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# Cuba's Citrus Industry: Growth and Change

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## Abstract

Cuban citrus is a major commercial crop and foreign exchange earner. The 1990s saw an industry collapse and a shift from fresh oranges to processed citrus products and grapefruit production. If commercial relationships with the United States were restored, Cuba's citrus industry would likely look to U.S. markets for new opportunities for Cuban fresh citrus, processed citrus products, and citrus byproducts. In turn, Cuba's citrus industry could become a market for U.S. exports of technology, citrus rootstock and other inputs, and capital. New U.S.-Cuban partnerships could develop to partially integrate citrus production, processing, and marketing for U.S. markets.

**Keywords:** Cuba, citrus, orange, grapefruit, lemon, lime, trade.

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## Introduction

Much of the recent popular U.S. discussion about Cuba and Cuban agriculture focuses on the potential for large U.S. agricultural exports to Cuba. Other agricultural sectors are important to Cuba's economy and may even be of some importance to the U.S. food and agriculture economy if trade is restored between the two countries. For example, the Cuban citrus sector has the potential to generate Cuban exports to the United States and even compete with U.S., Mexican, and other citrus-exporting producers in world markets. Cuba's citrus industry could also attract U.S. capital and provide a market for U.S. exporters of agricultural inputs and technology.

## Cuba's Citrus Industry

Citrus is a major commercial crop and significant foreign exchange earner for Cuba. Fresh and processed citrus are Cuba's fourth most important agricultural and natural resource export, responsible for about 8 percent of agricultural export earnings (table 1). Production consists primarily of oranges and grapefruit (fig. 1). Most oranges (over 80 percent) are Valencia, and both white and red grapefruit are produced. Cuba is the world's third most important grapefruit producer, after the United States and Israel.

Citrus is produced throughout Cuba, but the major citrus-producing provinces are Matanzas, Pinar del Rio, Isle of Youth (Isla de la Juventud), Santiago de Cuba, Ciego de Avila, La Habana, and Camagüey. These provinces contained over 80 percent of total citrus area in 1993. The northwestern provinces of Matanzas, Pinar del Rio, and Isle of Youth alone contained about 60 percent of Cuba's citrus area (table 2).

**Table 1—Citrus is one of Cuba's top exports**

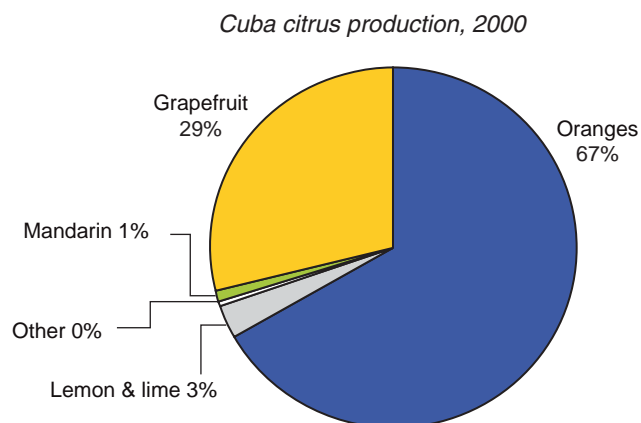
Cuban agricultural & natural resource 1999 export rankings

Commodity	Export value 1,000 pesos
1. Sugar, raw 96°	458,210
2. Cigars	172,115
3. Fish & shellfish	95,267
4. Citrus juices	58,176
5. Unmanufactured tobacco	27,048
6. Coffee	15,862
7. Fresh citrus	14,926
8. Rum	13,014
9. Molasses	8,079
10. Honey	4,296

Source: Messina et al.

Figure 1

## Cuba's citrus production is primarily oranges and grapefruits



Source: FAOSTAT database.

Cuba's citrus is well adapted for processing (fruit content is about 48 percent juice). Over half the oranges and about 90 percent of the grapefruit are processed (primarily for juice). Most of the processed citrus products are exported. A small amount of both grapefruit and oranges are exported fresh (fig. 2).

Prior to 1990, most of Cuba's citrus exports went to the former Soviet Union and the Council for Mutual Economic Assistance (COMECON, or CMEA) Eastern European countries. Since 1990, Western Europe has received the majority of Cuba's citrus exports, mostly as processed citrus products. Cuba faces tough competition in the fresh orange market in Western Europe from Israel and Spain, which have a higher quality product and lower transportation costs.

