

## RESEARCH PAPER: 1999-2

# TRENDS IN THE NOT-FROM- CONCENTRATE ORANGE-JUICE SEGMENT

BY

Mark G. Brown, Sr. Research Economist -- FDOC

Thomas Spreen, Professor -- UF

Renee Goodrich, Assistant Professor -- UF

FLORIDA DEPARTMENT OF CITRUS  
Economic and Market Research Department

P.O. Box 110249

Gainesville, Florida 32611-2049 USA

Phone: 352-392-1874

Fax: 352-392-8634

Email: [mgbrown@ufl.edu](mailto:mgbrown@ufl.edu)

**[www.floridajuice.com](http://www.floridajuice.com)**

# Trends in the Not-From-Concentrate Orange-Juice Segment

Mark Brown, Thomas Spreen, and Renée Goodrich\*

The not-from-concentrate (NFC) segment of the orange juice (OJ) market is becoming increasingly important for the Florida citrus industry. NFC is marketed to consumers in chilled displays near dairy or produce sections of supermarkets, and is a pasteurized product with approximately 45 to 60-day shelf life. This article reviews the recent history of this segment and discusses some new developments.

During the past decade, there has been strong growth in the NFC segment with the amount of Florida oranges used to make NFC increasing from 29.5 million (90 lb.) boxes in 1988-89 to 80.1 million boxes in 1998-99, an increase of 171% (Table 1). This increase is equivalent to an average annual growth rate of 10.5%. The number of boxes utilized for NFC in 1998-99 increased despite a sharp reduction in the Florida orange crop from 244 million boxes in 1997-98 to 185.7 million boxes in 1998-99. The share of the orange crop going to NFC in 1998-99 was 43% compared to about 30% in the three preceding seasons.

In terms of juice volume, Florida NFC production has increased from 174.0 million gallons in 1988-89 to 513.7 million gallons in 1998-99, an increase of 195%. The share of Florida OJ production accounted for by NFC increased from 19.6% in 1988-89 to 44.5% in 1998-99.

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\* Mark Brown is a Research Economist with the Economic and Market Research Department, Florida Department of Citrus, University of Florida. Thomas Spreen is a Professor with the Food and Resource Economics Department, University of Florida. Renée Goodrich is an Assistant Professor, Food Science, Citrus Research and Education Center at Lake Alfred, University of Florida.

NFC has become an increasingly important part of the supply of OJ available for the domestic and export markets. Since 1988-89, U.S. OJ consumption has ranged from 1062 million single strength equivalent (SSE) gallons to 1596 million SSE gallons (USDA). U.S. OJ exports have ranged from about 90 million SSE gallons in 1995-86 to 147 million SSE gallons in 1997-98 (U.S. Department of Commerce). Most of the NFC available in the U.S. is from Florida. Production of NFC in other states (Texas, California and Arizona) is not reported, but total OJ production in these states was less than 10% of Florida NFC production in 1998-99 and no more than 15% in the last five years. Little NFC is imported into the U.S. (1.3 to 5.1 million SSE gallons from 1993-94 to 1997-98), most of which is from Mexico. U.S. orange-juice imports are mostly frozen concentrate orange juice (FCOJ), which avoids the cost of transporting much of the water found in OJ (e.g., an export gallon of FCOJ at 66° Brix contains 7.278 pounds of solids and 3.75 pounds of water, while an NFC gallon at 11.8° Brix contains 1.029 pounds of solids and 7.688 pounds of water).

Florida movement of NFC is not reported, but a large amount is sold in the U.S. market, and a significant proportion of U.S. exports of OJ, particularly to Canada, is probably NFC. In the U.S. market, sales of NFC, predominately pasteurized but including some fresh-squeezed product, in retail outlets doing \$2 million business annually, as measured by ACNielsen, have increased from 108.6 million SSE gallons in 1988-89 to 267.5 million SSE gallons in 1997-98, a 146% increase or an average annual increase of 10.5% (Table 2). NFC's share of total OJ gallon sales has increased from 14% in 1988-89 to 33% in 1997-98. The price of NFC is typically 25% to 40% higher than the average price of all forms of OJ, so that the NFC's share of total OJ dollar sales has increased from 19% in 1988-89 to 41% in 1997-98. In contrast, gallon and dollar sales of FCOJ have been roughly cut in half, decreasing by 45% and 51%, respectively, over the same period. Sales of

