



*Raisin Administrative Committee*

# **Marketing Policy & Industry Statistics 2010**



# Raisin Administrative Committee

## Marketing Policy & Industry Statistics 2010 - 2011 Marketing Season

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October 5, 2010, November 2, 2010, and January 6, 2011  
As Submitted to the Secretary

From Federal Marketing Order 989.54(e) Factors. When computing preliminary and interim percentages, or determining final percentages for recommendation to the Secretary, the Committee shall give consideration to the following factors.

**(1) THE ESTIMATED TONNAGE HELD AT THE BEGINNING OF THE CROP YEAR.**

**(A) Tonnage held by producers.**

5,470 tons were being held on Memorandum Storage as of July 31, 2010.

**(B) Tonnage held by handlers.**

Packer inventory of raisins as of July 31, 2010, with comparative tonnages for July 31, 2009 was as follows:

	<b>PACKER INVENTORY *</b> <b>as of 07/31/09</b> <b>Held Locally</b>	<b>PACKER INVENTORY *</b> <b>as of 07/31/10</b> <b>Held Locally</b>
Natural Seedless	126,824	83,143
Dipped Seedless	3,230	2,411
Golden Seedless	3,596	2,710
Zante Currant	796	1,024
Sultana	42	23
Muscat	55	15
Monukka	130	138
Other Seedless	4,112	3,369
Other Seedless Sulfured	576	494
<b>TOTAL</b>	<b>139,361</b>	<b>93,327</b>

*\* Includes packed and unpacked in sweatbox tons*

**(C) Estimated tonnage held by Committee August 1, 2010.**

The Committee held 71 tons of Natural Seedless reserve pool raisins, of which 64 tons were uncommitted as of August 1, 2010.

**(2) THE EXPECTED GENERAL QUALITY AND ANY MODIFICATIONS OF THE MINIMUM GRADE STANDARDS.**

- (A)** The 2010-2011 raisin grape crop is forecast to be up 1 percent above last year. Weather has been mostly favorable for crop development, although cool, wet weather in the spring and early summer resulted in some mildew problems. European Grapevine Moth remains a concern, mainly because of a quarantine in Fresno County. (Source: USDA California Farm News, August 2010)

Scattered rain showers from September 30 to October 7 resulted in 0.14 inches of precipitation measured in Fresno. Larger Quantities of rain were reported in some of the outlying areas.

Dehydrators reported beginning their dehydrating activities two weeks later than normal due to a later crop harvest this year.

- (B)** In a meeting on October 5, 2010, the Raisin Administrative Committee received input from Vic Tolomeo and Lena Schwedler of the California Agricultural Statistics Service, received a report from the RAC President and General Manager Gary Schulz and voted to accept the industry survey of 293,272 tons of Natural Seedless raisins as the 2010-2011 crop estimate. Upon consideration of the crop estimate versus the Natural Seedless trade demand of 297,387 as computed and accepted by the RAC on August 13, 2010, the Committee unanimously voted to recommend to the USDA no volume regulation for Natural Seedless raisins for the 2010-2011 crop year, resulting in a 100% free tonnage.

- (C) During the 2009-10 crop year, incoming substandard and quality standards were maintained at the standard level. Substandard dockage has a maximum limit of 17% and B or Better maturity dockage allowance has a minimum limit of 35%.
- (D) Although raisins produced from grapes grown outside of the State of California are not subject to volume regulations or grade and condition standards established under the marketing order, the surveillance and reporting provisions for any such raisins received by raisin handlers will continue for the 2010-2011 crop year. Arizona declared fruit must be validated as produced in Arizona or will be subjected to all requirements of California grown fruit.

**3) THE ESTIMATED TONNAGE OF STANDARD AND OFF-GRADE RAISINS WHICH WILL BE PRODUCED.**

- (A) The Committee, meeting August 13, 2010, computed a trade demand for Natural (sun dried) Seedless Raisins. No trade demand was computed for the other varietal types of raisins. The Committee has a policy that for any variety of raisins for which the computed trade demand is less than 500 tons, the trade demand to be used for computing and announcing percentages would be 500 tons. The trade demand computed for the 2010-2011 crop year is as follows (in sweatbox tons):

Variety	Trade Demand	Estimated Production	Preliminary Percentages*	
			Free	Reserve
Natural Seedless *	297,387			
Dipped Seedless**	NONE			
Golden Seedless**	NONE			
Zante Currant**	NONE			
Sultana**	NONE			
Muscat**	NONE			
Monukka**	NONE			
Other Seedless**	NONE			
Other Seedless Sulf.**	NONE			

\* Beginning with the 2003-04 Crop Year, the Natural Seedless varietal type was modified through informal rule making to include Oleate Seedless (68 FR 42943: July 21, 2003).

\*\*The Committee computed but did not accept a Trade Demand for all other varieties of raisins resulting in them being unregulated for the crop year 2010-11.

The 2010 August 1 grape estimate, and the 2009 and 2008 final grape crops (in green tons) are as follows:

Varietal Type	August 1 2010	Final	
		2009	2008
Wine	3,500,000	3,743,000	3,055,000
Table	900,000	874,000	973,000
Raisin	1,950,000	1,927,000	2,520,000
Total	6,350,000	6,544,000	6,548,000

Source: USDA California Fruit & Nut Review, August 2010

**(B) Estimate of Tunnel Dehydrated Raisin Production.**

Production of Golden Seedless raisins in the 2009-2010 crop year was 17,008 swb tons. The carry-over from that year was 2,710 tons. Dipped Seedless production in 2009-2010 was 3,827 tons with a carry-over of 2,411 tons. Production of Golden Seedless and Dipped Seedless is expected to be about the same as the 2009-2010 crop production.

**(C) Estimated Tonnage of Off-Grade Raisins to be Produced.**



Cooler than normal temperatures resulted in a delay of about two weeks in the harvest of 2010-11 crop. The same growing conditions also resulted in a slightly decreased quality and maturity of the 2010-11 crop, which caused a slight increase in the substandard percentages.

**(4) THE ESTIMATED TRADE DEMAND FOR RAISINS IN FREE TONNAGE OUTLETS.**

- (A)** The tonnage of raisins marketed in recent crop years in domestic and Canadian markets, including government purchases, on a packed tonnage basis is shown in the following table:

<i>Domestic &amp; Canadian Markets</i>					
Packed Tons					
Varietal Type	2005-06	2006-07	2007-08	2008-09	<b>2009-10</b>
Natural Seedless	186,358	188,944	193,609	191,929	186,176
Dipped Seedless	5,111	4,673	3,651	3,480	3,629
Oleates	0	0	0	0	0
Golden Seedless	11,084	12,384	11,263	11,539	11,699
Zante Currants	1,403	1,244	1,535	1,536	1,382
Sultanas	32	181	42	56	52
Muscats	6	4	5	2	0
Monukkas	124	208	269	347	126
Other Seedless	4,573	3,135	4,944	4,363	5,385
Other Seedl. Sulf.	495	555	491	406	422
Total	209,186	211,328	215,809	213,658	208,871
Five-Yr. Average					211,770

- (B)** Free tonnage marketed in foreign markets during the past five years:

<i>Export Markets</i>					
Packed Tons					
Varietal Type	2005-06	2006-07	2007-08	2008-09	<b>2009-10</b>
Natural Seedless	97,672	101,684	142,541	125,789	152,246
Dipped Seedless	8	0	0	0	19
Oleate Seedless	0	0	0	0	0
Golden Seedless	3,625	3,037	4,823	5,217	4,858
Zante Currants	792	875	2,881	1,771	781
Sultanas	0	0	0	0	0
Muscats	0	0	0	0	0
Monukkas	1	0	1	1	0
Other Seedless	342	319	771	760	1097
Other Seedl. Sulf.	0	0	0	0	21
Total	102,440	105,915	151,017	133,538	159,022
Five-Yr. Average					130,386

**(5) AN ESTIMATED DESIRABLE CARRYOUT AT THE END OF THE CROP YEAR FOR FREE TONNAGE AND, IF APPLICABLE, FOR RESERVE TONNAGE.**

- (A)** Free Tonnage – After much debate, the Committee’s recommendation on July 24, 2002 was approved by USDA to change the desirable carryout from a rolling average of 3 months to 2 months of prior year’s shipments over the past five years, dropping the high and low figure; or 60,000 tons, whichever is higher, for Natural (sun-dried) Seedless raisins; other varieties stayed at a 2.5-months desirable carry-out calculation. (The rule was published in the Federal Register on August 12, 2002.)

**(6) THE ESTIMATED MARKET REQUIREMENTS FOR RAISINS OUTSIDE FREE TONNAGE OUTLETS, CONSIDERING THE ESTIMATED WORLD RAISIN SUPPLY AND DEMAND SITUATION.**

The export and the domestic demand is supplied from free tonnage raisins. The export of California Natural Seedless raisins increased by 26,457 packed tons to 152,246 packed tons during 2009-2010 from 125,789 packed tons in 2008-09.

In an effort to maintain export markets, the Committee continued the Export Replacement Program during the 2009-10 crop year. The Export Replacement Program was a Cash Back Program through September 15, 2010.

The following table shows the shipments of raisins on a packed weight basis for the 2009-2010 crop year into countries which were eligible for reserve pool sales:

Countries of Destination	Natural Seedless	Golden Seedless	Other
Belgium	2,117	19	0
Denmark	5,828	0	0
South Ireland	936	0	0
Finland	1,808	0	0
France	917	0	0
Germany	18,056	95	0
Hong Kong	1,612	129	1
Japan	21,133	0	846
Korea	3,929	6	0
Netherlands	3,412	18	4
Norway	3,575	0	0
Singapore	1,419	316	31
Sweden	6,722	0	9
Switzerland	138	0	0
Taiwan	5,187	157	13
United Kingdom	31,578	145	424
Latin America	7,851	48	102
All Other Markets	36,028	3,925	488
<b>TOTAL</b>	<b>152,246</b>	<b>4,858</b>	<b>1,918</b>

Global raisin consumption in 2010/11 is forecast to decline 8 percent and has weakened over the last few years due to lower availability. Most of the world remaining stock of raisins as of July 31, 2010 was held by the U.S.A and Turkey. The 2011 Turkish production is estimated to be 240,000 metric tons (MT) down from 260,000 last year. Published production and raisin disposition statistics from Afghanistan have increased slightly over prior years. Iran production estimates show an increase from 100,000MT in 2009-10 to 125,000 in 2010-11 or about a 25% increase. The South African 2009 production is at approximately 43,000 MT with an estimate for the 2010-11 crop year to be 48,000 MT. Australia's 2010 production is estimated at 15,000 MT and Chile is estimated at 75,000 MT. Mexican production is estimated at 8,500 tons. China has an estimated production of 120,000 MT.

