FLORIDA DEPARTMENT OF CITRUS

Florida Citrus Outlook and Production Trends

Presented to the International Citrus Beverage Conference

September 21, 2016

Presentation Overview

- Florida Citrus Outlook
- Florida Orange Production Trends

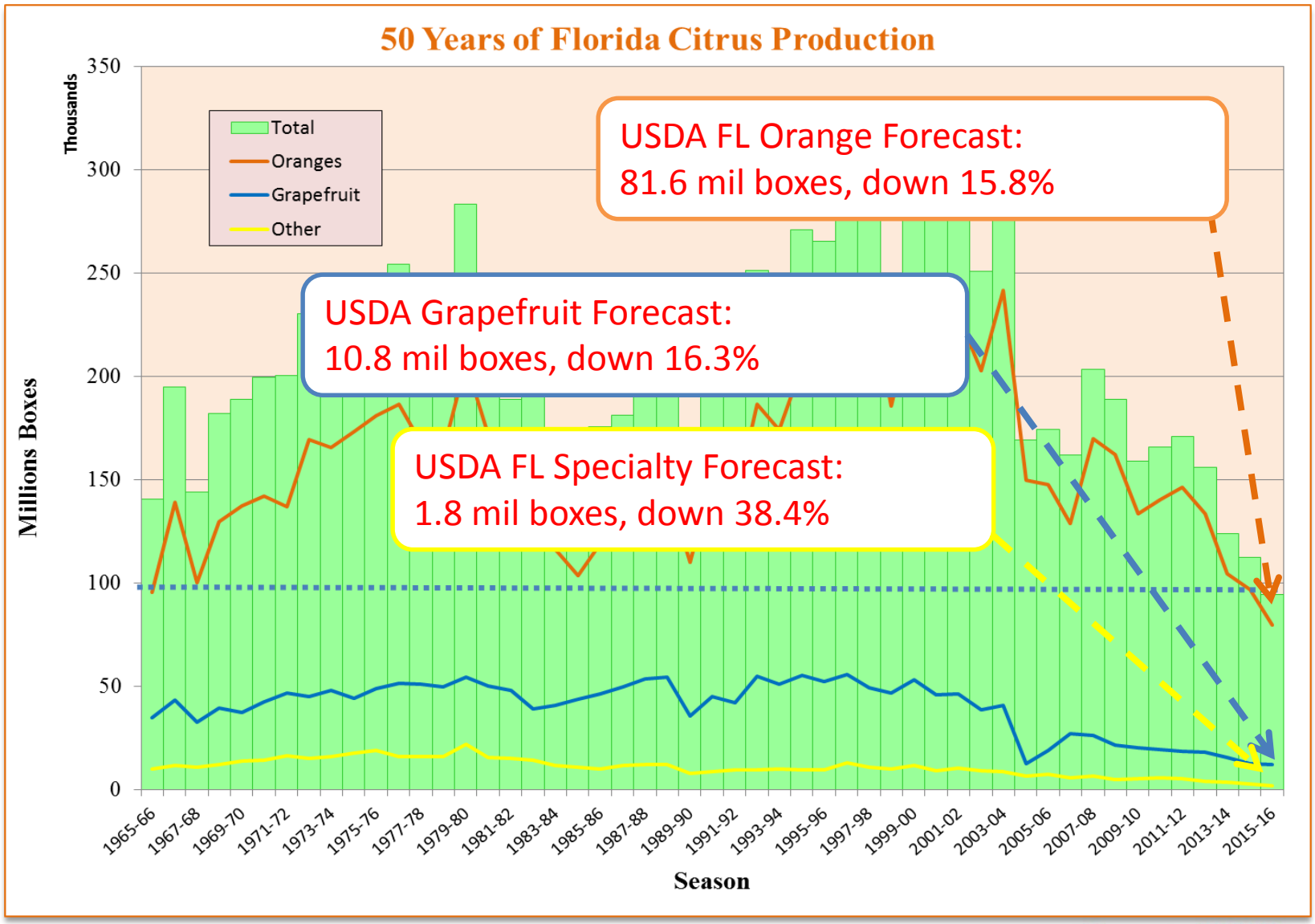
FLORIDA DEPARTMENT OF CITRUS

Florida Citrus Outlook
2015-16 Season in Review

Executive Summary

- Trends for the 2015-16 Florida citrus season:
  - Projected reduced orange production in both FL and BR, with overall estimated 10.5% reduction in availability.
  - Projected final NFC movement down 6.6%; FCOJ movement up 4.5%
  - Reduced ending inventories for both NFC and FCOJ
  - Retail OJ Prices up 0.2% and volumes down by 5%.
  - Imports for FCOJ down by > 25%; Imports NFC up by 3%.
  - Decrease in grapefruit and specialty
    - Increased fresh fruit prices with decline in total fresh revenues consistent with decline in crop size
    - Increased foreign and domestic receipts of GJ
  - On-tree prices declined for processed oranges and increased for fresh citrus and processed grapefruit.
  - Fewer boxes, higher production costs => overall reduced profitability

Florida Historical Citrus Production



THERE'S AMAZING INSIDE FLORIDA CITRUS.

Source: USDA

Florida Orange Utilization

Item	2013-14	2014-15	2015-16f	2015-16 final
			- - - - - - - million boxes - - - - - - -	
Certified Fresh	4.153	3.986	↓25%	3.01
SSOJ	76.04	71.89	↓14%	61.77
FCOJ	21.87	18.96	↓16%	15.84
Non-Certified	1.35	0.97	0.85	0.91
Other	1.29	0.99	1.00	0.07
TOTAL	104.7	96.8	74.0	81.6

Update based on November USDA Forecast and revised further by USDA in July 2016.

THERE'S AMAZING INSIDE FLORIDA CITRUS.

Florida Grapefruit Utilization

Item	2013-14	2014-15	2015-16f	2015-16 final
		- - - - - - - - million boxes - - - - - - - -		
Fresh	6.1	5.3	↓14%	4.54
FCGJ	4.7	3.8	↓28%	2.77
SSGJ	4.0	3.2	↓4%	3.04
Non-Certified	0.6	0.5	0.5	0.41
Other	0.3	0.1	0.2	0.04
TOTAL Utilized	15.7	12.9		10.80
		- - - - - - million SSE gallons - - - - - -		
GJ Availability	86.6	77.1	↓17%	64.1

Update based on November USDA Forecast and revised further by USDA in July 2016.

THERE'S AMAZING INSIDE FLORIDA GRAPEFRUIT.

Florida Citrus Outlook:
2015-16 Season in Review

PROCESSED ORANGES

THERE'S AMAZING INSIDE FLORIDA CITRUS.

Florida & Brazil Comparative Utilization of Round Oranges

Season	FLORIDA			BRAZIL		
	Produc-tion	Utilization		Produc-tion	Utilization	
		Fresh	Proc.		Fresh	Proc.
	million 90-lb. boxes					
12-13	133.6	5.97	127.63	502	178	324
13-14	104.7	5.50	99.20	401	133	268
14-15	96.95	4.96	91.99	438	148	290
15-16f	74.0	2.96	69.2	393	148	245
15-16u	81.6	3.01	77.68	410	128	282
Change	-15.8%	-39.0%	-15.6%	-6.4%	-13.5%	-2.8%

Source: Florida Citrus Outlook Update 2015-16 Season, Working Paper 2015-16 Update.
Update based on November Forecast and revised further by USDA in March 2016.

THERE'S AMAZING INSIDE FLORIDA CITRUS.

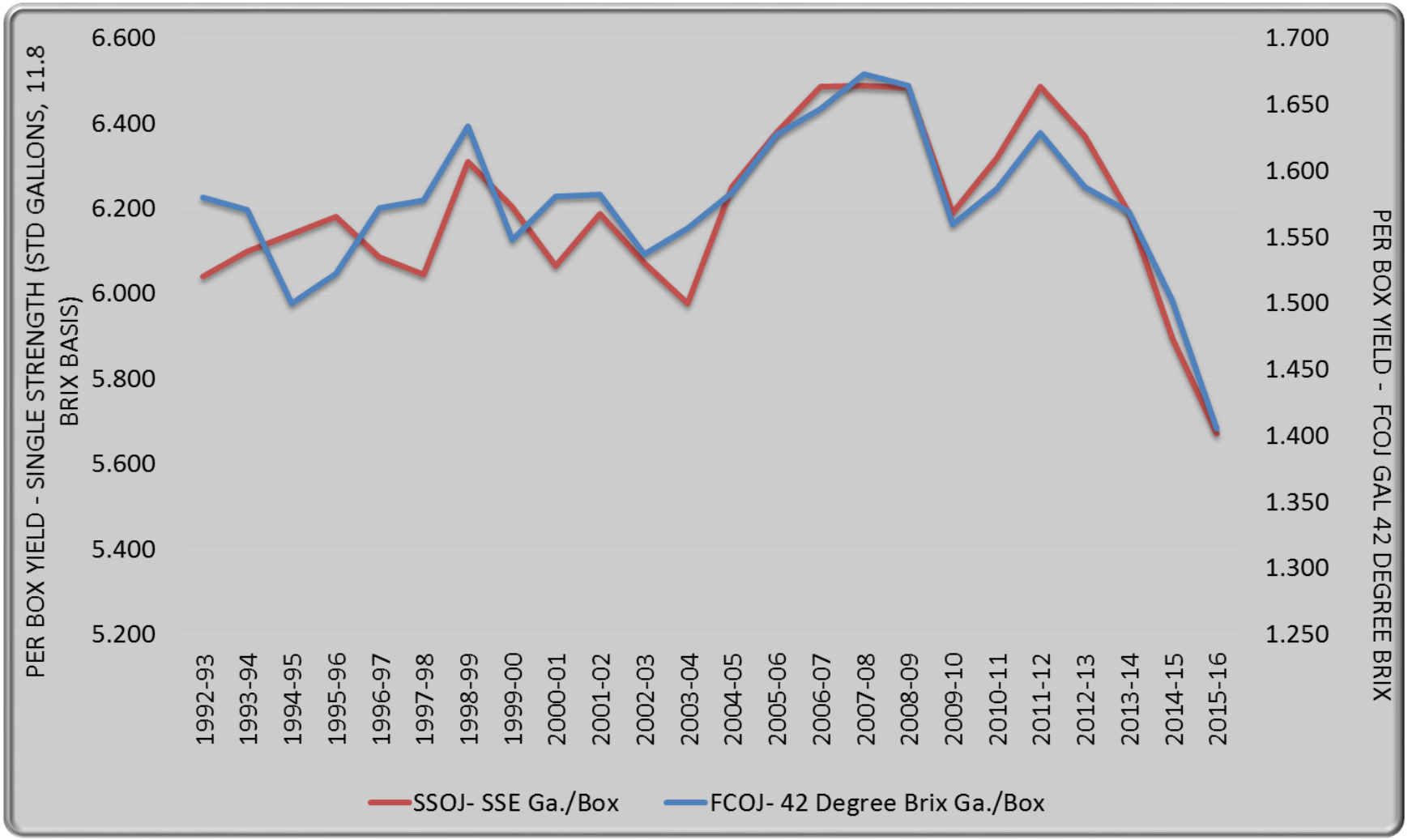
Florida & Brazil OJ Availability

Item	July-June Season			Chg	% Chg
	14-15	15-16f	15-16u		
FLORIDA					
Beg. Inventory	623	700	700	+77	+12%
Production	547	435	443	-104	-19%
Availability	1,170	1,135	1,143	-27	-2.3%
BRAZIL					
Beg. Inventory	465	444	465	0	-0%
Production	1,713	1,302	1,388	-324	-19%
Availability	2,178	1,746	1,854	-324	-15%
FL+BR					
Beg. Inventory	1,088	1,144	1,165	+77	+7%
Production	2,260	1,737	1,832	-428	-19%
Availability	3,348	2,881	2,997	-352	-10.5%

Source: Florida Citrus Outlook Update 2015-16 Season, Working Paper 2015-16 Update.
Update based on November Forecast and revised further by USDA in March 2016.

THERE'S AMAZING INSIDE FLORIDA CITRUS.

