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MATURITY YIELD & TEST RESULTS

1993-94 through 2002-03

August 1, 2003

INTRODUCTION

The processing industry utilizes about 95 percent of the Florida orange crop. To augment the box forecast, information on the internal quality of the fruit is provided. The Florida Agricultural Statistics Service (FASS) collects fruit samples starting the first of September, and monthly thereafter. Each sample consists of 15 oranges or 5 grapefruit. Samples are picked from preselected groves and predetermined sample trees. Fruit is tested on the first of each month for acid, solids, and unfinished juice. Early and midseason orange tests begin September 1 and continue through February 1. Late oranges are tested beginning October 1 and ending June 1. Grapefruit tests are conducted September 1 through December 1.

SAMPLING

During the 1994-95 season the number of sample groves was changed to the current level of 325 oranges (120 early, 55 midseason, and 150 late) and 100 seedless grapefruit (50 white and 50 colored). Sample groves and trees remain relatively constant from year to year in order to assure the greatest continuity of data. Each sample is picked from a randomly selected cluster of five trees, a central pivot tree and four adjacent trees of the same variety. Sample fruit are selected from the pivot tree's side nearest the road of travel and from the sides of the other four sample trees nearest the pivot tree. This procedure insures that fruit from all exposures is included.

TESTING

The extractor and specifications correspond to those used for official State tests when the program began. State tests are now run on the FMC 091 B utilizing air pressure. All FASS samples are run through an FMC 091 test extractor using mechanical pressure only. This machine utilizes a 0.040 short strainer and standard 5/8 inch orifice tube. The beam setting is 1/8 inch for the 3 and 4 inch cups and 1 inch for the 5 inch cup with no restrictors used. The 3 and 4 inch cups are used for oranges, while the 4 and 5 inch cups are used for grapefruit.

COMPARISONS OF FRUIT TEST RESULTS

The FASS Maturity Test Results are not directly comparable with the results of tests being made by the Division of Fruit and Vegetable (DFV). The FASS Maturity Tests are from a sample of all fruit remaining on trees at the time of sampling, whereas the DFV tests are of fruit currently being delivered. Secondly, FASS Maturity Test Results are unadjusted and based on an extraction procedure which has not varied or changed over the entire history of the tests while DFV tests are subject to changing industry regulations and equipment upgrades.

This office has established an historical series and informs growers of current conditions whereas the DFV tests are made primarily to establish a basis for payment of fruit. Thus, the FASS Maturity Tests Results are stated for raw unfinished juice and the DFV results refer to adjusted finished juice. The finished juice from test results entered on DFV inspection certificates will always be less than the unfinished juice extracted by the inspector and the amount of unfinished juice reported in FASS Maturity Test Results for the corresponding date.

YIELD FORECASTS OF

FROZEN CONCENTRATED ORANGE JUICE (FCOJ)

The forecast is made and measured against the history of actual final yields reported by the Florida Citrus Processors Association (FCPA). Variables used in the forecasts include Maturity Test Results, and the forecasts properly take into account the actual cumulative yield to date as reported by the FCPA.

Record high levels occurred in 1998-99 when the all orange yield reached 1.63381 gallons per box with early-midseason fruit at 1.58414 and the late (Valencia) portion of the crop at 1.74806. The 2002-03 yield for all oranges is lower than those of the previous seven seasons. Early-midseason fruit yielded less concentrate than in the previous two seasons. The Valencia yield is the lowest since 1994-95.