Cuba also produces citrus for domestic consumption. Domestic consumption is primarily fresh oranges (figs. 2, 3). Around 40 percent of the oranges produced in Cuba are for fresh domestic consumption (fig. 2).

## Development of Cuba's Citrus Industry

Historically, the development of Cuba's citrus industry, like most of Cuban agriculture, can be broken into three periods delineated by two major events: the 1959 communist revolution and the collapse of the centrally planned economies of Eastern Europe in 1989 and the Soviet Union in 1991.

Citrus products have been grown in Cuba since the 1500s, but production throughout the pre-revolutionary period remained small scale. During the Spanish

**Table 2—About 60 percent of Cuba's citrus area, including most of the grapefruit area, was in the northwestern provinces in 1993**

Cuba citrus area by province, 1993							
Province		All citrus	Oranges	Grapefruit	Lemons	Tangerines	Other
	Percent	Hectares					
Pinar del Rio	12.7	16,097.29	8,834.39	5,784.02	1,327.24	79.18	72.47
Isle of Youth	11.9	15,123.00	1,081.65	13,707.19	334.16	0.00	0.00
Habana	6.6	8,319.06	5,570.64	1,359.45	658.92	625.37	104.68
Matanzas	35.1	44,485.96	27,262.73	11,704.92	5,092.89	311.34	114.07
Villa Clara	1.3	1,709.71	1,489.62	5.37	114.07	100.65	0.00
Cienfuegos	4.0	5,080.81	3,795.18	589.16	370.39	322.08	4.03
Sancti Spiritus	0.2	206.67	123.46	6.71	33.55	13.42	29.52
Ciego de Avila	6.7	8,500.23	5,806.83	1,974.08	599.87	119.44	0.00
Camagüey	5.4	6,790.52	3,910.59	2,159.28	531.43	146.28	42.94
Las Tunas	0.4	456.28	396.57	41.60	5.37	1.34	9.39
Holguín	3.0	3,808.60	1,623.82	111.39	1,894.90	108.70	69.78
Granma	1.4	1,744.60	1,497.67	72.47	190.56	28.18	63.07
Santiago de Cuba	8.8	11,147.99	9,887.86	723.34	178.49	354.29	4.03
Guantánamo	2.6	3,286.56	2,963.14	182.51	123.46	17.45	0.00
Total	100.0	126,864.63	74,246.15	38,421.46	11,455.31	2,227.72	513.99
				Percent			
Share of total area		100.0	58.5	30.3	9.0	1.8	0.4

Source: González et al., 1996.

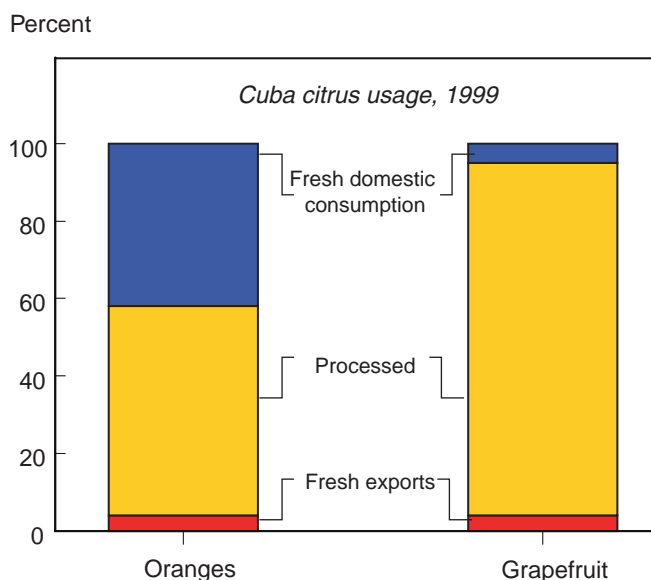
settlement era, Cuban agriculture focused on more profitable crops: sugarcane, tobacco, and coffee. While there was some American investment in the citrus sector prior to 1959, the industry remained small (table 3) and utilized little technology. Production consisted of oranges and a few lemons and limes for fresh domestic

consumption, plus a small amount of grapefruit produced for fresh export markets.