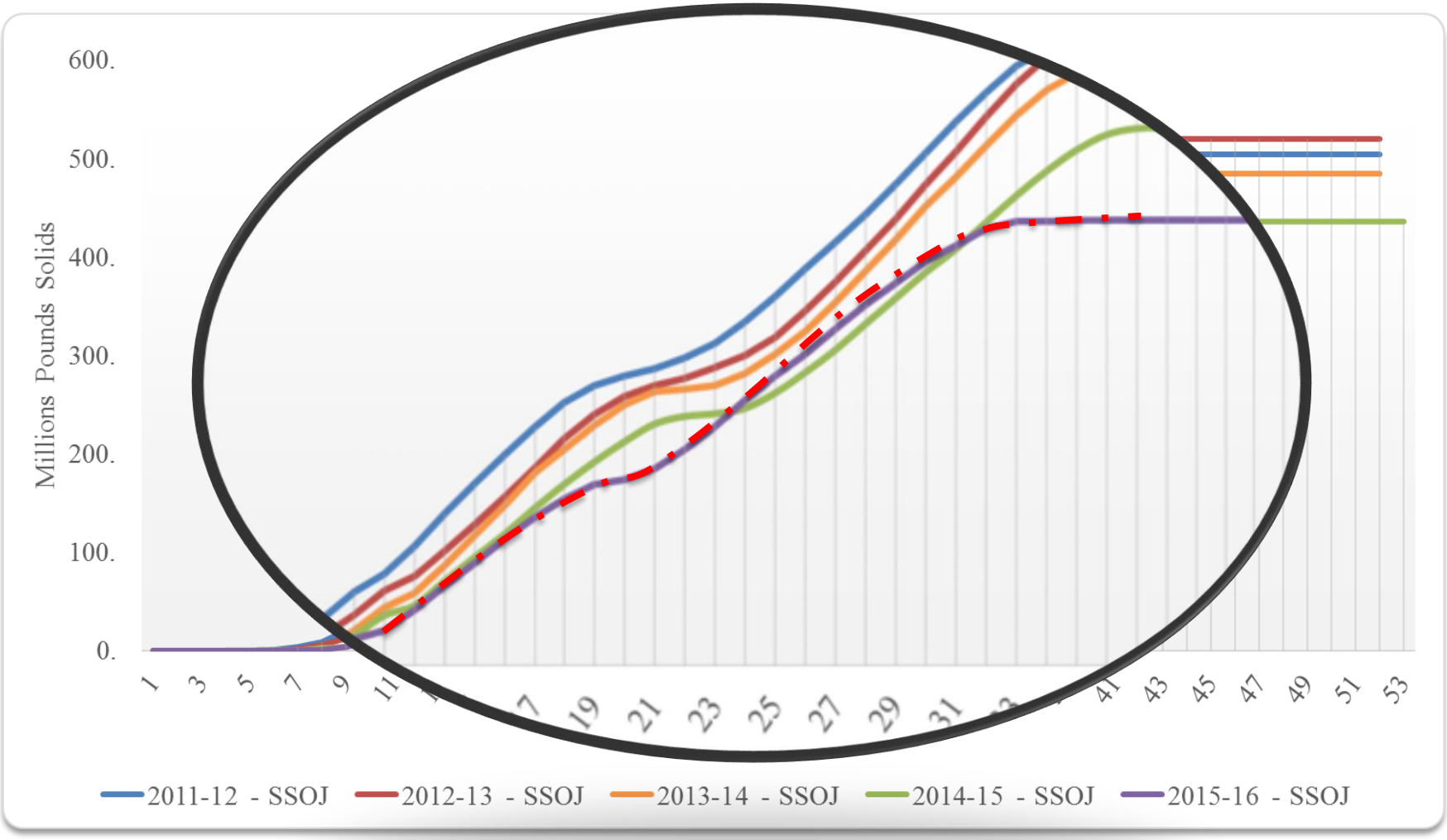
Juice Yields



Data Source: Florida Processors Statistics Database, FDOC

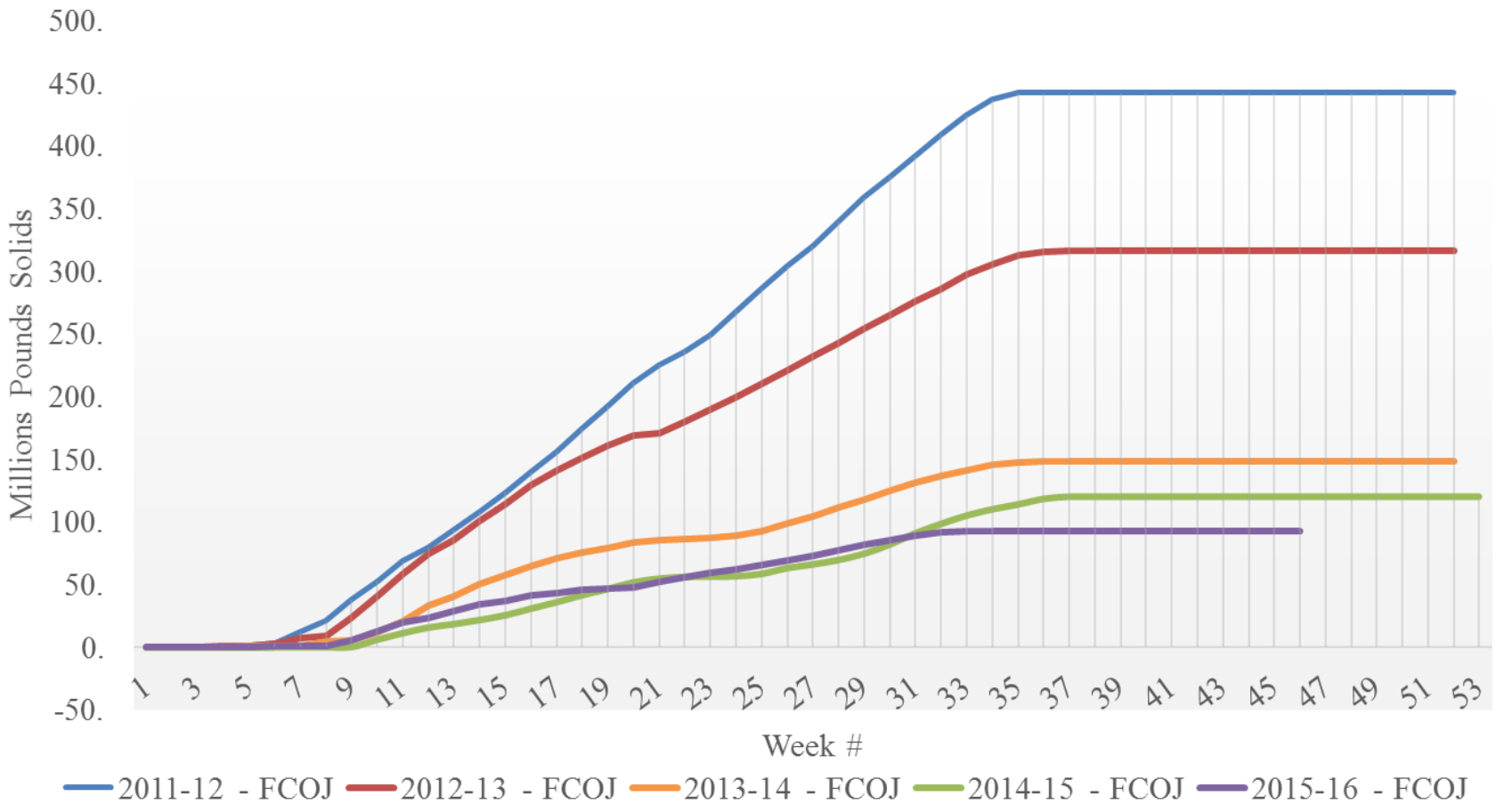
THERE'S AMAZING INSIDE FLORIDA CITRUS.

SSOJ – Net PS from fruit



Data Source: Florida Processors Statistics Database, FDOC

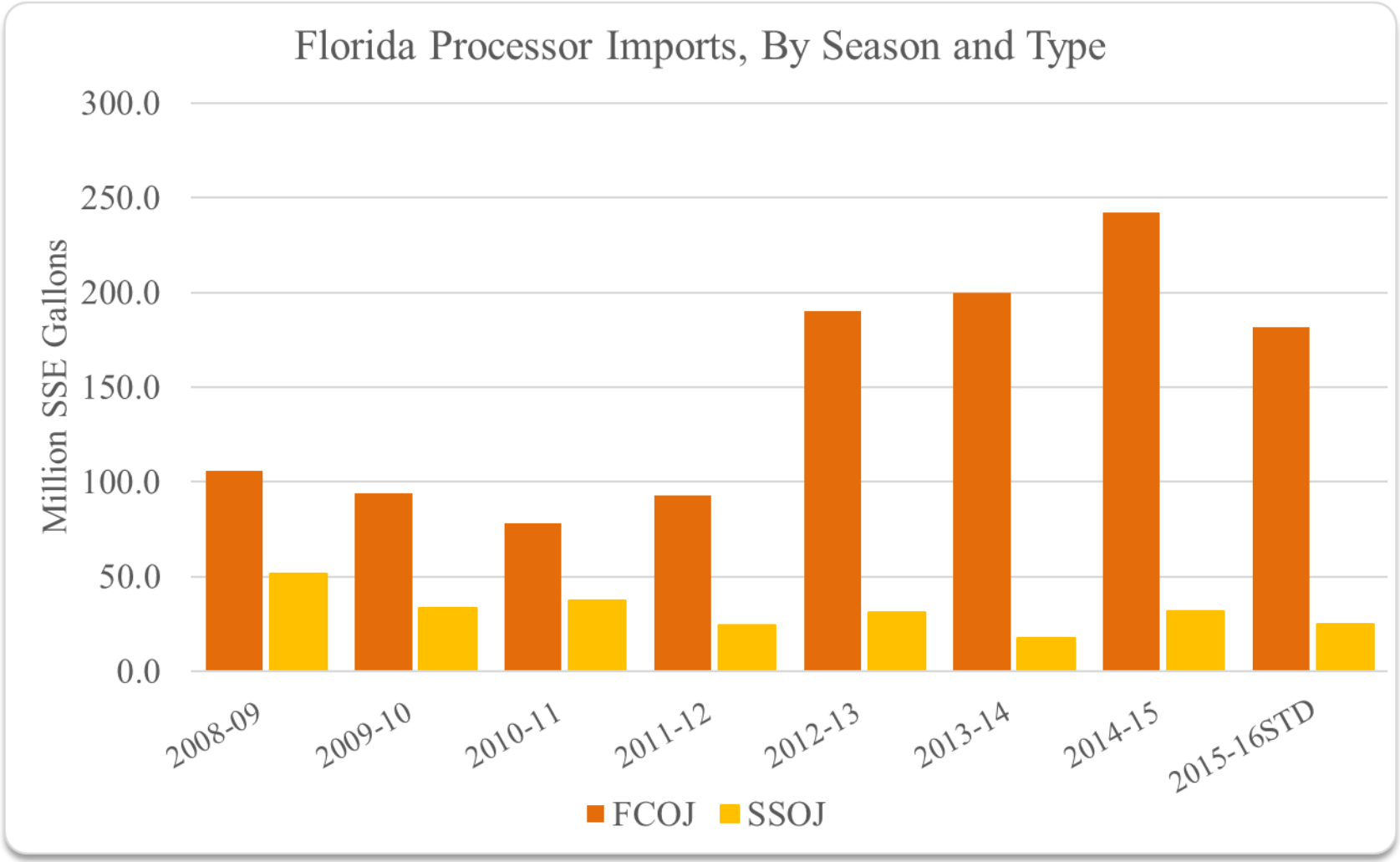
FCOJ – Net PS from fruit



Data Source: Florida Processors Statistics Database, FDOC

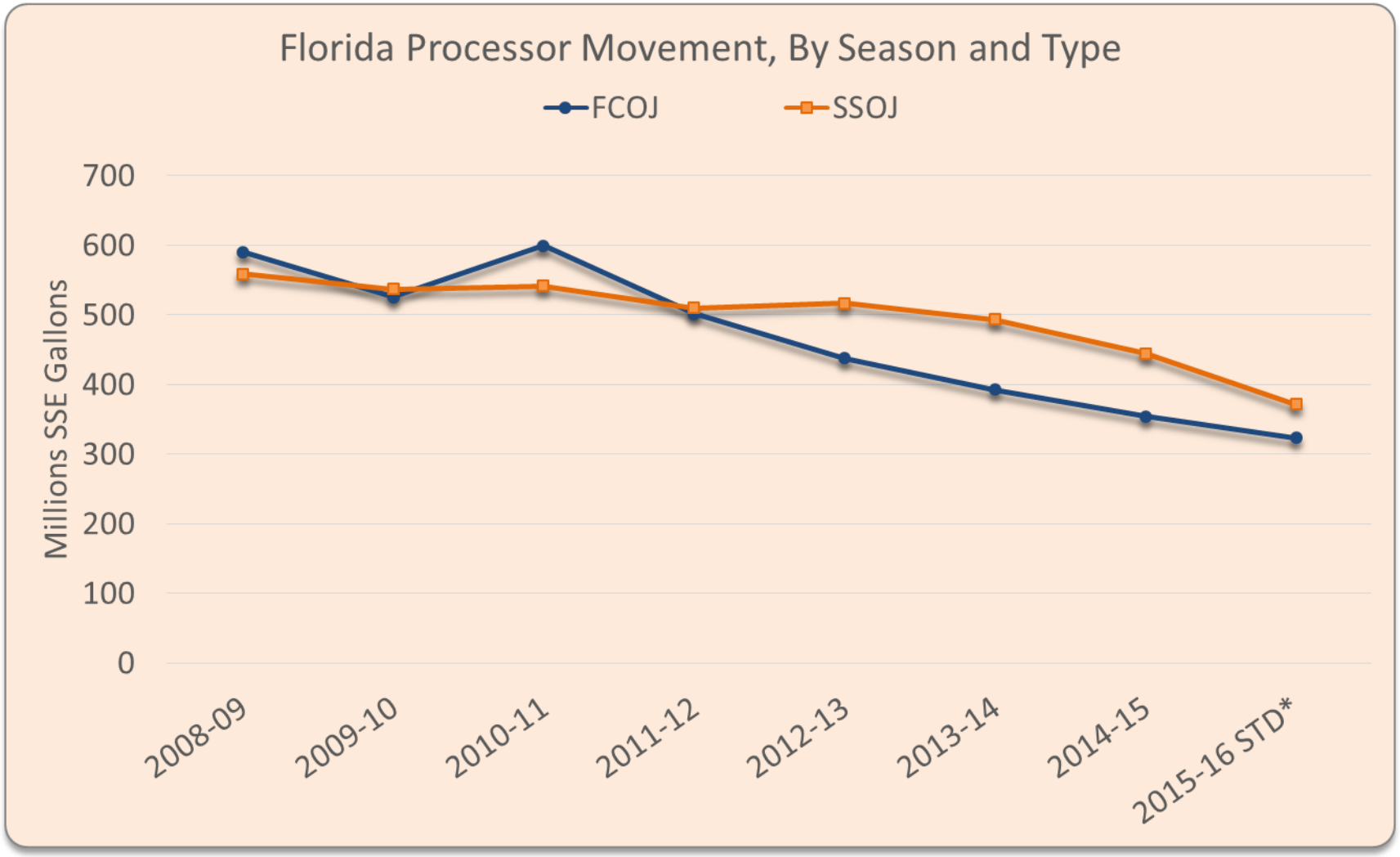
THERE'S AMAZING INSIDE FLORIDA CITRUS.

