

# FLORIDA AGRICULTURAL STATISTICS

## Citrus Maturity and Yield Tests

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We offer our sincere thanks to the many growers who allow picking of fruit samples from their groves, the Orange County Commissioners who maintain our test facilities, and citrus organizations who voluntarily cooperate in this program.

The report was assembled under the direction of Robert R. Terry and Harry M. Whittaker of the Florida Agricultural Statistics Service.

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## CITRUS MATURITY TESTING PROGRAM

### INTRODUCTION

Since the processing industry began to utilize the large majority of the orange crop in Florida, the concept of production estimates and forecasts only in terms of boxes of a given weight no longer fully reflects the statistical needs of the citrus industry. To be more meaningful, forecasts and estimates of production need to be expressed in terms of total pounds of solids as well as in terms of boxes. This publication provides a summary of results from randomly sampled fruit collected and tested by the Florida Agricultural Statistics Service for recent years.

### HISTORY OF CITRUS MATURITY TESTING PROGRAM

In the late 1950's the Service began to collect fruit samples of oranges monthly to determine if maturity and yield factors could be projected in advance of harvest. For several years field personnel picked a single fruit from each grove they entered to make monthly counts and size measurements in their regular drop and growth surveys. These fruit were combined into a single sample for each type of orange--early, midseason, and late--and juice was extracted with the aid of an electrically operated reamer. The necessary weights and test results were accumulated. Within a few seasons, it was determined that declines in acid, increases in soluble solids and solids-to-acid ratios and, later in the season, decreases in juice and gains in pounds solids followed predictable patterns. It appeared from these data that changes in these elements could be predicted over time if sufficient observations were available to provide a valid statistical base. None of the results of these tests were published. The yields of pounds solids shown in these tests appeared to be correlated with changes in yield levels of fruit received at the processing plants.

In early 1963, following the disastrous freeze of December 1962, the industry was very concerned over the level of pounds-solids yield that would be obtained from Valencia oranges which had been damaged severely. In response to recommendations by the Citrus Crop Estimates Advisory Committee and requests from others in the citrus industry, the Florida Agricultural Statistics Service conducted a series of tests using fruit from randomly selected sample groves. Three successive tests were made at two week intervals. These tests indicated rather accurately the abnormally low levels of juice and pounds of solids in Valencias that spring.

This pilot project provided experience for developing regular survey procedures which would yield statistically reliable results. Sufficient funds were available to finance the work and a regular program of monthly surveys began on October 1, 1963. The sample size selected in these first surveys provided for 50 groves each for early, midseason, and late oranges. Reports were issued individually on early and midseason oranges on the first of each month from October through January in the 1963-64 season, and from October 1 through February 1 in the 1964-65 and 1965-66 seasons. Valencia orange test results were reported on October 1 through April 1 in the 1963-64 season, and through May 1 in the 1964-65 season. In the 1965-66 season, Valencias were tested at the first of each month from October through February and, beginning in February, a midmonth report was added, continuing through April of that season. In the 1966-67 season, testing began September 1 and midmonth tests were added to the previous monthly programs.

In 1967, following a statistical evaluation of the preceding four years' results, the Service responded to industry requests for area data from the maturity and yield tests, and expanded sample sizes. In that year, the number of early orange groves was established at 73, midseasons at 55, and Valencias at 100. September 1 continued as the first test date and the schedule of midmonth tests was retained.

In the 1964-65 season, seedless grapefruit tests were added to the program with a separate series for white and colored varieties. A series for seedy grapefruit was added in the 1965-66 season and retained through the 1983 season, but has been discontinued because of steadily declining production.

## **SAMPLING**

The Florida Agricultural Statistics Service collects fruit samples starting the first of October, and monthly thereafter. Each sample consists of 15 oranges or 5 grapefruit. The samples are picked from preselected groves and predetermined sample trees. During the 1992-93 season the number of sample groves were: early orange, 115; midseason orange, 55; late (Valencia) orange, 145; white seedless grapefruit, 50; and colored seedless, 50.

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. 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 are included in the samples.

## **TESTING**

Early and midseason oranges are now tested on the first of each month beginning October 1 and continuing through February 1. Late oranges are tested on the first of each month beginning October 1 and ending June 1. Grapefruit tests are run the first of each month from October through December.

All maturity tests are conducted at a testing facility located at the Orange County Agricultural Center at 2350 E. Michigan Avenue in Orlando. The testing laboratory was built with funds and labor donated by Florida Citrus Mutual, the Florida Citrus Processors Association, the Florida Citrus Packers and the Orange County Commissioners.

All samples are run through an FMC 091 test extractor using mechanical pressure only. This machine utilizes a .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 depending on sizes. 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.

## **COMPARISONS OF FRUIT TEST RESULTS**

These Maturity Test Results are not directly comparable with the results of tests being taken by the Division of Fruit and Vegetable (DFV) for each load of fruit delivered for processing. The 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, the Maturity Test Results are based on an extraction procedure which has not varied or changed over the entire history of the tests, and the resulting measures of acids, solids and juice are unadjusted, whereas the DFV tests are made primarily to establish a basis for payment of fruit, in accord with industry regulations. Thus, the Maturity Tests Results are stated for unfinished juice, and the DFV tests are made, then adjusted to calculate finished juice based on current factoring.

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 Maturity Test Results for the corresponding date.

## **FORECASTS OF YIELD OF FCOJ**

Yield forecasts per 90 pound box equivalents are based on historic relationships, adjusted to reflect the effects of changing regulations on allowable extraction rates and current Brix standards. The forecast is made and measured against the history of actual final yields reported by the Florida Citrus Processors Association. 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 Florida Citrus Processors Association.

Starting in the 1965-66 season the standard for Florida orange juice was increased to 45.0° Brix, from the previous standard of 42.0°. This standard was changed to 43.4° with the 1980-81 season, then to 42.0° Brix, the U.S. standard, in 1981-82 and subsequently has remained unchanged.

### **THE 1984-85 SEASON**

The first all orange FCOJ yield projection for the 1984-85 season in October was 1.46 gallons of 42.0° Brix. This projection was continued until the February forecast when the yield expectations were lowered to 1.33 due to the January 21-23 freeze which, like the December 1983 freeze, was most severe in the upper portions of the citrus belt. The March 1 all orange yield was raised to 1.36 and was maintained until June when it was increased to 1.38 gallons per box. The final all orange FCOJ was 1.37582 gallons. The final early and midseason yield was 1.39083 and the Valencia final was 1.35988 gallons.