By the late 1950s, Cuba's annual citrus production was around 60,000 metric tons. The country's major citrus export market was the United States, which accounted for over 99 percent of Cuba's fresh orange exports

Figure 2

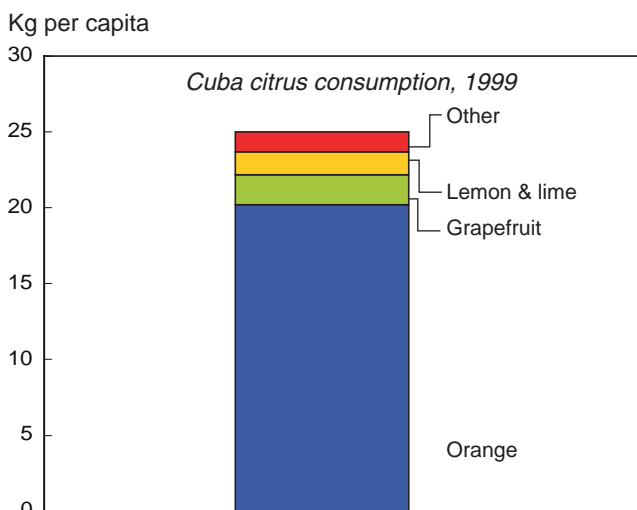
**Most Cuban grapefruit and about half of Cuban oranges are processed and exported**



Source: González et al., 2001.

Figure 3

**Cuban citrus consumption is primarily oranges**



Source: González et al., 2001.

**Table 3—Cuba produced little citrus, mostly oranges, before the 1959 revolution**

Citrus production, 1945-46	
Variety	Production
1,000 metric tons	
Oranges	37.0
Sour oranges	5.3
Grapefruits	2.6
Lemons & limes	5.5
Total	50.4

Source: González.

(15,728 metric tons) and almost 87 percent of Cuba's fresh grapefruit exports (753 metric tons).

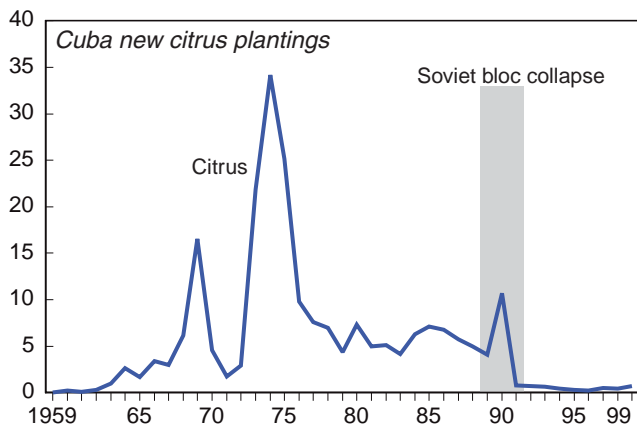
After the 1959 communist revolution, Cuba's new government increased investments in citrus (fig. 4). This was part of a program to diversify the country's sugar-dominated economy, use Cuba's natural resources more efficiently, and, at the same time, expand exports to Cuba's new markets in the Soviet Union and Eastern Europe, which replaced the embargoed U.S. market.

Citrus plantings and production continued to grow through the 1960s and 1970s. By the 1980s, plantings leveled off as most of the older, lower producing trees in the major citrus-producing areas were replaced. Citrus production, however, continued to increase through the 1980s, reaching a million metric tons in 1990 and making Cuba the world's 14th largest citrus producer. While orange production continued to rise,

Figure 4

**To aid in diversifying a sugar dominated agriculture, Cuba rapidly expanded citrus plantings after the revolution**

1,000 hectares



Sources: González; González et al., 2001.

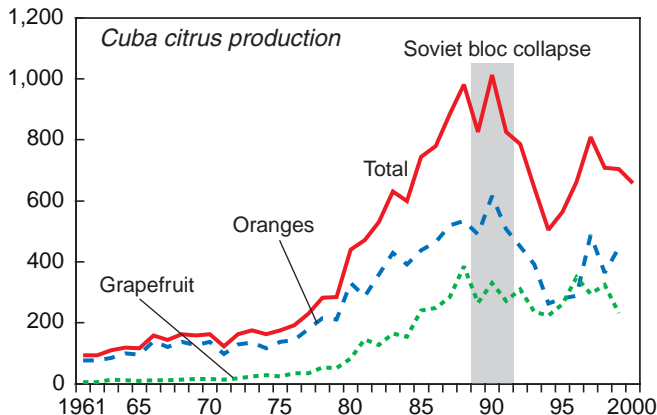
grapefruit production also picked up substantially (growth rates rose from almost 10 percent in the 1960s to almost 20 percent in the 1970s and almost 35 percent in the 1980s). Total orange and grapefruit production peaked in 1990 (fig. 5).

