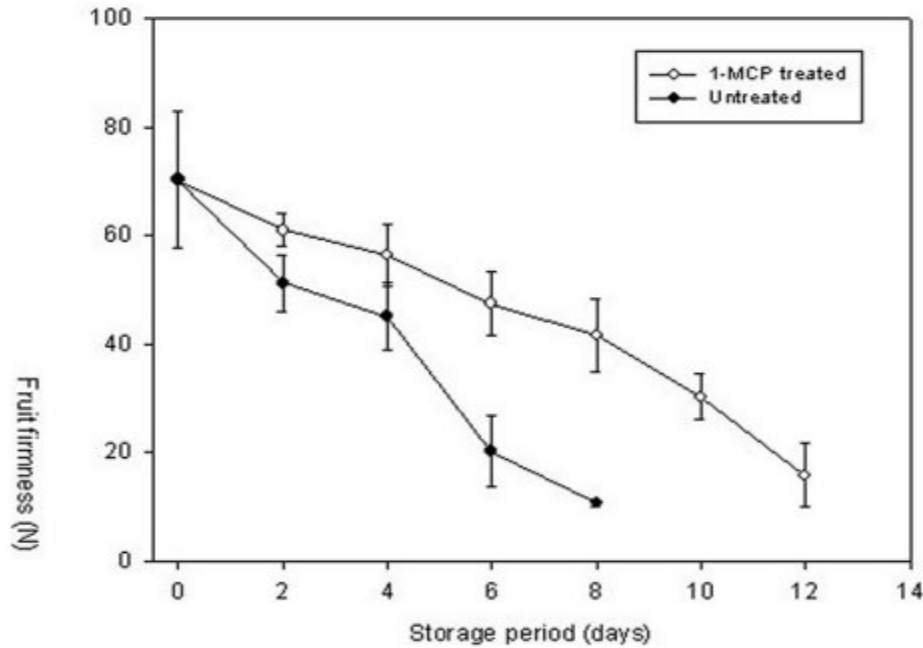


Figure 1. Fruit firmness (N) of 'Simmonds' avocado fruit stored at 68°F following SmartFresh treatment (450 parts per billion, 68°F for 24 hours)



Figure 2. Simmonds avocado fruit 6 days (68°C) after treatment with SmartFresh (Huber et al., 2003)

References

Crane, J.H., C.F. Balerdi, and C.W. Campbell. 2001. The Avocado. Circular 1034. The University of Florida/IFAS. <http://edis.ifas.ufl.edu/MG213>.

Huber, D.J., J. Jeong, and M.A. Ritenour. Use of 1-Methylcyclopropene (1-MCP) on Tomato and Avocado Fruits: Potential for Enhanced Shelf Life and Quality Retention. University of Florida/IFAS. HS-914. <http://edis.ifas.ufl.edu/HS151>.

Jeong, J., S.A. Sargent, D.J. Huber and J.H. Crane. 1999. Technical Feasibility of Instituting a Preconditioning Program for Florida Avocados. Final Report submitted to the Florida Lime & Avocado Administrative Committee.

Developed by Jonathan H. Crane, Tropical Research and Education Center, and Carlos F. Balerdi, Miami-Dade Co. Coop. Ext. Service, University of Florida, Homestead, Florida.