### **THE 1985-86 SEASON**

The initial FCOJ yield forecast issued October 1 for all oranges was projected to be 1.42 gallons of 42.0° Brix. This yield forecast was maintained until January when it was reduced to 1.40 gallons due to freezing conditions on December 26-27, 1985. The February indications were further lowered to 1.38 gallons per box for all oranges, following the second freeze of the season on January 28-29, 1986. Early and midseason oranges were final at 1.35822 gallons. Late oranges averaged 1.40629 while the all orange yield was final at 1.37834 gallons per box.

## **THE 1986-87 SEASON**

The all orange FCOJ yield projection on October 1, 1986 was 1.44 gallons of 42.0° Brix. This all orange yield forecast was continued until January when the yield was increased to 1.46 gallons per box. Near ideal weather continued throughout the winter with absence of freezing temperatures. Yield forecasts were further increased in March and again in April to 1.50 gallons per box for all oranges. The early and midseason orange yield was final at 1.44643 gallons per box. Continued excellent growing conditions prevailed and Valencias reached 1.59621 gallons per box. The final all orange FCOJ yield was 1.50827 gallons.

## **THE 1987-88 SEASON**

The October 1, 1987 all orange FCOJ yield projection was 1.46 gallons per box of 42.0° Brix concentrate. This projection was held until January when the forecast was increased to 1.48 gallons per box. There was almost ideal growing weather with good moisture through the winter. The yield projection was increased to 1.51 gallons the first of February and again to 1.53 in March. The spring months had adequate rainfall and no damaging cold weather. The early and midseason orange yield was final at 1.48982 gallons per box. The late type (Valencia) oranges set an all time record high yield at 1.64573. The all orange yield was also at a record level 1.55342 gallons per box.

## **THE 1988-89 SEASON**

The October 1 all orange FCOJ yield projection was 1.52 gallons of 42.0° Brix concentrate. This level was maintained until January when the unseasonably warm weather and lack of rain had depressed juice levels and the all orange FCOJ projection was lowered to 1.50 gallons per box. Improvements in weather and the Valencia orange crop returned the all orange projection to 1.52 for the February forecast. Continuing improvements in the late oranges supported an increase in all oranges the first of April to 1.53 gallons per box. The early and midseasons were final at 1.47532 gallons of FCOJ per box. The all orange yield projection remained at 1.53. The late type Valencia oranges were final at 1.62816 gallons per box. The all orange yield was final at 1.53625 gallons per box which was second only to the record 1987-88 season yield of 1.55342.

## **THE 1989-90 SEASON**

The first all orange FCOJ yield projection for the 1989-90 season on October 1 was 1.48 gallons of 42.0° Brix concentrate. This projection was continued until January when the all orange yield expectation was lowered to 1.30 gallons due to the 1989 Christmas freeze. The National Weather Service recorded temperatures lower with the durations below 28 degrees longer than in the severe 1983 Christmas freeze. The February 1 all orange yield projection was lowered to 1.29. The March 1 yield projection was lowered again to 1.24 gallons per box. On April 1, the all orange yield projection continued lower to 1.21 gallons per box. The May and June projections for all oranges were raised respectively to 1.22 and 1.23 gallons per box. The final all orange yield was 1.22604 gallons per box. The final early and midseason orange yield was 1.23446 gallons per box and the Valencias were final at 1.20566 gallons.

## **THE 1990-91 SEASON**

The October 1, 1990 all orange FCOJ yield projection was 1.52 gallons per box of 42.0° Brix concentrate. This projection was held until December when the 1.52 was lowered to 1.50 gallons per box. The January 1 yield projection was lowered again to 1.48 gallons. This level was maintained until April 1 when the all orange yield was decreased to 1.47. The May projection was reduced to 1.45 gallons per box and this level was held through June and July when the final for all oranges was 1.45383. The early and midseason oranges were final at 1.39285 and the late type Valencias were final at 1.55915 gallons per box.

## **THE 1991-92 SEASON**

The first all orange FCOJ yield projection for the 1991-92 season was 1.50 gallons of 42.0° Brix concentrate. This level was maintained until February when the all orange level was raised to 1.51 gallons per box. The all orange yield projection was raised again the first of March to 1.52 gallons. This level was held until May when the all orange projections increased to 1.54 gallons due to the excellent quality developed by the Valencia oranges. The all oranges were raised to 1.55 gallons the first of June. The final all orange average yield was 1.54818 gallons per box. The early and midseasons were final at 1.46846 and the Valencias at 1.69608 gallons per box.

## **THE 1992-93 SEASON (1st non-factored season)**

The October 1, 1992 all orange yield projection was 1.48 gallons per box of 42.0° Brix concentrate. This projection was held until January when the 1.48 level was raised to 1.52 gallons per box. The all orange projected yield was again increased the first of February to 1.55 gallons per box. The all orange level was increased to 1.57 March 1 and held through April. May projection was increased to 1.58 gallons per box. The final early and midseason yield as reported by the Florida Citrus Processors Association was a record high 1.52480 gallons per box. The late portion was final at 1.68686 and the all orange was final at 1.57893 gallons per box.

## EARLY ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
October 1						
1984-85	80	1.16	9.60	8.49	49.14	4.72
1985-86	80	1.08	9.34	8.82	49.30	4.61
1986-87	90	1.30	9.53	7.49	49.07	4.67
1987-88	90	1.47	9.79	6.80	47.58	4.65
1988-89	90	1.43	9.54	6.76	48.22	4.59
1989-90	90	1.32	9.65	7.57	48.35	4.66
1990-91	90	0.92	9.76	10.97	50.81	4.96
1991-92	115	0.96	9.73	10.43	49.56	4.82
1992-93	115	1.10	9.25	8.61	47.79	4.42
November 1						
1984-85	79	0.88	10.43	12.17	50.88	5.31
1985-86	78	0.86	9.99	11.85	51.88	5.18
1986-87	90	1.04	10.18	9.99	51.69	5.25
1987-88	90	1.17	10.23	8.85	50.60	5.17
1988-89	89	1.12	10.46	9.49	51.01	5.33
1989-90	88	1.02	10.36	10.35	51.62	5.34
1990-91	82	0.77	10.37	13.87	52.64	5.46
1991-92	111	0.81	10.30	13.05	51.50	5.31
1992-93	114	0.95	10.06	10.93	50.69	5.10
December 1						
1984-85	72	0.84	10.95	13.25	51.32	5.62
1985-86	76	0.77	10.62	13.98	52.73	5.60
1986-87	81	0.79	10.95	14.28	52.80	5.77
1987-88	84	0.95	11.31	12.13	52.11	5.88
1988-89	84	0.99	11.23	11.53	51.77	5.81
1989-90	82	0.90	11.28	12.83	52.20	5.88
1990-91	54	0.77	11.15	14.70	50.55	5.64
1991-92	81	0.72	11.44	16.12	51.47	5.89
1992-93	86	0.79	11.21	14.43	51.46	5.77