From the 1960s through the 1980s, Cuba continued to focus its citrus production and exports on fresh fruit (figs. 2, 6). Processed citrus products were produced, but came primarily from lower quality fruit unsuitable for the fresh market. Over 90 percent of Cuba's citrus exports during this period went to the Soviet Union, Czechoslovakia, Poland, and Bulgaria. Much of this

Figure 5

**Cuba's citrus industry collapsed in the early 1990s after the dissolution of the Soviet bloc**

1,000 metric tons

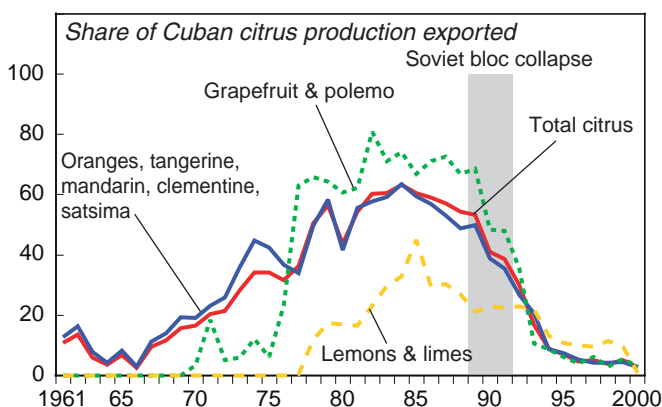


Source: FAOSTAT database.

Figure 6

**Cuba's exports of citrus fruit grew in importance from the 1960s through the 1980s**

Percent



Source: FAOSTAT database.

trade was barter for machinery, parts, grain, and oil, at very favorable terms to Cuba.

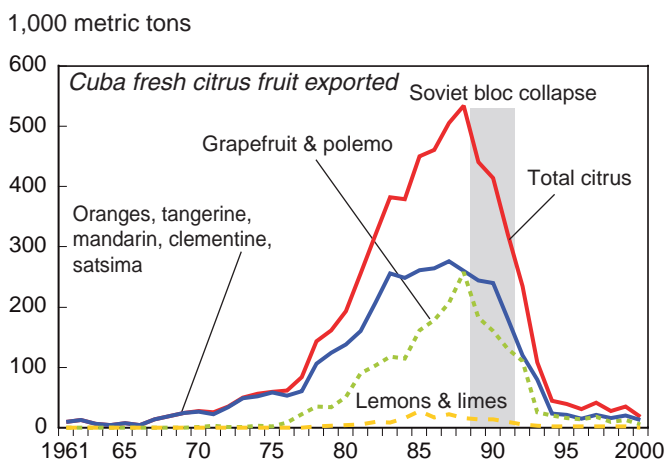
The citrus industry, like the rest of the Cuban economy, faced a major downturn with the collapse of the centrally planned economies of Eastern Europe in 1989 and the Soviet Union in 1991. Cuba lost its major markets and its favorable terms of barter trade for citrus products as the Soviet bloc countries collapsed. This was more than a loss of demand for Cuban citrus. Imports of Soviet bloc machinery, oil, and other agricultural inputs also collapsed. With no hard currency coming from its major export markets and a lack of available foreign exchange, this loss of production inputs was as devastating to Cuba's citrus industry as was the loss in citrus export demand.

As a result of these shocks, Cuba's citrus production fell by about 45 percent in the first half of the 1990s. Orange production fell by over half and grapefruit production fell by a fifth over this period. Citrus area dropped over 45 percent and new plantings mostly ceased. Fresh citrus exports fell about 90 percent over this same period (figs. 5, 7).

Cuba's response to these shocks was made more difficult by structural problems in its citrus industry. Productivity in the large state farms was low. Processing capacity was limited and, because processing consisted primarily of fresh-market-reject fruit, juice yield and quality were low.

