



# CITRUS OCTOBER FORECAST

## MATURITY TEST RESULTS AND FRUIT SIZE

Cooperating with the Florida Department of Agriculture and Consumer Services  
2290 Lucien Way, Suite 300, Maitland, FL 32751-7057  
(407) 648-6013 · (855) 271-9801 FAX · [www.nass.usda.gov/fl](http://www.nass.usda.gov/fl)

October 9, 2015

**Florida All Orange Production Down 17 Percent**  
**Florida Non-Valencia Orange Production Down 16 Percent**  
**Florida Valencia Orange Production Down 19 Percent**  
**Florida All Grapefruit Production Down 5 Percent**  
**Florida All Tangerine Production Down 23 Percent**  
**Florida Tangelo Production Down 34 Percent**  
**Florida FCOJ Yield 1.61 Gallons per Box**

### 2015-2016 SEASON FORECAST DATES

November 10, 2015      December 9, 2015

### Citrus Production by Type and State – United States

Crop and State	Production <sup>1</sup>			Forecasted Production <sup>1</sup>
	2012-2013 (1,000 boxes)	2013-2014 (1,000 boxes)	2014-2015 (1,000 boxes)	2015-2016 (1,000 boxes)
<b>Non-Valencia Oranges <sup>2</sup></b>				
<b>Florida</b> .....	<b>67,100</b>	<b>53,300</b>	<b>47,400</b>	<b>40,000</b>
California .....	42,500	38,700	39,500	43,000
Texas .....	1,504	1,401	1,170	1,317
United States.....	111,104	93,401	88,070	84,317
<b>Valencia Oranges</b>				
<b>Florida</b> .....	<b>66,500</b>	<b>51,400</b>	<b>49,400</b>	<b>40,000</b>
California .....	12,000	10,800	9,500	9,500
Texas .....	289	376	282	366
United States.....	78,789	62,576	59,182	49,866
<b>All Oranges</b>				
<b>Florida</b> .....	<b>133,600</b>	<b>104,700</b>	<b>96,800</b>	<b>80,000</b>
California .....	54,500	49,500	49,000	52,500
Texas .....	1,793	1,777	1,452	1,683
United States.....	189,893	155,977	147,252	134,183
<b>Grapefruit</b>				
<b>Florida-All</b> .....	<b>18,350</b>	<b>15,650</b>	<b>12,900</b>	<b>12,300</b>
<b>White</b> .....	<b>5,250</b>	<b>4,150</b>	<b>3,250</b>	<b>2,800</b>
<b>Red</b> .....	<b>13,100</b>	<b>11,500</b>	<b>9,650</b>	<b>9,500</b>
California .....	4,500	3,850	3,800	3,500
Texas .....	6,100	5,700	4,250	4,000
United States.....	28,950	25,200	20,950	19,800
<b>Lemons</b>				
California.....	21,000	18,800	20,500	19,500
Arizona.....	1,800	1,800	2,000	1,600
United States.....	22,800	20,600	22,500	21,100
<b>Tangelos</b>				
<b>Florida</b> .....	<b>1,000</b>	<b>880</b>	<b>680</b>	<b>450</b>
<b>Tangerines</b>				
<b>Florida-All</b> .....	<b>3,280</b>	<b>2,900</b>	<b>2,270</b>	<b>1,750</b>
<b>Early</b> <sup>3</sup> .....	<b>1,910</b>	<b>1,750</b>	<b>1,445</b>	<b>1,000</b>
<b>Honey</b> .....	<b>1,370</b>	<b>1,150</b>	<b>825</b>	<b>750</b>
California <sup>4</sup> .....	13,000	14,700	18,200	19,000
Arizona <sup>4 5</sup> .....	160	150	170	(NA)
United States.....	16,440	17,750	20,640	20,750

NA Not available.

<sup>1</sup> Net pounds per box: oranges in California-80, Florida-90, Texas-85; grapefruit in California-80, Florida-85, Texas-80; lemons-80, tangelos-90; tangerines and mandarins in Arizona and California-80, Florida-95.

<sup>2</sup> Navel and miscellaneous varieties in California. Early (including Navel) and midseason varieties in Florida and Texas. Includes small quantities of tangerines in Texas and Temples in Florida.

<sup>3</sup> Fallglo and Sunburst varieties.

<sup>4</sup> Includes tangelos and tangors.

<sup>5</sup> Estimates discontinued in 2015-2016.