FCOJ: Annual pack, 42.0° Brix, by season

	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
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ALL ORANGES

Million boxes

Utilization	116.248	144.678	132.907	153.842	160.865	97.247	134.204	124.072	135.975	102.073
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Million gallons

Production	182.231	216.502	202.353	241.800	253.734	158.884	207.708	196.055	215.057	156.845
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FCOJ YIELD: FASS forecasts by month and FCPA final yields, 42.0° Brix, by season

Forecast Month	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
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ALL ORANGES

Gallons per box

October	1.55	1.54	1.54	1.53	1.55	1.57	1.60	1.55	1.55	1.57
December	1.55	1.52	1.50	1.53	1.55	1.57	1.60	1.55	1.55	1.57
January	1.56	1.51	1.47	1.53	1.55	1.57	1.57	1.55	1.58	1.57
February	1.57	1.51	1.47	1.54	1.56	1.60	1.54	1.54	1.58	1.57
March	1.57	1.51	1.48	1.54	1.56	1.62	1.54	1.58	1.58	1.55
April	1.57	1.50	1.48	1.57	1.56	1.63	1.54	1.58	1.58	1.55
May	1.57	1.50	1.52	1.58	1.58	1.64	1.54	1.58	1.58	1.53
June	1.57	1.50	1.52	1.58	1.58	1.63	1.55	1.58	1.58	1.52
Final	1.56760	1.49644	1.52252	1.57174	1.57731	1.63381	1.54770	1.58018	1.58160	1.53659

EARLY-MIDSEASON ORANGES

January	1.52	1.44	1.42	1.48	1.48	1.52	1.50	1.51	1.52	1.52
February	1.53	1.44	1.44	1.50	1.50	1.56	1.48	1.51	1.52	1.50
March	1.53	^{1/}	^{1/}	1.52	1.50	1.59	1.48	1.54	1.52	^{1/}
Final	1.52073	1.44400	1.44775	1.52360	1.49255	1.58414	1.47574	1.54073	1.52774	1.49199

LATE ORANGES

January	1.65	1.63	1.55	1.62	1.65	1.67	1.68	1.62	1.68	1.67
February	1.65	1.63	1.55	1.60	1.65	1.67	1.64	1.60	1.68	1.67
March	1.65	1.63	1.55	1.60	1.65	1.68	1.64	1.65	1.68	1.65
April	1.67	1.58	1.55	1.66	1.67	1.72	1.64	1.65	1.68	1.65
May	1.67	1.59	1.66	1.68	1.70	1.75	1.66	1.65	1.68	1.58
June	1.67	1.59	1.67	1.68	1.72	1.75	1.67	1.65	1.68	1.56
Final	1.65942	1.58230	1.66979	1.67701	1.71525	1.74806	1.66336	1.64573	1.65789	1.60587

^{1/} Final yield available by March forecast.

CITRUS MATURITY: Unadjusted matched averages for regular bloom fruit from identical sample trees,
by season and (number of sample groves)

Date	1993-94 (61)	1994-95 (45)	1995-96 (42)	1996-97 (55)	1997-98 (57)	1998-99 (68)	1999-00 (79)	2000-01 (75)	2001-02 (53)	2002-03 (42)
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EARLY ORANGES

Percent acid

Sep 1	NA	NA	NA	NA	1.32	1.76	1.77	1.67	1.43	1.37
Oct 1	1.37	0.96	1.07	1.20	1.02	1.17	1.24	1.13	1.00	0.92
Nov 1	1.04	0.76	0.80	0.95	0.87	0.93	0.96	0.98	0.83	0.74
Dec 1	0.85	0.68	0.77	0.83	0.78	0.74	0.83	0.90	NA	0.75
Jan 1	0.85	0.66	0.77	0.79	0.74	0.68	0.77	0.83	0.68	0.70

Percent soluble solids (Brix)

Sep 1	NA	NA	NA	NA	9.31	9.51	9.33	9.81	9.57	9.43
Oct 1	9.76	9.59	9.37	9.76	9.81	9.29	9.32	9.86	9.78	9.89
Nov 1	10.34	10.24	9.93	10.22	10.50	10.04	9.70	10.77	10.50	10.46
Dec 1	11.39	10.76	10.64	11.06	11.33	11.07	10.81	11.50	NA	11.25
Jan 1	12.19	11.29	11.45	11.81	11.91	11.63	11.51	12.21	11.82	11.60