Figure 7

**Cuba's fresh citrus fruit exports grew rapidly during the 1970-80s, then plummeted with the Soviet bloc collapse**



Source: FAOSTAT database.

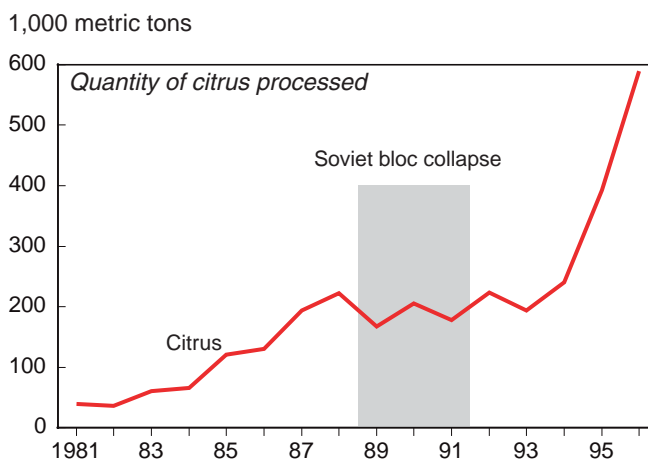
Also, the late-maturing Valencia oranges that Cuba sold in the fresh market, and that made up over 80 percent of Cuba's production and exports, were not competitive in Western fresh markets. Because of the country's warm climate, Cuba's Valencia oranges lack the darker external color preferred in the West. With the U.S. market closed, Cuba was forced to turn to Western Europe fresh markets. High transportation costs and lower quality products, however, limited Cuba's ability to compete with fresh orange exports from Spain and Israel.

In response to these developments, the Cuban Government took several steps. To better meet demand in its new markets, and to capitalize on comparative advantage, Cuba increased its emphasis on grapefruit and expedited the already-underway expansion of its citrus processing industry (figs. 8, 9).

In 1993, Cuba established a new form of agricultural production cooperative: the Basic Unit of Cooperative Production (UBPC). The UBPCs, in effect, broke up the large state farms. Land titles remained with the state, but the new cooperatives had the right to use the land and make limited production and resource decisions. State enterprises still provided marketing, technical assistance, production services, and agricultural inputs. Producers were allowed to sell surplus production after delivering a contracted quota to the state. In 1994, farmers' markets were established. Producers could sell surplus production at free-market prices to

Figure 8

**Losing Soviet bloc markets caused Cuba, in the 1990s, to expand its citrus processing industry to compensate for the loss of fresh export markets**

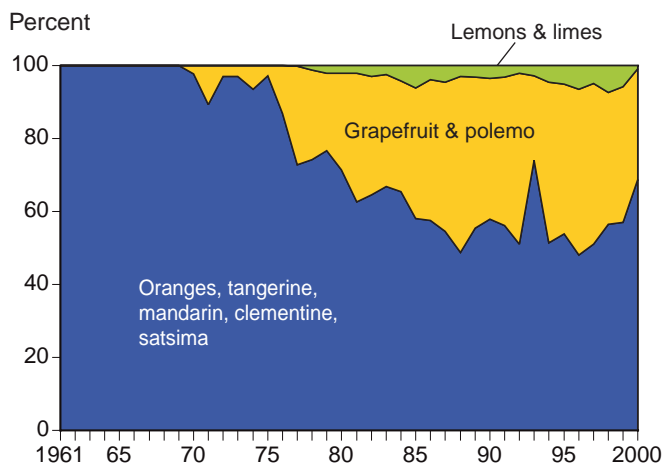


Sources: González; González et al., 1996.

Figure 9

**Cuba increased grapefruit production and processed grapefruit product exports in response to a drop in the demand for Cuban fresh oranges**

*Share of Cuba's total fresh citrus fruit export quantity*



Source: FAOSTAT database.

consumers in these markets. These markets now handle 25-30 percent of farm products available to Cuban consumers.