Source: [www.fas.usda.gov](http://www.fas.usda.gov) • Raisins: World Markets and Trade Report: 2010/11 Forecast Overview

**(7) CURRENT PRICES BEING RECEIVED AND THE PROBABLE GENERAL LEVEL OF PRICES TO BE RECEIVED FOR RAISINS BY PRODUCERS AND HANDLERS.**

**(A)** As announced by the Raisin Bargaining Association on October 8, 2010.

**Probable Prices to be Received by Producers for the 2010-2011 Crop**

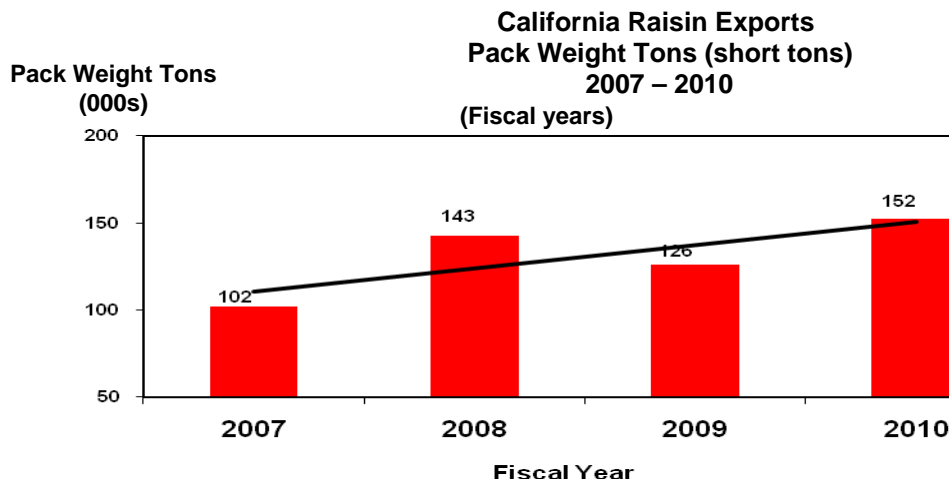
Natural Seedless	\$ <u>1,500.00</u>	Per Ton
Dipped Seedless	\$ _____	Per Ton
Golden Seedless	\$ _____	Per Ton
Zante Currants	\$ <u>2,000.00</u>	Per Ton
Sultanas	\$ _____	Per Ton
Muscats	\$ _____	Per Ton
Monukkas	\$ _____	Per Ton
Other Seedless	\$ _____	Per Ton
Other Seedless Sulf.	\$ _____	Per Ton

**(B) Current Prices Being Quoted by Handlers as of September, FOB**

<b>Natural Seedless</b>	\$ _____	<i>Per Ton</i>
<b>Dipped Seedless</b>	\$ _____	<i>Per Ton</i>
<b>Golden Seedless</b>	\$ _____	<i>Per Ton</i>
<b>Zante Currants</b>	\$ _____	<i>Per Ton</i>
<b>Other Seedless</b>	\$ _____	<i>Per Ton</i>

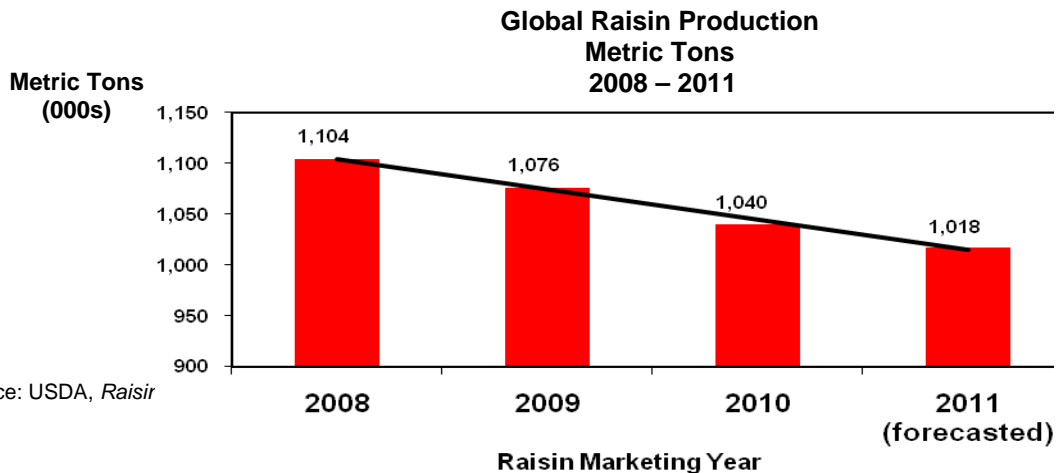
The Raisin Administrative Committee recently held its annual October 5<sup>th</sup> meeting to estimate the size of the 2010 California raisin crop and evaluate overall market conditions. It has been difficult during the past two years for the California raisin industry to maintain support for export markets as RAC inventories of natural seedless raisins have declined. The RAC export replacement offer (ERO) has been in place for many years for the purpose of assisting with orderly marketing of raisins. It has successfully assisted in expanding export sales of California raisins (which are up nearly 50% in four years) and has always been 100% funded by California raisin growers.

In an action by the Committee on October 5, the California raisin industry recommended a 100% free tonnage for the coming year. This also had the practical effect of not establishing an export replacement offer (ERO) for the coming year.



Source: Raisin Administrative Committee. August 2010

World production has declined for various reasons. As a result, world market conditions have been driving raisin prices up during the past months to levels which have not been seen in recent years.



Source: USDA, *Raisir*

California raisins are the most versatile, nutritious, and economical dried fruit in the world. Over 80% of exported California raisins are used as bulk ingredients in a wide assortment of food products, including bakery, cereal, and confectionary.

**(8) THE TREND AND LEVEL OF CONSUMER INCOME.**

Many have feared that the economy might worsen and enter what is known as a “double-dip” recession; however, the US economy has proven to be more resilient. Those fears have been somewhat relieved by better than expected improvements during July and August economic data showing modest gains in GDP. Moreover, consumer demand looks stronger and should grow enough to offset the winding down of various stimulus programs. What does seem certain is that economic growth will remain sluggish throughout the next year. The pace of growth is only producing modest income gains and is unlikely to spark a resurgence in consumer spending, particularly with unemployment so high (9.6% in August) and state and local government still cutting jobs. (Source: Wells Fargo Economic Group Outlook; September 8, 2010).

Historically, California raisins maintain good market demand even in weaker economic times.

**(9) ANY OTHER PERTINENT FACTORS BEARING ON THE MARKETING OF SUCH RAISINS INCLUDING THE ESTIMATED SUPPLY AND DEMAND FOR OTHER VARIETAL TYPES AND REGULATIONS APPLICABLE THERETO.**

On Tuesday, October 5, in accordance with mandatory provisions of the federal marketing order 989 for raisins produced from grapes grown in California, the Raisin Administrative Committee met and determined a crop estimate for Natural Seedless raisins for the 2010-2011 crop year.

The crop estimate was determined to be 293,272 tons. The calculated trade demand for the 2010-2011 crop year is 297,387 tons and was determined at the Committee’s August 15, 2010 meeting. It is important to note that only 83,207 tons were carried into the 2010 crop year, the lowest such inventory since 1980 (70,145 tons of combined free and reserve tonnage inventory as of 8/1/80). As the demand for Natural Seedless raisins is greater than the estimated crop for the upcoming crop year, the Committee recommended to USDA that Natural Seedless be declared 100% free with no reserve pool.



## Trade Demand

### **Raisin Administrative Committee** 2010-2011

	<b>Natural Seedless</b>	<b>Dipped Seedless</b>	<b>Golden Seedless</b>	<b>Zante Currants</b>	<b>Sultanas</b>	<b>Muscats</b>	<b>Monukkas</b>	<b>Other Seedless</b>	<b>Other Sulf. Seedless</b>
Base Shipments (Packed Tons)	338,422	3,648	16,557	2,163	52	0	126	6,482	443
./ Shrink Factor (5 yr avg)	0.95024	0.89091	0.89794	0.86367	0.71255	(1.27456)	0.87137	0.84779	0.89515
Shrink %	4.976	10.909	10.206	13.633	28.745	227.456	12.863	15.221	10.485
= Base Tonnage (Sweatbox Tons)	356,144	4,095	18,439	2,504	73	0	144	7,646	495
x 90% Formula	90%	90%	90%	90%	90%	90%	90%	90%	90%
= Adjusted Base	320,530	3,686	16,595	2,254	66	0	130	6,881	446
Physical Inventory 07/31/10	83,143	2,411	2,710	1,024	23	15	138	3,369	494
- Desirable Inventory	60,000	1,035	3,996	739	0	(1)	35	943	75
= ± Inventory Adjustment	(23,143)	(1,377)	1,285	(285)	(23)	(15)	(102)	(2,426)	(419)
= Computed Trade Demand	297,387	2,309	17,880	1,969	43	(15)	28	4,455	27
2010/11 Final Trade Demand	297,387	<b>NO TRADE DEMAND ESTABLISHED</b>							

NOTE: Prior Years' Practice sets 500 minimum

RAC - 8/13/2010

## **General Information: Shrink**

In the processing of raisins, a shrinkage occurs. Annually, the "shrinkage" varies due to growing conditions. Shrinkage is computed by determining the disappearance between the total available natural condition supply and the quantity reported as processed. This "Shrinkage" or loss is reflected as a conversion factor throughout this report to account for the difference between natural condition "sweatbox" and processed "packed" weights.

The table on this page shows the annual conversion factors used to convert packed tonnage figures to a sweatbox basis.

Conversion Factors are applied to reported packed weight to determine the sweatbox equivalent. Packed tons are divided by the conversion factor to obtain the equivalent sweatbox weight.

Conversion of sweatbox weight to a packed weight basis is accomplished by multiplying the sweatbox weight by the conversion factor.