## **All Oranges 80.0 Million Boxes**

The 2015-2016 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 80.0 million boxes, 17 percent less than last season's final production. The total includes 40.0 million boxes of non-Valencia oranges (early, midseason, Navel, and Temple varieties) and 40.0 million boxes of Valencia oranges. The Navel orange forecast is 1.10 million boxes, 3 percent of the non-Valencia total.

The estimated number of bearing trees for all oranges is 52.8 million, down 3 percent from the previous season. Trees planted in 2012 and earlier are considered bearing this season. Field work for the latest Commercial Citrus Inventory was completed in July 2015. Attrition rates were applied to the results to determine the number of bearing trees which are used to weight and expand objective count data in the forecast model.

Citrus growing conditions were ideal from the start of the citrus bloom in February to the beginning of the 2015-2016 harvest season. Seasonal warm temperatures, coupled with above average rainfall continued throughout early spring. Drought conditions were eliminated by adequate rainfall throughout the summer months. By the beginning of September, the complete citrus producing region was drought free.

A 9 year regression has been used for comparison purposes. For those previous 9 seasons, average actual production is 135.3 million boxes. The initial forecast has deviated from final production by an average of 7 percent with 8 seasons above and 1 below, with differences ranging from 1.3 percent below to 19.4 percent above.

The procedures used in this forecast are the same as used in past seasons. The methodology is described on page 5 of this report. All references to "average," "minimum" and "maximum" refer to the previous 9 seasons. Average fruit per tree includes regular bloom and the first late bloom.

## **Non-Valencia Oranges 40.0 Million Boxes**

The non-Valencia forecast of 40.0 million boxes is 16 percent lower than last season's production. The estimated number of bearing trees (excluding Navels) is 21.6 million, down 3 percent from the previous season. The estimated fruit per tree for early-midseason oranges is 744, a decrease of 16 percent from last season. Projected fruit size is below average, requiring an estimated 290 pieces of fruit to fill a 90-pound box. At 23 percent, droppage is at maximum.

Based on fruit population, the prorated forecast shows a decrease of 3,100 thousand boxes in the Southern area compared to last season. The Indian River area shows a decrease of 500 thousand boxes. The combined other areas shows a decrease of 3,800 thousand boxes.

The Navel forecast of 1.10 million boxes is 21 percent lower than last season's production. If realized, this will be the lowest in a series dating back to 1979-1980 when separate Navel forecasts began. The estimated number of bearing trees is 944 thousand, down 1 percent from the previous season. The estimated fruit per tree is 229, a decrease of 22 percent from last season. Projected fruit size is below average, requiring an estimated 139 pieces of fruit to fill a 90-pound box. Projected droppage is close to the maximum at 24 percent.

## **Valencia Oranges 40.0 Million Boxes**

The Valencia forecast of 40.0 million boxes is 19 percent lower than last season's production. The estimated number of bearing trees is 30.2 million, down 3 percent from the previous season. The estimated fruit per tree is 520, a decrease of 17 percent from last season. Projected fruit size is below average, requiring an estimated 231 pieces of fruit to fill a 90-pound box. Projected droppage is above maximum at 32 percent.

Based on fruit population, the prorated forecast shows a decrease of 4,100 thousand boxes in the Southern area compared to last season. The forecast shows a decrease in the Indian River of 400 thousand boxes. The combined other areas shows a decrease of 4,900 boxes.

## **FCOJ Yield 1.61 Gallons per Box**

The projection for frozen concentrated orange juice (FCOJ) is 1.61 gallons per box of 42° Brix concentrate. Last season's final yield for all oranges was 1.502203 gallons per box, as reported by the Florida Department of Citrus. Projections for the components will be published in January. Record yields were set in 2007-2008 for all oranges at 1.672737 gallons per box and the late category (Valencias) at 1.790343 gallons per box. The record for the early-midseason category is 1.597195 gallons per box which occurred in 2008-2009. All projections of yield assume the processing relationships this season will be similar to those of the past several seasons.