Ratio

Sep 1	NA	NA	NA	NA	7.14	5.54	5.39	5.98	6.87	7.03
Oct 1	7.31	10.24	8.98	8.39	9.83	8.03	7.64	8.88	9.95	10.98
Nov 1	10.23	13.87	12.90	11.11	12.26	11.02	10.31	11.25	12.95	14.47
Dec 1	13.62	16.18	14.14	13.45	14.67	15.14	13.27	13.01	NA	15.26
Jan 1	14.66	17.57	15.22	15.09	16.35	17.18	14.96	14.97	17.56	16.81

Pounds unfinished juice per box

Sep 1	NA	NA	NA	NA	45.47	42.41	41.24	42.42	43.73	43.66
Oct 1	46.32	50.49	50.53	48.03	47.68	47.84	46.31	48.45	48.51	51.02
Nov 1	49.74	52.41	53.64	50.53	49.61	50.85	50.24	51.09	51.97	52.26
Dec 1	51.83	52.79	51.93	51.77	50.85	51.92	50.86	50.80	NA	49.04
Jan 1	51.24	48.77	52.27	50.53	49.58	51.68	50.11	50.69	51.42	51.51

Pounds solids per box

Sep 1	NA	NA	NA	NA	4.23	4.03	3.84	4.16	4.19	4.12
Oct 1	4.52	4.83	4.73	4.69	4.67	4.44	4.31	4.77	4.74	5.04
Nov 1	5.14	5.38	5.33	5.16	5.21	5.10	4.87	5.49	5.45	5.46
Dec 1	5.90	5.69	5.52	5.72	5.76	5.75	5.49	5.83	NA	5.51
Jan 1	6.24	5.52	5.99	5.96	5.90	6.01	5.76	6.17	6.08	5.97

NA = Not available

CITRUS MATURITY: Unadjusted matched averages for regular bloom fruit from identical sample trees,
by season and (number of sample groves)

Date	1993-94 (44)	1994-95 (40)	1995-96 (40)	1996-97 (43)	1997-98 (43)	1998-99 (47)	1999-00 (43)	2000-01 (47)	2001-02 (41)	2002-03 (43)
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MIDSEASON ORANGES

Percent acid

Sep 1	NA	NA	NA	NA	1.58	1.96	2.01	1.78	1.58	1.44
Oct 1	1.64	1.19	1.25	1.43	1.17	1.30	1.43	1.23	1.17	1.03
Nov 1	1.26	0.92	0.96	1.13	1.01	1.06	1.10	1.07	0.97	0.83
Dec 1	1.01	0.83	0.89	0.99	0.89	0.84	0.93	0.95	NA	0.79
Jan 1	1.00	0.79	0.85	0.90	0.82	0.78	0.89	0.88	0.79	0.76

Percent soluble solids (Brix)

Sep 1	NA	NA	NA	NA	9.15	9.43	9.11	9.31	9.31	8.99
Oct 1	9.38	9.21	9.24	9.83	9.45	9.16	9.06	9.49	9.45	9.55
Nov 1	9.95	10.13	9.95	10.26	10.33	10.01	9.48	10.48	10.40	10.34
Dec 1	11.08	10.94	10.95	11.39	11.40	11.19	10.89	11.39	NA	11.23
Jan 1	12.00	11.60	11.81	12.13	12.06	12.28	12.02	12.09	12.25	11.84

Ratio

Sep 1	NA	NA	NA	NA	5.93	4.92	4.59	5.28	5.98	6.35
Oct 1	5.85	7.89	7.48	6.98	8.30	7.19	6.44	7.87	8.21	9.52
Nov 1	8.12	11.37	10.61	9.37	10.55	9.57	8.73	10.11	10.99	12.77
Dec 1	11.24	13.50	12.64	11.81	13.09	13.57	11.87	12.19	NA	14.46
Jan 1	12.23	14.77	14.24	13.78	15.07	15.99	13.65	14.03	15.68	15.87