	05-06	06-07	07-08	08-09	09-10
Natural Seedless	0.952	0.927	0.962	0.956	0.955
Dipped Seedless	0.925	0.830	0.782	1.090	0.827
Golden Seedless	0.859	0.917	0.893	0.895	0.926
Zante Currants	0.851	0.840	0.894	0.860	0.873
Sultanas	1.101	0.708	0.490	0.728	0.626
Muscats	1.000	1.020	0.572	0.124	-9.089
Monukkas	0.907	0.911	0.796	0.922	0.821
Other Seedless	0.910	0.758	0.962	0.807	0.802
Other Seedless Sulf.	0.714	0.500	0.750	1.599	0.913

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**Table 1**

**California Bearing Grape Acreage  
By Varietal Type, Production and Yield Per Acre**

Year	BEARING ACREAGE				Fresh Grape Production	Yield Per Acre
	Total	Wine	Table	Raisins		
2001 *	803,000	480,000	88,000	235,000 *	5,962,000	7.42
2002 *	825,000	491,000	88,000	246,000 *	6,721,000	8.15
2003 *	819,000	479,000	85,000	255,000 *	5,790,000	7.07
2004	800,000	473,000	83,000	244,000	5,700,000	7.13
2005	800,000	477,000	83,000	240,000	6,978,000	8.72
2006	797,000	480,000	83,000	234,000	5,726,000	7.18
2007	789,000	480,000	82,000	227,000	6,230,000	7.90
2008	786,000	482,000	83,000	221,000	6,532,000	8.31
2009	789,000	489,000	84,000	216,000	6,548,000	8.30
2010	789,000	489,000	84,000	209,076	6,544,000	8.29 +
<b>TEN YEAR AVERAGE</b>						
	808,000	482,000	84,300	241,008	6,273,100	
	(8,300)			(8,300)		
++	799,700	482,000	84,300	232,708	6,273,100	7.84 +

\* Note:

In 2001      41,000 acres had no production - diversion program  
 In 2002      27,000 acres had no production - diversion program  
 In 2003      15,000 acres had no production - diversion program

+ = Preliminary

++ = Ten year average is adjusted for diversion acreage.

Source: Agricultural Statistics Board NASS, USDA - April 2010 and August 2010

The total production of grapes in California continues to be influenced more by the change in production per acre than by any change in bearing acreage. The ten year average grape production per acre was 5.2 tons - 1940-49; 6.2 tons - 1950-59; 7.1 tons - 1960-69; 7.0 tons - 1970-79; 7.92 tons - 1980-89 and 8.02 tons for the ten years 1990-99. The increased production per acre has been significant in the increase in total grape production. The 10 year average bearing acreage for 1940-49 was 501,785 acres, the 10 year average for 1980-89 was 643,329 acres and 673,270 acres for the ten years 1990-99.

**Table 1A**

**California Non-Bearing Grape Acreage  
By Varietal Type**

NON-BEARING ACREAGE				
Year	Total	Wine	Table	Raisins
2000	91,433	77,392	8,201	5,840
2001	107,000	90,000	10,000	7,000
2002	85,000	70,000	9,000	6,000
2003	43,884	34,913	5,905	3,066
2004	36,069	26,639	6,626	2,804
2005	38,281	25,856	7,531	4,894
2006	39,977	27,280	8,268	4,429
2007	59,000	43,000	10,000	6,000
2008	58,000	44,000	10,000	4,000
2009	54,000	42,000	9,000	3,000
<b>TEN YEAR AVERAGE</b>				
	61,264	48,108	8,453	4,703

Source: California Agricultural Statistics Service, Sacramento, California - April 2010



**Table 2**

**California Total Annual Grape Production  
By Varietal Type and Utilization  
2005-2009  
(Fresh Tons)**

Varietal Type	2005-2006 Crop		2006-2007 Crop		2007-2008 Crop		2008-2009 Crop		2009-2010 Crop	
	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%
<b>Raisins</b>										
Dried	1,604,000	70.20	1,422,000	76.41	1,593,000	74.06	1,838,000	72.94	1,463,000	75.92
Crushed	468,000	20.48	267,000	14.35	364,000	16.92	494,000	19.60	307,000	15.93
Canned	0	0.00	21,000	1.13	21,000	0.98	25,000	0.99	20,000	1.04
Fresh Sales	213,000	9.32	151,000	8.11	173,000	8.04	163,000	6.47	137,000	7.11
Total Production	2,285,000	32.82	1,861,000	32.28	2,151,000	34.53	2,520,000	38.49	1,927,000	29.45
<b>Wine</b>										
Crushed	3,756,000	98.69	3,136,000	98.74	3,247,000	98.78	3,015,000	98.69	3,703,000	98.93
Fresh Sales	50,000	1.31	40,000	1.26	40,000	1.22	40,000	1.31	40,000	1.07
Total Production	3,806,000	54.66	3,176,000	55.08	3,287,000	52.77	3,055,000	46.66	3,743,000	57.20
<b>Table</b>										
Dried	41,000	4.70	29,000	3.98	28,000	3.54	35,000	3.60	34,000	3.89
Crushed	106,000	12.16	86,000	11.80	63,000	7.96	165,000	16.96	85,000	9.73
Fresh Sales	725,000	83.14	614,000	84.22	700,000	88.50	773,000	79.45	755,000	86.38
Total Production	872,000	12.52	729,000	12.64	791,000	12.70	973,000	14.86	874,000	13.36
<b>Total Grape</b>										
Dried	1,645,000	23.62	1,451,000	25.16	1,621,000	26.02	1,873,000	28.60	1,497,000	22.88
Crushed	4,330,000	62.19	3,489,000	60.51	3,674,000	58.98	3,674,000	56.11	4,095,000	62.58
Canned	0	0.00	21,000	0.36	21,000	0.34	25,000	0.38	20,000	0.31
Fresh Sales	988,000	14.19	805,000	13.96	913,000	14.66	976,000	14.91	932,000	14.24
Total Production	6,963,000	100.00	5,766,000	100.00	6,229,000	100.00	6,548,000	100.00	6,544,000	100.00

Percentages in Relation to Total Annual Production and Type of Production

Source: Agricultural Statistics Board NASS, USDA, Noncitrus Fruits and Nuts - July 2010. Percentages computed by the RAC.

**Table 3**

**Raisin Deliveries By Varietal Types**  
**2000-2009**  
(Sweatbox Tons)

Varietal Type	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Natural Seedless	432,616	377,328 (a)	388,010 (b)	296,864 (c)	265,262	319,126	282,999	329,288	364,268	298,532
Dipped Seedless	24,441	1,750	8,907	11,933	5,839	8,044	2,456	3,225	4,845	3,827
Oleate Seedless *	3,669	6,495	18,385	0	0	0	0	0	0	0
Golden Seedless	14,360	20,624	19,119	15,650	19,353	15,474	13,833	17,626	19,782	17,008
Zante Currants	4,848	4,213	4,385	3,029	3,495	3,800	2,968	3,347	2,912	2,708
Sultanas	139	142	86	84	34	75	216	93	67	63
Muscat	51	39	34	20	0	2	7	3	5	8
Monukka	910	559	620	336	235	156	364	280	287	155
Other Seedless	8,241	5,193	3,468	2,593	2,649	8,353	5,170	5,231	6,529	7,304
Other Seedless, Sulf.	0	0	365	1,309	374	412	963	687	521	413
<b>TOTALS</b>	<b>489,275</b>	<b>416,343</b>	<b>443,379</b>	<b>331,818</b>	<b>297,241</b>	<b>355,442</b>	<b>308,976</b>	<b>359,780</b>	<b>399,217</b>	<b>330,018</b>

(a) Includes 89,076 tons of Raisin Diversion Tonnage

(b) Includes 50,840 tons of Raisin Diversion Tonnage

(c) Includes 15,299 tons of Raisin Diversion Tonnage

\* Oleates are included in Natural Seedless tonnage starting in 2003-2004

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**Table 4**

**Free Tonnage Shipments By Country of Destination**  
**Natural Seedless Raisins**  
**August 1 - July 31**  
**(Packed Tons)**

<i>Country of Destination</i>	2008-2009	2009-2010	Percent Gain/Loss (2008-2009=100%)
<b><i>European Countries</i></b>			
Austria	227	91	-60.00%
Belgium	1,039	2,117	103.66%
Denmark	5,990	5,828	-2.70%
So. Ireland	344	936	172.59%
Finland	1,878	1,808	-3.75%
France	626	917	46.44%
Germany	15,831	18,057	14.06%
Israel	327	516	57.67%
Italy	130	130	0.00%
Netherlands	3,175	3,412	7.47%
Norway	2,687	3,575	33.06%
Spain	840	908	8.19%
Sweden	6,040	6,722	11.31%
Switzerland	137	138	1.34%
United Kingdom	24,979	31,578	26.42%
Total European Countries	64,250	76,733	19.43%
<b><i>Latin American Republics</i></b>			
Brazil	354	521	47.11%
Colombia	155	272	75.17%
Costa Rica	178	424	138.91%
Dominican Republic	751	732	-2.48%
Ecuador	40	43	7.41%
Mexico	1,399	3,931	180.97%
Panama	582	576	-0.92%
Puerto Rico	0	0	0.00%
Venezuela	530	633	19.36%
Others	798	719	-9.96%
Total Latin American Republics	4,787	7,851	64.01%
<b><i>Other Countries</i></b>			
Australia	5,760	7,051	22.41%
China	9,984	10,073	0.89%
Hong Kong	1,678	1,612	-3.95%
Iceland	314	310	-1.26%
Indonesia	1,089	1,185	8.88%
Japan	16,010	21,133	32.00%
Korea	3,561	3,929	10.34%
Malaysia	2,836	3,832	35.10%
New Zealand	1,848	1,617	-12.51%
USSR - Russia	109	98	-10.12%
Philippines	1,643	1,881	14.50%
Singapore	1,428	1,419	-0.68%
Taiwan	4,537	5,187	14.33%
Thailand	1,562	2,078	33.05%
Others	4,394	6,257	42.39%
Total Other Countries	56,752	67,662	19.22%
<b>GRAND TOTAL</b>	<b>125,789</b>	<b>152,246</b>	<b>21.03%</b>

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**Table 4 ZC**

**Free Tonnage Shipments By Country of Destination**  
**Zante Currant Raisins**  
**August 1 - July 31**  
**(Packed Tons)**

<i>Country of Destination</i>	2008-2009	2009-2010	Percent Gain/Loss (2008-2009=100%)
<b><i>European Countries</i></b>			
Austria	0	0	0.00%
Belgium	0	0	0.00%
Denmark	0	0	0.00%
So. Ireland	0	0	0.00%
Finland	1	0	-100.00%
France	0	0	0.00%
Germany	0	0	0.00%
Israel	10	32	205.00%
Italy	0	0	0.00%
Netherlands	11	4	-59.86%
Norway	0	0	0.00%
Spain	0	0	0.00%
Sweden	12	8	-29.30%
Switzerland	0	0	0.00%
United Kingdom	903	29	-96.79%
Total European Countries	937	74	-92.14%
<b><i>Latin American Republics</i></b>			
Brazil	10	13	33.18%
Colombia	0	0	0.00%
Costa Rica	1	0	-100.00%
Dominican Republic	0	0	0.00%
Ecuador	0	0	0.00%
Mexico	0	0	0.00%
Panama	0	0	0.00%
Puerto Rico	0	0	0.00%
Venezuela	0	0	0.00%
Others	0	18	100.00%
Total Latin American Republics	11	31	197.25%
<b><i>Other Countries</i></b>			
Australia	59	44	-24.60%
China	143	147	3.18%
Hong Kong	1	1	0.00%
Iceland	0	0	0.00%
Indonesia	43	22	-48.47%
Japan	468	395	-15.62%
Korea	0	0	0.00%
Malaysia	26	34	29.82%
New Zealand	1	1	0.00%
USSR - Russia	0	0	0.00%
Philippines	0	0	0.00%
Singapore	39	19	-49.61%
Taiwan	21	13	-39.29%
Thailand	0	0	0.00%
Others	22	0	-100.00%
Total Other Countries	823	676	-17.89%
<b>GRAND TOTAL</b>	<b>1,771</b>	<b>781</b>	<b>-55.90%</b>