refrigerated reconstituted orange juice (RECON) have grown moderately, with gallon and dollar sales increasing by 1.6% and .9% per year on average, respectively, from 1988-89 to 1997-98. Important factors in these changes in demand have been consumer preferences for convenience and quality, and growth in consumer income. NFC is perceived as closer than other OJ product forms to fresh squeezed product and is in a chilled ready-to-serve form; RECON is also in a chilled ready-to-serve form, while FCOJ must be reconstituted by the consumer. Based on estimates of the demand for these different product forms, NFC is a luxury good, meaning that its income elasticity of demand is greater than one so that the share of total OJ dollars allocated to NFC increases, when income increases. Estimated income elasticities for the other products were positive but less than one, meaning that their share of total OJ dollar sales tend to decline as income increases. To the extent that consumers view luxury goods to be higher quality than other goods, the growth in NFC suggests that the quality of the average basket of OJ consumed in the U.S. has increased.

Data on NFC production and consumption in the rest of the world are limited. OJ production by Europe's three major producers, Spain, Italy and Greece, ranged from 101 to 127 million SSE gallons annually, from 1996-97 to 1998-99 (USDA, FAS, "World Horticultural Trade and U.S. Export Opportunities," July 1999). A significant portion of this production may be NFC, either fresh-squeezed or pasteurized, given growing preferences for this product form. Also, based on information from the University of Sao Paulo at Piracicaba, Brazil produces about 31 million gallons of NFC, which is sold domestically or exported to Europe and MERCOSUR countries, mainly Argentina. The Brazilian processor Citrosuco has been packaging NFC for Tropicana for sales in Argentina; and Nestle and Cargill, and Danone and Citrovita, respectively, have joint ventures in producing and marketing NFC. Presently, Citrosuco exports NFC in bulk frozen form in drums or

in consumer package aseptic cartons. In the near future they plan to ship bulk NFC in bag-in-bin containers, and by the end of the year they plan to be shipping NFC by tanker ship. Transporting NFC by tanker ship will reduce costs and make Brazilian NFC more competitive in world markets.

Consumer preferences for convenience and product quality, along with growth in consumer incomes, have been important factors underlying the growth of the NFC segment in the U.S. market. To the extent foreign consumers become more affluent and develop lifestyles that place a premium on convenience and quality as in the U.S., NFC can be expected to be a promising segment of the OJ business in the rest of the world. Thus far, Florida has been the dominant NFC supplier in the world, but may face increasing competition from countries such as Brazil, where development of an NFC supply infrastructure is occurring.

Table 1. Florida orange utilization, Florida OJ production and U.S. OJ consumption.

Season	Utilization of Florida Orange Crop						Florida OJ Production			U.S. OJ Consumption <sup>d</sup>
	Fresh <sup>a</sup>	FCOJ	NFC <sup>b</sup>	NFC % Total	Other <sup>c</sup>	Total	Total	NFC	NFC % Total	
	----- million 90-lb. boxes -----			- % -	- million 90-lb. boxes -	- million SSE gallons -			- % -	million SSE gallons
1988-89	8.6	107.4	29.5	20.1	1.1	146.6	886.1	174.0	19.6	1,258
1989-90	6.0	70.1	33.5	30.4	.6	110.2	541.7	173.7	32.1	1,062
1990-91	12.4	100.4	38.2	25.2	.6	151.6	841.2	226.5	26.9	1,174
1991-92	11.7	90.6	37.0	26.5	.5	139.8	811.3	221.3	27.3	1,097
1992-93	10.7	128.3	47.3	25.3	.3	186.6	1,130.8	286.0	25.3	1,339
1993-94	9.9	111.7	51.0	29.2	1.8	174.4	1,058.2	320.9	30.3	1,319
1994-95	10.4	140.8	53.4	26.0	.9	205.5	1,206.5	330.3	27.4	1,415
1995-96	10.0	129.3	62.1	30.6	1.9	203.3	1,213.3	394.6	32.5	1,388
1996-97	10.7	147.9	65.7	29.0	1.9	226.2	1,388.3	410.6	29.6	1,455
1997-98	11.2	156.4	74.8	30.7	1.6	244.0	1,486.8	462.0	31.1	1,596
1998-99	10.8	93.5	80.1	43.1	1.3	185.7	1,155.4	513.7	44.5	1,541

<sup>a</sup>Certified and noncertified.