## Forecast Components, by Type – Florida: October 2015

[Survey data is considered final in December for Navels, January for early-midseason oranges, February for grapefruit, and April for Valencias]

Type	Bearing trees (1,000 trees)	Fruit per tree (number)	Droppage (percent)	Fruit per box (number)
<b>ORANGES</b>				
Early-midseason.....	21,650	744	23	290
Navel.....	944	229	24	139
Valencia.....	30,249	520	32	231
<b>GRAPEFRUIT</b>				
White.....	1,087	449	29	122
Red.....	3,236	439	26	112

## Citrus Production and Prorated Forecast, by Production Area – 2014-2015 and 2015-2016

[Forecasts based on fruit populations. The possible differences between growing areas, concerning average fruit size, loss from droppage, and harvest patterns, can alter the prorated estimates]

Production Area	Oranges				Grapefruit			
	Non-Valencia		Valencia		White		Red	
	2014-2015	2015-2016	2014-2015	2015-2016	2014-2015	2015-2016	2014-2015	2015-2016
	(1,000 boxes)							
Indian River.....	1,500	1,000	2,500	2,100	2,500	2,250	7,350	6,700
Southern.....	13,900	10,800	18,000	13,900	200	200	900	1,450
Other <sup>1</sup> .....	32,000	28,200	28,900	24,000	550	350	1,400	1,350
Florida Total.....	47,400	40,000	49,400	40,000	3,250	2,800	9,650	9,500

<sup>1</sup> Includes Central, Northern, and Western areas.

## Distribution of Estimated Fruit Population, by Type, Area, and Age Groups – Florida: September

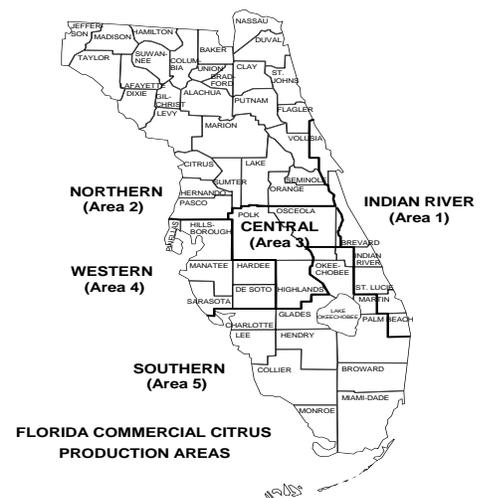
[Distribution of fruit population in September as determined by multiplying average fruit per tree from the Limb Count Survey by bearing age trees]

Areas and age groups	Oranges				Grapefruit			
	Non-Valencia		Valencia		White		Red	
	2014-2015	2015-2016	2014-2015	2015-2016	2014-2015	2015-2016	2014-2015	2015-2016
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Indian River.....	3	3	5	5	79	79	71	70
Northern.....	5	6	2	3	(Z)	1	3	3
Central.....	28	29	35	31	12	12	10	9
Western.....	38	35	26	26	1	1	4	3
Southern.....	26	27	32	35	8	7	12	15
3 - 5 years.....	4	3	2	3	(Z)	2	3	6
6 - 8 years.....	5	7	4	4	1	1	4	4
9 - 13 years.....	12	12	11	10	4	4	10	7
14 - 23 years.....	29	24	39	34	19	18	24	20
24 yrs & over.....	50	54	44	49	76	75	59	63

Z Less than half of the unit shown.

## Expected Gift Fruit Shipments Under the 6-R Program and Non-Certified Usage, by Type – Florida: 2015-2016

Type	1,000 boxes	Type	1,000 boxes
Non-Valencia Oranges.....	550	Tangelos.....	40
Valencia Oranges.....	300	Early Tangerines.....	85
White Grapefruit.....	100	Late Tangerines.....	40
Red Grapefruit.....	350		



## Maturity

Regular bloom fruit samples were collected from groves on established routes in Florida's five major citrus producing areas and tested in the Florida Agricultural Statistics Service (FASS) laboratory September 30 - October 2, 2015. The orange sample size is 325 and the grapefruit sample size is 100.

### Citrus Unadjusted Maturity Tests – Florida: 2014-2015 and 2015-2016

[Averages of regular bloom fruit from sample groves. Juice and solids per box are unadjusted and not comparable to juice processing plant test results. All samples were run through an FMC 091 machine using mechanical pressure only. This machine utilizes a .040 short strainer and standard 5/8 inch orifice tube. The beam settings are also identical to past tests and no restrictors are used]