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**Table 4A**

***Free Tonnage Export Shipments***  
*(Excluding Canada)*  
***Natural Seedless Raisins***  
***2005 - 2009***  
*(Packed Tons)*

	2005-06	2006-07	2007-2008	2008-2009	2009-2010
<b>August</b>	8,983	10,257	11,109	13,778	15,767
<b>September</b>	10,993	9,747	10,358	14,897	19,494
<b>October</b>	7,593	10,279	10,127	13,869	10,429
<b>November</b>	6,551	8,411	10,442	5,456	8,087
<b>December</b>	8,092	8,678	10,851	8,335	11,816
<b>January</b>	6,945	7,180	12,667	9,877	12,668
<b>February</b>	6,527	6,278	10,416	6,502	11,088
<b>March</b>	7,301	7,391	10,262	8,441	12,435
<b>April</b>	7,181	7,300	12,433	11,123	12,346
<b>May</b>	8,442	8,127	14,109	8,882	13,664
<b>June</b>	9,018	8,786	14,745	12,244	11,666
<b>July</b>	10,046	9,250	15,022	12,385	12,786
<b>TOTAL YEAR</b>	97,672	101,684	142,541	125,789	152,246

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**Table 4B**

***Free Tonnage Export Shipments***  
*(Excluding Canada)*  
***Zante Currant Raisins***  
***2005 - 2009***  
*(Packed Tons)*

	2005-06	2006-07	2007-2008	2008-2009	2009-2010
<b>August</b>	144	54	130	208	112
<b>September</b>	71	82	117	291	39
<b>October</b>	30	151	204	214	154
<b>November</b>	75	81	150	270	70
<b>December</b>	85	55	327	58	73
<b>January</b>	59	84	151	40	42
<b>February</b>	53	92	460	234	49
<b>March</b>	57	40	188	45	48
<b>April</b>	48	53	250	162	50
<b>May</b>	47	60	309	96	42
<b>June</b>	79	40	317	63	45
<b>July</b>	44	83	278	90	57
<b>TOTAL YEAR</b>	792	875	2,881	1,771	781

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**Table 5*****Free Tonnage Shipments To Domestic And Canadian Markets****(Including Government)****Natural Seedless Raisins******2005 - 2009****(Packed Tons)*

	<b>2005-2006</b>		<b>2006-2007</b>		<b>2007-2008</b>		<b>2008-2009</b>		<b>2009-2010</b>	
	<b>Tons</b>	<b>%</b>	<b>Tons</b>	<b>%</b>	<b>Tons</b>	<b>%</b>	<b>Tons</b>	<b>%</b>	<b>Tons</b>	<b>%</b>
<b>August</b>										
Packed	6,918	37	6,762	40	6,713	38	5,479	35	5,701	39
Bulk	11,855	63	10,229	60	11,092	62	10,274	65	8,737	61
<b>TOTAL</b>	<b>18,773</b>	<b>100</b>	<b>16,991</b>	<b>100</b>	<b>17,805</b>	<b>100</b>	<b>15,753</b>	<b>100</b>	<b>14,438</b>	<b>100</b>
<b>September</b>										
Packed	5,805	34	6,455	40	5,318	36	5,887	37	6,823	39
Bulk	11,372	66	9,759	60	9,618	64	9,844	63	10,591	61
<b>TOTAL</b>	<b>17,177</b>	<b>100</b>	<b>16,214</b>	<b>100</b>	<b>14,936</b>	<b>100</b>	<b>15,731</b>	<b>100</b>	<b>17,414</b>	<b>100</b>
<b>October</b>										
Packed	6,435	37	7,748	41	7,699	41	7,035	38	6,937	41
Bulk	11,165	63	11,194	59	11,219	59	11,614	62	10,012	59
<b>TOTAL</b>	<b>17,600</b>	<b>100</b>	<b>18,942</b>	<b>100</b>	<b>18,918</b>	<b>100</b>	<b>18,649</b>	<b>100</b>	<b>16,949</b>	<b>100</b>
<b>November</b>										
Packed	6,301	36	6,926	43	7,388	44	6,208	39	7,944	45
Bulk	11,021	64	9,140	57	9,438	56	9,661	61	9,869	55
<b>TOTAL</b>	<b>17,322</b>	<b>100</b>	<b>16,066</b>	<b>100</b>	<b>16,826</b>	<b>100</b>	<b>15,869</b>	<b>100</b>	<b>17,813</b>	<b>100</b>
<b>December</b>										
Packed	5,439	38	5,162	38	5,485	42	6,602	44	6,235	42
Bulk	8,815	62	8,523	62	7,632	58	8,437	56	8,755	58
<b>TOTAL</b>	<b>14,254</b>	<b>100</b>	<b>13,685</b>	<b>100</b>	<b>13,117</b>	<b>100</b>	<b>15,039</b>	<b>100</b>	<b>14,990</b>	<b>100</b>
<b>January</b>										
Packed	4,643	32	5,041	33	6,433	37	5,328	33	5,774	40
Bulk	9,859	68	10,095	67	10,722	63	10,716	67	8,814	60
<b>TOTAL</b>	<b>14,502</b>	<b>100</b>	<b>15,136</b>	<b>100</b>	<b>17,155</b>	<b>100</b>	<b>16,044</b>	<b>100</b>	<b>14,588</b>	<b>100</b>
<b>February</b>										
Packed	5,001	35	5,464	37	6,256	38	5,914	41	4,021	29
Bulk	9,439	65	9,125	63	10,368	62	8,473	59	9,818	71
<b>TOTAL</b>	<b>14,440</b>	<b>100</b>	<b>14,589</b>	<b>100</b>	<b>16,624</b>	<b>100</b>	<b>14,387</b>	<b>100</b>	<b>13,839</b>	<b>100</b>
<b>March</b>										
Packed	5,769	34	6,510	39	6,114	38	5,854	35	6,472	37
Bulk	11,297	66	10,343	61	9,983	62	11,017	65	10,807	63
<b>TOTAL</b>	<b>17,066</b>	<b>100</b>	<b>16,853</b>	<b>100</b>	<b>16,097</b>	<b>100</b>	<b>16,871</b>	<b>100</b>	<b>17,279</b>	<b>100</b>
<b>April</b>										
Packed	4,991	33	5,376	34	5,971	37	5,687	36	5,862	36
Bulk	9,923	67	10,383	66	9,965	63	10,225	64	10,235	64
<b>TOTAL</b>	<b>14,914</b>	<b>100</b>	<b>15,759</b>	<b>100</b>	<b>15,936</b>	<b>100</b>	<b>15,912</b>	<b>100</b>	<b>16,097</b>	<b>100</b>
<b>May</b>										
Packed	5,446	41	5,895	36	5,448	36	5,558	36	4,673	34
Bulk	7,885	59	10,553	64	9,718	64	9,837	64	9,197	66
<b>TOTAL</b>	<b>13,331</b>	<b>100</b>	<b>16,448</b>	<b>100</b>	<b>15,166</b>	<b>100</b>	<b>15,395</b>	<b>100</b>	<b>13,870</b>	<b>100</b>
<b>June</b>										
Packed	5,822	36	4,140	33	4,973	36	5,775	34	4,691	32
Bulk	10,243	64	8,311	67	8,967	64	11,070	66	10,081	68
<b>TOTAL</b>	<b>16,065</b>	<b>100</b>	<b>12,451</b>	<b>100</b>	<b>13,940</b>	<b>100</b>	<b>16,845</b>	<b>100</b>	<b>14,772</b>	<b>100</b>
<b>July</b>										
Packed	4,992	46	5,468	35	6,036	35	5,731	37	5,092	36
Bulk	5,922	54	10,342	65	11,053	65	9,703	63	9,035	64
<b>TOTAL</b>	<b>10,914</b>	<b>100</b>	<b>15,810</b>	<b>100</b>	<b>17,089</b>	<b>100</b>	<b>15,434</b>	<b>100</b>	<b>14,127</b>	<b>100</b>
<b>TOTAL YEAR</b>										
Packed	67,562	36	70,947	38	73,834	38	71,058	37	70,225	38
Bulk	118,796	64	117,997	62	119,775	62	120,871	63	115,951	62
<b>TOTAL</b>	<b>186,358</b>	<b>100</b>	<b>188,944</b>	<b>100</b>	<b>193,609</b>	<b>100</b>	<b>191,929</b>	<b>100</b>	<b>186,176</b>	<b>100</b>