Florida Processor OJ Imports*



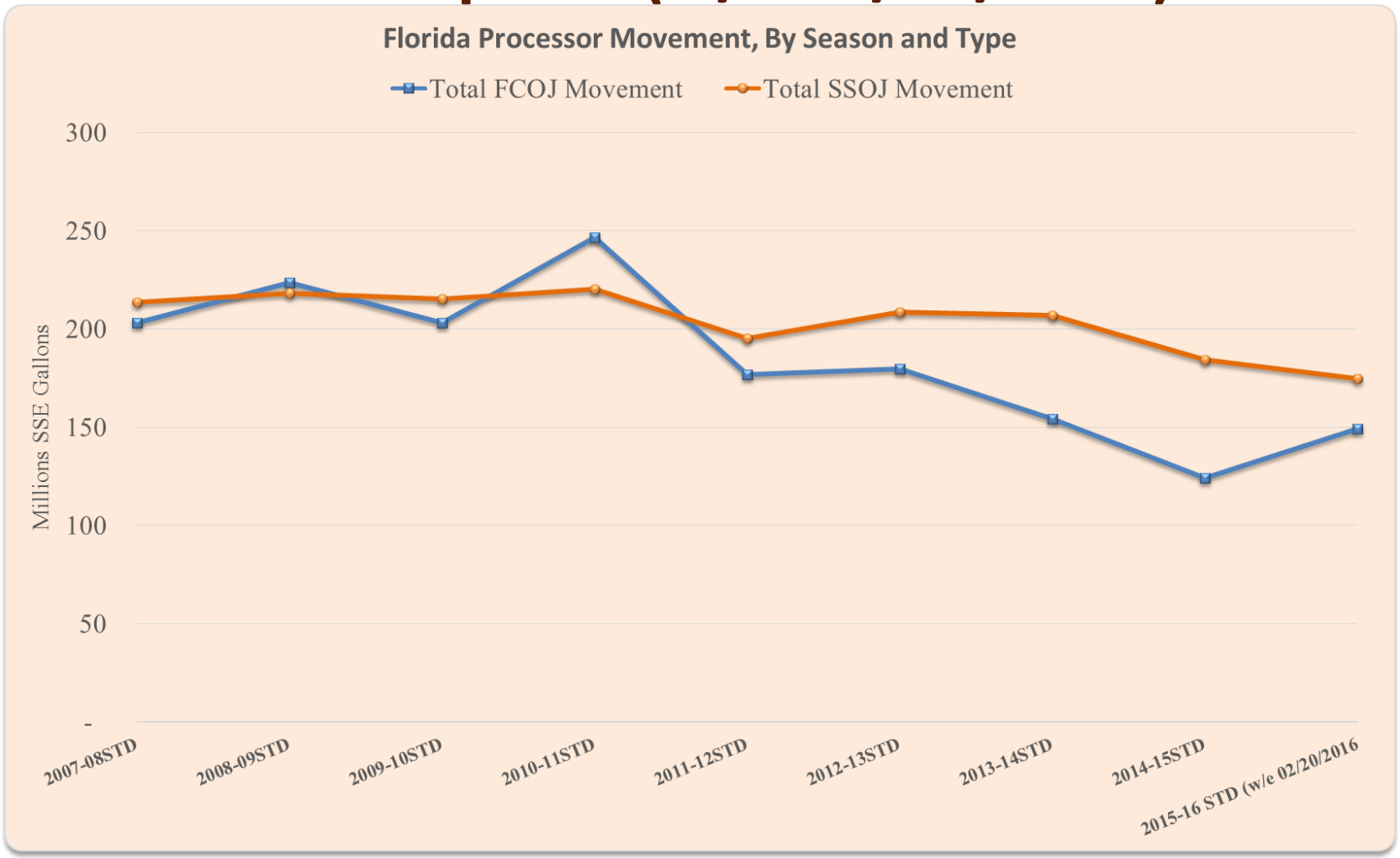
*Includes foreign and domestic receipts; 2015-16STD through 08/20/2016

Florida FCOJ and SSOJ Movement



*2015-16 STD through w/e 8/20/2016

Florida FCOJ and SSOJ Movement – Midseason snapshot (w/e 02/20/2016)



THERE'S AMAZING INSIDE FLORIDA CITRUS.

FL FCOJ Availability, Movement & Inventory

Item	2013-14	2014-15	2015-16f	2015-16p
		- - - - - - - - million SSE gallons - - - - - - - - -		
Beg. Inventory	310.47	266.39	~~281.11~~	281.11
Pack	144.00	116.64	66.64	90.73
Imports & Other	204.82	252.37	~~257.27~~	200.14[a]
Availability	659.29	635.40	605.01	571.98
Movement	392.89	354.29	~~322.30~~	370.23
End. Inventory	266.4	281.1	282.7	201.8
		- - - - - - - - - weeks supply - - - - - - - -		
Carryover	35.3	42.1	45.6	28.3

Update based on November USDA Forecast and revised further by USDA in July 2016.

[a] Includes projected imports of 8.44 million ps from 8/28/2016 through 10/01/2016.

FL SSOJ Availability, Movement & Inventory

Item	2013-14	2014-15	2015-16f	2015-16u
		- - - - - - - - million SSE gallons - - - - - - - - -		
Beg. Inventory	213.1	207.6	221.4	222.0
Production	462.7	416.8	366.9	349.1
Pack from FCOJ	11.2	15.8	14.4	13.5
NFC Imports	17.5	31.8	33.0	27.2
Availability	704.5	672.0	635.7	611.9
Movement	496.9	450.6	440.6	421.1
Bulk End. Inventory[a]	201.3	215.4	195.1	184.9
		- - - - - - - - - weeks supply - - - - - - -		
Bulk Carryover	21.1	25.3	23.0	22.8

Update based on November USDA Forecast and revised further by USDA in July 2016.

[a] Ending Inventory less packaged

FL OJ Availability, Movement & Inventory

Item	2013-14	2014-15	2015-16f	2015-16u
	- - - - - - - - million SSE gallons - - - - - - - - -			
Beg. Inventory	529.8	480.3	509.9	509.9
Production[a]	622.6	547.3	448.4	443.5
Imports[b]	220.9	276.6	281.2	227.4
Availability	1,373.3	1,304.2	1,241.5	1,183.8
Movement	893.0	794.3	730.6	791.3
End. Inventory	480.3	509.9	510.9	392.5
	- - - - - - - - - weeks supply - - - - - - -			
Carryover	28.0	33.4	36.4	25.7

[A] Includes Packaged COJ,

[b] Foreign and domestic; reprocessed tangerine juice; net loss/gain during reprocessing; and adjustments.

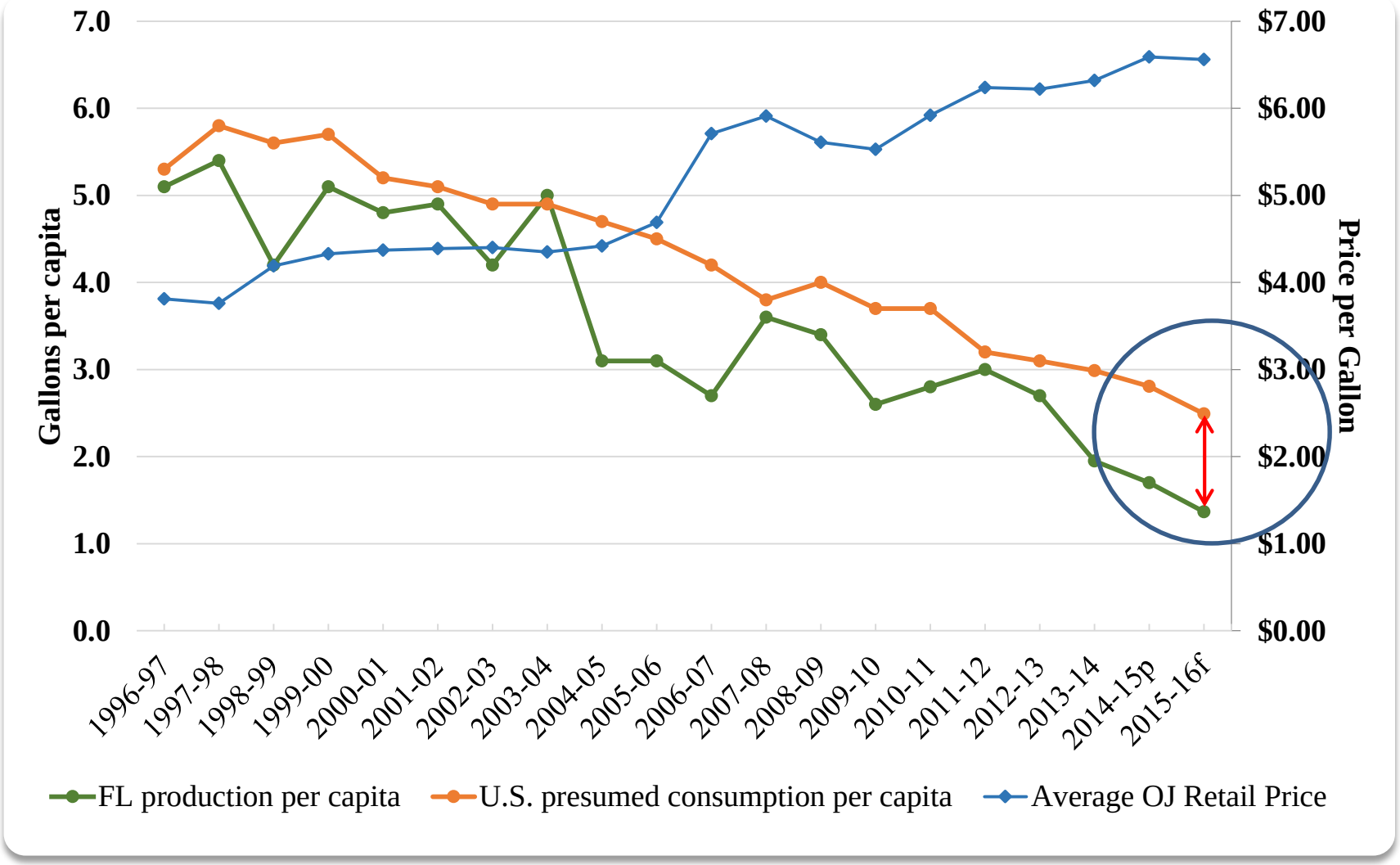
Update based on November USDA Forecast and revised further by USDA in July 2016.

THERE'S AMAZING INSIDE FLORIDA CITRUS.