Fruit type (number of groves) test date	Acid		Solids (Brix)		Ratio		Unfinished juice per box		Solids per box	
	2014-2015 (percent)	2015-2016 (percent)	2014-2015 (percent)	2015-2016 (percent)	2014-2015	2015-2016	2014-2015 (pounds)	2015-2016 (pounds)	2014-2015 (pounds)	2015-2016 (pounds)
<b>ORANGES</b>										
Early (120-120)										
Sep 1.....	1.38	1.26	9.12	9.14	6.69	7.33	43.72	44.82	3.98	4.09
Oct 1.....	1.01	0.91	9.05	9.42	9.11	10.50	49.01	52.40	4.43	4.93
Midseason (55-55)										
Sep 1.....	1.53	1.42	9.10	9.08	6.05	6.51	44.18	45.82	4.02	4.16
Oct 1.....	1.14	1.06	9.09	9.21	8.08	8.93	49.77	49.59	4.52	4.57
Late (150-150)										
Sep 1.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Oct 1.....	2.08	1.91	8.69	8.57	4.23	4.55	45.17	48.46	3.92	4.15
<b>GRAPEFRUIT</b>										
White Seedless (50-50)										
Sep 1.....	1.64	1.65	9.97	9.74	6.11	5.91	34.69	35.06	3.46	3.41
Oct 1.....	1.47	1.48	9.76	9.48	6.68	6.44	38.25	39.09	3.73	3.70
Red Seedless (50-50)										
Sep 1.....	1.63	1.58	9.92	9.77	6.10	6.20	34.79	35.37	3.45	3.45
Oct 1.....	1.43	1.37	9.56	9.60	6.75	7.03	39.17	42.55	3.74	4.08

NA Not available.

### Citrus Maturity Test Averages, by Areas – Florida: October 2014-2015 and 2015-2016

Fruit type (number of groves) test date	Acid		Solids (Brix)		Ratio		Unfinished juice per box		Solids per box	
	2014-2015 (percent)	2015-2016 (percent)	2014-2015 (percent)	2015-2016 (percent)	2014-2015	2015-2016	2014-2015 (pounds)	2015-2016 (pounds)	2014-2015 (pounds)	2015-2016 (pounds)
<b>ORANGES</b>										
Early										
Indian River (9-9).....	1.04	0.95	9.06	9.69	8.87	10.42	47.05	47.71	4.26	4.63
Other Areas <sup>1</sup> (111-111)	1.01	0.91	9.05	9.40	9.13	10.51	49.17	52.78	4.44	4.95
Midseason										
Indian River (11-8).....	1.19	1.17	8.87	9.49	7.48	8.40	48.27	49.41	4.28	4.69
Other Areas <sup>1</sup> (44-47) ....	1.13	1.05	9.14	9.16	8.23	9.02	50.14	49.62	4.58	4.55
Late										
Indian River (29-29).....	2.13	1.98	8.84	8.92	4.18	4.57	44.76	47.51	3.96	4.24
Other Areas <sup>1</sup> (121-121)	2.06	1.89	8.66	8.49	4.24	4.54	45.26	48.68	3.92	4.13
<b>GRAPEFRUIT</b>										
White Seedless										
Indian River (38-38).....	1.48	1.48	9.86	9.60	6.71	6.53	37.89	38.74	3.73	3.72
Other Areas <sup>1</sup> (12-12) ....	1.44	1.48	9.48	9.07	6.60	6.16	39.38	40.19	3.73	3.64
Red Seedless										
Indian River (40-40).....	1.46	1.38	9.62	9.56	6.65	6.97	38.64	43.05	3.71	4.11
Other Areas <sup>1</sup> (10-10) ....	1.31	1.35	9.32	9.74	7.16	7.26	41.29	40.52	3.85	3.95

<sup>1</sup> Includes Central, Northern, Southern, and Western areas.

## All Grapefruit 12.3 Million Boxes

The forecast of grapefruit production is 12.3 million boxes, 5 percent less than last season's production. The total includes 2.80 million boxes of white grapefruit and 9.50 million boxes of red grapefruit. All grapefruit bearing trees are estimated to be 4.30 million, down 3 percent from the previous season.

The **white** grapefruit forecast of 2.80 million boxes is 14 percent less than last season's production. The estimated number of bearing trees is down 6 percent from the previous season. The estimated fruit per tree is 449, a decrease of 6 percent from last season. Projected fruit size is slightly below minimum, requiring an estimated 122 pieces of fruit to fill an 85-pound box. Projected droppage is slightly below maximum at 29 percent.

The **red** grapefruit forecast of 9.50 million boxes is 2 percent less than last season's final production. The estimated number of bearing trees is down 2 percent from the previous season. The estimated fruit per tree is 439, a decrease of less than 1 percent from last season. Projected fruit size is slightly below average, requiring an estimated 112 pieces of fruit to fill an 85-pound box. Projected droppage is slightly below maximum at 26 percent.