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**Table 6**

**Free Tonnage Shipments To All Market Outlets**  
**2002 - 2009**  
**(Sweatbox Tons)**

Variety	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
<b>Natural Seedless</b>								
Domestic & Canada	189,160	191,376	205,002	195,822	203,889	201,355	200,775	194,879
Export Free	108,480	112,860	112,996	102,632	109,727	148,243	131,587	159,363
<b>Total</b>	<b>297,640</b>	<b>304,236</b>	<b>317,998</b>	<b>298,454</b>	<b>313,616</b>	<b>349,598</b>	<b>332,361</b>	<b>354,242</b>
<b>Dipped Seedless</b>								
Domestic & Canada	9,414	14,408	6,584	5,527	5,628	4,668	3,192	4,389
Export Free	2	27	0	8	0	0	0	23
<b>Total</b>	<b>9,416</b>	<b>14,435</b>	<b>6,584</b>	<b>5,534</b>	<b>5,628</b>	<b>4,668</b>	<b>3,192</b>	<b>4,412</b>
<b>Oleate &amp; Related Seedless</b>								
Domestic & Canada	6,959	0	0	0	0	0	0	0
Export Free	0	0	0	0	0	0	0	0
<b>Total</b>	<b>6,959</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Golden Seedless</b>								
Domestic & Canada	13,759	12,851	12,319	12,897	13,505	12,620	12,899	12,632
Export Free	6,179	5,335	4,128	4,218	3,312	5,404	5,832	5,245
<b>Total</b>	<b>19,938</b>	<b>18,186</b>	<b>16,447</b>	<b>17,115</b>	<b>16,817</b>	<b>18,024</b>	<b>18,731</b>	<b>17,877</b>
<b>Zante Currants</b>								
Domestic & Canada	2,225	1,856	1,920	1,648	1,481	1,717	1,786	1,583
Export Free	2,875	1,370	883	931	1,041	3,222	2,060	895
<b>Total</b>	<b>5,100</b>	<b>3,226</b>	<b>2,803</b>	<b>2,579</b>	<b>2,522</b>	<b>4,939</b>	<b>3,846</b>	<b>2,478</b>
<b>Sultanas</b>								
Domestic & Canada	152	63	25	32	255	85	78	83
<b>Total</b>	<b>152</b>	<b>63</b>	<b>25</b>	<b>32</b>	<b>255</b>	<b>85</b>	<b>78</b>	<b>83</b>
<b>Muscats</b>								
Domestic & Canada	9	4	12	6	4	9	14	0
Export Free	1	0	0	0	0	0	0	0
<b>Total</b>	<b>10</b>	<b>4</b>	<b>12</b>	<b>6</b>	<b>4</b>	<b>9</b>	<b>14</b>	<b>0</b>
<b>Monukka Type</b>								
Domestic & Canada	669	503	424	137	228	338	376	153
Export Free	0	0	0	1	0	1	1	0
<b>Total</b>	<b>669</b>	<b>503</b>	<b>424</b>	<b>138</b>	<b>228</b>	<b>339</b>	<b>377</b>	<b>153</b>
<b>Other Seedless</b>								
Domestic & Canada	3,861	3,676	1,808	5,023	4,135	5,141	5,408	6,716
Export Free	463	1,334	880	375	421	802	942	1,367
<b>Total</b>	<b>4,324</b>	<b>5,010</b>	<b>2,688</b>	<b>5,398</b>	<b>4,556</b>	<b>5,943</b>	<b>6,350</b>	<b>8,083</b>
<b>Other Seedless Sulfured</b>								
Domestic & Canada *	357	698	243	693	1,110	655	254	462
Export Free	0	0	0	0	0	0	0	23
<b>Total</b>	<b>357</b>	<b>698</b>	<b>243</b>	<b>693</b>	<b>1,110</b>	<b>655</b>	<b>254</b>	<b>485</b>
<b>TOTAL ALL VARIETIES</b>	<b>344,565</b>	<b>346,361</b>	<b>347,224</b>	<b>329,950</b>	<b>344,736</b>	<b>384,260</b>	<b>365,203</b>	<b>387,813</b>
<b>Government Reserve - Nat'ls</b>	<b>11,037</b>	<b>19,270</b>	<b>165</b>	<b>0</b>	<b>982</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Government Reserve - Zantes</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

\*For statistical reporting purposes the shrinkage for Golden Seedless was used in 2002/03.

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**Table 6A**

**Free Tonnage Shipments To All Market Outlets**  
**2002 - 2009**  
**(Packed Tons)**

Variety	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
<b>Natural Seedless</b>								
Domestic & Canada	177,054	180,085	193,680	186,358	188,944	193,609	191,929	186,176
Export Free	101,537	106,201	106,755	97,672	101,684	142,541	125,789	152,246
<b>Total</b>	<b>278,591</b>	<b>286,286</b>	<b>300,435</b>	<b>284,030</b>	<b>290,628</b>	<b>336,150</b>	<b>317,718</b>	<b>338,422</b>
<b>Dipped Seedless</b>								
Domestic & Canada	10,327	10,316	5,337	5,111	4,673	3,651	3,480	3,629
Export Free	2	19	0	8	0	0	0	19
<b>Total</b>	<b>10,329</b>	<b>10,335</b>	<b>5,337</b>	<b>5,119</b>	<b>4,673</b>	<b>3,651</b>	<b>3,480</b>	<b>3,648</b>
<b>Oleate &amp; Related Seedless</b>								
Domestic & Canada	7,669	0	0	0	0	0	0	0
Export Free	0	0	0	0	0	0	0	0
<b>Total</b>	<b>7,669</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Golden Seedless</b>								
Domestic & Canada	11,929	11,604	11,242	11,084	12,384	11,263	11,539	11,699
Export Free	5,357	4,818	3,767	3,625	3,037	4,823	5,217	4,858
<b>Total</b>	<b>17,286</b>	<b>16,422</b>	<b>15,009</b>	<b>14,709</b>	<b>15,421</b>	<b>16,086</b>	<b>16,756</b>	<b>16,557</b>
<b>Zante Currants</b>								
Domestic & Canada	2,049	1,663	1,692	1,403	1,244	1,535	1,536	1,382
Export Free	2,648	1,227	778	792	875	2,881	1,771	781
<b>Total</b>	<b>4,697</b>	<b>2,890</b>	<b>2,470</b>	<b>2,195</b>	<b>2,119</b>	<b>4,416</b>	<b>3,307</b>	<b>2,163</b>
<b>Sultanas</b>								
Domestic & Canada	86	18	7	32	181	42	56	52
<b>Total</b>	<b>86</b>	<b>18</b>	<b>7</b>	<b>32</b>	<b>181</b>	<b>42</b>	<b>56</b>	<b>52</b>
<b>Muscats</b>								
Domestic & Canada	9	3	10	6	4	5	2	0
Export Free	1	0	0	0	0	0	0	0
<b>Total</b>	<b>10</b>	<b>3</b>	<b>10</b>	<b>6</b>	<b>4</b>	<b>5</b>	<b>2</b>	<b>0</b>
<b>Monukka Type</b>								
Domestic & Canada	307	400	400	124	208	269	347	126
Export Free	0	0	0	1	0	1	1	0
<b>Total</b>	<b>307</b>	<b>400</b>	<b>400</b>	<b>125</b>	<b>208</b>	<b>270</b>	<b>348</b>	<b>126</b>
<b>Other Seedless</b>								
Domestic & Canada	3,491	2,603	1,303	4,573	3,135	4,944	4,363	5,386
Export Free	418	944	634	342	319	771	760	1,096
<b>Total</b>	<b>3,909</b>	<b>3,547</b>	<b>1,937</b>	<b>4,915</b>	<b>3,454</b>	<b>5,715</b>	<b>5,123</b>	<b>6,482</b>
<b>Other Seedless Sulfured</b>								
Domestic & Canada	310	399	167	495	555	491	406	422
Export Free	0	0	0	0	0	0	0	21
<b>Total</b>	<b>310</b>	<b>399</b>	<b>167</b>	<b>495</b>	<b>555</b>	<b>491</b>	<b>406</b>	<b>443</b>
<b>TOTAL ALL VARIETIES</b>	<b>323,194</b>	<b>320,300</b>	<b>325,772</b>	<b>311,626</b>	<b>317,243</b>	<b>366,826</b>	<b>347,196</b>	<b>367,893</b>
<b>Government Reserve - Nat'l's</b>	<b>10,348</b>	<b>18,078</b>	<b>154</b>	<b>0</b>	<b>923</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Government Reserve - Zantes</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

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**Table 7**

**Free Tonnage Shipments To Domestic And Canadian Markets  
(Including Government)  
Natural Seedless Raisins  
1994 - 2009  
(Packed Tons)**

Crop Year	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Total
1994-95	18,182	19,627	18,334	17,067	14,947	13,252	13,773	20,846	13,833	13,990	14,115	10,607	188,573
1995-96	18,066	19,788	19,187	20,227	13,823	14,226	14,026	14,317	15,534	14,888	7,517	14,014	185,613
1996-97	16,574	17,574	20,307	16,285	14,092	12,378	13,899	15,420	14,589	14,005	11,885	17,684	184,692
1997-98	16,646	16,654	18,624	15,110	14,508	13,829	11,207	15,126	13,478	12,287	13,586	13,917	174,972
*1998-99	15,620	14,734	19,730	15,400	13,686	14,019	13,751	16,118	11,302	10,850	12,897	11,569	169,676
1999-2000	14,081	13,757	17,721	15,389	12,668	10,260	11,082	14,355	12,299	12,963	13,975	7,775	156,325
2000-01	11,303 **	9,391 **	13,002 **	11,793 **	23,696	20,097	14,028	14,611	15,275	13,249	13,324	14,348	174,117
2001-02	17,192	13,049	18,783	15,541	11,745	15,457	12,655	13,878	14,187	13,815	12,253	16,065	174,620
2002-03	16,163	16,661	17,326	15,181	13,496	14,971	12,147	15,556	14,059	13,661	12,835	14,998	177,054
2003-04	13,761	17,209	18,345	14,976	14,326	14,663	14,965	16,557	14,086	12,819	13,742	14,636	180,085
*2004-05	17,930	17,431	17,644	16,638	16,166	15,088	14,385	17,298	17,717	14,014	15,525	13,844	193,680
2005-06	18,773	17,176	17,600	17,322	14,255	14,502	14,440	17,066	14,914	13,331	16,065	10,914	186,358
2006-07	16,991	16,214	18,942	16,066	13,685	15,136	14,589	16,853	15,759	16,448	12,451	15,810	188,944
2007-08	17,805	14,936	18,918	16,826	13,117	17,155	16,624	16,097	15,936	15,166	13,940	17,089	193,609
2008-09	15,753	15,731	18,649	15,869	15,039	16,044	14,387	16,871	15,912	15,395	16,845	15,436	191,929
2009-10	14,438	17,414	16,949	17,813	14,990	14,588	13,839	17,279	16,097	13,870	14,772	14,127	186,176
<b>TEN YEAR AVERAGE</b>													
	16,011	15,521	17,616	15,803	15,052	15,770	14,206	16,207	15,394	14,177	14,175	14,727	184,657

\* No Pool Established

\*\* Months shipments under reported and tonnage recorded Dec/Jan.