U.S. OJ Supply & Consumption

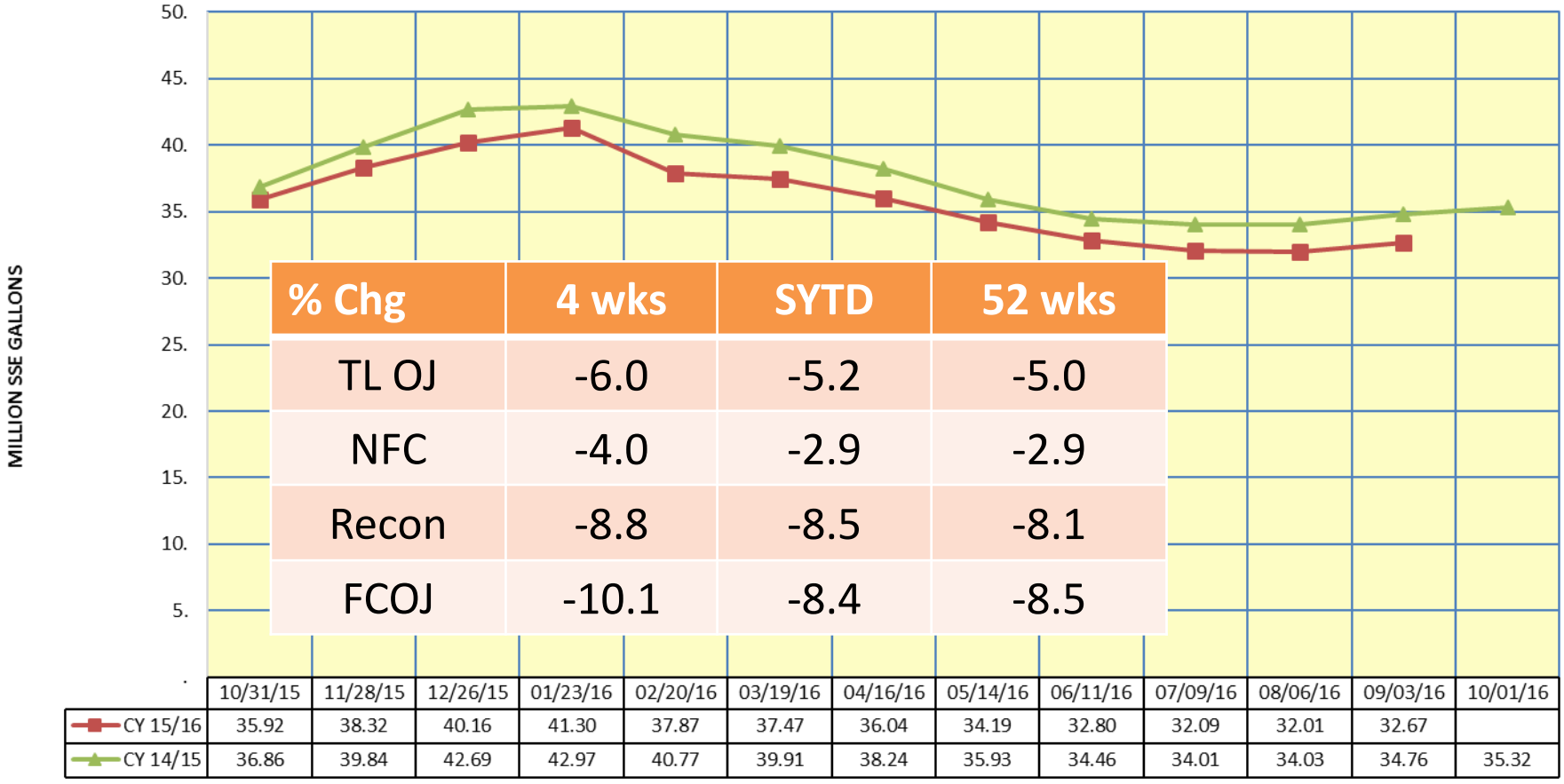
Season	Beg. Inv.	FL Prod.	Other U.S. Prod.	U.S.		End. Inv.	Presumed Consumption	
				IMP	EXP		TOTAL	Per Capita
	- - - - - - - - - - million SSE gallons - - - - - - - - - -							Gallons
2011-12	423	928	39	223	152	511	949	3.0
2012-13	511	821	30	421	169	529	1,084	3.4
2013-14	529	623	42	418	160	498	953	3.0
2014-15	498	547	43	458	113	530	903	2.8
2015-16u	530	443	51	379	88	507	809	2.5

Presumed Consumption > FL Production



THERE'S AMAZING INSIDE FLORIDA CITRUS.

Total U.S. OJ - Gallon Sales

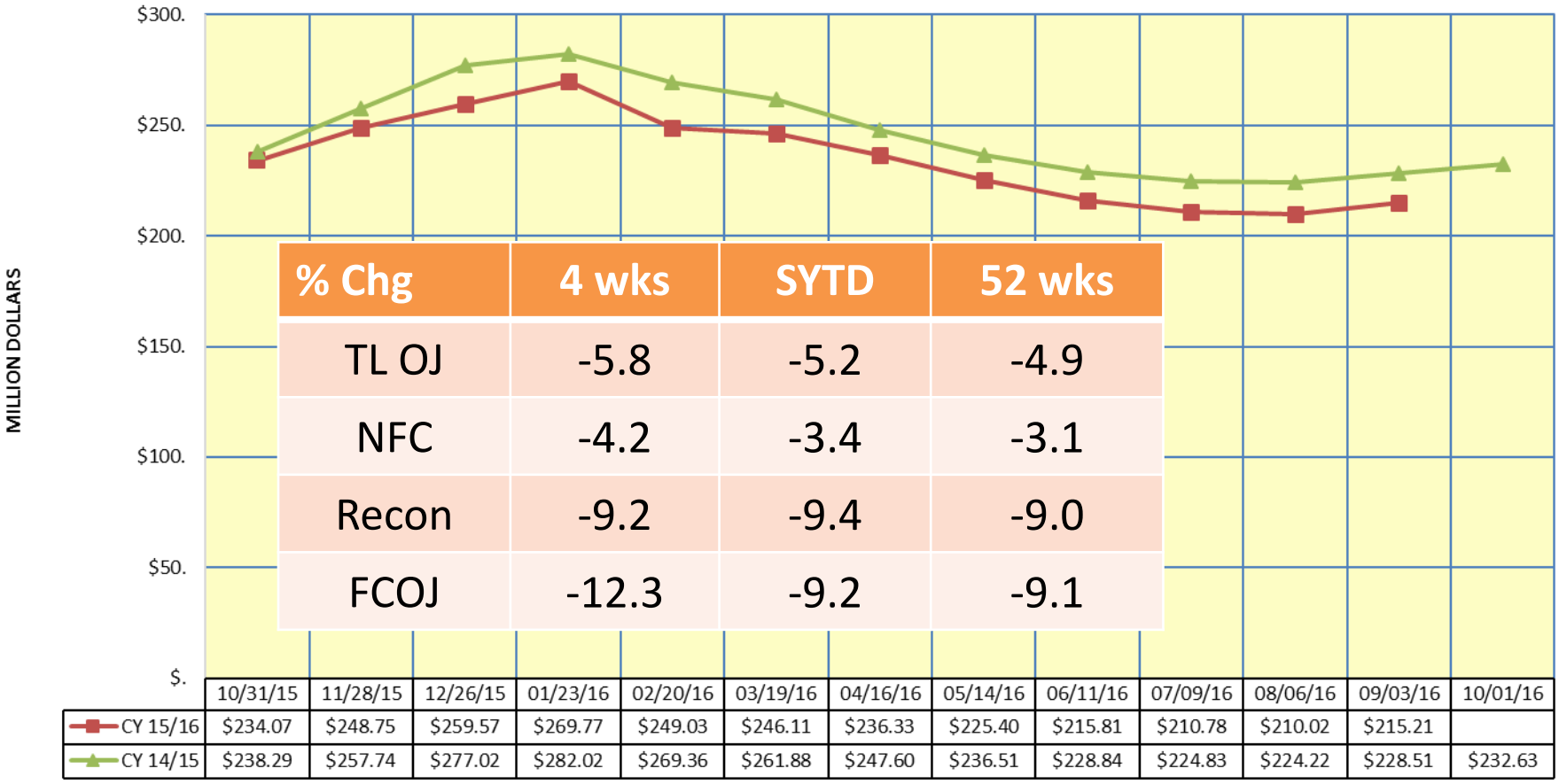


% Chg	4 wks	SYTD	52 wks
TL OJ	-6.0	-5.2	-5.0
NFC	-4.0	-2.9	-2.9
Recon	-8.8	-8.5	-8.1
FCOJ	-10.1	-8.4	-8.5

	10/31/15	11/28/15	12/26/15	01/23/16	02/20/16	03/19/16	04/16/16	05/14/16	06/11/16	07/09/16	08/06/16	09/03/16	10/01/16
CY 15/16	35.92	38.32	40.16	41.30	37.87	37.47	36.04	34.19	32.80	32.09	32.01	32.67	
CY 14/15	36.86	39.84	42.69	42.97	40.77	39.91	38.24	35.93	34.46	34.01	34.03	34.76	35.32

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

Total U.S. OJ - Dollar Sales



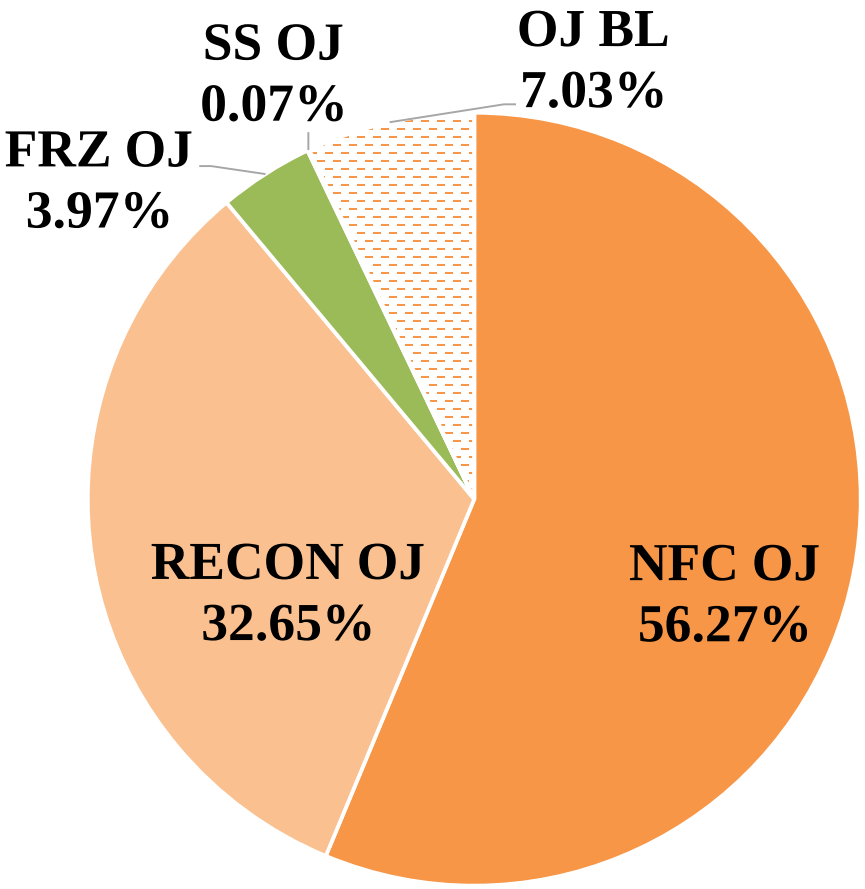
% Chg	4 wks	SYTD	52 wks
TL OJ	-5.8	-5.2	-4.9
NFC	-4.2	-3.4	-3.1
Recon	-9.2	-9.4	-9.0
FCOJ	-12.3	-9.2	-9.1

	10/31/15	11/28/15	12/26/15	01/23/16	02/20/16	03/19/16	04/16/16	05/14/16	06/11/16	07/09/16	08/06/16	09/03/16	10/01/16
CY 15/16	$234.07	$248.75	$259.57	$269.77	$249.03	$246.11	$236.33	$225.40	$215.81	$210.78	$210.02	$215.21	
CY 14/15	$238.29	$257.74	$277.02	$282.02	$269.36	$261.88	$247.60	$236.51	$228.84	$224.83	$224.22	$228.51	$232.63

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

THERE'S AMAZING INSIDE FLORIDA CITRUS.

Share of U.S. Volume Sales in OJ Category

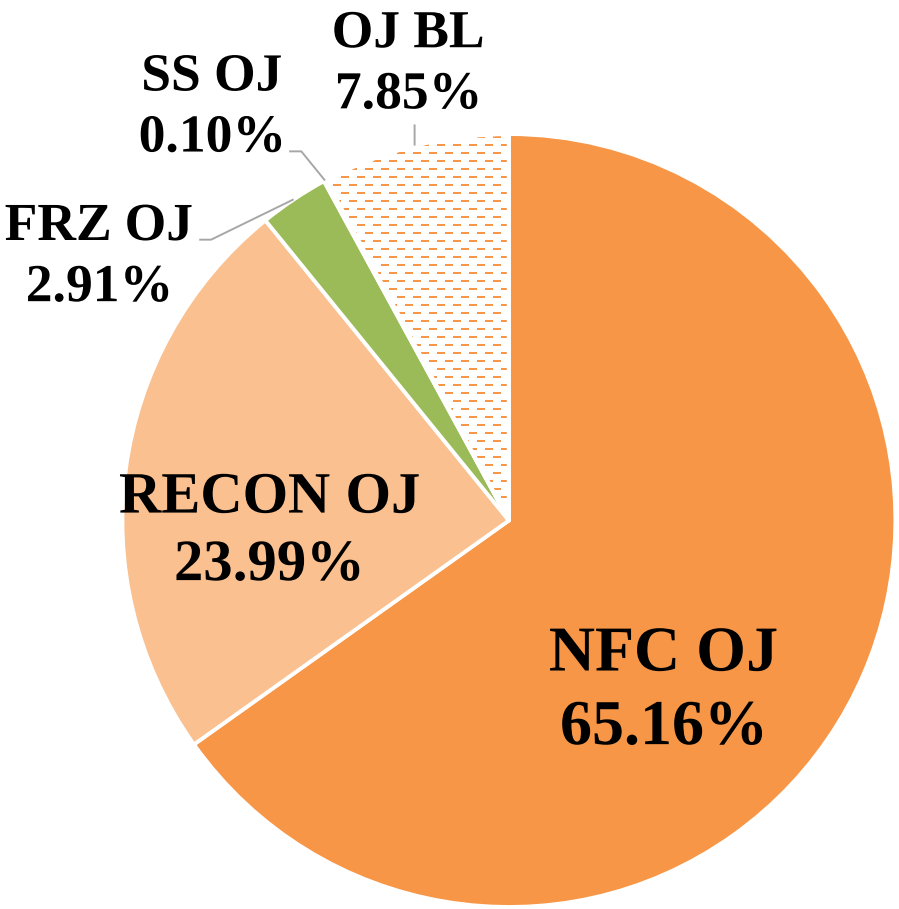


	Share Chg from 2014-15	Share Chg from 2013-14
NFC OJ	1.45%	2.03%
RECON OJ	-0.97%	-0.97%
FRZ OJ	-0.14%	-0.24%
SS OJ	-0.03%	-0.04%
OJ BL	-0.31%	-0.77%

