



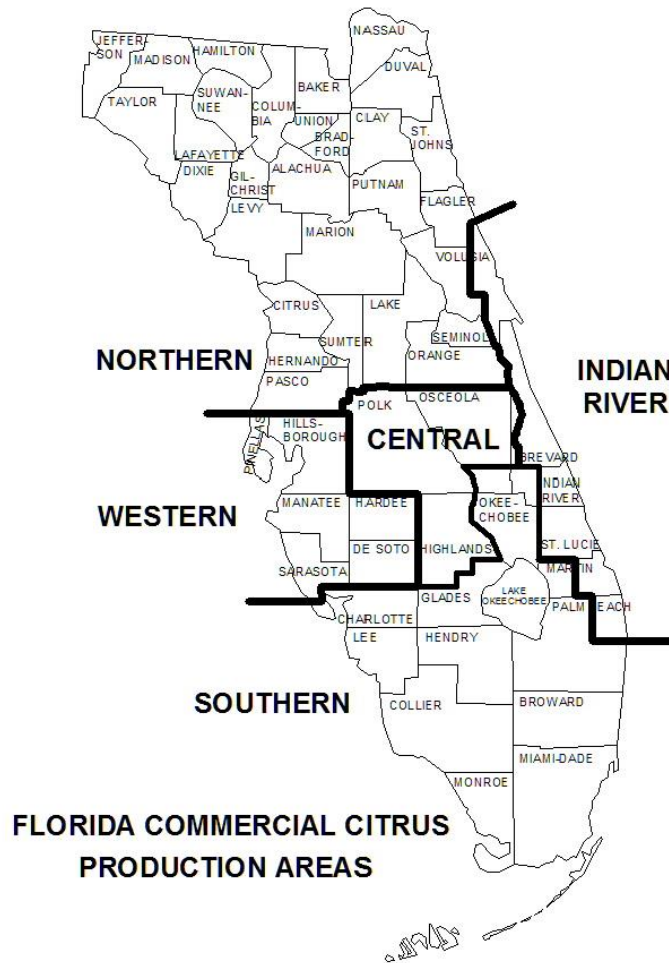
CITRUS FRUIT SIZE AND DROP

Cooperating with the Florida Department of Agriculture and Consumer Services
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Detailed Historic Florida Size and Drop Data Released

The tables on the following pages display the results of the final size and drop surveys for each of the past eight crop seasons by production area and age group. During the crop season, the state-level indications for size and drop are projected from the initial forecast month until the final forecast month (January for early-midseason oranges, February for grapefruit, April for Valencia oranges). Sample size used in these surveys and the distribution of the sample groves around the state are chosen to minimize error in the state estimates of production; these estimates are not to be considered as precise for the area and age group as at the state level.



Final Fruit Per Box, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final January 1 for early-midseason oranges]

Area and age group	Early-midseason Oranges							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
Indian River.....	247	270	281	273	298	302	285	289
Northern.....	263	223	308	246	292	324	299	337
Central.....	249	240	277	237	282	294	309	301
Western.....	259	242	278	230	270	288	318	281
Southern.....	265	265	278	231	264	267	279	264
3 - 5 Years.....	215	215	226	216	211	229	241	235
6 - 8 Years.....	255	206	245	207	251	271	303	244
9 - 13 Years.....	256	227	259	218	243	266	286	276
14 - 23 Years.....	261	251	286	237	285	290	301	281
24 yrs & over.....	255	257	288	245	284	296	314	298
State.....	257	246	280	235	274	286	302	284

Final Droppage, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final January 1 for early-midseason oranges]

Area and age group	Early-midseason Oranges							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Indian River.....	15	11	7	12	32	29	23	31
Northern.....	3	3	3	5	24	28	28	46
Central.....	5	7	4	9	17	20	22	36
Western.....	10	8	7	20	18	24	24	30
Southern.....	18	12	10	13	17	24	17	27
3 - 5 Years.....	7	8	7	44	24	35	31	45
6 - 8 Years.....	15	8	10	16	29	35	34	40
9 - 13 Years.....	8	8	6	13	21	25	28	35
14 - 23 Years.....	10	8	6	11	18	24	22	30
24 yrs & over.....	12	8	8	13	16	21	18	30
State.....	11	8	7	13	18	23	22	32

Final Fruit Per Box, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final April 1 for Valencia oranges]

Area and age group	Valencia Oranges							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
Indian River.....	230	241	260	234	265	248	241	217
Northern.....	208	230	259	227	256	256	260	253
Central.....	218	215	224	209	243	256	260	244
Western.....	218	211	229	203	233	231	245	231
Southern.....	220	222	222	218	212	230	228	212
3 - 5 Years.....	207	189	216	170	205	190	184	(D)
6 - 8 Years.....	211	196	204	194	214	229	235	214
9 - 13 Years.....	213	200	209	204	223	222	235	217
14 - 23 Years.....	223	225	233	213	232	243	246	230
24 yrs & over.....	220	226	231	221	236	247	249	234
State.....	219	218	227	212	231	240	244	228

D Withheld to avoid disclosing data for individual operations.