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**Table 8**

**Free Tonnage Made Available For Disposition In Commercial Trade Channels**  
**Natural Seedless Raisins**  
**2000 - 2009**  
**(Sweatbox Tons)**

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Natural Seedless Total Deliveries	432,616	377,328 (a)	388,010 (a)	296,864 (a)	265,262	319,126	282,999	329,288	364,268	298,532
Free Tonnage Purchased	229,287	237,716	205,668	207,818	265,262	263,287	254,703	279,895	316,913	253,752
Reserve Tonnage Purchased (b)	84,867	76,827	76,146	61,186	72,789	31,975	52,689	69,604	35,844	56,798
Total Tonnage Purchased	314,154	314,543	281,814	269,004	338,051	295,262	307,392	349,499	352,757	310,550
Packers' August 1 Carryin (c)	97,109	116,131	132,135	129,345	95,003	114,792	111,444	105,430	106,249	126,824
Total Disposable Tonnage	411,263	430,674	413,949	398,349	433,054	410,054	418,836	454,929	459,006	437,374
Commercial Shipments	295,027	298,633	297,640	304,236	317,998	298,454	313,616	349,598	332,362	354,242
July 31 Carryout (calculated)	116,236	132,041	116,309	94,113	115,056	111,600	105,220	105,331	126,645	83,132

(a) Includes Diversion Tonnage

(b) Export and 10+10

(c) Packers' Carryin Inventory Report

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**Table 9**

**SUPPLY AND DISPOSITION  
NATURAL SEEDLESS RAISINS  
2000-2009  
(Sweatbox Tons)**

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
<b>Total Disposable Free Tonnage</b>	<b>411,263</b>	<b>430,674</b>	<b>413,949</b>	<b>398,349</b>	<b>433,054</b>	<b>410,054</b>	<b>418,836</b>	<b>454,929</b>	<b>459,006</b>	<b>437,374</b>
<b><u>Disposition</u></b>										
Domestic & Canada	185,429	186,361	189,160	191,376	205,002	195,822	203,889	201,355	200,775	194,879
Export Free	109,598	112,272	108,480	112,860	112,996	102,632	109,727	148,243	131,587	159,363
Total Disposition	295,027	298,633	297,640	304,236	317,998	298,454	313,616	349,598	332,362	354,242
Carryout (Calculated)	116,236	132,041	116,309	94,113	115,056	111,600	105,220	105,331	126,644	83,132
<b><u>Reserve Tonnage</u></b>										
<b>Total Available Supply</b>	<b>244,724</b>	<b>292,799</b>	<b>287,067</b>	<b>221,951</b>	<b>101,358</b>	<b>82,096</b>	<b>77,783</b>	<b>70,257</b>	<b>48,002</b>	<b>56,934</b>
Released for Export*	62,776	72,827	19,349	0	0	0	0	0	25,438	11,604
Other Disposition	181,948	219,972	267,718	221,951	101,358	82,096	77,783	70,257	22,564	45,330
<b>Exports</b>										
Free Tonnage	109,598	112,272	108,480	112,860	112,996	102,632	109,727	148,243	131,587	159,363
Reserve Shipments	0	0	0	0	0	0	0	0	0	0
Total Exports	109,598	112,272	108,480	112,860	112,996	102,632	109,727	148,243	131,587	159,363

\* Raisin-Back

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**Table 10**

**Supply And Disposition Of Reserve Pool Tonnage  
Natural Seedless Raisins  
2002-2009  
(Sweatbox Tons)**

	2002-2003 Crop Year	2003-2004 Crop Year	2004-2005 Crop Year	2005-2006 Crop Year	2006-2007 Crop Year	2007-2008 Crop Year	2008-2009 Crop Year	2009-2010 Crop Year
<b>SUPPLY</b>								
Reserve Tonnage	182,342	89,046	0	55,839	28,297	49,393	47,355	44,780
Carry In From Previous Year	104,725	132,905	101,358	26,257	49,486	20,864	647	12,154
Total Reserve Supply	287,067	221,951	101,358	82,096	77,783	70,257	48,002	56,934
<b>DISPOSITION</b>								
10 & 10**	56,797	61,186	72,789	31,975	52,689	69,604	10,406	45,194
Export*	19,349	0	0	0	0	0	25,438	11,604
Raisin Diversion Program	50,840	15,299	0	0	0	0	0	0
Government	11,037	19,270	165	0	982	0	0	0
Non-Normal Outlets	15,102	23,000	0	0	0	0	0	0
Distillation	0	0	0	0	0	0	0	0
Donations	1,037	1,838	1,853	635	1,139	6	4	15
Miscellaneous	0	0	294	0	2,109	0	0	50
Carry Out To Subsequent Year	132,905	101,358	26,257	49,486	20,864	647	12,154	71
Total Disposition	287,067	221,951	101,358	82,096	77,783	70,257	48,002	56,934

\*\* Includes all Reserve for Free Usage Sales

\* Raisin-Back

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**Table 11**

**Supply And Disposition Of Reserve Pool Tonnage  
Natural Seedless Raisins  
2009-2010 Crop Year  
(Sweatbox Tons)**

<b>SUPPLY</b>		
Reserve Tonnage (based on total deliveries of: 298,532)	44,780	
Carry In From Previous Crop Year	<u>12,154</u>	
Total Reserve Supply		56,934
<b>DISPOSITION</b>		
10 & 10	45,189	
67(j)	5	
Export*	11,604	
Raisin Diversion Program	0	
Government/Food Aid	0	
Non-Normal Outlets	0	
Exemption/Loss	50	
Donations	<u>15</u>	
Total Disposition		<u>56,863</u>
Carry Out To Subsequent Crop Year		<u><u>71</u></u>

\* Raisin-Back

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**Table 12**

**Reserve Pool Percentages  
Natural Seedless Raisins  
1995-2009**

Crop Year	Preliminary Percentages		Secretary Established		Date Established	Basis for Pool Payments	
	Free	Reserve	Free	Reserve		Free	Reserve
1995-96	65	35	79	21	07/15/96	79	21
1996-97	73	27	86	14	07/16/97	86	14
1997-98	61	39	66	34	07/01/98	66	34
1998-99	85	15	100	0	01/15/99	100	0
1999-2000	73	27	85	15	06/23/00	85	15
2000-01	35	65	53	47	08/01/01	53	47
2001-02	56	44	63	37	07/19/02	63	37
2002-03	41	59	53	47	04/03/03	53	47
2003-04	65	35	70	30	08/10/04	70	30
2004-05	100	0	100	0	10/05/04	100	0
2005-06	74	26	82.5	17.5	05/23/06	82.5	17.5
2006-07	89.75	10.25	90	10	04/10/07	90	10
2007-08	84.75	15.25	85	15	02/20/08	85	15
2008-09	86.75	13.25	87	13	03/10/09	87	13
2009-10	84.75	15.25	85	15	06/25/10	85	15

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**Table 13**

**Comparison Of Packer Acquisitions By Week**  
**Natural Seedless Raisins**  
**2005-2009**  
**(Sweatbox Tons)**

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Week of Delivery	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
1	21	672		9,858	0
2	0	5,442		63	0
3	0	105	60	0	0
4	0	820	0	5	47
<b>Comparative 4 Week Total</b>	<b>21</b>	<b>7,039</b>	<b>60</b>	<b>9,926</b>	<b>47</b>
5	4	173	101	604	90
6	389	613	932	873	2,506
7	890	3,760	2,993	3,769	5,368
8	3,071	13,251	8,280	9,837	9,815
9	7,838	22,229	13,266	13,417	22,195
<b>Comparative 5 Week Total</b>	<b>12,192</b>	<b>40,026</b>	<b>25,572</b>	<b>28,500</b>	<b>39,974</b>
10	14,496	23,167	22,181	18,962	38,094
11	18,324	32,391	24,766	24,319	29,239
12	23,591	25,798	32,053	42,918	32,437
13	24,063	26,524	32,825	28,560	29,838
<b>Comparative 4 Week Total</b>	<b>80,474</b>	<b>107,880</b>	<b>111,825</b>	<b>114,759</b>	<b>129,608</b>
14	24,014	21,549	28,623	30,100	24,054
15	22,670	20,755	26,154	25,770	25,535
16	25,146	16,196	21,650	23,219	12,521
17	15,376	10,301	10,763	8,962	7,559
<b>Comparative 4 Week Total</b>	<b>87,206</b>	<b>68,801</b>	<b>87,190</b>	<b>88,051</b>	<b>69,669</b>
18	19,953	11,070	17,524	14,541	7,373
19	18,417	8,987	11,373	11,542	5,401
20	15,627	4,465	11,561	8,675	5,654
21	10,889	2,453	5,375	1,966	2,002
22	4,973	2,977	2,895	4,370	1,773
<b>Comparative 5 Week Total</b>	<b>69,859</b>	<b>29,952</b>	<b>48,728</b>	<b>41,094</b>	<b>22,203</b>
23	6,237	1,502	4,301	7,905	5,001
24	9,087	2,175	7,818	11,856	4,455
25	7,296	1,484	3,048	3,110	1,800
26	4,474	2,179	3,970	4,633	2,015
<b>Comparative 4 Week Total</b>	<b>27,094</b>	<b>7,340</b>	<b>19,137</b>	<b>27,504</b>	<b>13,271</b>
27	4,112	1,438	3,052	3,666	2,534
28	4,095	1,189	3,322	5,166	2,500
29	3,069	(145)	3,618	2,131	2,594
30	2,984	1,726	2,282	2,473	1,191
<b>Comparative 4 Week Total</b>	<b>14,260</b>	<b>4,208</b>	<b>12,274</b>	<b>13,436</b>	<b>8,819</b>

**Table 13**

**Comparison Of Packer Acquisitions By Week**  
**Natural Seedless Raisins**  
**2005-2009**  
**(Sweatbox Tons)**

Page 2 of 2

Week of Delivery	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
31	2,645	1,626	2,700	6,046	1,716
32	1,678	767	1,587	2,126	1,833
33	2,097	1,116	2,170	1,378	2,257
34	1,943	1,346	823	8,329	1,813
<b>Comparative 4 Week Total</b>	<b>8,363</b>	<b>4,855</b>	<b>7,280</b>	<b>17,879</b>	<b>7,619</b>
35	1,550	486	561	988	1,373
36	752	476	1,407	203	419
37	522	589	1,785	735	769
38	4,479	940	1,712	2,141	913
39	747	1,011	388	1,605	307
<b>Comparative 5 Week Total</b>	<b>8,050</b>	<b>3,502</b>	<b>5,853</b>	<b>5,672</b>	<b>3,781</b>
40	375	613	1,927	1,530	258
41	733	143	1,510	769	1,201
42	439	802	1,101	946	743
43	480	756	986	1,129	275
<b>Comparative 4 Week Total</b>	<b>2,027</b>	<b>2,314</b>	<b>5,524</b>	<b>4,374</b>	<b>2,477</b>
44	212	175	566	463	230
45	60	2,068	993	300	634
46	149	1,204	495	376	(25)
47	166	1,616	791	478	48
<b>Comparative 4 Week Total</b>	<b>587</b>	<b>5,063</b>	<b>2,845</b>	<b>1,617</b>	<b>887</b>
48	886	776	665	943	143
49	508	437	387	1,736	0
50	356	119	613	1,845	2
51	1,115	505	558	3,114	5
52	6,129	182	778	3,818	27
<b>Comparative 5 Week Total</b>	<b>8,994</b>	<b>2,019</b>	<b>3,001</b>	<b>11,456</b>	<b>177</b>
<b>YEARLY TOTAL</b>	<b>319,126</b>	<b>282,999</b>	<b>329,288</b>	<b>364,268</b>	<b>298,532</b>