2015-16:16 Wks Ending 09/03/16
2014-15:16 Wks Ending 09/05/15
2013-14:16 Wks Ending 09/06/14

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

Share of U.S. Dollar Sales in OJ Category

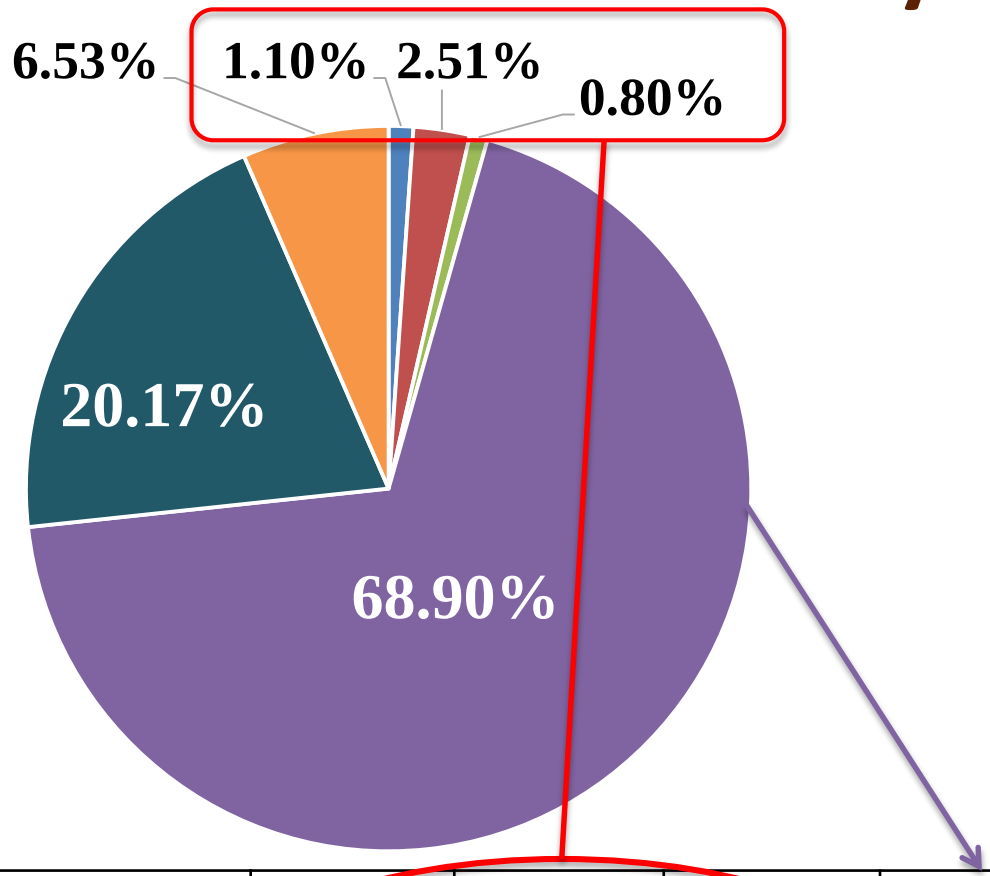


	Share Chg from 2014-15	Share Chg from 2013-14
NFC OJ	1.38%	2.74%
RECON OJ	-1.02%	-1.72%
FRZ OJ	-0.15%	-0.26%
SS OJ	-0.04%	-0.07%
OJ BL	-0.16%	-0.70%

2015-16:16 Wks Ending 09/03/16
2014-15:16 Wks Ending 09/05/15
2013-14:16 Wks Ending 09/06/14

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

Share of Volume Sales by Size(EQ Gal)- NFC

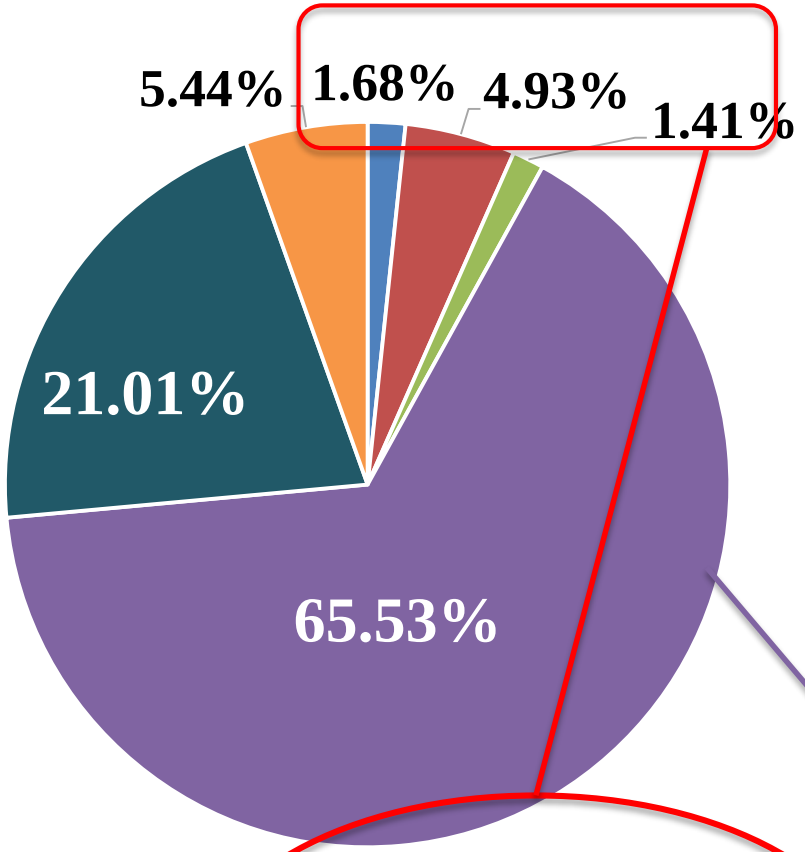


2015-16:16 Wks Ending 09/03/16
2014-15:16 Wks Ending 09/05/15
2013-14:16 Wks Ending 09/06/14

% Chg from	<11OZ	11-20oz	20-50oz	50-70oz	70-110oz	>110oz
14-15 to 15-16	6.23%	5.17%	12.33%	-5.23%	8.62%	-20.05%
13-14 to 14-15	3.90%	17.73%	4.18%	-3.30%	-3.07%	-18.58%

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

Share of Dollar Sales by Size(EQ Gal)- NFC

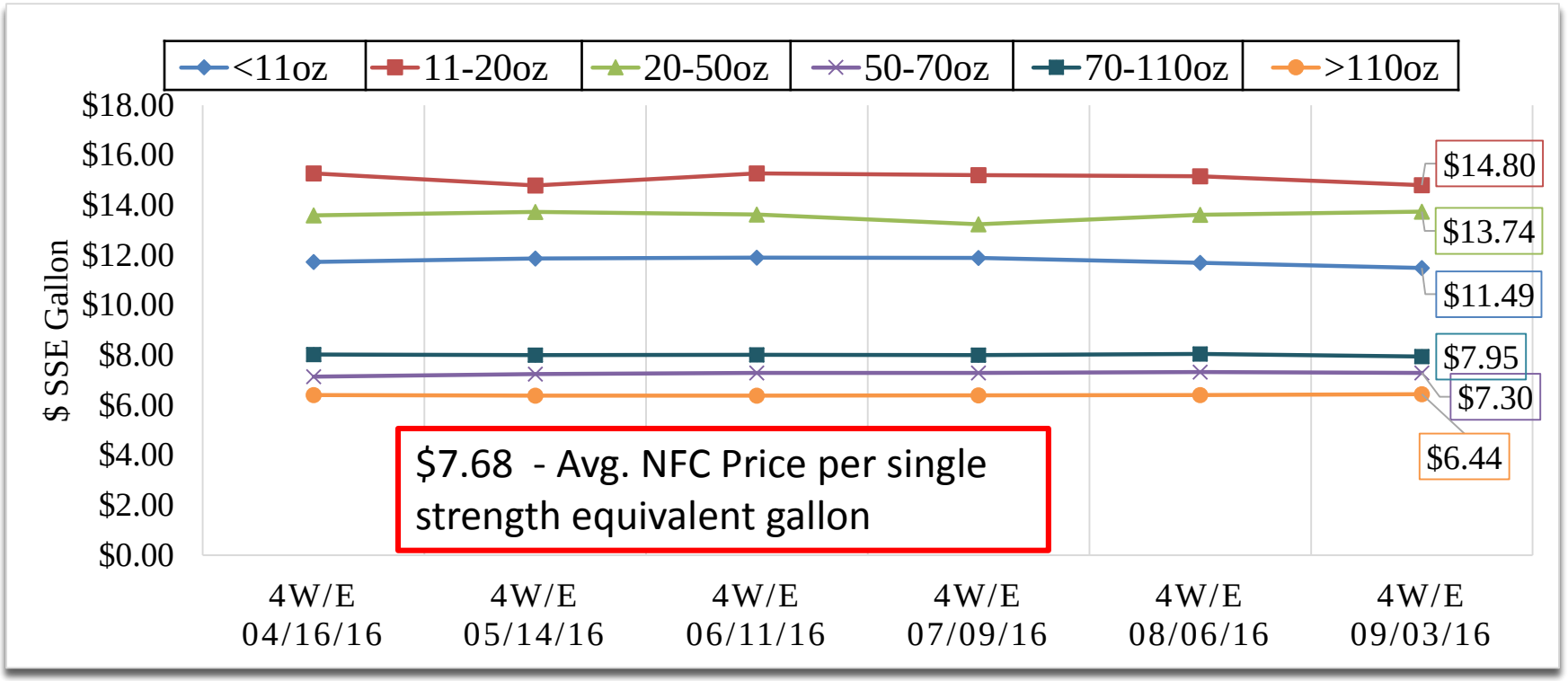


2015-16:16 Wks Ending 09/03/16
2014-15:16 Wks Ending 09/05/15
2013-14:16 Wks Ending 09/06/14

% Chg from	<11OZ	11-20oz	20-50oz	50-70oz	70-110oz	>110oz
14-15 to 15-16	5.38%	6.86%	12.78%	-5.52%	3.32%	-24.31%
13-14 to 14-15	4.28%	15.01%	6.73%	-0.56%	1.30%	-16.24%

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

NFC OJ Avg. per equiv gallon price, by size



% Chg vs YAG	4W/E 04/16/16	4W/E 05/14/16	4W/E 06/11/16	4W/E 07/09/16	4W/E 08/06/16	4W/E 09/03/16	52 Weeks
<11 oz	-3.23%	-0.22%	0.37%	1.62%	-2.03%	-2.90%	0.00%
11-20 oz	-3.98%	-3.85%	-0.36%	1.34%	3.34%	1.72%	-0.86%
20-50 oz	0.25%	2.36%	1.74%	-2.11%	-0.42%	2.30%	1.32%
50-70 oz	-0.40%	-0.23%	-0.83%	-1.04%	0.71%	0.10%	-0.36%
70-110 oz	-1.66%	-4.46%	-4.98%	-5.44%	-5.61%	-3.59%	-2.23%
>110 oz	-5.89%	-5.65%	-5.70%	-6.30%	-5.72%	-3.48%	-2.77%

Source: Nielsen. xAOC = Expanded All Outlets Combined. xAOC data consists of POS data for U.S. grocery stores doing $2 million and greater annual sales, drug stores doing $1 million and greater annual sales, mass merchandisers (like Target), Walmart, club (Sam's and BJ's), dollar stores (Dollar General, Family Dollar and Fred's), and military/DECA.