Pounds juice per box

Sep 1	NA	NA	NA	NA	45.25	42.52	39.06	44.60	43.13	45.98
Oct 1	45.76	51.13	51.74	48.65	50.12	48.38	46.61	50.00	49.77	52.68
Nov 1	50.54	54.45	55.72	52.39	51.94	52.91	51.14	53.71	53.33	54.56
Dec 1	53.32	55.11	53.50	53.17	52.08	53.91	51.92	53.32	NA	53.17
Jan 1	52.72	52.39	53.86	51.91	51.12	53.17	51.38	53.34	52.39	52.41

Pounds solids per box

Sep 1	NA	NA	NA	NA	4.14	4.01	3.56	4.16	4.02	4.13
Oct 1	4.29	4.71	4.79	4.79	4.74	4.43	4.23	4.74	4.71	5.03
Nov 1	5.03	5.52	5.55	5.37	5.37	5.29	4.85	5.63	5.55	5.64
Dec 1	5.90	6.03	5.85	6.05	5.94	6.04	5.66	6.08	NA	5.97
Jan 1	6.33	6.09	6.37	6.29	6.17	6.53	6.17	6.45	6.42	6.21

NA = Not available

CITRUS MATURITY: Unadjusted matched averages for regular bloom fruit from identical sample trees,
by season and (number of sample groves)

Date	1993-94 (84)	1994-95 (45)	1995-96 (75)	1996-97 (71)	1997-98 (60)	1998-99 (52)	1999-00 (91)	2000-01 (97)	2001-02 (59)	2002-03 (59)
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LATE ORANGES

Percent acid										
Oct 1	2.73	2.25	2.46	2.50	2.18	2.51	2.53	2.48	2.25	2.09
Nov 1	2.20	1.74	1.83	2.05	1.86	2.09	2.12	2.04	1.79	1.69
Dec 1	1.75	1.43	1.60	1.70	1.51	1.64	1.73	1.76	NA	1.48
Jan 1	1.61	1.28	1.42	1.48	1.28	1.38	1.51	1.54	1.27	1.28
Feb 1	1.37	1.16	1.25	1.34	1.14	1.30	1.36	1.42	1.15	1.23
Mar 1	1.21	1.09	1.16	1.16	1.06	1.22	1.23	1.22	1.10	1.13
Apr 1	1.06	0.95	1.04	0.98	0.99	1.07	1.05	1.07	0.92	0.90
May 1	0.87	0.79	0.89	0.90	0.85	0.90	0.93	0.93	0.79	0.79
Percent soluble solids (Brix)										
Oct 1	8.97	8.76	8.61	9.00	8.86	8.71	8.61	8.76	8.93	8.72
Nov 1	8.97	9.30	8.67	9.36	9.44	9.05	8.77	9.43	9.29	9.18
Dec 1	9.86	10.00	9.52	10.37	10.23	10.01	9.87	10.31	NA	10.07
Jan 1	10.71	10.69	10.51	11.19	11.02	10.85	10.84	11.03	11.08	10.81
Feb 1	11.83	11.50	11.36	11.99	11.86	12.08	11.74	11.79	11.81	11.41
Mar 1	12.47	12.15	11.85	12.48	12.73	12.65	12.55	12.45	12.67	12.28
Apr 1	12.74	12.30	12.23	12.84	12.91	13.38	12.96	12.62	12.85	12.40
May 1	13.25	12.57	12.72	13.15	13.51	13.80	13.40	12.87	13.27	12.49
Ratio										
Oct 1	3.32	3.94	3.54	3.65	4.13	3.56	3.44	3.58	4.03	4.24
Nov 1	4.14	5.45	4.84	4.62	5.18	4.37	4.20	4.70	5.25	5.53
Dec 1	5.73	7.08	6.04	6.17	6.90	6.19	5.77	5.93	NA	6.95
Jan 1	6.75	8.49	7.50	7.66	8.73	7.96	7.27	7.28	8.86	8.55
Feb 1	8.76	10.02	9.19	9.08	10.57	9.42	8.70	8.38	10.48	9.37
Mar 1	10.40	11.30	10.32	10.92	12.21	10.76	10.28	10.31	11.67	11.07
Apr 1	12.07	13.06	11.90	13.20	13.26	12.62	12.43	11.97	14.17	13.93
May 1	15.34	16.21	14.46	14.94	16.07	15.42	14.59	13.99	17.20	16.02
Pounds unfinished juice per box										
Oct 1	44.61	48.95	47.64	46.32	47.55	45.33	43.28	46.22	47.61	48.72
Nov 1	48.62	53.75	52.88	49.50	50.82	50.42	47.60	50.56	51.54	51.92
Dec 1	53.03	55.86	53.66	53.68	52.69	53.07	51.51	52.44	NA	52.85
Jan 1	54.34	56.31	54.10	54.09	54.46	54.26	52.39	54.08	55.86	54.53
Feb 1	54.15	56.01	55.19	54.72	55.31	55.04	52.75	53.49	55.96	53.71
Mar 1	55.14	55.93	54.42	54.52	54.40	53.46	52.46	53.91	55.76	52.38
Apr 1	55.51	54.98	51.66	55.00	53.74	55.38	52.27	54.92	56.45	53.47
May 1	55.39	56.04	53.94	54.18	54.78	54.45	52.55	53.91	56.01	52.91
Pounds solids per box										
Oct 1	4.00	4.29	4.10	4.17	4.22	3.95	3.73	4.05	4.25	4.25
Nov 1	4.37	5.00	4.59	4.63	4.80	4.56	4.18	4.77	4.79	4.77
Dec 1	5.23	5.59	5.12	5.57	5.40	5.31	5.09	5.41	NA	5.32
Jan 1	5.82	6.02	5.69	6.06	6.01	5.88	5.68	5.97	6.20	5.90
Feb 1	6.41	6.45	6.28	6.56	6.56	6.65	6.20	6.31	6.61	6.14
Mar 1	6.88	6.81	6.45	6.82	6.93	6.78	6.59	6.71	7.07	6.44
Apr 1	7.08	6.77	6.32	7.08	6.94	7.42	6.78	6.94	7.25	6.65
May 1	7.34	7.06	6.87	7.14	7.41	7.52	7.04	6.95	7.44	6.62