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**Table 14**

**Free Tonnage Supply And Demand Situation  
Natural Seedless Raisins  
1995-2009  
(Sweatbox Tons)**

S U P P L Y							S H I P M E N T S			
Crop Year	Acquired	Percent Free	Free Tonnage	Carryin	Purchased From Reserve	Total Free Supply	Canada and Domestic	Export (Free)	Total Disposition	Computed Carryout
1995-96	325,911	79.0	257,470	105,294	67,251	430,015	198,517	116,653	315,170	114,845
1996-97	272,063	86.0	233,974	113,697	59,485	407,156	198,167	117,719	315,886	91,270
1997-98	382,448	66.0	252,416	92,769	63,104	408,289	185,745	124,349	310,094	98,195
1998-99	240,469	100.0	240,469	98,291	59,844	398,604	181,666	115,234	296,900	101,704
1999-2000	299,910	85.0	254,923	101,946	3,586	360,455	166,127	97,342	263,469	96,986
2000-01	432,616	53.0	229,287	97,109	84,867	411,263	185,429	109,598	295,027	116,236
2001-02	377,328	63.0	237,716	116,131	76,827	430,674	186,361	112,272	298,633	132,041
2002-03	388,010	53.0	205,668 **	132,135	76,146	413,949	189,160	108,480	297,640	116,309
2003-04	296,864	70.0	207,818 **	129,345	61,186	398,349	191,376	112,860	304,236	94,113
2004-05	265,262	100.0	265,262	95,003	72,789	433,054	205,002	112,996	317,998	115,056
2005-06	319,126	82.5	263,287 **	114,792	31,975	410,054	195,822	102,632	298,454	111,600
2006-07	282,999	90.0	254,703 **	111,444	52,689	418,836	203,889 ***	109,727	313,616	105,220
2007-08	329,288	85.0	279,895	105,430	69,604	454,929	201,355 ***	148,243	349,598	105,331
2008-09	364,268	87.0	316,913	106,249	35,844	459,006	200,775 ***	131,587	332,362	126,644
2009-10	298,532	85.0	253,752	126,824	56,798	437,374	194,879	159,363	354,242	83,132
<b>TEN YEAR AVERAGE</b>										
	335,429	75.0 *	251,430	113,446	61,872	426,749	195,405	120,776	316,181	110,568

\* Percentage is a weighted average

\*\* Adjusted for exempt tonnage

\*\*\*Includes Government Free



**Table 15**

**Calculated Free Tonnage Disappearance  
Natural Seedless Raisins  
2000-2009  
(Sweatbox Tons)**

<b>Crop Year</b>	<b>Reported Beginning Physical Inventory</b>	<b>Free Tonnage</b>	<b>Reported Ending Physical Inventory</b>	<b>Free Tonnage Disappearance</b>	<b>Handler Reported Shipments (Packed Tons)</b>	<b>Calculated Shrink (a)</b>
2000-01	97,109	314,154	116,131	295,132	277,030	6.13%
2001-02	116,131	314,543	132,135	298,539	279,819	6.27%
2002-03	132,135	281,814	116,465	297,484	278,591	6.35%
2003-04	129,345	269,004	95,003	303,346	286,286	5.62%
2004-05	95,003	338,051	114,792	318,262	300,435	5.60%
2005-06	114,792	295,262	111,444	298,610	284,030	4.88%
2006-07	111,444	307,392	105,430	313,406	290,628	7.27%
2007-08	105,430	349,499	106,249	348,680	336,150	3.59%
2008-09	106,249	352,757	126,824	332,182	317,718	4.35%
2009-10	126,824	310,550	83,143	354,232	338,422	4.46%

(a) The calculated shrinkage was determined by dividing Handler Reported Shipments by Free Tonnage Disappearance and deducting the result from 100%.

**Table 16**

**Natural Seedless Raisins Diversion Program  
Historical Data  
1999-2009**

<b>RDP Year</b>	<b>Number of Certificates Issued</b>	<b>Number of Acres</b>	<b>Number of Pounds</b>	<b>Average Tons/Acre</b>
<b><u>Combined--Diverted and Removed:</u></b>				
2009	0	0	0	0
2008	0	0	0	0
2007	0	0	0	0
2006	0	0	0	0
2005	0	0	0	0
2004	0	0	0	0
2003	236	8,198.20	30,598,695	1.87
2002	775	26,739.20	101,680,000	1.90
2001	932	38,111.00	178,152,627	2.34
2000	0	0	0	0
1999	0	0	0	0
		73,048.40	310,431,322	2.12

**Diverted:**

2009	0	0	0	0
2008	0	0	0	0
2007	0	0	0	0
2006	0	0	0	0
2005	0	0	0	0
2004	0	0	0	0
2003	0	0	0	0
2002	573	20,907.00	79,150,000	1.89
2001	815	35,494.00	166,741,306	2.35
2000	0	0	0	0.00
1999	0	0	0	0.00
		56,401.00	245,891,306	2.18

**Removed:**

2009	0	0	0	0
2008	0	0	0	0
2007	0	0	0	0
2006	0	0	0	0
2005	0	0	0	0
2004	0	0	0	0
2003	236	8,198.20	30,598,695	1.87
2002	202	5,832.20	22,530,000	1.93
2001	117	2,617.00	11,411,321	2.18
2000	0	0	0	0.00
1999	0	0	0	0.00
		16,647.40	64,540,016	1.94

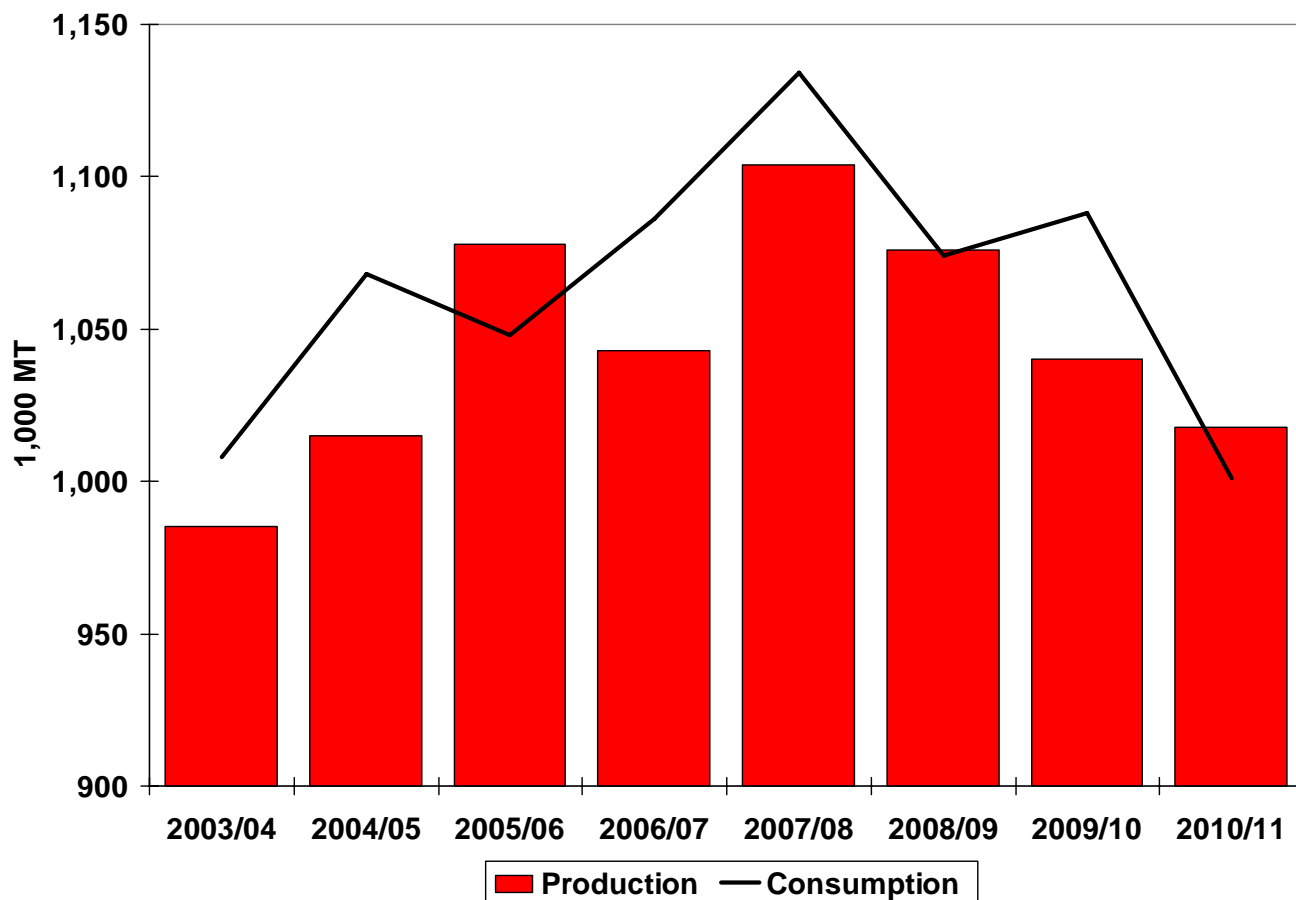


United States  
Department of  
Agriculture

Foreign  
Agricultural  
Service  
September 2010

# Raisins: World Markets and Trade

## Falling Global Production Pulls Consumption Lower

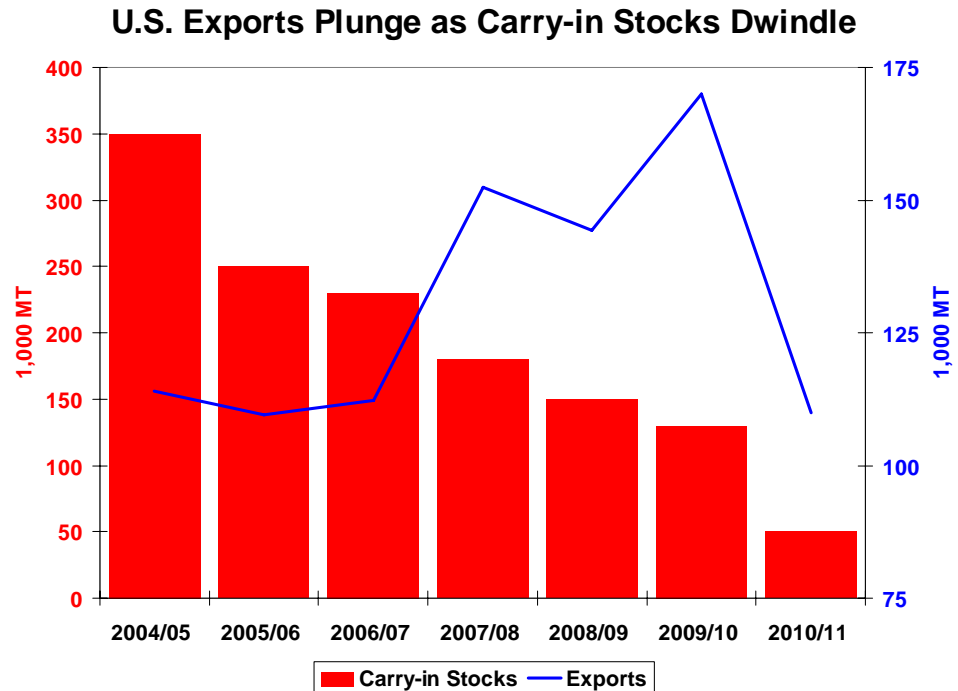


Global raisin consumption in 2010/11 is forecast to decline 8 percent to 1.0 million metric tons (MT) and has weakened over the last few years due to lower availability. The EU-27 consumes nearly one-third of the world's raisins and accounts for most of the decline due to tight supplies from Turkey and the United States.