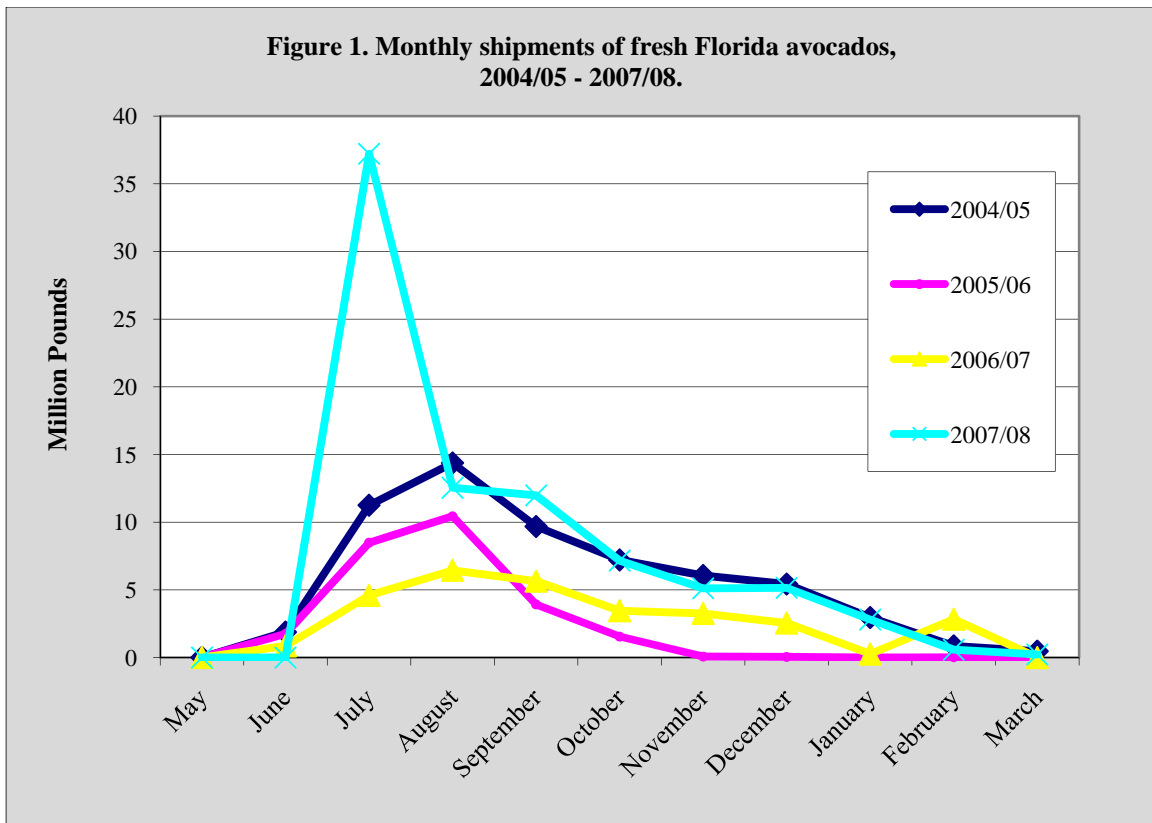
Marketing Opportunities

Florida avocado marketing activities are administered by the Avocado Committee, under the USDA marketing order section 915. This committee sets and implements marketing regulations for the industry. Most regulations focus on quality grades, shipping containers, and weights. Florida avocados are packed in differently sized containers, including a 6-14 count in one layer box called a flat, and boxes of 14-36 counts in two layers. The minimum weight for a flat is 12 pounds, and 24 pounds for a two-layer box. Containers of 33 and 31 pounds are sometimes used as well.

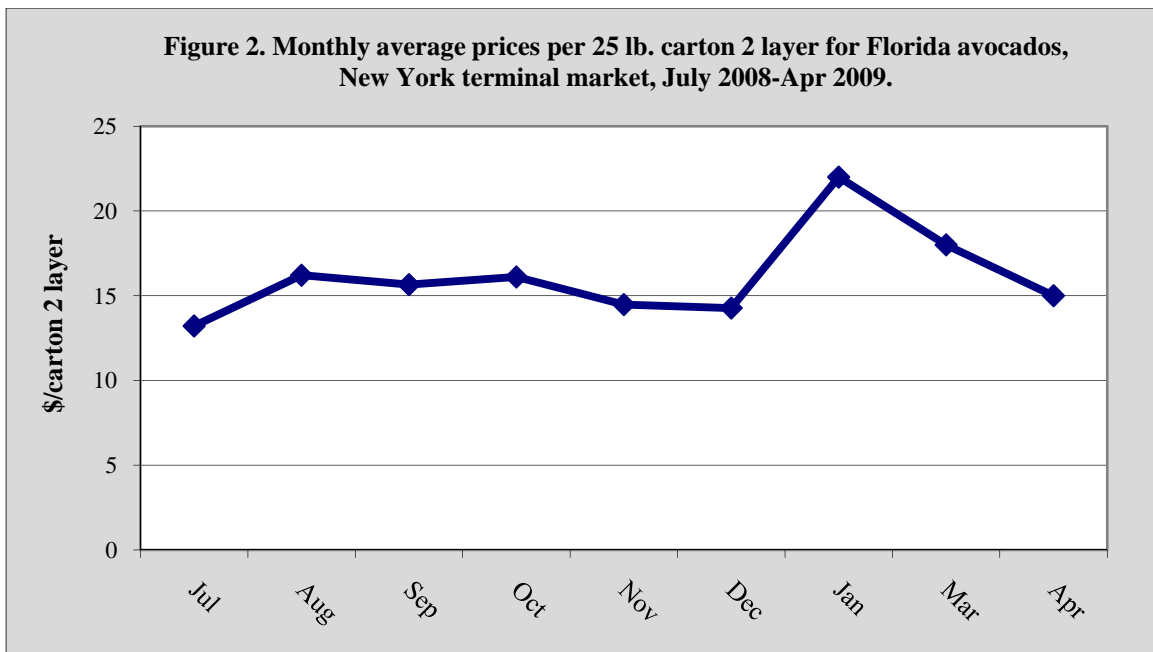
Most Florida avocados are handled by local packinghouses, packed according to the Florida U.S. Combo various Greenskin varieties grades in flats and boxes, and shipped primarily to wholesalers and retailers on the East Coast of the United States. The Florida avocado season starts in May with very little volume (Figure 1). The volume continues to increase until mid-August when it reaches its peak, after which there is a gradual decrease in shipments until March of the following year, when the season ends. This seasonal shipment pattern remains the same for most years, but there is some variation which is usually the result of weather conditions affecting the start of blooming.

Figure 2 shows the monthly average prices per carton 2 layer for Florida avocados in the New York Terminal market for the July 2008 to April 2009 period. Growers usually receive approximately 60 percent of the terminal market price. Like other commodities, the avocado market follows the laws of supply and demand. With the start of the season, when less volume is shipped, prices are higher; and as the volume increases, prices fall. Based on the pattern of shipments and prices obtained in the market, significant gains can be made if you are able to exploit the “window of opportunity” by producing early and late varieties. An alternative strategy would be to organize your production and harvesting in such a manner that equal amounts are shipped throughout the period. On average, your net return will be more than if you were to ship all or the majority of your fruits during the time when prices are at their lowest.