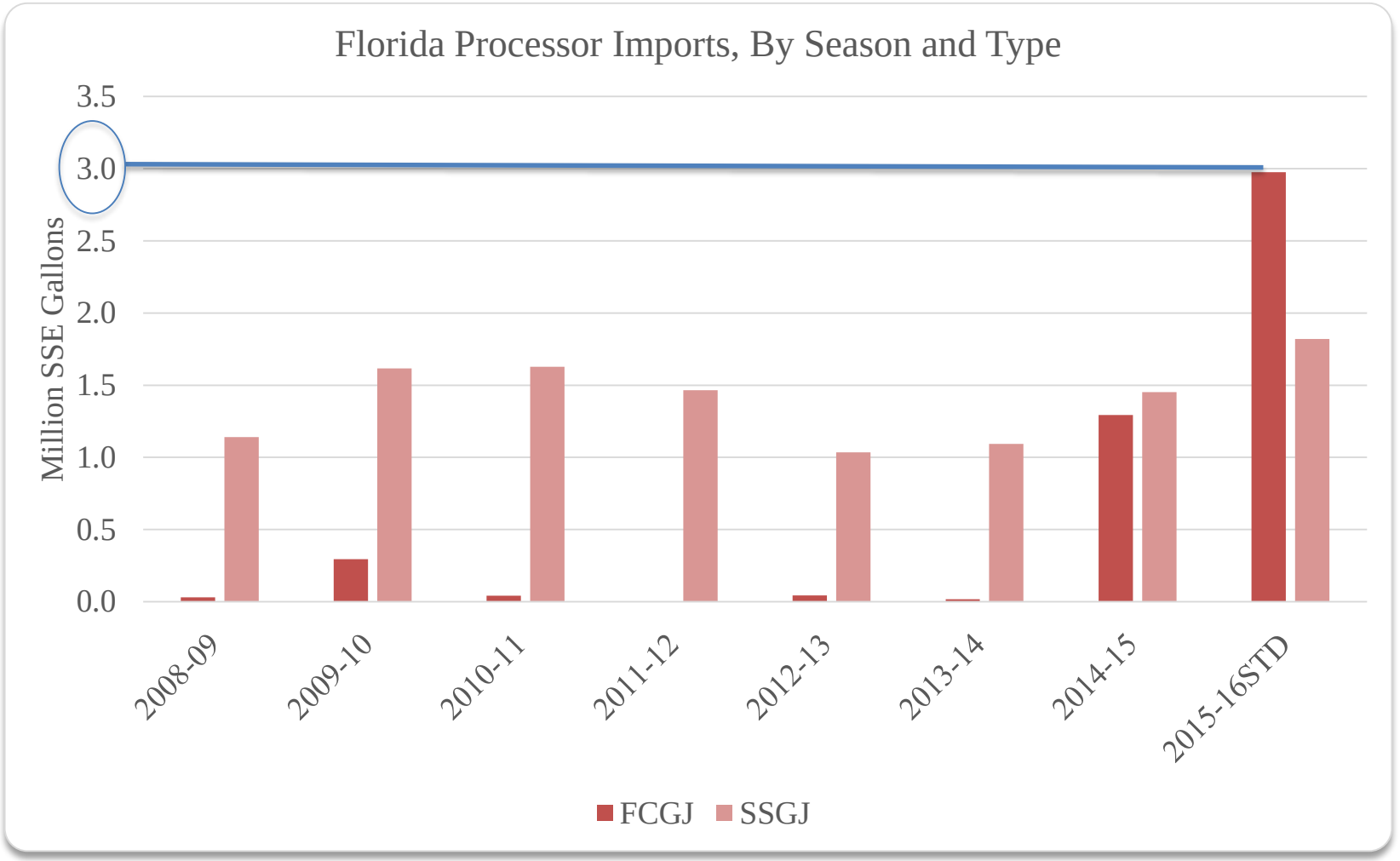
THERE'S AMAZING INSIDE FLORIDA CITRUS.

Florida Citrus Outlook:
2015-16 Season in Review

PROCESSED GRAPEFRUIT

THERE'S AMAZING INSIDE
FLORIDA GRAPEFRUIT.

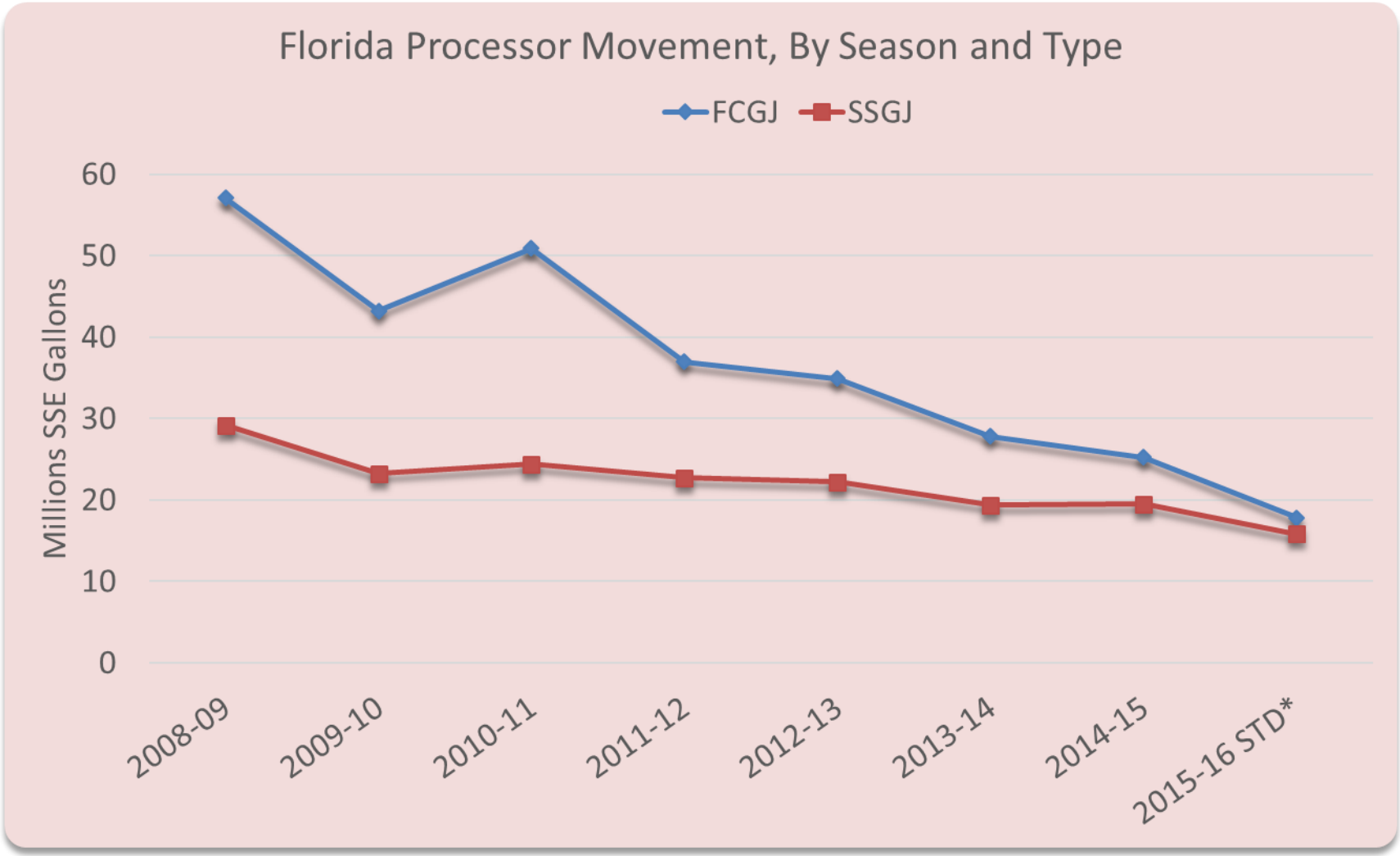
Florida Processor GJ Imports*



*Includes foreign and domestic receipts; 2015-16STD through 08/20/2016

THERE'S AMAZING INSIDE FLORIDA GRAPEFRUIT.

Florida FCGJ and SSGJ Movement



THERE'S AMAZING INSIDE FLORIDA GRAPEFRUIT.

Florida GJ Availability, Movement & Carryover

Item	2013-14	2014-15	2015-16f	2015-16u
		million SSE gallons		
Beg. Inventory	**36.8**	**35.9**	**~~29.6~~**	**29.6**
Production	**49.8**	**41.2**	**35.0**	**34.4**
Availability	**86.6**	**77.1**	**~~64.6~~**	**64.1**
Movement*	**49.0**	**46.7**	**40.2**	**37.9**
Domestic	30.8	31.0	26.1	24.9
Export	18.2	15.7	14.1	11.0
End. Inventory	**35.9**	**29.7**	**24.0**	**28.2**
		weeks supply		
GJ Carryover	**38.1**	**33.7**	**31.1**	**38.7**

Source: Florida Citrus Outlook March Update 2015-16 Season.
*Movement projected through week 52.

THERE'S AMAZING INSIDE FLORIDA GRAPEFRUIT.

U.S. GJ Supply & Consumption

Season	Florida		Other U.S. Prod.	U.S.		FL End. Inv.	Presumed Consumption	
	Beg. Inv.	Prod.		IMP	EXP		TOTAL	Per Capita
	- - - - - - - - - million SSE gallons - - - - - - - - -							Gallons
2011-12	35.6	65.3	12.4	0.5	23.8	39.6	50.5	0.16
2012-13	39.6	59.0	16.4	0.8	22.8	36.8	56.1	0.18
2013-14	36.8	49.3	17.8	0.3	18.2	35.9	50.1	0.16
2014-15p	35.9	38.4	13.1	0.4	21.5	31.2	35.0	0.11
2015-16u	31.2	31.3	15.3	0.6	16.3	29.3	32.8	0.10

THERE'S AMAZING INSIDE FLORIDA GRAPEFRUIT.

A look ahead. . .

- Reduced overall availability
  - Reduced crop in Sao Paulo
  - Reduced beginning inventories in FL and BR
- 2016-17 Florida crop unknown????
  - Post bloom fruit drop (PFD)
  - Efficacy of HLB mitigation measures
- Uncertainty regarding production trends in FL and Sao Paulo.

FLORIDA DEPARTMENT OF CITRUS

Florida Orange Production Projections 2017-18 Through 2027-28

Economic & Market Research Committee
FLORIDA CITRUS COMMISSION
Bartow. FL
September 20. 2016

Florida Orange Production Trends 2016

Available on-line at:

http://fdocgrower.com/economics/economic-research/trends-florida-production/

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Executive Summary

- The long-run outlook of the Florida Citrus industry continues to be highly dependent on HLB mitigation strategies.
- The persistent trend of tree mortality rates exceeding tree planting rates continues a downward course for production levels.
- Declining yields have a double-edge effect: production decreases and declining profitability.

***Long-run sustainability, relevance, and impact will be realized with new tree plantings, improved per tree yields, and modest market growth.**

Objective of Study

- To provide citrus industry stakeholders with possible future *trends* in orange production by evaluating the components affecting production, specifically planting rates and per tree yields.
- 3 approaches: FDOC model, extrapolated yields, and World OJ Model

COMMERCIAL ROUND ORANGE TREE INVENTORY

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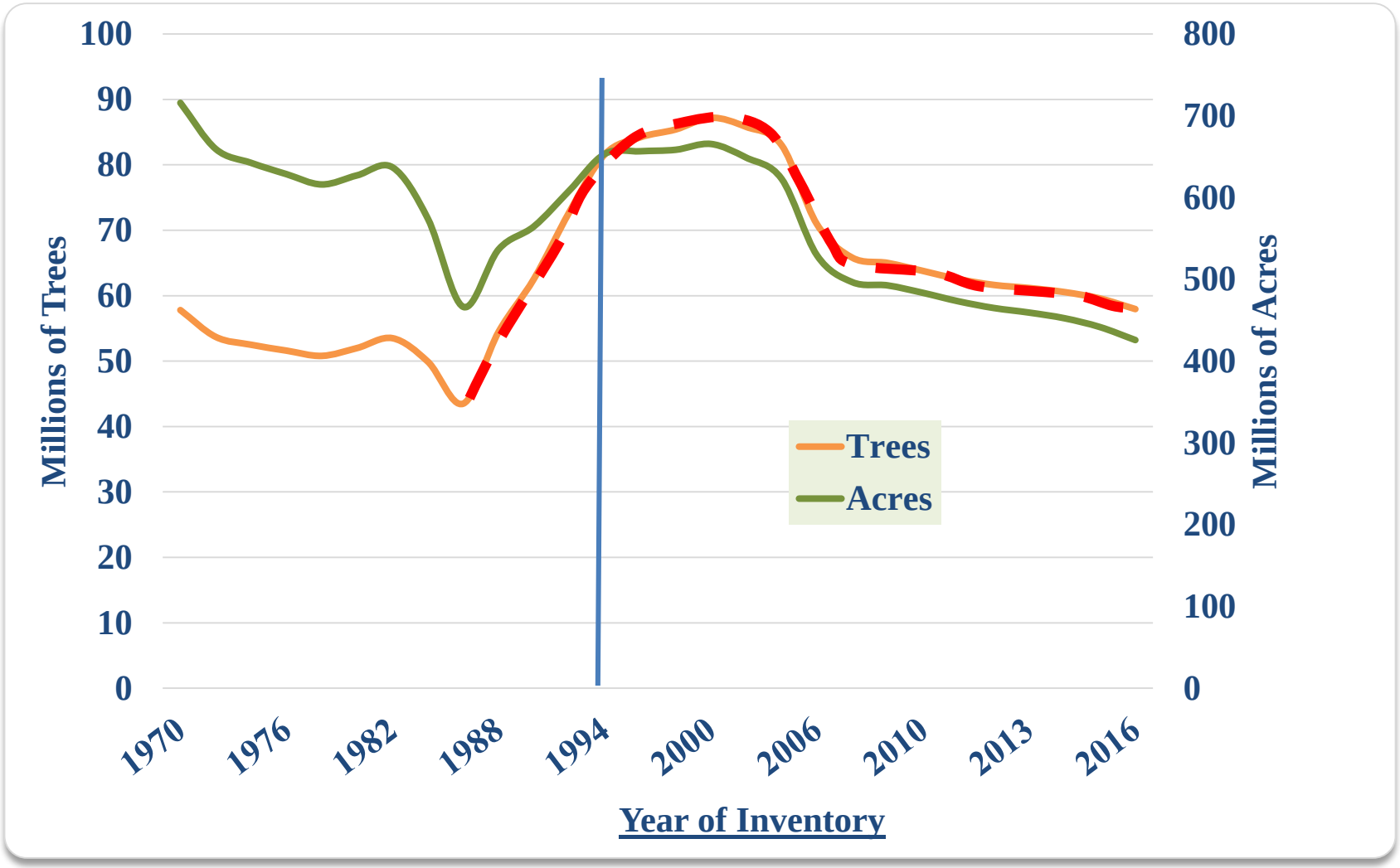
Florida Orange Tree by Commercial Inventory