Continued



## EARLY ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93 (continued)

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
January 1						
1984-85	51	0.83	11.90	14.64	50.64	6.03
1985-86	56	0.77	11.48	15.04	50.19	5.77
1986-87	45	0.81	11.86	14.99	52.97	6.28
1987-88	57	0.87	12.22	14.21	52.01	6.35
1988-89	50	0.87	12.26	14.21	51.46	6.31
1989-90	47	0.83	11.73	14.36	46.91	5.52
1990-91	26	0.77	12.02	15.89	51.26	6.16
1991-92	39	0.76	12.17	16.33	49.98	6.09
1992-93	57	0.77	12.00	15.94	51.10	6.13
February 1						
1984-85	18	0.73	12.43	17.33	45.41	5.69
1985-86	29	0.74	12.16	16.64	49.22	5.99
1986-87	13	0.83	12.97	15.72	50.52	6.54
1987-88	29	0.86	13.12	15.46	51.06	6.70
1988-89	19	0.82	13.23	16.32	51.10	6.76
1989-90 1/						
1990-91 1/						
1991-92 1/						
1992-93	32	0.73	12.76	17.84	51.02	6.51

1/ Too few samples to test.

## MIDSEASON ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
October 1						
1984-85	60	1.30	9.21	7.27	50.79	4.68
1985-86	60	1.18	9.19	8.01	49.79	4.58
1986-87	65	1.49	9.37	6.47	51.17	4.79
1987-88	65	1.65	9.41	5.79	48.39	4.55
1988-89	65	1.53	9.16	6.08	49.62	4.54
1989-90	65	1.57	9.47	6.14	49.55	4.68
1990-91	65	1.07	9.74	9.54	52.33	5.10
1991-92	55	1.22	9.54	8.04	51.00	4.86
1992-93	55	1.38	9.06	6.76	49.12	4.45
November 1						
1984-85	60	1.00	10.19	10.59	53.11	5.41
1985-86	60	0.94	9.94	10.74	52.75	5.25
1986-87	65	1.20	10.05	8.62	53.46	5.37
1987-88	65	1.36	10.12	7.55	51.93	5.25
1988-89	65	1.32	10.10	7.83	52.61	5.31
1989-90	65	1.20	10.11	8.50	53.10	5.37
1990-91	64	0.90	10.43	12.04	53.80	5.61
1991-92	55	1.05	10.38	10.19	52.69	5.47
1992-93	55	1.19	10.01	8.61	52.71	5.28
December 1						
1984-85	60	0.96	10.93	11.71	52.87	5.78
1985-86	59	0.86	10.63	12.60	53.32	5.67
1986-87	63	0.93	11.13	12.27	55.46	6.17
1987-88	65	1.10	11.16	10.33	53.83	6.00
1988-89	65	1.06	11.10	10.71	52.89	5.86
1989-90	65	1.03	11.12	11.09	53.55	5.95
1990-91	55	0.88	11.25	13.21	54.01	6.08
1991-92	52	0.91	11.65	13.05	52.64	6.13
1992-93	54	1.00	11.34	11.59	53.11	6.02

Continued

## MIDSEASON ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93 (continued)

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
January 1						
1984-85	53	0.89	11.70	13.47	51.82	6.06
1985-86	50	0.84	11.39	13.75	51.33	5.85
1986-87	54	0.89	12.10	13.91	54.48	6.59
1987-88	63	1.00	12.04	12.15	53.19	6.40
1988-89	60	0.98	11.93	12.35	52.99	6.33
1989-90	58	0.94	11.50	12.50	49.14	5.65
1990-91	33	0.87	11.78	13.81	53.86	6.35
1991-92	36	0.90	12.44	14.27	51.14	6.36
1992-93	49	0.97	12.04	12.79	52.33	6.30
February 1						
1984-85	16	0.79	12.18	15.89	47.70	5.82
1985-86	23	0.84	12.30	15.09	50.08	6.17
1986-87	23	0.90	12.55	14.41	53.69	6.74
1987-88	40	1.00	12.68	12.86	52.39	6.64
1988-89	32	0.96	13.37	14.14	50.69	6.77
1989-90 1/						
1990-91 1/						
1991-92 1/						
1992-93	32	0.85	12.99	15.77	51.83	6.74

1/ Too few samples to test.

## LATE ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
October 1						
1984-85	110	2.37	8.76	3.75	47.75	4.19
1985-86	110	2.40	8.63	3.65	48.83	4.21
1986-87	120	2.70	8.79	3.28	46.96	4.13
1987-88	120	2.86	8.86	3.13	46.36	4.11
1988-89	120	2.80	8.64	3.12	46.15	3.98
1989-90	120	2.74	8.88	3.28	47.73	4.24
1990-91	120	1.98	8.96	4.64	50.95	4.57
1991-92	145	2.15	8.71	4.13	48.35	4.21
1992-93	145	2.45	8.50	3.51	46.16	3.92
November 1						
1984-85	110	1.86	9.33	5.09	52.14	4.86
1985-86	110	1.84	8.93	4.94	52.05	4.65
1986-87	120	2.18	9.27	4.28	51.14	4.74
1987-88	120	2.34	9.12	3.95	49.47	4.51
1988-89	120	2.40	9.30	3.91	50.10	4.66
1989-90	120	2.14	9.30	4.39	51.76	4.82
1990-91	120	1.50	9.48	6.46	54.98	5.21
1991-92	145	1.77	9.22	5.33	51.48	4.75
1992-93	145	2.06	9.04	4.51	50.85	4.60
December 1						
1984-85	110	1.63	9.90	6.15	53.40	5.29
1985-86	109	1.55	9.40	6.16	54.03	5.08
1986-87	120	1.61	9.97	6.28	53.61	5.35
1987-88	120	1.85	9.94	5.42	53.93	5.36
1988-89	120	1.84	10.07	5.54	52.96	5.33
1989-90	120	1.80	10.10	5.70	54.28	5.48
1990-91	120	1.31	10.18	7.99	55.84	5.69
1991-92	145	1.46	10.37	7.22	53.50	5.56
1992-93	145	1.64	10.11	6.27	53.39	5.40