Outside of the above traditional way in which the bulk of Florida’s avocados are marketed, opportunities exist to try and capture more of the final consumer’s food dollar. Capturing more of the final value of a product is certainly a worthy goal for commodity producers; however, it may not be as easy as it appears at first glance. A proper understanding of the marketing chain and the roles of different individuals and firms in it will be helpful to anyone considering value-added marketing strategies. Moreover, any attempts to do so must be in conformity with the Florida Marketing Order mentioned above, since there are strict conditions governing the handling and selling of the fruits and heavy fines for persons found in violation. **WE THEREFORE STRONGLY SUGGEST THAT BEFORE INVESTING RESOURCES IN ANY OF THE MARKETING OPPORTUNITIES WE DISCUSS BELOW, YOU FIRST CHECK WITH THE FLORIDA AVOCADO**



Source: Fruit and Vegetable Market News, USDA



Source: Market News terminal market report, USDA


<http://marketnews.usda.gov/portal/fv>

ADMINISTRATIVE COMMITTEE, located at 18710 SW 288th Street, Homestead, Florida 33030, telephone (305) 247-0848.

A few ways to increase returns include direct marketing, adding value, using niche or specialty markets. Direct marketing has become popular among small producers due to advances in information technologies and consumer concerns about personal health, the environment, and food safety. Direct marketing includes community-supported agriculture (CSA), catalog and Internet sales, and local markets (<http://edis.ifas.ufl.edu/FE569>). Adding value means changing a product from its raw form into a form more convenient for consumer consumption. For example, sliced avocados add value to the raw fruit. Other examples of adding value to fruits include jams, wines, barbecue sauces, ice cream, dried fruits, vinegars, and chocolate-dipped fruits. Niche or specialty markets can be profitable for small operations. Large businesses cater mainly to the largest, most profitable market segments and often ignore smaller, specialty market segments, which can command premium prices. Improving quality seems obvious, but it involves improving both the physical appearance of the good and production conditions (i.e., protecting/preserving natural resources and the environment). Here are some specific marketing opportunities that you might consider as they relate to avocados.

Organic Markets

Major growth in consumer demand for organic produce over the past twenty years



Difficult to follow strict organic practices in South Florida growing climate due to year-round pests and disease.

Photo source: <http://crane.ifas.ufl.edu/av/index.htm>

Organic Production

The organic food industry in the United States has been growing rapidly during the past several years. Annual growth has been about 30% since 1998 and grew 32.6% from 2001 to 2002. The U.S. consumer sales of organic food in 2003 were \$7.9 billion, compared to \$3.7 billion in 1997 (Nutrition Business Journal of San Diego, California). The market for organic foods and beverages is still growing at a rapid pace and is expected to generate sales of \$32.3 billion by 2009, according to a new report from “Packaged Facts,”

<http://www.organicconsumers.org/organic/growing112904.cfm>. Fresh fruits and vegetables are in top ranks among organic food items purchased by consumers.

According to The Packer (September 22, 2003), “as conventional avocados are just reaching a mainstream popularity spike, organic avocados are being successfully marketed as well. Companies such as Eco-Farm Corp. and Pacific Organic Produce, both based in California, have seen dramatic increases in organic avocado sales over the last few years. Eco-Farm Corp has been growing and marketing organic avocados since the 1970s and will be bringing 500 acres of new plantings into production soon. Pacific Organic in San Francisco sold 57,000 boxes of organic avocados in 2002 and imported 100,000 boxes of organic avocados from Chile in 2003.”

Developing the organic market requires an effort by growers, shippers, wholesalers and retailers to educate consumers about the benefits of organic fresh fruits and vegetables. These efforts are costly, but are usually economically beneficial for the industry in the long term. Florida avocados are no exception. Nationally, the two supermarket chains that have invested heavily in organic products are Whole Foods Market and Wild Oats Natural Marketplace. These two companies have several stores in South Florida. Many buyers at local farmers’ markets are looking for organic fresh fruits and vegetables as well.

Farmers’ markets

- **Considerable time investment required**
- **Require timely harvest of avocados**



Photo source: <http://crane.ifas.ufl.edu/av/index.htm>

Farmers’ markets

More and more consumers like to visit their local farmers’ markets and talk to farmers, buy fresh fruits and vegetables, freshly baked bread and maybe buy a few ornamental plants. Many farmers’ markets have cooking demonstrations, games for kids, live music and an array of entertainment activities, which make them a good place for the whole family to visit.

Most successful vendors at farmers’ markets offer a variety of products. Thus, while it may be feasible for an avocado grower to only offer what he or she grows, it may be more profitable to offer a broader array of items if permitted by the farmers’ market rules. Combining avocados with other fruits or produce items will attract more buyers.

The USDA's Agricultural Marketing Services website has a link to contact names, location addresses and hours of operation for farmers' markets found throughout the state of Florida: <http://www.ams.usda.gov/farmersmarkets/States/Florida.htm>. In addition, the Florida Department of Agriculture and Consumer Services' Bureau of State Farmers' Markets has links to State Farmers' Markets, Fairs and Expositions, and Community Farmers' Markets, as well as how-to publications and research articles: <http://www.florida-agriculture.com/markets.htm>.