Final Droppage, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final April 1 for Valencia oranges]

Area and age group	Valencia Oranges							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Indian River.....	9	20	27	28	29	43	21	30
Northern.....	14	7	13	10	26	19	36	24
Central.....	14	11	13	16	21	34	26	32
Western.....	12	13	12	18	24	29	28	27
Southern.....	19	18	21	22	21	28	23	28
3 - 5 Years.....	14	7	31	18	38	45	22	(D)
6 - 8 Years.....	14	14	17	23	27	42	38	29
9 - 13 Years.....	11	9	10	21	27	34	28	29
14 - 23 Years.....	15	15	16	17	20	29	26	26
24 yrs & over.....	18	18	19	19	23	31	24	29
State.....	15	14	16	19	22	31	25	29

D Withheld to avoid disclosing data for individual operations.

Final Fruit Per Box, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final February 1 for grapefruit]

Area and age group	White Grapefruit							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
Indian River.....	84	98	102	104	123	122	114	136
Northern.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Central.....	93	90	94	90	108	110	110	132
Western.....	(D)	(D)	(D)	(D)	(D)	(D)	106	(D)
Southern.....	(D)	(D)	(D)	(D)	(D)	(D)	103	105
3 - 5 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
6 - 8 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
9 - 13 Years.....	83	100	100	94	123	131	121	124
14 - 23 Years.....	84	98	100	109	120	113	114	149
24 yrs & over.....	89	95	102	93	120	119	112	129
State.....	85	96	101	101	120	118	113	132

D Withheld to avoid disclosing data for individual operations.

Final Droppage, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final February 1 for grapefruit]

Area and age group	White Grapefruit							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Indian River.....	8	12	10	15	22	28	20	29
Northern.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Central.....	6	11	10	18	25	23	34	68
Western.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Southern.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	39
3 - 5 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
6 - 8 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
9 - 13 Years.....	5	9	11	17	34	40	10	(D)
14 - 23 Years.....	8	10	11	19	19	21	31	48
24 yrs & over.....	10	14	11	13	24	33	23	30
State.....	9	12	11	16	22	29	24	34

D Withheld to avoid disclosing data for individual operations.

Final Fruit Per Box, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final February 1 for grapefruit]

Area and age group	Red Grapefruit							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
Indian River.....	97	109	112	110	133	125	114	124
Northern.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Central.....	94	103	103	91	113	105	130	135
Western.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Southern.....	100	111	117	100	109	129	142	139
3 - 5 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	118
6 - 8 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
9 - 13 Years.....	93	113	109	(D)	151	117	117	125
14 - 23 Years.....	96	112	107	97	119	123	132	130
24 yrs & over.....	98	106	116	115	127	122	113	128
State.....	97	109	111	105	125	123	117	127

D Withheld to avoid disclosing data for individual operations.

Final Droppage, by Area and Age Group – Florida: 2008-2009 through 2015-2016

[Survey data is considered final February 1 for grapefruit]

Area and age group	Red Grapefruit							
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Indian River.....	9	11	8	19	25	23	25	31
Northern.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Central.....	11	4	6	8	13	21	40	61
Western.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Southern.....	27	15	20	16	7	33	32	72
3 - 5 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	50
6 - 8 Years.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
9 - 13 Years.....	14	3	4	(D)	21	23	15	38
14 - 23 Years.....	14	11	10	14	17	27	27	51
24 yrs & over.....	10	11	9	20	22	24	27	36
State.....	12	10	9	18	21	25	27	40

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Methodology

The annual citrus crop production forecast is based on estimates and projections from actual counts and measurements, avoiding observations based on opinion or judgment. These objective procedures are simple in concept but complex in planning, management for efficiency, and quality assurance.

The four basic parameters used in the forecast are (1) number of bearing trees, (2) number of fruit per tree, (3) fruit size, and (4) fruit loss from droppage. The general model incorporates the estimated total fruit (bearing trees times average fruit per tree), reduced for droppage (the fraction of fruit counted at the initial survey visit, but lost to droppage before it was harvested), divided by the number of fruit projected to make a standard box at harvest (using the fruit size survey).

$$\text{Direct Expansion} = \frac{\text{Bearing Trees} \times \text{Fruit per Tree} \times \text{Percent Remaining at Harvest}}{\text{Pieces of Fruit per Box}}$$

The sample design used to obtain each parameter stratifies the State's citrus belt into five nearly homogeneous areas and the bearing trees into five age groups. Sample groves for surveying are selected from the citrus tree inventory using probability sampling procedures. The samples are mapped on digital imagery and indexed for reference.

Size and fruit drop are monthly indications of the fruit size and the amount of fruit that has fallen from the citrus sample tree from the previous month. Fruit size measurement and droppage surveys are conducted monthly from August to harvest on two trees in each of approximately 1,800 sample groves.

Circumference calipers, which have proven to be the most sensitive tool to measure subtle changes in size, are used for this survey. Fruit size is projected to harvest by use of growth charts, historical relationships of current survey data to final results, and other relationships to detect similar year growth. Fruit circumference is converted to number of fruit per box to report the forecast in boxes. Fruit droppage is the final factor which must be considered to develop a reliable forecast of production. This requires monthly observations of fruit loss from chosen sample branches. These sample branches are tagged and the fruit is first counted in August. Then at monthly intervals, the same branches are recounted. Cumulative fruit loss for the season and historical data from previous seasons are used to project fruit loss to harvest time. The October forecast is subject to change in later months due to weather and growing conditions that affect fruit sizing and droppage rates.