Continued

## LATE ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93 (continued)

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
January 1						
1984-85	110	1.45	10.57	7.40	54.13	5.72
1985-86	109	1.34	10.13	7.69	54.78	5.55
1986-87	120	1.42	10.71	7.66	55.49	5.94
1987-88	120	1.61	10.86	6.82	55.20	5.99
1988-89	120	1.62	10.79	6.74	54.26	5.85
1989-90	120	1.54	10.69	7.03	51.27	5.49
1990-91	120	1.19	10.85	9.29	56.02	6.08
1991-92	145	1.33	11.28	8.64	53.57	6.05
1992-93	145	1.47	10.97	7.59	53.66	5.89
February 1						
1984-85	108	1.29	11.04	8.67	52.03	5.76
1985-86	108	1.22	10.60	8.78	53.99	5.73
1986-87	120	1.30	11.29	8.81	55.94	6.32
1987-88	120	1.45	11.54	8.04	55.56	6.41
1988-89	120	1.39	11.63	8.47	55.24	6.43
1989-90	105	1.17	10.86	9.41	46.85	5.13
1990-91	120	1.03	11.52	11.34	56.28	6.49
1991-92	145	1.23	12.01	9.90	53.54	6.43
1992-93	145	1.23	11.75	9.67	55.03	6.47
March 1						
1984-85	78	1.16	11.84	10.40	51.72	6.14
1985-86	103	1.12	11.24	10.16	53.33	6.00
1986-87	118	1.20	11.89	10.02	55.07	6.55
1987-88	120	1.31	12.17	9.35	55.93	6.81
1988-89	120	1.27	12.20	9.67	55.17	6.73
1989-90	62	1.03	11.30	11.09	49.38	5.62
1990-91	108	0.96	12.13	12.83	55.46	6.74
1991-92	139	1.12	12.58	11.39	53.64	6.75
1992-93	142	1.19	12.43	10.60	55.80	6.94

Continued

## LATE ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-84 through 1992-93 (continued)

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
April 1						
1984-85	49	1.03	12.27	12.17	51.84	6.37
1985-86	92	0.98	11.60	12.08	53.39	6.21
1986-87	113	1.09	12.50	11.60	54.97	6.87
1987-88	116	1.16	12.60	11.02	56.01	7.06
1988-89	110	1.09	12.73	11.83	56.02	7.13
1989-90	39	0.97	11.97	12.47	52.44	6.30
1990-91	82	0.89	12.29	14.10	56.58	6.96
1991-92	89	1.01	12.91	12.92	53.68	6.95
1992-93	118	1.04	12.72	12.38	55.53	7.07
May 1						
1984-85	30	0.86	12.05	14.25	51.68	6.23
1985-86	47	0.85	11.77	14.10	52.40	6.19
1986-87	71	0.99	12.67	12.94	56.52	7.16
1987-88	79	1.01	12.89	12.86	56.02	7.23
1988-89	71	0.97	13.00	13.55	55.42	7.21
1989-90	10	0.90	12.97	14.73	54.53	7.11
1990-91	28	0.70	12.47	18.07	57.06	7.14
1991-92	39	0.93	13.57	14.81	54.56	7.42
1992-93	63	0.94	13.22	14.34	55.78	7.38

Continued

## LATE ORANGES

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93 (continued)

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
				June 1		
1984-85 1/						
1985-86	21	0.79	12.13	15.44	52.76	6.42
1986-87	17	0.78	12.27	15.85	55.42	6.81
1987-88	26	0.88	13.08	14.97	55.75	7.30
1988-89	27	0.81	13.17	16.53	56.00	7.39
1989-90 1/						
1990-91 1/						
1991-92 1/						
1992-93	15	0.84	13.88	16.74	55.20	7.68

1/ Too few samples to test.

## EARLY ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, within season  
1984-85 through 1992-93

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent	Pounds			
<b>1984-85 (51 groves)</b>					
Oct 1	1.20	9.74	8.31	48.70	4.74
Nov 1	0.90	10.63	12.12	51.18	5.44
Dec 1	0.84	11.13	13.40	51.31	5.71
Jan 1	0.83	11.90	14.64	50.64	6.03
<b>1985-86 (56 groves)</b>					
Oct 1	1.09	9.30	8.69	48.95	4.55
Nov 1	0.87	10.06	11.78	51.92	5.23
Dec 1	0.79	109.68	13.72	52.76	5.64
Jan 1	0.77	11.48	15.04	50.19	5.77
<b>1986-87 (45 groves)</b>					
Oct 1	1.34	9.59	7.34	49.13	4.70
Nov 1	1.07	10.25	9.82	51.84	5.31
Dec 1	0.81	11.02	13.98	53.46	5.88
Jan 1	0.81	11.86	14.99	52.97	6.28

Continued



## EARLY ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, within season  
1984-85 through 1992-93 (continued)

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
1987-88 (57 groves)					
Oct 1	1.50	9.86	6.69	47.49	4.67
Nov 1	1.21	10.31	8.62	50.60	5.21
Dec 1	0.98	11.39	11.78	51.85	5.89
Jan 1	0.87	12.22	14.21	52.01	6.35
1988-89 (50 groves)					
Oct 1	1.48	9.56	6.53	48.04	4.59
Nov 1	1.13	10.51	9.39	50.69	5.32
Dec 1	1.01	11.35	11.39	51.87	5.88
Jan 1	0.87	12.26	14.21	51.46	6.31
1989-90 (47 groves)					
Oct 1	1.37	9.70	7.29	48.35	4.69
Nov 1	1.04	10.39	10.16	51.57	5.35
Dec 1	0.92	11.36	12.60	52.65	5.97
Jan 1	0.83	11.73	14.36	46.91	5.52

Continued

## EARLY ORANGES

Maturity and yield test results  
 unadjusted matched averages for regular bloom fruit  
 from identical sample trees, within season  
 1984-85 through 1992-93 (continued)

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
<b>1990-91 (26 groves)</b>					
Oct 1	0.97	9.87	10.42	51.50	5.08
Nov 1	0.76	10.45	13.93	52.73	5.51
Dec 1	0.79	11.33	14.57	48.73	5.51
Jan 1	0.77	12.02	15.89	51.26	6.16
<b>1991-92 (39 groves)</b>					
Oct 1	1.00	9.74	9.97	49.34	4.80
Nov 1	0.82	10.41	12.84	52.00	5.42
Dec 1	0.74	11.45	15.76	51.48	5.90
Jan 1	0.76	12.17	16.33	49.98	6.09
<b>1992-93 (57 groves)</b>					
Oct 1	1.15	9.32	8.35	48.11	4.48
Nov 1	0.99	10.11	10.60	51.00	5.15
Dec 1	0.80	11.30	14.52	51.20	5.78
Jan 1	0.77	12.00	15.94	51.10	6.13