Data Source: USDA, National Agricultural Statistics Service, *Various Years*

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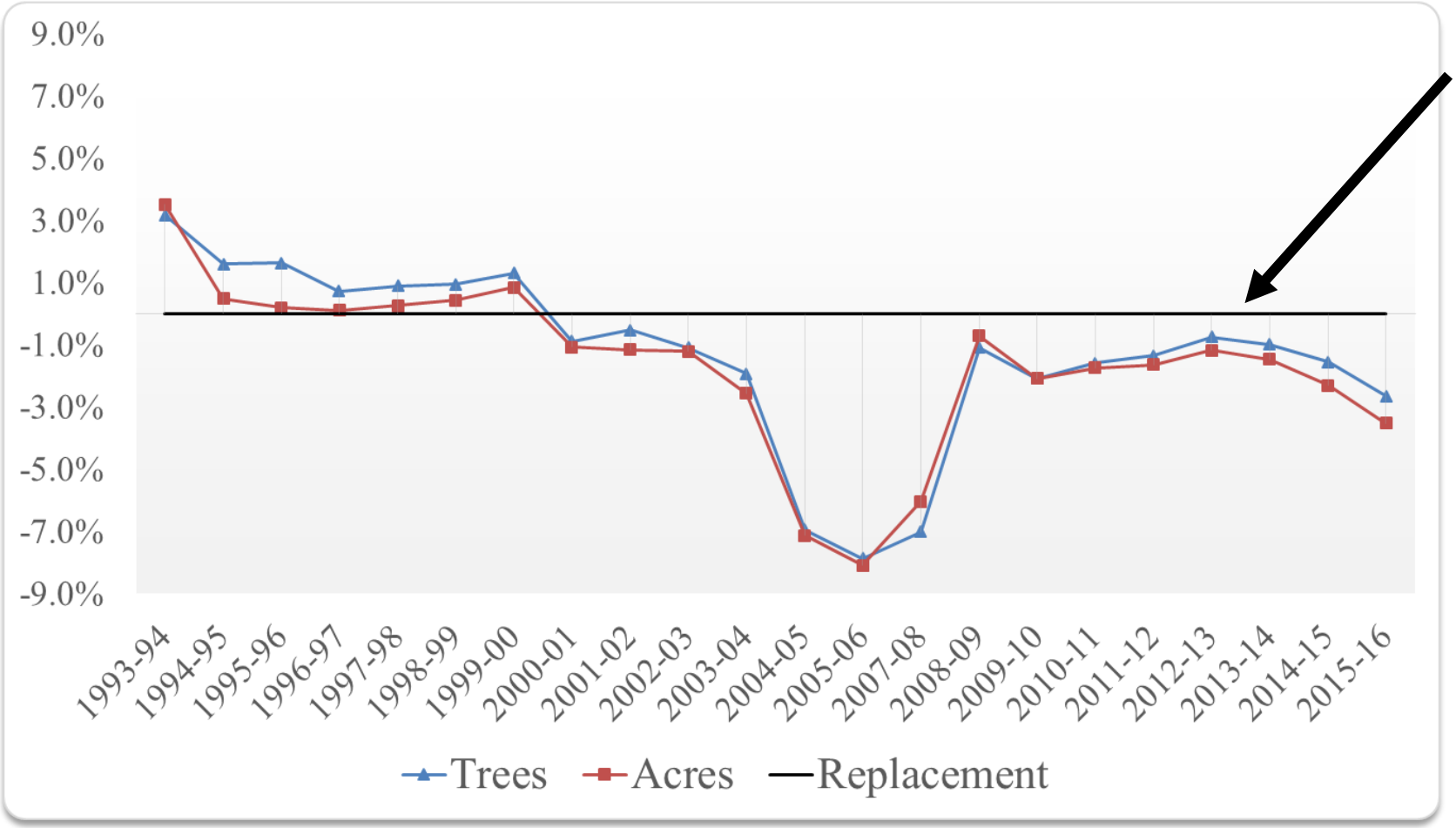
Florida Round-orange tree replacement rate*



Data Source: USDA, National Agricultural Statistics Service, *Various Years*

* Calculated as difference between loss rate and replanting rates

Age Distribution of Florida Round-Orange Trees by Year of Inventory

Year of Inventory	Tree Age						Total Trees	Bearing Trees
	≤2	3-5	6-8	9-13	14-23	≥24	millions	
	%							
1970	9.1	20.6	17.6	14.8	13.4	24.4	57.8015	49.4042
1980	7.2	4.7	3.8	13.0	39.1	32.2	51.9778	47.3663
1990	35.1	14.3	10.7	6.7	10.0	23.3	62.6134	40.6660
2000	9.7	7.2	21.4	33.7	13.6	14.4	87.2001	78.7210
2004	9.1	9.4	8.1	29.0	32.4	12.0	82.9875	75.3917
2010	6.6	6.7	9.7	14.6	48.6	13.8	63.7767	59.5608
2011	7.0	6.5	8.0	16.2	46.3	16.0	62.5289	58.1604
2012	6.8	7.1	7.4	15.5	42.9	20.2	61.6401	57.4604
2013	6.6	7.5	6.6	15.2	40.9	23.2	61.1670	57.1461
2014	7.7	8.1	6.2	13.5	36.7	27.9	60.5455	55.8917
2015	8.7	8.2	7.0	12.7	31.2	32.3	59.5712	54.3833
2016	9.9	8.3	7.5	14.6	14.9	44.8	57.9521	52.202.8

59.7% tree age > = 14 yrs

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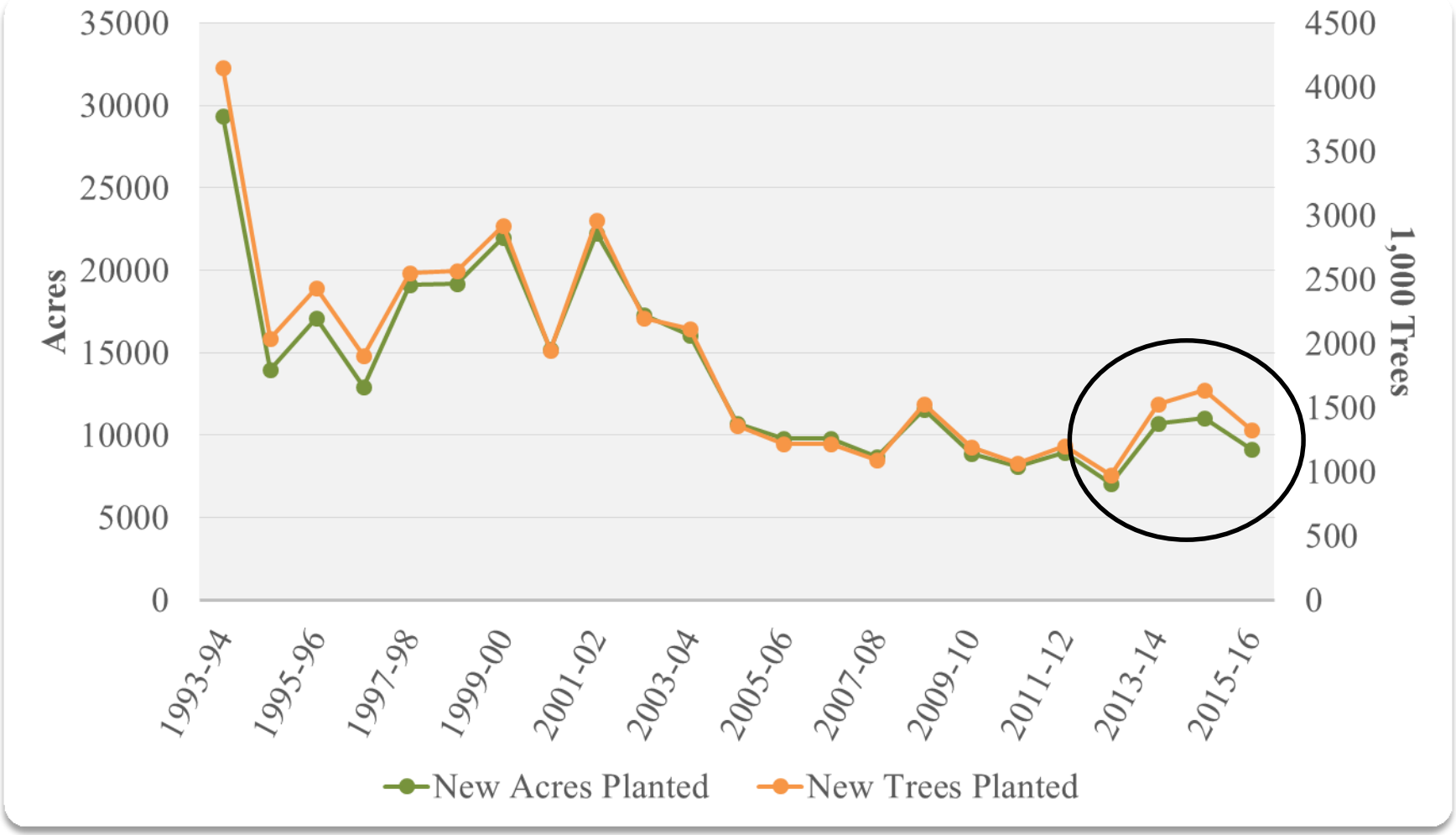
New plantings of round-orange commercial acreage and trees



Data Source: USDA, National Agricultural Statistics Service, *Various Years*

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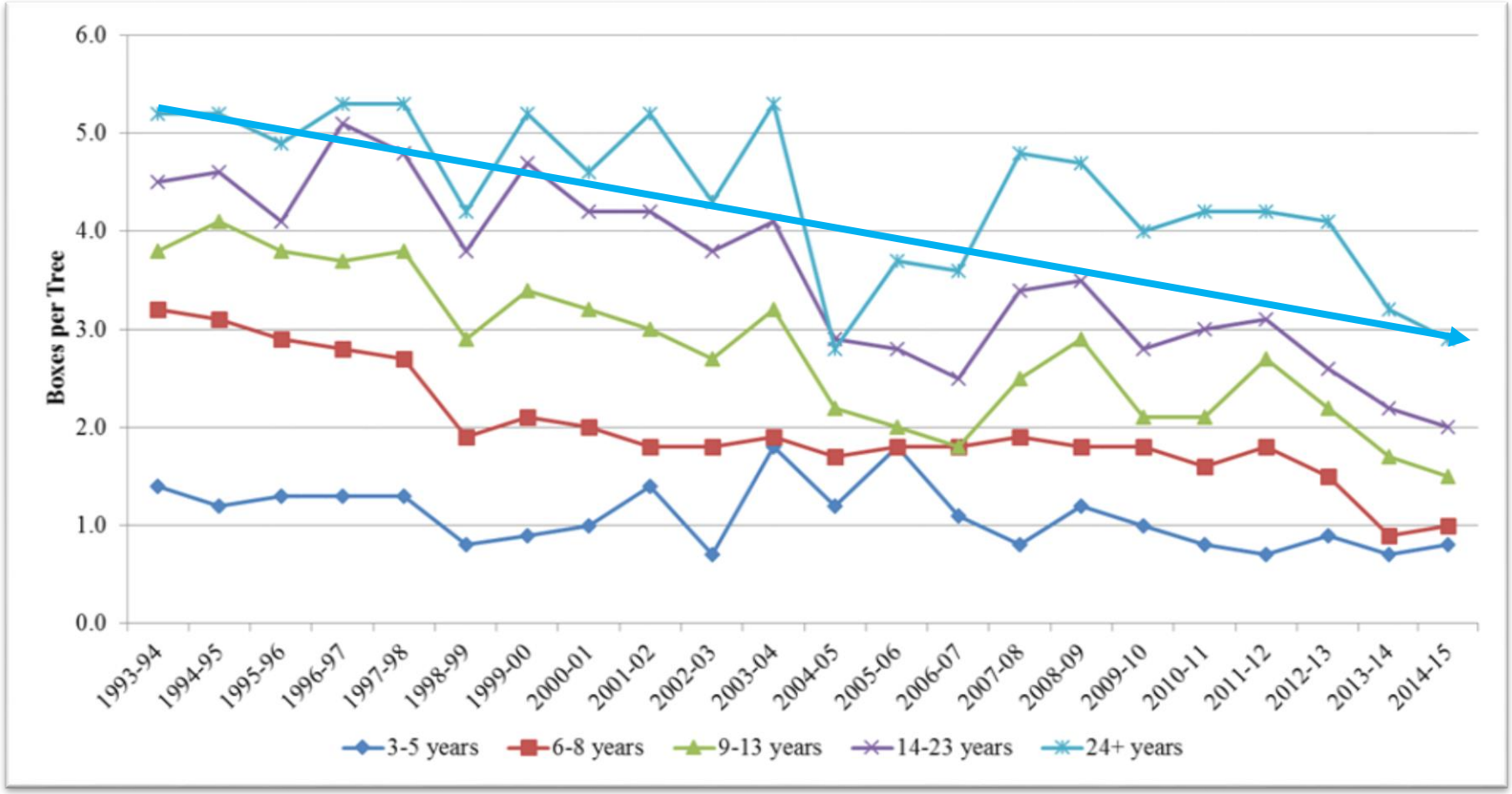
ROUND ORANGE TREE YIELDS