NA = Not available

CITRUS MATURITY: Unadjusted matched averages for regular bloom fruit from identical sample trees,
by season and (number of sample groves)

Date	1993-94 (49)	1994-95 (46)	1995-96 (44)	1996-97 (49)	1997-98 (47)	1998-99 (45)	1999-00 (48)	2000-01 (46)	2001-02 (47)	2002-03 (42)
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WHITE SEEDLESS GRAPEFRUIT

Percent acid										
Sep 1	NA	NA	NA	NA	1.60	1.81	1.85	1.83	1.67	1.56
Oct 1	1.69	1.39	1.57	1.64	1.42	1.56	1.63	1.58	1.46	1.42
Nov 1	1.50	1.25	1.34	1.45	1.34	1.48	1.45	1.50	1.33	1.27
Dec 1	1.42	1.18	1.32	1.43	1.27	1.36	1.42	1.47	1.26	1.30

Percent soluble solids (Brix)										
Sep 1	NA	NA	NA	NA	9.55	10.10	10.29	10.15	9.82	9.67
Oct 1	10.38	9.55	9.65	10.39	9.73	9.76	9.82	10.22	9.73	9.88
Nov 1	10.19	9.61	9.48	10.11	9.93	10.10	9.60	10.38	9.81	10.20
Dec 1	10.51	9.55	9.73	10.44	9.91	10.33	10.07	10.78	9.96	10.45