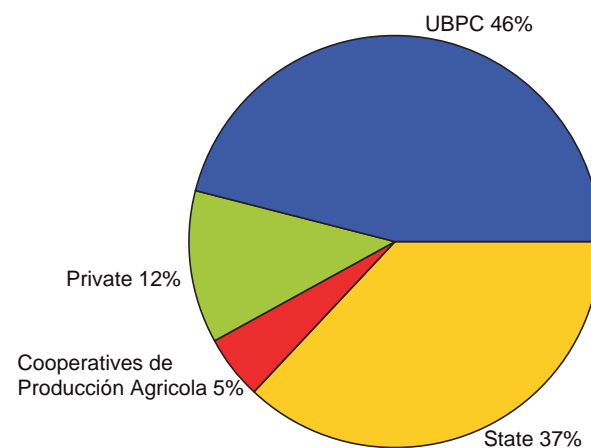
Before 1994, about 90 percent of Cuban citrus production was controlled by large state farms. By 1999, almost half of the citrus production area was controlled by UBPCs (fig. 10). Over 75 percent of these UBPCs were profitable by the decade's end. In addition, UBPC member incomes were over 60 percent higher than the incomes of the older, established citrus-producing Cooperatives de Produccion Agricola.

Cuba also cultivated foreign "economic associations" (joint ventures, international contracts) to increase foreign investment in the Cuban economy. As a result, Israel reinitiated investments in 1991 that increased productivity and product quality for a joint Cuban-Israeli production enterprise. By 1997, this joint venture produced over a third of Cuba's total citrus production and controlled over a fourth of citrus area. Other investments in citrus production have come from Greece, Great Britain, Chile, and Italy. Over half of Cuba's citrus area now is covered by international economic associations. Cooperative investments, along with improved-technology processing equipment imported from Western Europe, have also benefited the citrus processing industry.

Figure 10

**Cuba converted many inefficient and unprofitable citrus state farms into cooperative UBPCs in the mid-1990s**

*Cuba's citrus organizational structure, 1999*



Source: González et al., 2001.

As a result of these changes and improved incentives, citrus yields and production have rebounded to 1980s levels. Cuba's infrastructure, however, remains in poor condition, investment resources and production inputs continue in short supply, foreign exchange remains limited, the trade deficit continues, and foreign debt remains high. Thus, Cuba's economic austerity programs continue.

The citrus industry was hit by another devastating blow in November 2001 as Hurricane Michelle swept across the major citrus plantations in central Cuba, where about half of the country's citrus is produced. The hurricane hit as the fruit was ripening and the harvest was underway. An estimated 80 percent of the crop in this area was blown off the trees. Fruit recovery and processing were further obstructed by severe flooding, damage to roads, downed power lines, and heavy storm damage to Cuba's largest juice processing plant during its peak season.

**Potential U.S.-Cuba Citrus Relationships**

If commercial relationships between the United States and Cuba were restored, Cuba's citrus industry would likely look to the United States for new market opportunities, particularly for processed citrus products. The newer Cuban processing facilities are capable of producing the juice qualities demanded by U.S. con-



sumers. With U.S. orange juice demand exceeding U.S. supply, Cuba might be able to compete with Brazil and export some orange juice products to the United States. Cuba's proximity to Eastern U.S. markets gives it a strong advantage in that region.

Cuban fresh grapefruit, particularly red seedless grapefruit, could also find a niche market in the United States. Cuban grapefruit for the export market is harvested in late August and September. Harvesting fresh grapefruit in Florida, the primary U.S. supplier, begins in October (table 4). With a similar high-quality product, Cuba could enter U.S. markets early when the U.S. grapefruit supply is low and Florida production has not yet fully entered the market.

Cuba's fresh grapefruit exports may be more complementary than competitive with Florida production. With Cuban exports meeting early consumer demands, Florida producers would be under less pressure to harvest any of their crop early and supply U.S. consumers with a Florida grapefruit that is not at peak Florida quality. Some in the industry argue that this early harvest of lower quality product harms Florida grapefruit's image in the market and reduces overall demand for grapefruit. Thus, extending the window in which high-quality fresh grapefruit is available to U.S. consumers through Cuban exports may help increase the total demand for fresh grapefruit in the United States. This seasonal complementarity could even lead producers in the two countries to form foreign economic associations that market fresh grapefruit in the United States. Florida producers would benefit by helping manage the flow of Cuban grapefruit to the early U.S. market. Cuban producers would benefit by having access to the well-developed marketing channels currently available to Florida producers. These commercial relationships could also foster the flow of investment funds, technologies, inputs, and management from the United States to Cuba.