Historical Early-Mid Orange Tree Yields by Tree Age



Data Source: USDA, National Agricultural Statistics Service, *Various Years*

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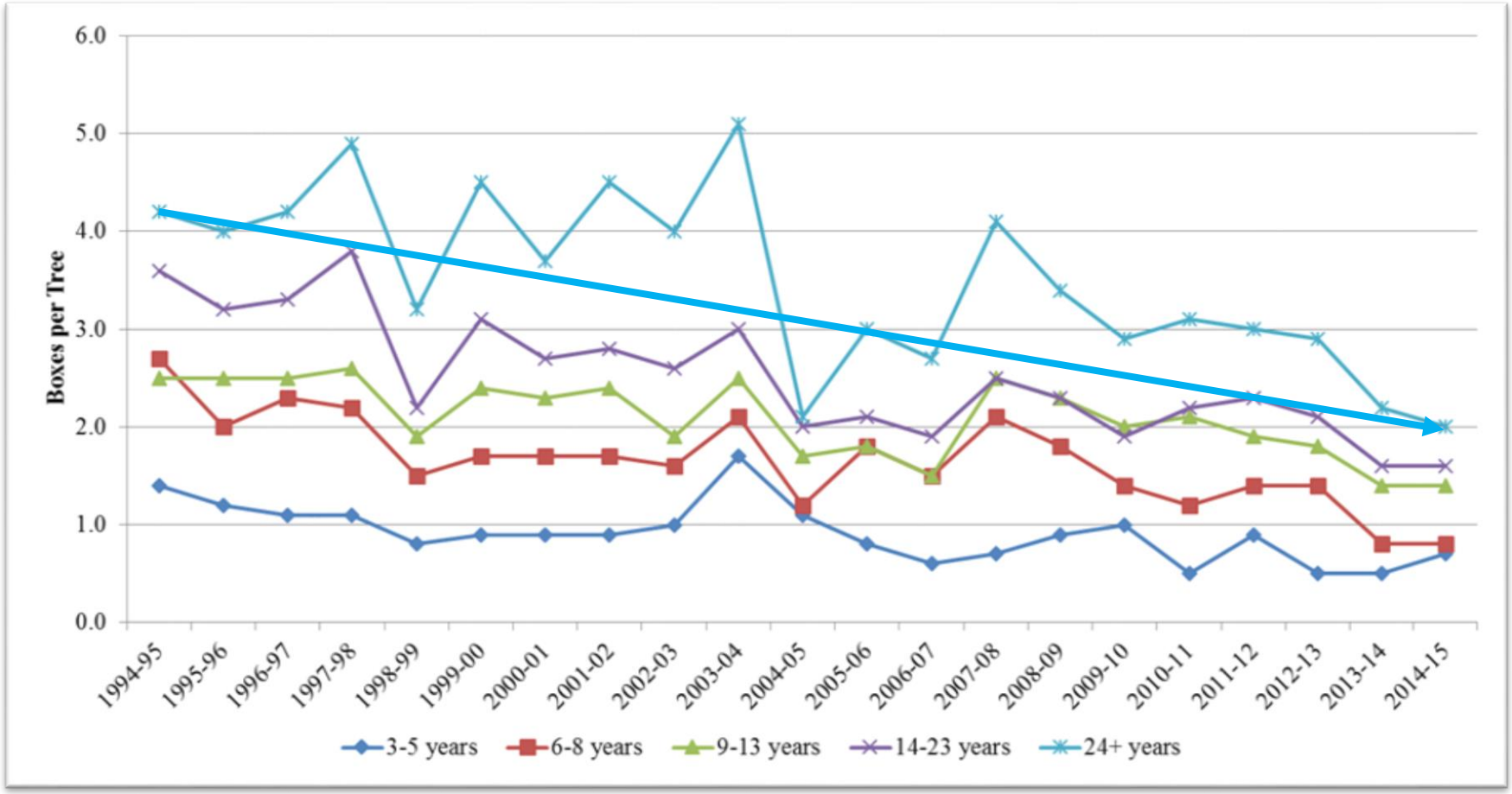
Historical Valencia Orange Tree Yields by Tree Age



Data Source: USDA, National Agricultural Statistics Service, *Various Years*

FLORIDA ORANGE PRODUCTION TRENDS

FL Orange Production Projections[a]

Season	Low Planting[b]	Middle Planting[c]	High Planting[d]	Recovery Rate[e]
	---------- millions boxes ----------			
2015-16	81.6			
	A forecast for the 2016-17 season will be made in October 2016 by the USDA/FASS			
2017-18	82.31	82.31	82.31	82.31
2018-19	82.25	82.25	82.25	82.25
2019-20	82.01	82.24	82.35	82.94
2020-21	81.60	82.21	82.52	84.14
2021-22	81.16	82.30	82.87	85.89
2022-23	80.58	82.35	83.25	87.97
2023-24	79.89	82.40	83.67	90.46
2024-25	79.00	82.37	84.08	93.29
2025-26	78.11	82.41	84.61	96.61
2026-27	77.11	82.39	85.11	100.14

[a] Assumes yields based upon the 2015-16 season.

[b] 50% of replacement planting level (roughly average planting level in recent years).

[c] 100% of replacement planting level.

[d] 125% of replacement planting level.

[e] 255% of replacement planting level

Recovery Rate: New Tree Plantings

Season	Replanted Trees	Net New Plantings	Total Trees
	---------- million trees ----------		
2017-18	1.585	2.458	4.403
2018-19	1.606	2.489	4.094
2019-20	1.620	2.511	4.314
2020-21	1.692	2.622	4.314
2021-22	1.765	2.735	4.500
2022-23	1.838	2.849	4.687
2023-24	1.912	2.964	4.875
2024-25	1.989	3.083	5.073
2025-26	2.070	3.208	5.278
2026-27	2.154	3.339	5.493

Extrapolated Yields

- Fruit yields per tree have declined substantially over last 5 years.
- An attempt was made to produce a 10-year production forecast in which the downturn in fruit yields was extrapolated.
- Statistical techniques were employed to model a scenario in which the recent downward trend in yields is projected into the future.
- These results are a highly pessimistic outlook for the Florida citrus industry without HLB mitigation measures in place.

Projected Orange Production Using Extrapolated Yields

Season	Early-Mid Orange 1000 boxes	Late Orange 1000 boxes	Total Production 1000 boxes
2017-18	33,480	35,402	68,882
2018-19	30,277	31,859	62,136
2019-20	27,397	28,712	56,109
2020-21	24,782	25,874	50,656
2021-22	22,407	23,327	45,734
2022-23	20,258	21,019	41,277
2023-24	18,311	18,941	37,252
2024-25	16,543	17,061	33,604
2025-26	14,942	15,368	30,310
2026-27	13,491	13,846	27,337

The World Orange Juice Model

- The world orange juice model was originally developed as a joint effort between the University of Florida and the Florida Department of Citrus in the late 1980s.
- Since then it has been used in a wide variety of applications to assist economic analysis of the Florida citrus industry.
- The model differs from the FDOC model in two important ways.

- First while it uses the Florida Citrus Tree Inventory to predict Florida production, it also attempts to use the same procedure to estimate orange production in Saõ Paulo, Brazil.
- Second instead of specifying new plantings, an equation is used that predicts new plantings based upon on-tree prices and lagged new plantings.
- Once orange production in Florida and Saõ Paulo has been estimated and converted to juice, it is allocated between not-from-concentrate (NFC) and from-concentrate (FCOJ) and across four markets: United States, Canada, the EU, and the rest of world represented by Japan.

- Allocation of juice across markets establishes price in each market. After deducting transportation costs and accounting for tariffs, Florida and Brazil FOB prices are determined.
- Further deductions are made to account for processing and fruit harvesting giving on-tree prices in each country.
- These on-tree prices predict new plantings; the tree inventory is aged and the model is solved again.
- In the current version of the model, 2015-16 fruit yields are used for Florida and Saõ Paulo.

World OJ Model: Florida

Season	Florida Production	On-tree Price	OJ Production	FOB FCOJ Price	FOB NFC Price
	mil. boxes	$/box	mil ps	$/ps	$/ps
2015-16	81.6	8.23	457	1.56	2.167
2016-17	A forecast for the 2016-17 season will be made in October 2016 by the USDA, Florida Agricultural Statistics Service.				
2017-18	80.6	8.26	472	1.55	2.15
2018-19	79.9	8.29	467	1.55	2.16
2019-20	79.2	8.37	463	1.56	2.17
2020-21	78.6	8.48	460	1.58	2.19
2021-22	78.2	8.61	457	1.61	2.21
2022-23	77.8	8.78	455	1.63	2.24
2023-24	77.5	8.93	453	1.66	2.27
2024-25	77.2	9.09	451	1.69	2.29
2025-26	77.1	9.22	451	1.71	2.32
2026-27	77.1	9.32	451	1.72	2.33

World OJ Model: Sao Paulõ, Brazil

Season	Sao Paulo Production	On-tree Price	OJ Production	FOB Price
	mil. boxes	$/box	mil ps	$/ps
2015-16	280	4.131	1430	1.23
2016-17	245[a]	-----	-----	-----
2017-18	287	4.06	1463	1.22
2018-19	287	4.09	1462	1.22
2019-20	283	4.17	1444	1.24
2020-21	278	4.27	1419	1.25
2021-22	272	4.39	1386	1.28
2022-23	264	4.54	1347	1.30
2023-24	257	4.68	1308	1.33
2024-25	249	4.82	1269	1.35
2025-26	242	4.93	1236	1.37
2026-27	235	5.02	1212	1.39

[a] Source: USDA, FAS, "Brazil Citrus Semi-annual 2016," GAIN report no. BR16007, 6/16/2016.

Concluding Remarks

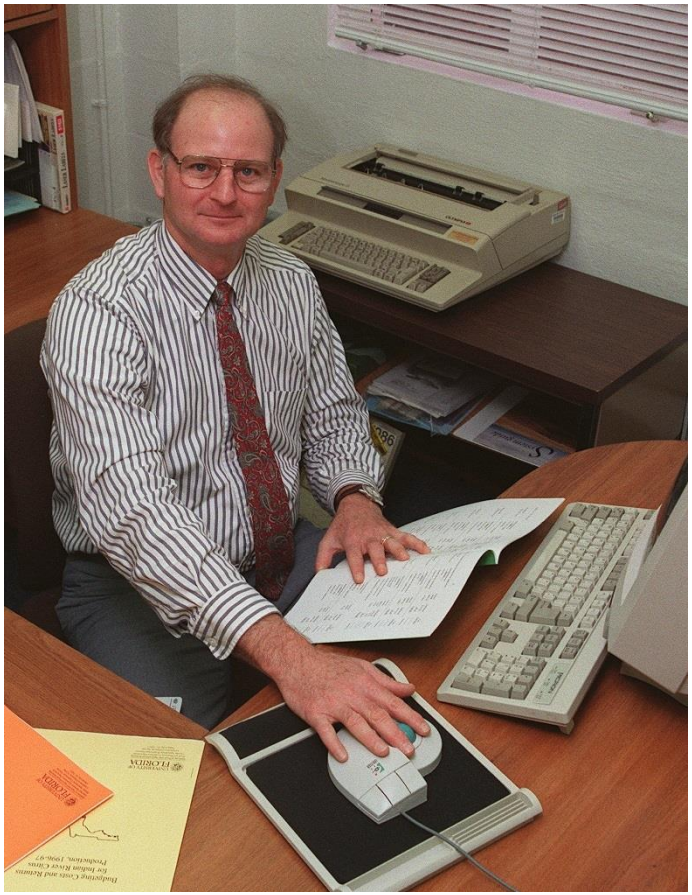
- Future orange production in Florida was projected using three different approaches.
  - The traditional model, called the 'FDOC model', suggests relatively flat production over the next ten seasons.
  - The extrapolated yields model, a pessimistic scenario which assumes that no measures would prove effective in combating HLB, projects steadily declining crops reaching 27 million boxes by 2026-27.
  - The world orange juice model projects relatively flat crops for Florida, but increasing on-tree prices.

Concluding Remarks (cont.)

- The FDOC model was also used to examine a recovery scenario for Florida. The results indicate tree planting rates at 255 percent of replacement would be needed for each of the next 11 seasons to achieve a crop of 100 million boxes by the 2026-27 season.
- Such a **recovery is not unprecedented**, though, as more that 30 million net new trees were planted in the late 1980s and 1990s as the industry recovered from the devastating freezes of the 1980s.

Ronald P. Muraro Memorial Endowment

Purpose: Support research and extension on the economics and management of citrus and other fruit crops grown in Florida.



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