## MIDSEASON ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, within season  
1984-85 through 1992-93

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent		Pounds		
1984-85 (53 groves)					
Oct 1	1.30	9.21	7.25	50.88	4.69
Nov 1	1.01	10.22	10.48	53.23	5.44
Dec 1	0.97	11.00	11.65	53.14	5.85
Jan 1	0.89	11.70	13.47	51.82	6.06
1985-86 (50 groves)					
Oct 1	1.19	9.18	7.88	49.78	4.57
Nov 1	0.95	9.95	10.68	52.94	5.27
Dec 1	0.87	10.63	12.49	53.21	5.66
Jan 1	0.84	11.39	13.75	51.33	5.85
1986-87 (54 groves)					
Oct 1	1.51	9.37	6.40	51.17	4.79
Nov 1	1.21	10.05	8.56	53.28	5.35
Dec 1	0.94	11.14	12.19	55.40	6.17
Jan 1	0.89	12.10	13.91	54.48	6.59

Continued

## MIDSEASON ORANGES

Maturity and yield test results  
 unadjusted matched averages for regular bloom fruit  
 from identical sample trees, within season  
 1984-85 through 1992-93 (continued)

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
1987-88 (63 groves)					
Oct 1	1.66	9.41	5.76	48.40	4.55
Nov 1	1.37	10.12	7.52	51.96	5.26
Dec 1	1.10	11.16	10.30	54.03	6.03
Jan 1	1.00	12.04	12.15	53.19	6.40
1988-89 (60 groves)					
Oct 1	1.55	9.13	6.01	49.87	4.55
Nov 1	1.33	10.06	7.73	52.83	5.31
Dec 1	1.06	11.09	10.67	53.12	5.89
Jan 1	0.98	11.93	12.35	52.99	6.33
1989-90 (58 groves)					
Oct 1	1.58	9.46	6.11	49.60	4.68
Nov 1	1.21	10.12	8.55	52.99	5.36
Dec 1	1.03	11.16	11.08	53.34	5.94
Jan 1	0.94	11.50	12.50	49.14	5.65

Continued

## MIDSEASON ORANGES

Maturity and yield test results  
 unadjusted matched averages for regular bloom fruit  
 from identical sample trees, within season  
 1984-85 through 1992-93 (continued)

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
1990-91 (33 groves)					
Oct 1	1.12	9.73	9.01	53.56	5.21
Nov 1	0.95	10.41	11.30	55.25	5.75
Dec 1	0.88	11.23	13.04	54.75	6.15
Jan 1	0.87	11.78	13.81	53.86	6.35
1991-92 (36 groves)					
Oct 1	1.23	9.58	8.08	51.57	4.93
Nov 1	1.03	10.35	10.34	52.50	5.43
Dec 1	0.89	11.63	13.28	52.13	6.06
Jan 1	0.90	12.44	14.27	51.14	6.36
1992-93 (49 groves)					
Oct 1	1.40	9.12	6.70	49.18	4.49
Nov 1	1.22	10.10	8.48	52.64	5.32
Dec 1	1.01	11.39	11.56	53.01	6.04
Jan 1	0.97	12.04	12.79	52.33	6.30

## LATE ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, within season  
1984-85 through 1992-93

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
1984-85 (30 groves)					
Oct 1	2.41	8.85	3.71	47.68	4.22
Nov 1	1.90	9.47	5.05	51.58	4.88
Dec 1	1.72	10.07	5.96	53.34	5.37
Jan 1	1.49	10.78	7.30	53.81	5.80
Feb 1	1.37	11.30	8.37	54.45	6.15
Mar 1	1.19	12.01	10.15	54.04	6.50
Apr 1	1.04	12.25	12.03	52.03	6.38
May 1	0.86	12.05	14.25	51.68	6.23
1985-86 (47 groves)					
Oct 1	2.42	8.60	3.62	48.67	4.19
Nov 1	1.88	8.83	4.79	51.71	4.57
Dec 1	1.58	9.36	6.03	53.90	5.05
Jan 1	1.36	10.09	7.53	54.69	5.52
Feb 1	1.23	10.54	8.70	54.22	5.72
Mar 1	1.14	11.24	9.96	53.24	5.99
Apr 1	0.99	11.54	11.88	53.06	6.13
May 1	0.85	11.77	14.10	52.40	6.19
1986-87 (71 groves)					
Oct 1	2.78	8.81	3.20	46.89	4.13
Nov 1	2.24	9.24	4.16	51.09	4.72
Dec 1	1.64	9.98	6.16	53.67	5.36
Jan 1	1.47	10.74	7.41	55.84	6.00
Feb 1	1.32	11.30	8.63	55.73	6.30
Mar 1	1.25	11.93	9.69	54.99	6.56
Apr 1	1.12	12.58	11.35	54.80	6.90
May 1	0.99	12.67	12.94	56.52	7.16

Continued

## LATE ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, within season  
1984-85 through 1992-93 (continued)

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
1987-88 (79 groves)					
Oct 1	2.90	8.87	3.09	46.33	4.11
Nov 1	2.35	9.10	3.91	49.35	4.49
Dec 1	1.87	9.95	5.36	54.27	5.40
Jan 1	1.62	10.87	6.77	55.52	6.03
Feb 1	1.47	11.53	7.92	55.69	6.43
Mar 1	1.34	12.23	9.19	56.18	6.88
Apr 1	1.18	12.66	10.83	56.01	7.09
May 1	1.01	12.89	12.86	56.02	7.23
1988-89 (71 groves)					
Oct 1	2.85	8.65	3.06	46.24	3.99
Nov 1	2.41	9.32	3.89	49.81	4.64
Dec 1	1.86	10.09	5.45	53.27	5.37
Jan 1	1.63	10.79	6.69	54.37	5.86
Feb 1	1.39	11.68	8.46	55.34	6.47
Mar 1	1.29	12.27	9.58	54.84	6.73
Apr 1	1.08	12.70	11.86	56.00	7.11
May 1	0.97	13.00	13.55	55.42	7.21
1989-90 (10 groves)					
Oct 1	2.87	9.19	3.21	48.57	4.46
Nov 1	2.15	9.72	4.53	51.78	5.03
Dec 1	1.69	10.55	6.39	55.08	5.79
Jan 1	1.58	11.40	7.29	54.39	6.21
Feb 1	1.28	11.94	9.37	54.15	6.47
Mar 1	1.13	12.27	10.92	55.38	6.83
Apr 1	0.99	12.57	12.89	54.13	6.83
May 1	0.90	12.97	14.73	54.53	7.11