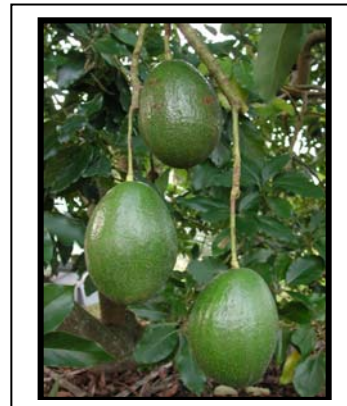
Many South Florida farmers' markets operate only during the months of November to May. Growers may consider these farmers' markets for the late varieties, which are usually available during the months of November to February. It is important to contact farmers' market managers at locations where you consider participating early on, in order to determine hours of operation and arrange for space.

Cooperative Marketing

Possible benefits

- Better price with larger volume of avocados
- Provide member-growers with marketplace bargaining power
- Take greater control of your product
- Find cooperative marketing publications at <http://www.rurdev.usda.gov/>

Photo source: <http://crane.ifas.ufl.edu/av/index.htm>



Cooperatives

Members of a cooperative can usually negotiate better prices because they have larger volumes to sell. They may also have reduced costs for inputs and harvesting. Member-growers save time and reduce wasted products left in the field. Co-op members will need to make a commitment to selling their product through the co-op in order to sustain the overall group effort, and stand to gain a chance for better returns for their crops. A co-op requires skilled financial and time management, and it may be necessary to hire an experienced individual with excellent decision-making skills on a full-time or part-time seasonal basis. The fixed costs associated with operating a farmer's cooperative may make it infeasible if members' aggregate production is relatively small.

You can find information for farmers' cooperatives by following the link <http://palmm.fcla.edu/feol/> to find "Florida Environments Online." Then use this site's path finder entitled "Florida Agriculture and Rural Life" to search for the publication "Co-operative agriculture in Florida: a survey of the development of the cooperative ventures in

Florida and the United States,” by Doyle Edgar Timmons. Although this publication is quite old, it remains an excellent source of cooperative farming information. The entire publication is available for download and printing purposes.

Pick your own markets



- **Advertise with road-side signage, in local newspapers and on the Florida Department of Agriculture and Consumer Service’s web site at <http://www.doacs.state.fl.us>**
- **Provide parking, restrooms, and pole-mounted picking aids**

Photo source: <http://crane.ifas.ufl.edu/av/index.htm>

Pick-your-own markets

A pick-your-own or “U-pick” operation may provide growers with more profits, but it will take considerable management time during the harvest season.

Getting consumers’ attention is essential. U-pick operations need to advertise with roadside signage, in local newspapers and on the Department of Agriculture web site at: <http://www.doacs.state.fl.us>.

U-pick operators will need to provide adequate, safe parking, pole-mounted picking aids, and containers. You may also want to provide restrooms and drinking water. Also, you will need to be there to supervise and help. It will take time to build up your business with repeat customers.

Close supervision will be required to prevent damage to trees and to assure patrons’ safety. Particular attention should be paid to covering irrigation wells and to controlling insects such as fire ants and wasps.

You will also need to investigate if you need to carry extra liability insurance (pick-your-own operations are often outside the bounds of regular farm liability insurance).

Roadside Markets

Location! Location! Location!



Example: <http://www.Redlandriot.com>

Roadside markets

Roadside stands or markets are a type of direct marketing system where a grower establishes a selling place near a roadway and sells directly to consumers. Produce sold in a roadside stand may be grown exclusively in the farm or may be purchased from outside sources. A few growers sell various fruits and vegetables roadside in the Homestead area. The advantage is that you get retail prices and that the revenues are immediate. However, costs are a significant factor. Roadside markets require increased investment in equipment and labor costs associated with running the market. Other significant costs may be the acquisition of a high-traffic location and construction of attractive, but not necessarily fancy, structures and display fixtures. In some cases, it may be feasible to augment produce sales with sales of other food items. For more information on several successful South Dade (Homestead) roadside stands, see: <http://www.Redlandriot.com> and click on “Burr’s Berry Farm,” “Knaus Berry Farm,” and “Robert Is Here.”

To operate a roadside market, growers should learn the state and local legal requirements for establishing one. In addition, a fact sheet by Cooperative Extension Service of Agriculture, Okalahoma State University (OSU Extension Fact, No. 186) outlines the following for a successful roadside market:

- Roadside signs should be placed far enough in advance of the market to attract customers and to provide enough time for them to stop safely at the stand.
- Overripe produce should not be offered for sale unless it is marked and displayed as such.
- If possible, place the stand on or near the farm or orchard to create a farm atmosphere.
- Post prices clearly so all customers are treated fairly and equally. If prices are not posted, many customers will simply pass up the items rather than seek out the sales attendant to determine prices.

- Home-grown produce generally increases sales and the percentage of repeated customers, because it has the connotation of being fresher.
- A pleasant personality with strong emphasis on courtesy, honesty and integrity are helpful in dealing with the public.

Online marketing

- **An individual grower can establish his or her own website**
- **Growers can sell through established online companies**
- **Several growers can establish a jointly owned website**



Examples of established online companies:

<http://www.lycheesonline.com>

<http://www.avocadonow.com>

<http://www.thinkavocado.com>

Photo source: <http://crane.ifas.ufl.edu/av/index.htm>

Online marketing

The Florida Gift Fruit Association (<http://www.fgfsa.com/>) specializes in shipping Florida-grown citrus products nationally and internationally, and many of their member firms may consider adding avocado fruits to their gift baskets. Most gift fruit marketers are selling their products online, and this way they are able to reach out to a wider customer base.