It is unlikely that Cuban fresh oranges could compete in the U.S. market. California and, to a far lesser degree, Florida dominate the U.S. fresh orange market. The United States imports only a small quantity of fresh oranges during the U.S. offseason. Furthermore, Cuban orange production consists primarily of Valencia oranges. With many seeds and a less-desirable external appearance, these oranges would find little demand in U.S. markets.

In the longer term, Cuba's best prospects for citrus exports to the United States would most likely be Persian limes. U.S. demand for Persian limes is growing, and U.S. production is small. Historically, Persian limes were produced primarily in southern Florida. The combination of Hurricane Andrew in 1992 and the more recent citrus canker infestation decimated Florida's Persian lime groves. Given the competition for land from urbanization and the low lime prices generated by the influx of Mexican Persian lime imports, these Florida groves are not being replaced (fig. 11). This leaves Mexico as the major supplier of the U.S. market. With excellent growing conditions and a competitive location advantage, Cuba could expand Persian lime production and capture a significant portion of the Eastern U.S. market. With an efficient processing industry, Cuba could likely find a U.S. market for lime juice.

With a large and growing citrus processing industry, Cuba also produces a large amount of citrus processing by-products. Cuba could export essential oils and pectin to U.S. industries. By-product livestock fodders would likely be too bulky and costly to export and would therefore be used domestically, particularly since Cuba imports essentially all of its animal feed.

Any Cuban move into a U.S. citrus market would likely be relatively slow. An increase in productivity and production will not occur rapidly. It will require a significant turnaround in the Cuban economy as well as continuing economic growth. Cuba's citrus sector will

**Table 4—Cuba's grapefruit harvest starts before Florida's harvest**

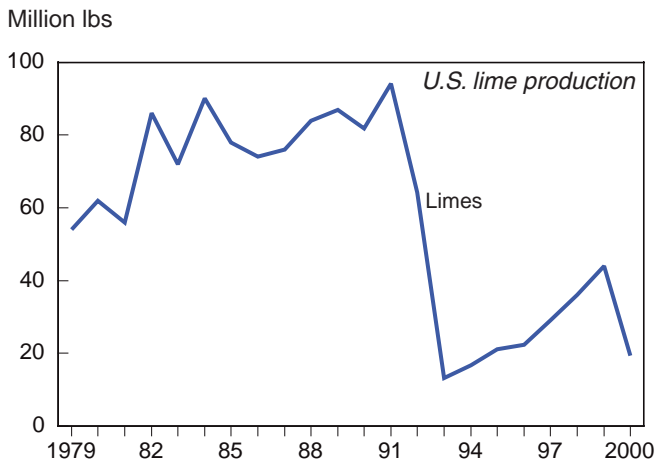
Market	Grapefruit harvest periods											
	Month											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Cuba—fresh	X							X	X	X	X	X
Florida—fresh	M	M	M							M	M	M
Florida—processed	M	M	M	m	m				m	m	m	m

Notes: X = harvesting; M, m = processed/marketed (M=more, m=less).

Source: Gonzalez et al., 2001; Gonzalez et al., 1996.

Figure 11

**Florida did not replant lime trees lost to Hurricane Andrew and citrus canker infestation**



Source: FAOSTAT database.

need to provide increased incentives and become more market oriented to provide the signals to producers and processors that will increase production, improve quality, and efficiently move product along the marketing chain in a timely manner. Given the existing infrastructure, this will likely be a slow process. It will take

a significant amount of capital to improve the industry structure, as well as changes in the conduct of industry participants, to achieve the performance gains that would allow Cuba to compete in the U.S. market. Product quality will have to improve to meet U.S. market standards. Significant improvements in transportation and refrigeration between Cuban producers and the U.S. market will be needed. Furthermore, Cuba will need to institute changes in product handling procedures to meet the U.S. technical sanitary and phytosanitary regulations governing U.S. agricultural product imports.

In turn, the United States might find the Cuban citrus industry to be a market for U.S. exports. The United States has a highly developed, technically advanced citrus industry. A large part of that industry is in Florida. Florida has a similar climate, is geographically close, and has cultural ties to Cuba. The United States, particularly Florida, could easily supply Cuba's citrus industry with technology, citrus rootstock and other inputs, a market-economy oriented management, and capital, all of which are currently in short supply in Cuba. It is likely that new economic partnerships would develop between the Cuban and the U.S. citrus industries.



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