Continued

## LATE ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, within season  
1984-85 through 1992-93 (continued)

Season and date	Acid	Soluble solids	Ratio	Juice per box	Solids per box
Number	Percent			Pounds	
1990-91 (28 groves)					
Oct 1	2.04	9.01	4.54	51.58	4.64
Nov 1	1.52	9.52	6.31	57.04	5.44
Dec 1	1.34	10.17	7.75	56.74	5.77
Jan 1	1.18	10.92	9.38	56.69	6.20
Feb 1	1.02	11.56	11.49	56.63	6.56
Mar 1	0.96	12.22	12.97	55.77	6.83
Apr 1	0.86	12.39	14.48	56.40	7.00
May 1	0.70	12.47	18.07	57.06	7.14
1991-92 (39 groves)					
Oct 1	2.24	8.81	3.98	48.38	4.26
Nov 1	1.87	9.43	5.12	51.34	4.84
Dec 1	1.55	10.53	6.87	53.62	5.65
Jan 1	1.40	11.48	8.33	54.16	6.22
Feb 1	1.29	12.22	9.64	53.25	6.51
Mar 1	1.19	12.83	10.92	53.69	6.89
Apr 1	1.05	13.14	12.60	53.76	7.07
May 1	0.93	13.57	14.81	54.56	7.42
1992-93 (63 groves)					
Oct 1	2.55	8.58	3.41	45.97	3.94
Nov 1	2.15	9.13	4.39	50.82	4.64
Dec 1	1.69	10.13	6.08	53.29	5.40
Jan 1	1.53	11.05	7.31	53.91	5.96
Feb 1	1.28	11.88	9.39	54.87	6.52
Mar 1	1.22	12.50	10.33	56.10	7.02
Apr 1	1.06	12.84	12.23	56.20	7.22
May 1	0.94	13.22	14.34	55.78	7.38



## EARLY ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons

1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Percent acid									
Oct 1	1.20	1.09	1.34	1.50	1.48	1.37	0.97	1.00	1.15
Nov 1	0.90	0.87	1.07	1.21	1.13	1.04	0.76	0.82	0.99
Dec 1	0.84	0.79	0.81	0.98	1.01	0.92	0.79	0.74	0.80
Jan 1	0.83	0.77	0.81	0.87	0.87	0.83	0.77	0.76	0.77
Percent soluble solids									
Oct 1	9.74	9.30	9.59	9.86	9.56	9.70	9.87	9.74	9.32
Nov 1	10.63	10.06	10.25	10.31	10.51	10.39	10.45	10.41	10.11
Dec 1	11.13	10.68	11.02	11.39	11.35	11.36	11.33	11.45	11.30
Jan 1	11.90	11.48	11.86	12.22	12.36	11.73	12.02	12.17	12.00
Ratio									
Oct 1	8.31	8.69	7.34	6.69	6.53	7.29	10.42	9.97	8.35
Nov 1	12.12	11.78	9.82	8.62	9.39	10.16	13.93	12.84	10.60
Dec 1	13.40	13.72	13.98	11.78	11.39	12.60	14.57	15.76	14.52
Jan 1	14.64	15.04	14.99	14.21	14.21	14.36	15.89	16.33	15.94

## EARLY ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons

1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
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### Pounds juice per box

Oct 1	48.70	48.95	49.13	47.49	48.04	48.35	51.50	49.34	48.11
Nov 1	51.18	51.92	51.84	50.60	50.69	51.57	52.73	52.00	51.00
Dec 1	51.31	52.76	53.46	51.85	51.87	52.65	48.73	51.48	51.20
Jan 1	50.64	50.19	52.97	52.01	51.46	46.91	51.26	49.98	51.10

### Pounds solids per box

Oct 1	4.74	4.55	4.70	4.67	4.59	4.69	5.08	4.80	4.48
Nov 1	5.44	5.23	5.31	5.21	5.32	5.35	5.51	5.42	5.15
Dec 1	5.71	5.64	5.88	5.89	5.88	5.97	5.51	5.90	5.78
Jan 1	6.03	5.77	6.28	6.35	6.31	5.52	6.16	6.09	6.13

## MIDSEASON ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons  
1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
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### Percent acid

Oct	1	1.30	1.06	1.52	1.65	1.63	1.58	1.12	1.00	1.43
Nov	1	1.01	0.86	1.25	1.38	1.41	1.21	0.95	0.82	1.26
Dec	1	0.97	0.79	0.96	1.13	1.11	1.03	0.88	0.74	1.03
Jan	1	0.89	0.76	0.89	1.02	1.02	0.94	0.87	0.76	0.99
Feb	1	1/	0.84	0.90	1.00	0.96	1/	1/	1/	0.85

### Percent soluble solids

Oct	1	9.21	9.33	9.27	9.36	9.30	9.46	9.73	9.74	9.14
Nov	1	10.22	10.10	10.02	10.08	10.18	10.12	10.41	10.41	10.08
Dec	1	11.00	10.69	11.10	11.12	11.30	11.16	11.23	11.45	11.44
Jan	1	11.70	11.50	11.82	11.97	12.20	11.50	11.78	12.17	12.14
Feb	1	1/	12.30	12.55	12.68	13.37	1/	1/	1/	12.99

### Ratio

Oct	1	7.25	8.95	6.33	5.73	5.81	6.11	9.01	9.97	6.55
Nov	1	10.48	11.81	8.26	7.39	7.36	8.55	11.30	12.84	8.18
Dec	1	11.65	13.76	11.88	9.97	10.37	11.08	13.04	15.76	11.30
Jan	1	13.47	15.40	13.76	11.91	12.12	12.50	13.81	16.33	12.52
Feb	1	1/	15.09	14.41	12.86	14.14	1/	1/	1/	15.77

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1/ Too few samples to test.