The Florida Department of Agriculture and Consumer Services offers promotional assistance, including website development and hosting, promotional materials, demographic consumer information, current research articles, etc. There is also extensive material available concerning the “Fresh from Florida” Florida Agricultural Promotional Campaign, which can be viewed on <http://www.florida-agriculture.com/marketing/index.htm>.

Some growers sell their produce online using other companies’ websites. The online company receives the order and passes it down to the grower for packing, shipping and handling. Growers pay for the online service. Packages are usually sent via courier services, such as FedEx, UPS or Airborne to customers.

It is also possible that a grower or a group of growers can set up a website and sell their fruits online. Selling online requires availability of a variety of fruits during each season, or a number of avocado varieties to extend the season over a longer time period. Also, selling online requires that growers ship only the best quality product to command a premium price and justify the relatively high shipping costs. Commitment to the ultimate in product quality will enhance the firm's reputation and foster repeat sales.

Export opportunity to Europe

- **Euro may strengthen relative to the dollar**
- **Transportation is readily available**
- **Europe has large numbers of immigrants from the Caribbean and Latin America that know avocados**
- **Willingness of Europeans to try new foods**



Source: <http://crane.ifas.ufl.edu/av/index.htm>

Export to Europe

In recent years, many European countries have received immigrants from Caribbean and Latin American countries. Most of these immigrants are accustomed to consuming the West Indian type avocado in their native countries. These “new” European residents represent a growing market for green-skin varieties of avocados, such as those produced by growers in South Florida. In addition to the market comprised of former residents of the Caribbean and Latin America, indigenous Europeans are known for their willingness to try new and different varieties of fruits and vegetables. They pay good prices and expect good quality fruits. In 2000, France led the world by importing 105,249 tons of avocados, 31.2 percent of total world imports of avocados that year. Key exporters to the French market include Israel, Spain and South Africa, comprising 35, 24 and 15 percent of the market, respectively. Other key importers included the Netherlands, United Kingdom, Japan and Canada (http://www.fas.usda.gov/http/Hort_Circular/2002/02-02/Avocado.htm).

Exporting to Europe is a good option due to a relatively stronger Euro in comparison to the U.S. dollar, and readily available transportation between the U.S. and Europe.

Value-added (fresh-cut)

- **More convenience**
- **Larger fruit size better**
- **Lower fat content for health conscience consumers**



Photo source: <http://www.freshcut.com/mar2005/productshelflife.htm>

Fresh-cut

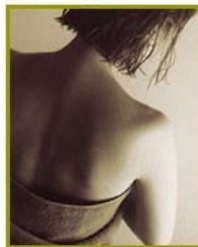
In recent years, there has been a rapid increase in the consumption of “fresh-cut” fruits and vegetables. Fresh-cut produce offers many advantages to the food service industry and to consumers as well. Food service firms have been utilizing increasing quantities of fresh-cut produce because they offer uniform, prepackaged items that require little preparation labor, reduced injuries to preparation personnel (and reduced Workmen’s Comp claims), and significant reductions in waste disposal costs. The ultimate attraction for consumers who buy fresh-cut produce from food retailers is convenience. Meal preparation time can be greatly reduced by the use of fresh-cut produce.

Many varieties of Florida avocados possess two very important characteristics that would enhance their use for fresh-cut products. These characteristics are the relatively large fruit size and the typically lower fat content. The bigger fruit size of the Florida-type avocado will yield more fresh-cut portions per fruit in comparison to the smaller Hass variety. Also, the low fat content of Florida avocados at the food service level may have appeal to chefs and customers because it can be positioned as a “healthier” alternative. As evidence of this potential appeal, one of the local packinghouses has been successfully promoting low fat content Florida avocados.

Rapid browning after slicing of avocado fruit for fresh cut has remained an obstacle for fresh-cut processors. This obstacle is now believed to be solved because of two new formulations developed by the Westport, Conn.-based Mantrose-Haeuser Co., Inc., the makers of the NatureSeal® family of products for fresh-cut produce. NatureSeal for Avocados protects fresh-cut avocados from color, flavor and texture changes for up to two weeks. These formulations may be applied as a dip or as a spray (<http://www.freshcut.com/mar2005/productshelflife.htm>).

Value-added (miscellaneous avocado products)

Everything You Need to Know



have fun...
be natural...
be beautiful!

Discover the beautiful extended uses of California avocados in facial creams, masques, and cleansers. Here you will find a selection of recipes ranging from those derived from ancient secrets to ones used at the most exclusive spas.

SPA avocát

Avocado Body Lotion



Health & Beauty Aids

- Therapeutic hand cream
- Soap & shampoo
- Facial cream & body lotion

Picture sources:

<http://www.avocado-oil.co.nz/>

<http://www.pioneerthinking.com/avocadobeauty.html>

<http://shantimandir.com/poornasamagri/index.php?productID=153&PHPSESSID=d5f413bafa1827ef2e42f90b128c9f7f>

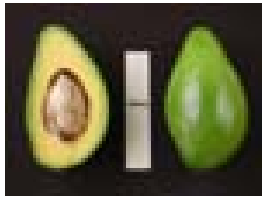


Miscellaneous avocado products

Like many other fresh fruits, avocado is considered a perishable product with limited shelf-life. Processing perishable food items into other forms of consumer products is a way to add value and extend shelf life. An important rationale behind the concept of value-added activities in agriculture is to provide consumers with more choices in how they purchase an agriculturally-based product. In doing so, not only is a larger portion of the agricultural product used (less waste), but it is also likely that consumers will buy more of the agriculturally-based product and generate more income for producers.