## All Tangerines 1.75 Million Boxes

The forecast of all tangerines is 1.75 million boxes. The total includes 1.00 million boxes of the early varieties (Fallglo and Sunburst), and 750 thousand boxes of the later maturing Honey variety.

The **Fallglo** tangerine forecast of 300 thousand boxes is 27 percent lower than last season's final production. The estimated number of bearing trees is down 5 percent from the previous season. The estimated fruit per tree is 681, a decrease of 40 percent from last season. Projected fruit size is below average, requiring an estimated 366 pieces of fruit to fill a 95-pound box. Projected droppage is slightly below maximum at 40 percent.

The **Sunburst** tangerine forecast of 700 thousand boxes is 32 percent lower than last season's final production. The estimated number of bearing trees is down 7 percent from the previous season. The estimated fruit per tree is 623, a decrease of 39 percent from last season. Projected fruit size is below average, requiring an estimated 362 pieces of fruit to fill a 95-pound box. Projected droppage is above average at 28 percent.

The **Honey** tangerine forecast of 750 thousand boxes is 9 percent lower than last season's final production. The estimated number of bearing trees is down 6 percent from last season. The estimated fruit per tree is 974, a 9 percent decrease from last season. Projected fruit size is below average, requiring an estimated 306 pieces of fruit to fill a 95-pound box. Projected droppage is slightly below maximum at 46 percent.

## All Tangelos 450 Thousand Boxes

The **tangelo** forecast of 450 thousand boxes is 34 percent lower than last season's final production. The estimated number of bearing trees is down 12 percent from the previous season. The estimated fruit per tree is 541, a decrease of 35 percent from last season. Projected fruit size is below average, requiring an estimated 283 pieces of fruit to fill a 90-pound box. Projected droppage is above maximum at 16 percent.

## Forecast Procedures

All citrus forecasts are based on actual fruit counts and measurements. The objective count method uses four components:

- (1) bearing age trees provided from the latest Commercial Citrus Inventory;
- (2) average fruit per tree obtained from the Limb Count survey using randomly selected trees and limbs;
- (3) fruit size from the fruit measurement survey; and
- (4) fruit loss from the drop survey.

These measurements are used in the forecast models; regression data are from the 2006-2007 through 2014-2015 seasons.

The latest tree inventory is used to determine estimated tree numbers. All trees planted in 2012 and earlier are included for the current season. An attrition factor was applied to these tree numbers (by age and area) to account for losses since the inventory period.

Statistically valid procedures are used to provide unbiased estimates of fruit count. Samples are drawn with known probabilities from the Commercial Citrus Inventory, taking into account the variability in fruit per tree. Limbs are randomly selected from sample trees. Fruit on these limbs are counted in the mid-July to mid-September period.

Fruit size and loss surveys were conducted in August and September. Results of these surveys are used in the models to project the fruit size at harvest and the fruit population expected to be available for harvest.