<sup>b</sup>NFC utilization reported by the FCPA since 1993-94; estimated as residual before 1993-94.

<sup>c</sup>Canned OJ, blends and other processed OJ.

<sup>d</sup>USDA, "Fruit and Tree Nuts, Situation and Outlook," October, 1998; 1998-99 consumption estimates.

Table 2. Nielsen OJ sales in retail stores doing \$2 million and greater business annually.

Season	Total OJ		FCOJ		NFC		Recon		Other	
	Mil. Gal.	% Total	Mil. Gal.	% Total	Mil. Gal.	% Total	Mil. Gal.	% Total	Mil. Gal.	% Total
-----GALLON SALES-----										
1988-89	760.5	100	320.5	42.1	108.6	14.3	316.7	41.6	13.8	1.8
1989-90	690.4	100	282.5	40.9	111.3	16.1	282.6	40.9	13.1	1.9
1990-91	767.6	100	307.7	40.1	129.2	16.8	317.0	41.3	12.7	1.7
1991-92	749.8	100	287.9	38.4	146.2	19.5	302.3	40.3	12.5	1.7
1992-93	813.5	100	284.3	34.9	178.9	22.0	337.7	41.5	12.6	1.5
1993-94	803.3	100	260.9	32.5	192.8	24.0	337.6	42.0	12.1	1.5
1994-95	807.6	100	239.8	29.7	211.0	26.1	346.1	42.9	10.8	1.3
1995-96	786.4	100	214.4	27.3	218.0	27.7	343.8	43.7	10.2	1.3
1996-97	804.0	100	194.6	24.2	228.9	28.5	371.1	46.2	9.5	1.2
1997-98	817.1	100	175.3	21.5	267.5	32.7	365.2	44.7	9.1	1.1
-----DOLLAR SALES-----										
	Mil. \$	% Total	Mil. \$	% Total	Mil. \$	% Total	Mil. \$	% Total	Mil. \$	% Total
1988-89	2,834.9	100	1,038.3	36.6	544.2	19.2	1,175.5	41.5	71.9	2.5
1989-90	2,954.4	100	1,044.3	35.3	621.7	21.0	1,208.9	40.9	71.9	2.4
1990-91	2,821.2	100	920.9	32.6	662.1	23.5	1,166.5	41.3	65.3	2.3
1991-92	2,884.7	100	891.8	30.9	763.6	26.5	1,158.5	40.2	65.0	2.3
1992-93	2,728.8	100	761.0	27.9	840.7	30.8	1,065.3	39.0	61.7	2.3
1993-94	2,721.4	100	708.5	26.0	883.7	32.5	1,071.7	39.4	57.6	2.1
1994-95	2,788.2	100	653.5	23.4	985.0	35.3	1,097.9	39.4	51.7	1.9
1995-96	2,911.0	100	637.5	21.9	1,043.9	35.9	1,179.5	40.5	50.0	1.7
1996-97	3,052.0	100	581.9	19.1	1,120.1	36.7	1,301.9	42.7	48.0	1.6
1997-98	3,101.1	100	508.1	16.4	1,273.2	41.1	1,272.8	41.0	46.9	1.5
-----PRICE-----										
	\$/Gal.	% Total	\$/Gal.	% Total	\$/Gal.	% Total	\$/Gal.	% Total	\$/Gal.	% Total
1988-89	3.73	100	3.24	86.9	5.01	134.4	3.71	99.6	5.20	139.4
1989-90	4.28	100	3.70	86.4	5.59	130.6	4.28	100.0	5.48	128.2
1990-91	3.68	100	2.99	81.4	5.12	139.4	3.68	100.1	5.12	139.3
1991-92	3.85	100	3.10	80.5	5.22	135.8	3.83	99.6	5.21	135.4
1992-93	3.35	100	2.68	79.8	4.70	140.1	3.15	94.0	4.92	146.6
1993-94	3.39	100	2.72	80.2	4.58	135.3	3.17	93.7	4.77	140.8
1994-95	3.45	100	2.73	78.9	4.67	135.3	3.17	91.9	4.78	138.5
1995-96	3.70	100	2.97	80.3	4.79	129.4	3.43	92.7	4.92	132.8
1996-97	3.80	100	2.99	78.8	4.89	128.9	3.51	92.4	5.06	133.4
1997-98	3.80	100	2.90	76.4	4.76	125.4	3.49	91.8	5.17	136.2