Reviewing the Internet, one comes across a variety of avocado by-products that have helped the avocado industries in California and other countries, such as New Zealand and Israel, develop niche market opportunities.

Exotic varieties (Minor cultivars)



Catalina, mid-season



Marcus, mid-season



Gossman, late-season



Reed, late-season



Arue, early-season



Russell, early-season

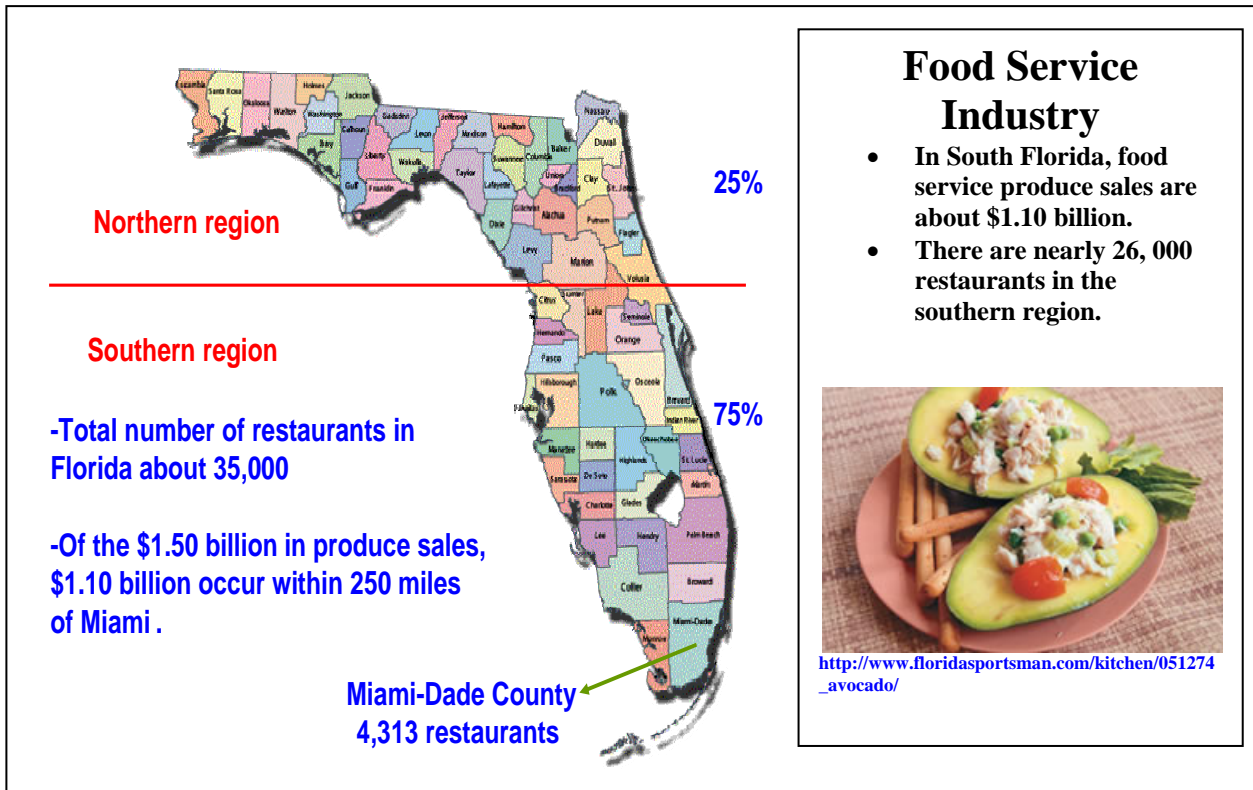
- Good niche markets for specialty items with ethnic populations
- Many of the ethnic products are becoming popular with mainstream consumers.

Photo source: <http://crane.ifas.ufl.edu/av/index.htm>

Exotic varieties

Many growers of other crops are identifying target markets (mostly ethnic groups) that may be interested in more exotic forms of different fruits and vegetables. Ethnic (specialty) produce is playing an important economic role in horticulture production in the United States. Although it appears that growing exotic varieties of fruits and vegetable may be more challenging, consumers are frequently willing to pay premium prices to buy these items. Heirloom tomatoes and many of the exotic Indian and Asian fruits and vegetables are good examples. It is possible that there may be varieties of Florida-type avocados that are considered minor cultivars, but may have some very special value to a particular segment of an ethnic population. It is only by studying these ethnic populations and their native-grown avocado cultivars that our growers may be able to build a niche market and grow these cultivars to fulfill their needs.

As it is with other products, many of the ethnic fruits and vegetables are gaining popularity in the mainstream markets.



Food service industry in South Florida

There are nearly 35,000 restaurants in Florida, and about 26,000 of them are located below a line dividing Florida into two regions, one north and the other south of Orlando. Florida restaurant sales for produce items in 2005 were estimated at \$1.5 billion. Considering that 75 percent of all restaurants in Florida are located below the line (Orlando to the Keys), it is likely that \$1.10 billion in produce sales occur within 250 miles of Miami-Dade County. Developing a strategic marketing plan to sell Florida avocados to the food service industry in this region appears to be a good opportunity for avocado growers, processors and shippers.

Developed by Ray Rafie, Miami-Dade Co. Coop. Ext. Service, Robert Degner and Edward Evans, University of Florida.