## MIDSEASON ORANGES

Maturity and yield test results  
 unadjusted matched averages for regular bloom fruit  
 from identical sample trees, yearly comparisons  
 1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
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### Pounds juice per box

Oct 1	48.70	49.86	52.22	48.78	49.11	49.60	53.56	51.57	49.23
Nov 1	51.18	52.60	53.29	52.24	52.31	52.99	55.25	52.50	52.92
Dec 1	51.31	52.78	54.24	54.22	52.76	53.34	54.75	53.13	53.26
Jan 1	50.64	50.98	54.50	53.23	52.90	49.14	53.86	51.14	52.60
Feb 1	1/	50.08	53.69	52.39	50.69	1/	1/	1/	51.83

### Pounds solids per box

Oct 1	4.69	4.65	4.84	4.56	4.56	4.68	5.21	4.93	4.50
Nov 1	5.44	5.31	5.34	5.26	5.32	5.36	5.75	5.43	5.33
Dec 1	5.85	5.65	6.03	6.03	5.95	5.94	6.15	6.06	6.09
Jan 1	6.06	5.87	6.45	6.37	6.45	5.65	6.35	6.36	6.38
Feb 1	1/	6.17	6.74	6.64	6.77	1/	1/	1/	6.74

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1/ Too few samples to test.

## LATE ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons  
1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
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### Percent acid

Oct 1	2.41	2.42	2.78	2.90	2.85	2.87	2.04	2.24	2.55
Nov 1	1.90	1.88	2.24	2.35	2.41	2.15	1.52	1.87	2.15
Dec 1	1.72	1.58	1.64	1.87	1.86	1.69	1.34	1.55	1.69
Jan 1	1.49	1.36	1.47	1.62	1.63	1.58	1.18	1.40	1.53
Feb 1	1.37	1.23	1.32	1.47	1.39	1.28	1.02	1.29	1.28
Mar 1	1.19	1.14	1.25	1.34	1.29	1.13	0.96	1.19	1.22
Apr 1	1.04	0.99	1.12	1.18	1.08	0.99	0.86	1.05	1.06
May 1	0.86	0.85	0.99	1.01	0.97	0.90	0.70	0.93	0.94

### Percent soluble solids

Oct 1	8.85	8.60	8.81	8.87	8.65	9.19	9.01	8.81	8.58
Nov 1	9.47	8.83	9.24	9.10	9.32	9.72	9.52	9.43	9.13
Dec 1	10.07	9.36	9.98	9.95	10.09	10.55	10.17	10.53	10.13
Jan 1	10.78	10.09	10.74	10.87	10.79	11.40	10.92	11.48	11.05
Feb 1	11.30	10.54	11.30	11.53	11.68	11.94	11.56	12.22	11.88
Mar 1	12.01	11.24	11.93	12.23	12.27	12.27	12.22	12.83	12.50
Apr 1	12.25	11.54	12.58	12.66	12.70	12.57	12.39	13.14	12.84
May 1	12.05	11.77	12.67	12.89	13.00	12.97	12.47	13.57	13.22

### Ratio

Oct 1	3.71	3.62	3.20	3.09	3.06	3.21	4.54	3.98	3.41
Nov 1	5.05	4.79	4.16	3.91	3.89	4.53	6.31	5.12	4.39
Dec 1	5.96	6.03	6.16	5.36	5.45	6.39	7.75	6.87	6.08
Jan 1	7.30	7.53	7.41	6.77	6.69	7.29	9.38	8.33	7.31
Feb 1	8.37	8.70	8.63	7.92	8.46	9.37	11.49	9.64	9.39
Mar 1	10.15	9.96	9.69	9.19	9.58	10.92	12.97	10.92	10.33
Apr 1	12.03	11.88	11.35	10.83	11.86	12.89	14.48	12.60	12.23
May 1	14.25	14.10	12.94	12.86	13.55	14.73	18.07	14.81	14.34

## LATE ORANGES

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons

1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
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### Pounds juice per box

Oct 1	47.68	48.67	46.89	46.33	46.24	48.57	51.58	48.38	45.97
Nov 1	51.58	51.71	51.09	49.35	49.81	51.78	57.04	51.34	50.82
Dec 1	53.34	53.90	53.67	54.27	53.27	55.08	56.74	53.62	53.29
Jan 1	53.81	54.69	55.84	55.52	54.37	54.39	56.69	54.16	53.91
Feb 1	54.45	54.22	55.73	55.69	55.34	54.15	56.63	53.25	54.87
Mar 1	54.04	53.24	54.99	56.18	54.84	55.38	55.77	53.69	56.10
Apr 1	52.03	53.06	54.80	56.01	56.00	54.13	56.40	53.76	56.20
May 1	51.68	52.40	56.52	56.02	55.42	54.53	57.06	54.56	55.78

### Pounds solids per box

Oct 1	4.22	4.19	4.13	4.11	3.99	4.46	4.64	4.26	3.94
Nov 1	4.88	4.57	4.72	4.49	4.64	5.03	5.44	4.84	4.64
Dec 1	5.37	5.05	5.36	5.40	5.37	5.79	5.77	5.65	5.40
Jan 1	5.80	5.52	6.00	6.03	5.86	6.21	6.20	6.22	5.96
Feb 1	6.15	5.72	6.30	6.43	6.47	6.47	6.56	6.51	6.52
Mar 1	6.50	5.99	6.56	6.88	6.73	6.83	6.83	6.89	7.02
Apr 1	6.38	6.13	6.90	7.09	7.11	6.83	7.00	7.07	7.22
May 1	6.23	6.19	7.16	7.23	7.21	7.11	7.14	7.42	7.38

## WHITE SEEDLESS GRAPEFRUIT

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
October 1						
1984-85	61	1.51	9.80	6.53	37.97	3.71
1985-86	61	1.38	9.24	6.73	38.64	3.57
1986-87	63	1.57	9.78	6.29	38.99	3.81
1987-88	63	1.65	10.11	6.14	37.08	3.74
1988-89	63	1.61	9.86	6.18	37.94	3.74
1989-90	63	1.62	10.34	6.41	37.30	3.85
1990-91	63	1.42	10.18	7.21	36.55	3.72
1991-92	49	1.43	9.90	7.00	38.67	3.83
1992-93	50	1.47	9.84	7.49	37.61	3.70
November 1						
1984-85	55	1.37	9.88	7.26	42.68	4.21
1985-86	58	1.22	9.30	7.69	43.10	4.01
1986-87	61	1.46	10.06	6.95	42.16	4.24
1987-88	62	1.55	10.14	6.59	40.43	4.10
1988-89	63	1.59	10.22	6.49	41.03	4.19
1989-90	59	1.49	10.37	7.04	40.59	4.21
1990-91	62	1.25	10.25	8.26	41.87	4.29
1991-92	49	1.30	9.91	7.67	42.53	4.21
1992-93	47	1.44	10.03	7.01	42.07	4.22
December 1						
1984-85	54	1.37	9.99	7.33	44.53	4.45
1985-86	53	1.15	9.50	8.28	44.28	4.21
1986-87	55	1.26	9.95	7.98	43.83	4.35
1987-88	58	1.38	9.98	7.29	44.14	4.40
1988-89	62	1.45	10.31	7.17	39.05	4.01
1989-90	58	1.40	10.46	7.53	43.35	4.54
1990-91	59	1.23	10.54	8.62	47.08	4.96
1991-92	44	1.31	10.26	7.88	44.04	4.51
1992-93	46	1.34	10.23	7.70	43.29	4.42