Ratio										
Sep 1	NA	NA	NA	NA	6.00	5.59	5.60	5.47	5.91	6.23
Oct 1	6.17	6.89	6.20	6.35	6.86	6.32	6.07	6.52	6.70	6.99
Nov 1	6.84	7.78	7.11	6.99	7.45	6.86	6.67	6.98	7.43	8.15
Dec 1	7.43	8.12	7.41	7.32	7.88	7.64	7.16	7.36	7.93	8.10

Pounds unfinished juice per box										
Sep 1	NA	NA	NA	NA	34.47	30.67	28.77	32.70	33.86	35.25
Oct 1	35.16	39.87	36.84	37.79	38.94	35.95	34.37	36.84	38.80	38.21
Nov 1	39.26	43.49	40.76	40.62	41.62	38.65	37.92	40.56	42.31	40.30
Dec 1	42.81	44.93	42.67	43.19	43.94	42.99	42.31	41.79	44.48	42.37

Pounds solids per box										
Sep 1	NA	NA	NA	NA	3.29	3.09	2.96	3.32	3.33	3.41
Oct 1	3.64	3.81	3.55	3.92	3.80	3.50	3.37	3.76	3.78	3.77
Nov 1	4.00	4.18	3.86	4.11	4.14	3.90	3.64	4.20	4.16	4.10
Dec 1	4.50	4.29	4.15	4.51	4.35	4.44	4.25	4.50	4.43	4.42

Date	1993-94 (42)	1994-95 (39)	1995-96 (39)	1996-97 (39)	1997-98 (44)	1998-99 (39)	1999-00 (41)	2000-01 (44)	2001-02 (44)	2002-03 (36)
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COLORED SEEDLESS GRAPEFRUIT

Percent acid										
Sep 1	NA	NA	NA	NA	1.56	1.79	1.77	1.76	1.65	1.54
Oct 1	1.66	1.35	1.48	1.58	1.39	1.49	1.57	1.51	1.43	1.34
Nov 1	1.46	1.21	1.24	1.37	1.31	1.38	1.38	1.43	1.26	1.20
Dec 1	1.41	1.11	1.25	1.35	1.22	1.29	1.36	1.39	1.21	1.21

Percent soluble solids (Brix)										
Sep 1	NA	NA	NA	NA	9.69	10.01	10.17	10.37	10.05	10.16
Oct 1	10.45	9.67	9.59	10.43	9.80	9.64	9.78	10.44	10.08	10.32
Nov 1	10.24	9.85	9.57	10.07	9.96	10.04	9.72	10.68	10.16	10.71
Dec 1	10.65	9.88	10.03	10.55	10.14	10.42	10.20	10.88	10.37	10.85

Ratio										
Sep 1	NA	NA	NA	NA	6.23	5.60	5.77	5.91	6.12	6.63
Oct 1	6.33	7.17	6.55	6.67	7.08	6.50	6.29	6.96	7.06	7.78
Nov 1	7.07	8.17	7.76	7.37	7.64	7.30	7.06	7.53	8.10	8.99
Dec 1	7.61	8.98	8.05	7.89	8.35	8.09	7.60	7.87	8.59	9.01

Pounds unfinished juice per box										
Sep 1	NA	NA	NA	NA	35.13	31.30	28.29	33.37	34.62	35.80
Oct 1	34.75	40.77	36.65	38.12	39.98	34.88	35.08	37.15	40.15	39.41
Nov 1	39.56	44.24	41.86	41.66	43.65	40.27	37.58	40.53	43.93	42.25
Dec 1	41.84	45.65	42.85	44.64	44.92	43.24	45.34	43.52	44.85	42.97

Pounds solids per box										
Sep 1	NA	NA	NA	NA	3.40	3.13	2.88	3.46	3.48	3.64
Oct 1	3.63	3.94	3.51	3.97	3.92	3.36	3.43	3.87	4.05	4.07
Nov 1	4.05	4.36	4.00	4.19	4.35	4.04	3.65	4.33	4.47	4.52
Dec 1	4.46	4.52	4.30	4.71	4.56	4.50	4.63	4.71	4.66	4.66

NA = Not available