Transitioning Out of the Business



For some farmers and fishermen, exiting the business may be the best financial and family option. For some, it may be the only option. Transitioning to a new career, business, or to retirement can be an emotional and complex experience. This is particularly true when financial stress is forcing a change or exit from the business. Some producers and their families may be ready for a change or for retirement, but others may be in the process of being forced out of their business for financial reasons. If you are facing a potential transition out of your business, you should discuss your options and goals with family members, creditors, and financial advisors. You might also seek additional assistance from TAA technical assistance providers.

There are different transition issues that need to be addressed depending on each individual's situation, but some general factors should be considered by most producers or fishermen faced with exiting their business. These include future sources of income, family and emotional well-being, tax and credit issues, and retraining and education opportunities for TAA eligible producers and fishermen.

Future Sources of Income

If you are transitioning out of your business, you need a new means to support yourself and your family. Your source of future income will depend significantly on your stage of life. Your stage in life will determine whether you are willing to start over with a new career or business, seek additional education and training, or plan for partial or full retirement.

Different Business or Career

An earlier section of the TAA technical assistance package, Inventory of Resources and Talents, discussed your skills and resources. This same inventory can be very useful in assessing your opportunities to transition to a new business or career. The education and experience that you have obtained will have a significant impact on the alternative sources of employment and income available. The management, technical and people skills obtained in farming or fishing can often be leveraged into valuable assets for other types of employment or in other businesses.

Farmers and fishermen possess a set of entrepreneurial skills that are valuable when starting a new business. But starting a new business is rarely easy. The statement is frequently made that 80 percent of new businesses are gone within five years. Farmers and fishermen may possess the experience and management skills to give them the edge to overcome the odds when starting a new business, but should still seek advice and assistance. Small Business Development Centers (SBDC's) are located throughout the country and provide help with financial, marketing, production, organization, engineering and technical problems and

feasibility studies. To locate the nearest SBDC, visit <http://www.sba.gov/sbdc/> or call 1-800-8-ASK-SBA.

You may be interested in starting a new career as an employee, rather than starting a new business. You probably have numerous relationships with businesses in your area. If you are seeking off-farm employment, your existing relationships are one of the most valuable tools available to assist you in your job search. As the producer of a TAA certified commodity, you also have access to employment counseling services at your state department of labor (<http://www.doleta.gov/tradeact/contacts.cfm>). Location may also be a major factor in determining how you will seek future income. In many rural areas, job availability is limited, many jobs may not pay enough to maintain your standard of living, or available jobs may not include health insurance benefits. Determining whether you are willing to relocate may be a major issue for you and your family.

Regardless of whether you are considering a new business or a new job, your attitude is critical to success. You have the opportunity to create a new future for yourself. You can take the attitude that your future is in your hands or you can have the attitude that you are a victim of circumstances beyond your control, of imports, overproduction, and lost markets. Your attitude may be the single most important factor in determining the success of your new career or business.

Retirement

The average age of agricultural producers in the U.S. is in the upper 50's. For many producers, retirement may be a viable option when facing the choice of exiting the business or struggling financially to keep it going. If retirement is an option for you, there are a number of questions you should answer before making the decision to retire.

Do you have sufficient financial resources to sustain you through the retirement years? You should project your retirement income and your retirement expenses to determine if you will have adequate income for your retirement. If you aren't sure how to project your financial needs or how to evaluate income from your investments and capital assets, you should seek the assistance of a financial planner. How will you handle your capital assets? For many producers, the bulk of their wealth is tied up in capital assets such as land, buildings, and equipment. Will you sell the capital assets and invest the proceeds or will you lease out the assets to provide retirement income? Do you know how much social security you will receive if you retire? Do you have the annual statement you receive from Social Security Administration detailing how much you will receive at various retirement ages? You may want to contact your local social security office (<http://s3abaca.ssa.gov/pro/fo/fo-home.html>) or call 1-800-772-1213 to determine your specific retirement benefits.

Health is a major issue for most senior citizens. Do you want to retire early, while your health is good? If you retire now, will you have adequate health care coverage to cover you until you are eligible for Medicare? Should you wait to retire due to health care affordability?

Supplemental Income and Leasing Assets

You have probably considered supplementing your income with off-farm or non-fishing income. Have you exhausted all the possibilities for supplemental income? There are certainly trade-offs associated with finding a second job. You may not have the time to successfully manage your business. The impact on your quality of life or family life may cause you to decide supplemental income is not worth the cost.

You may want to explore the possibility of terminating your business while retaining control of your business assets. Leasing your land, equipment, or boat to other farmers or fishermen, when combined with an off-farm or non-fishing job, may allow you to support yourself financially. This alternative may allow you to keep the land or boat to which you have emotional ties, while providing sufficient income for your family. Exiting the business while retaining control of the assets is dependent on the amount of debt you have against those assets and your overall financial situation.

Family and Emotional Well-Being

When considering a transition or exit from your business, family concerns are one of the major issues that will impact your decision making. What are the goals of your family? How much emotional impact will leaving the business, possibly changing your way of life, or a potential move have on you and your family? Where will you live; can you stay living on your farm or in your community?

Goals

The previous Goals section of the TAA technical assistance package discussed setting and implementing goals for your business and family. Goals are important when you are considering a major career change. Even though exiting your business may be the best financial decision or, in some cases, you may not have a choice about exiting, considering your family goals as you explore the next step is important.