### Citrus Size Frequency Measurement Distributions, by Type – Florida: September

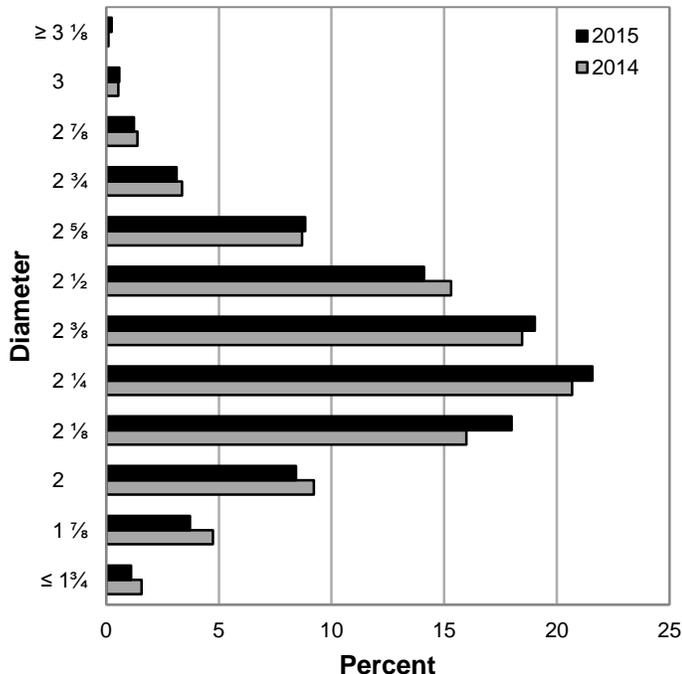
Type and number of fruit per 4/5 – bushel containers	2013	2014	2015	Type and number of fruit per 4/5 – bushel containers	2013	2014	2015
	(percent)	(percent)	(percent)		(percent)	(percent)	(percent)
<b>NON-VALENCIA ORANGES <sup>1</sup></b>				<b>WHITE GRAPEFRUIT <sup>2</sup></b>			
64 or less .....	(NA)	0.1	0.1	32 or less .....	(NA)	0.9	0.1
80 .....	(NA)	1.1	1.2	36 .....	(NA)	3.2	1.6
100 .....	(NA)	7.2	6.6	40 .....	(NA)	6.3	5.2
125 .....	(NA)	21.0	20.2	48 .....	(NA)	10.6	10.4
163 or more .....	(NA)	70.6	71.9	56 .....	(NA)	12.3	11.7
<b>NAVEL ORANGES</b>				<b>RED GRAPEFRUIT</b>			
64 or less .....	(NA)	20.6	23.9	32 or less .....	(NA)	0.9	1.1
80 .....	(NA)	31.1	33.0	36 .....	(NA)	2.8	4.3
100 .....	(NA)	27.6	25.2	40 .....	(NA)	6.2	7.0
125 .....	(NA)	14.2	12.0	48 .....	(NA)	11.4	11.9
163 or more .....	(NA)	6.5	5.9	56 .....	(NA)	12.1	12.9
<b>VALENCIA ORANGES</b>				<b>FALLGLO TANGERINES</b>			
64 or less .....	(NA)	0.1	0.1	80 or less .....	(NA)	5.0	12.1
80 .....	(NA)	1.0	1.5	100 .....	(NA)	28.2	13.7
100 .....	(NA)	7.5	9.4	120 .....	(NA)	7.3	20.0
125 .....	(NA)	23.6	25.4	176 .....	(NA)	5.0	12.5
163 or more .....	(NA)	67.8	63.6	210 or more .....	(NA)	54.5	41.7
<b>TANGELOS</b>				<b>SUNBURST TANGERINES</b>			
80 or less .....	(NA)	3.0	3.4	100 or less .....	(NA)	0.5	5.2
100 .....	(NA)	9.4	11.2	120 .....	(NA)	3.5	9.4
120 .....	(NA)	18.0	19.8	176 .....	(NA)	7.4	10.4
156 or more .....	(NA)	69.6	65.6	210 or more .....	(NA)	88.6	75.0

NA Not available.

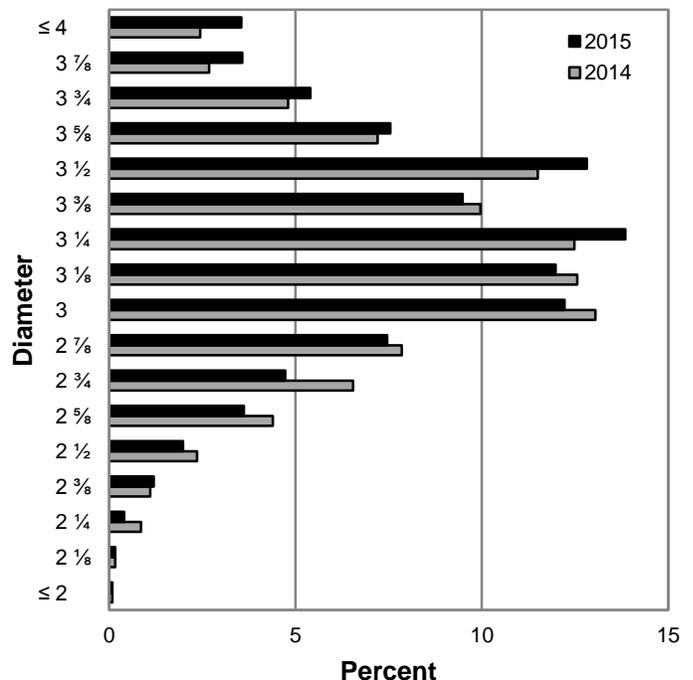
<sup>1</sup> Excludes Navel and Temple varieties.

<sup>2</sup> Excludes seedy variety.

**Fruit Size Frequency Measurements, Non-Valencia Oranges <sup>1</sup>, by Diameter - Florida: September**



**Fruit Size Frequency Measurements, Red Grapefruit, by Diameter - Florida: September**



<sup>1</sup> Excludes Navel and Temple varieties.