## COLORED SEEDLESS GRAPEFRUIT

Maturity and yield test results  
unadjusted averages for regular bloom fruit  
from sample groves  
1984-85 through 1992-93

Crop year	Sample groves	Acid	Soluble solids	Ratio	Juice per box	Solids per box
	Number	Percent			Pounds	
October 1						
1984-85	51	1.51	10.02	6.65	37.79	3.79
1985-86	51	1.37	9.36	6.86	40.02	3.75
1986-87	53	1.53	9.86	6.47	38.63	3.81
1987-88	53	1.64	10.32	6.31	37.08	3.83
1988-89	53	1.62	9.88	6.12	38.99	3.85
1989-90	53	1.57	10.63	6.80	38.33	4.07
1990-91	53	1.37	10.21	7.49	36.72	3.75
1991-92	48	1.37	9.73	7.13	35.29	3.44
1992-93	50	1.45	9.65	6.69	37.77	3.65
November 1						
1984-85	49	1.39	10.16	7.32	42.79	4.34
1985-86	47	1.19	9.57	8.13	44.86	4.29
1986-87	53	1.38	10.10	7.35	42.75	4.32
1987-88	49	1.53	10.30	6.77	40.37	4.16
1988-89	50	1.57	10.40	6.64	42.09	4.38
1989-90	44	1.49	10.67	7.20	41.39	4.42
1990-91	51	1.14	10.34	9.10	47.38	4.91
1991-92	39	1.22	9.73	8.02	41.33	4.03
1992-93	47	1.41	10.09	7.19	41.37	4.17
December 1						
1984-85	42	1.38	10.35	7.56	44.18	4.58
1985-86	41	1.11	9.63	8.72	46.61	4.49
1986-87	48	1.17	10.05	8.71	46.38	4.66
1987-88	47	1.36	10.25	7.54	43.93	4.50
1988-89	45	1.45	10.61	7.34	40.16	4.26
1989-90	42	1.39	11.00	7.98	44.41	4.90
1990-91	45	1.15	10.66	9.39	48.52	5.18
1991-92	47	1.20	10.55	8.86	45.59	4.81
1992-93	45	1.28	10.35	8.10	43.78	4.54



## WHITE SEEDLESS GRAPEFRUIT

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons  
1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Percent acid									
Oct 1	1.53	1.39	1.60	1.66	1.61	1.62	1.43	1.44	1.48
Nov 1	1.36	1.23	1.48	1.54	1.59	1.48	1.26	1.31	1.44
Dec 1	1.37	1.15	1.26	1.38	1.45	1.40	1.23	1.31	1.34
Percent soluble solids									
Oct 1	9.86	9.23	9.82	10.14	9.88	10.40	10.19	9.92	9.86
Nov 1	9.86	9.36	10.07	10.13	10.24	10.36	10.25	9.92	10.02
Dec 1	9.99	9.50	9.95	9.98	10.31	10.46	10.54	10.26	10.23
Ratio									
Oct 1	6.48	6.66	6.19	6.14	6.19	6.44	7.19	6.93	7.56
Nov 1	7.27	7.68	6.87	6.61	6.50	7.05	8.20	7.60	6.99
Dec 1	7.33	8.28	7.98	7.29	7.17	7.53	8.62	7.88	7.70
Pounds juice per box									
Oct 1	38.07	38.53	39.16	36.98	38.00	37.12	36.61	38.76	37.60
Nov 1	42.75	43.12	42.14	40.46	41.06	40.74	41.72	42.47	42.02
Dec 1	44.53	44.28	43.83	44.14	39.05	43.35	47.08	44.04	43.29
Pounds solids per box									
Oct 1	3.74	3.56	3.84	3.74	3.75	3.85	3.73	3.85	3.70
Nov 1	4.21	4.04	4.24	4.10	4.20	4.22	4.28	4.21	4.21
Dec 1	4.45	4.21	4.35	4.40	4.01	4.54	4.96	4.51	4.42

## COLORED SEEDLESS GRAPEFRUIT

Maturity and yield test results  
unadjusted matched averages for regular bloom fruit  
from identical sample trees, yearly comparisons  
1984-85 through 1992-93

Date	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Percent acid									
Oct 1	1.54	1.38	1.53	1.65	1.63	1.60	1.39	1.38	1.47
Nov 1	1.41	1.19	1.38	1.52	1.58	1.50	1.16	1.24	1.40
Dec 1	1.38	1.11	1.17	1.36	1.45	1.39	1.15	1.20	1.28
Percent soluble solids									
Oct 1	10.13	9.42	9.85	10.39	9.98	10.81	10.22	9.95	9.71
Nov 1	10.23	9.55	10.09	10.31	10.47	10.72	10.36	9.90	10.08
Dec 1	10.35	9.63	10.05	10.25	10.61	11.00	10.66	10.55	10.35
Ratio									
Oct 1	6.61	6.85	6.47	6.31	6.13	6.80	7.41	7.27	6.65
Nov 1	7.28	8.12	7.36	6.80	6.68	7.22	9.01	8.05	7.20
Dec 1	7.56	8.72	8.71	7.54	7.34	7.98	9.39	8.86	8.10
Pounds juice per box									
Oct 1	37.42	40.44	38.50	37.18	39.02	38.25	36.57	35.77	37.68
Nov 1	42.47	45.24	42.58	40.43	42.16	41.43	47.39	42.15	41.38
Dec 1	44.18	46.61	46.38	43.93	40.16	44.41	48.52	45.59	43.78
Pounds solids per box									
Oct 1	3.79	3.81	3.79	3.86	3.89	4.13	3.74	3.56	3.66
Nov 1	4.34	4.32	4.30	4.17	4.41	4.44	4.92	4.18	4.17
Dec 1	4.58	4.49	4.66	4.50	4.26	4.90	5.18	4.81	4.54