Emotional Stress and Counseling

Transitioning out of your business and your way of life may be one of the most stressful events you will ever experience. This is especially true if you are exiting due to financial stress. Although you might not believe it now, many farmers and fishermen have successfully and happily transitioned to a different career. Many successful business people started out with a farming background and took their work ethic and skills into another field. During this time of emotional stress, it may be very important for you get help. Counseling help is usually available. You might start by checking with your local county human services department or a member of your local clergy. If you don't know where to ask for help, contact your local Extension Service and ask them where to find assistance.

Living Situation

What options do you have to continue to live in your home and in your community? The answer may depend on many of the issues discussed above. Can you find alternative employment or start a new business that will financially support you in your current living situation? If you live on a farm, can you retain ownership of it and rent out the land? If you need to sell the land, can you keep the farmstead and continue to live in your home? If you need to move to a different community to find employment, will you be able to continue to own a farm that may have been in your family for several generations? One of the most important aspects of these topics is whether you are willing to seek the help of friends, family, or business advisors to help you think through your options. Oftentimes someone else can help you think about options more broadly and, also, others can look at the situation without the emotional stress you may be experiencing.

Tax and Credit Issues

Taxes are one of the major issues you will need to address if you exit your business. If you are planning to sell your business or assets owned by your business, meet with a qualified tax advisor first. You should also keep your lender informed about your plans. Many assets have security agreements in which they are used as the collateral for the outstanding debt used to purchase the asset. Proceeds from assets sold with security agreements must be used to pay off the credit owed for the asset.

Income Taxes

Taxes can consume a major portion of the sales value of a business's assets. Tax planning is critical if you are transitioning out of your business and selling business assets. When selling capital assets, you must pay income tax on the difference between the selling price and the tax basis of the asset. Tax basis is generally the amount you paid for the asset minus any tax depreciation you have claimed on it. Some assets, such as land, are not generally depreciated, so the tax basis is simply the difference between the selling price and the original purchase price. Most assets owned for more than 12 months qualify for capital gains tax rates. Capital gains rates are either 5% or 15%, depending on your income level. For assets that have been depreciated below their market value, the difference between the sales price and depreciated value will be taxed at your normal income tax rate.

There are ways to reduce the amount of tax you will pay on the sales of your capital assets. One method is installment sales of property. The installment method allows you to spread out the taxation proportionally over the years that principal payments are made. Another strategy is to sell assets over several years. Both the installment method and selling assets over time will often allow you to keep more taxable income in lower tax brackets. If you are selling a farm that includes your personal residence, up to \$250,000 (\$500,000 for married filing jointly) of capital gain on the residence can be excluded from taxation. In every case, you should consult a tax advisor.

Self-Employment Tax

Income tax must be paid on the sales of all farm or fishing assets, but self-employment tax is only due on current assets, such as crop and livestock inventories. You may want to consider selling all of your current assets in a single year if it will push your income over the self-employment tax limit. In 2003, self-employment tax is only charged on the first \$87,000 of income. The self-employment tax threshold increases each year. Sales of capital assets including equipment, machinery, buildings, and land are not subject to self-employment taxes.

Collateral and Security Agreements

You have probably been discussing your situation with your lenders, but before you sell any assets you should contact the appropriate lenders to check on security agreements. You should repay outstanding loans against assets that you are selling or discuss a repayment plan and security release with your lender. Frequently, there is considerable debt against farming or fishing assets. Liquidating some assets may only generate enough cash to pay the outstanding debt or, in some cases, the sales revenue may be insufficient to cover the debt. You should keep lenders informed throughout the process and work with them.

TAA Retraining and Education Opportunities

Producers of commodities that are eligible for TAA benefits are also eligible for substantially more retraining and educational benefits than the typical producer or fisherman facing an exit from their business. To learn more about TAA retraining and educational benefits that are available, contact the Department of Labor TAA coordinator in your state (<http://www.doleta.gov/tradeact/contacts.cfm>). For some producers and fishermen, the TAA educational benefits may be the most significant benefit available under TAA. For others, such as those approaching retirement or unable to relocate to an area where jobs are available, the educational benefit may be less valuable.

The TAA Department of Labor program provides retraining and reemployment services tailored to help individuals prepare for employment in another job or career. Producers or fishermen may receive up to 104 weeks of approved training in occupational skills or basic or remedial education.

There are some conditions that you need to meet to receive the educational benefits. You must be able to complete your educational program within 104 weeks and be job ready at the end of that time. Generally that means you will need to earn some type of degree within the 104 weeks. The educational program must be fully paid for by the Department of Labor. You can't supplement government payments with your own funds. This means that there are limits to how much the program can cost and on when you must complete it. Individual state labor agencies responsible for TAA have lists of educational programs in which TAA participants may enroll.

Summary

Whether to make the pivotal move of transitioning out of your farm or fishing business is a very personal decision that each person has to think through with the support of his or her family. Analyzing the financial viability of your business, determining the availability of alternative sources of income, working through the emotional and family issues, examining the tax consequences, and exploring retraining opportunities are important parts of the process. Assistance is available for all of these issues related to transitioning out of your business, but only you and your family can make the final decision.

Developed by Kevin Klair, Extension Economist, Farm Management, University of Minnesota.



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Section 3

How Do I Get There ?

 **How to Access More Intensive Assistance?**



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Tropical Research and Education Center

How To Access More Intensive Assistance



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