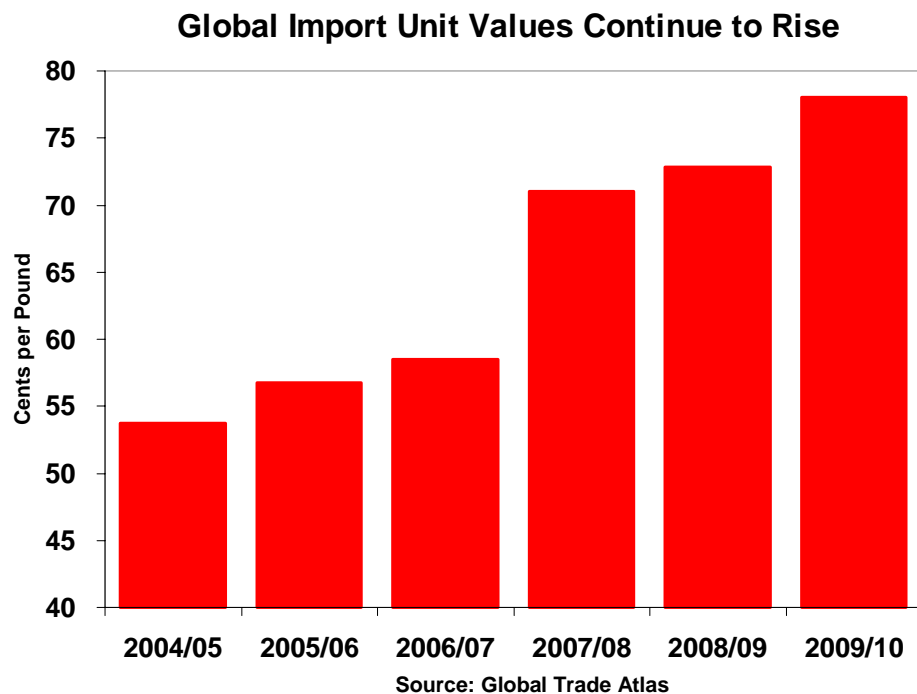
Global production is forecast lower, the third year of contraction. The United States is forecast 5 percent lower due in part to mildew problems from cool, wet weather early in the summer. Also, the crop was over two weeks behind normal which is expected to increase the drying ratio and lower production. Turkey is forecast down 8 percent due to a frost in March as well as heavy rains that limited the use of agricultural inputs such as plant protection chemicals. China is forecast 20 percent lower due to damage from a strong windstorm in Turpin, the primary growing region. Partially offsetting these losses, Iran and Chile are forecast up 25 percent and 12 percent, respectively.

Global exports are forecast down 6 percent to 660,000 MT as losses from the United States, Turkey and China more than offset stronger exports from Iran and Chile.

U.S. raisin exports are forecast to plunge 35 percent to 110,000 MT due primarily to low carry-in stocks. Exports were exceptionally strong the previous three years as high inventory levels were drawn down to supply overseas markets. With inventory levels tightening, exports are forecast to return to the pre-2007/08 level. As a result, exports to the EU-27, Japan and Canada are expected to decline.



Global import unit values are likely to continue rising as a result of less available supplies.



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For additional production, supply, and demand information, you may visit our website at <http://www.fas.usda.gov/psdonline/psdHome.aspx>.

**Raisin Production and Exports**  
**Metric Tons (Dry Weight Basis)**

	2005/06	2006/07	2007/08	2008/09	2009/10	Sep 2010/11
<b>Production</b>						
Afghanistan	31,000	20,000	25,000	25,300	29,000	32,000
Argentina	25,000	36,000	33,000	30,000	36,000	37,000
Australia	30,400	15,000	12,000	16,000	14,000	15,000
Chile	65,500	61,500	67,350	80,000	67,000	75,000
China	105,000	125,000	150,000	135,000	150,000	120,000
EU-27	30,000	20,000	10,000	10,000	12,000	10,000
Iran	155,000	130,000	150,000	60,000	100,000	125,000
Mexico	8,200	8,500	8,500	8,500	8,300	8,500
South Africa	36,000	41,800	40,200	28,000	43,000	45,000
Turkey	250,000	280,000	250,000	310,000	260,000	240,000
United States	316,245	274,877	321,143	347,452	294,835	280,000
Uzbekistan	26,000	30,000	37,000	25,700	26,000	30,000
<b>Total</b>	1,078,345	1,042,677	1,104,193	1,075,952	1,040,135	1,017,500
<b>Exports</b>						
Afghanistan	25,100	15,500	21,000	21,300	25,000	28,000
Argentina	19,100	28,900	23,950	22,200	28,100	29,000
Australia	7,650	5,700	4,150	4,500	3,000	3,000
Chile	59,400	61,300	65,600	78,300	65,000	73,000
China	18,063	23,621	31,874	27,500	48,000	35,000
EU-27	8,700	8,625	7,450	7,600	9,000	9,000
Iran	123,000	103,000	117,000	40,000	78,000	100,000
Mexico	3,014	1,967	3,200	2,800	2,400	2,500
South Africa	23,600	33,830	38,800	23,200	40,000	40,500
Turkey	209,200	263,800	205,900	274,900	214,000	205,000
United States	109,500	112,220	152,385	144,295	170,000	110,000
Uzbekistan	20,600	24,000	29,700	21,100	21,700	25,000
<b>Total</b>	626,927	682,463	701,009	667,695	704,200	660,000

Raisin marketing year for producer countries begins in August for northern hemisphere countries and January for southern hemisphere countries.

Raisin marketing year for non-producer countries begins in August.

Intra-EU trade excluded from EU-27 data.

# Raisin Imports and Consumption

Metric Tons (Dry Weight Basis)

	2005/06	2006/07	2007/08	2008/09	2009/10	Sep 2010/11
<b>Imports</b>						
Afghanistan	0	0	0	0	0	0
Algeria	6,600	7,650	7,900	9,000	7,300	6,800
Argentina	0	0	0	0	0	0
Australia	11,600	27,475	26,850	26,600	26,800	25,000
Brazil	17,150	19,175	22,700	19,500	27,000	25,000
Canada	34,000	32,800	32,500	31,300	29,300	27,000
Chile	1,350	300	300	200	600	300
China	10,391	12,262	13,600	11,300	13,300	13,000
Colombia	5,200	5,750	5,950	6,000	6,500	6,000
EU-27	319,150	331,600	349,900	325,000	340,500	315,000
India	8,650	6,900	8,900	9,200	10,000	9,000
Iran	0	0	0	0	0	0
Japan	28,950	31,850	32,300	27,300	29,300	27,000
Malaysia	4,950	5,200	5,025	5,950	6,775	6,300
Mexico	11,690	14,342	13,100	15,500	16,100	15,000
Morocco	4,850	6,500	5,500	7,500	7,400	7,000
New Zealand	6,900	7,925	8,000	7,400	7,800	7,400
Norway	4,000	4,600	4,600	4,500	4,700	4,400
Peru	4,975	5,625	5,625	6,425	6,500	6,000
Russia	62,600	70,325	70,500	64,500	72,400	68,000
South Africa	700	300	100	1,100	2,300	2,000
Switzerland	4,000	4,000	4,800	4,200	4,000	3,700
Taiwan	5,400	5,850	6,325	6,375	7,500	7,000
Turkey	1,000	1,000	1,000	2,100	2,000	1,800
Ukraine	15,475	19,725	20,100	16,000	17,800	16,500
United States	21,614	28,868	21,625	19,300	20,000	25,000
Uzbekistan	0	0	0	0	0	0
Venezuela	3,600	5,100	7,400	6,000	6,200	5,800
<b>Total</b>	594,795	655,122	674,600	632,250	672,075	630,000
<b>Domestic Consumption</b>						
Afghanistan	5,900	4,500	4,000	4,000	4,000	4,000
Algeria	6,600	7,650	7,900	9,000	7,300	6,800
Argentina	5,900	7,100	9,050	7,800	7,900	8,000
Australia	34,350	36,775	34,700	38,100	37,800	37,000
Brazil	17,150	19,175	22,700	19,500	27,000	25,000
Canada	34,000	32,800	32,500	31,300	29,300	27,000
Chile	4,450	3,400	2,700	2,200	2,720	2,300
China	97,328	113,641	131,726	118,800	115,300	98,000
Colombia	5,200	5,750	5,950	6,000	6,500	6,000
EU-27	340,450	342,975	352,450	327,400	343,500	316,000
India	8,650	6,900	8,900	9,200	10,000	9,000
Iran	32,000	27,000	33,000	20,000	22,000	25,000
Japan	28,950	31,850	32,300	27,300	29,300	27,000
Malaysia	4,950	5,200	5,025	5,950	6,775	6,300
Mexico	16,876	20,875	18,400	21,200	22,000	21,000
Morocco	4,850	6,500	5,500	7,500	7,400	7,000
New Zealand	6,900	7,925	8,000	7,400	7,800	7,400
Norway	4,000	4,600	4,600	4,500	4,700	4,400
Peru	4,975	5,625	5,625	6,425	6,500	6,000
Russia	62,600	70,325	70,500	64,500	72,400	68,000
South Africa	13,750	7,520	3,500	5,900	6,800	6,700
Switzerland	4,000	4,000	4,800	4,200	4,000	3,700
Taiwan	5,400	5,850	6,325	6,375	7,500	7,000
Turkey	26,000	36,000	69,100	50,377	46,000	40,000
Ukraine	15,475	19,725	20,100	16,000	17,800	16,500
United States	248,359	241,525	220,383	242,457	224,835	205,000
Uzbekistan	5,400	6,000	7,300	4,600	4,300	5,000
Venezuela	3,600	5,100	7,400	6,000	6,200	5,800
<b>Total</b>	1,048,063	1,086,286	1,134,434	1,073,984	1,087,630	1,000,900

**Raisin Production, Supply and Distribution**  
Metric Tons (Dry Weight Basis)

Country Mktg Year	Beginning Stocks	Production	Imports	Total Supply	Exports	Domestic Consumption	Ending Stocks
<b>Afghanistan</b>							
2006/07	0	20,000	0	20,000	15,500	4,500	0
2007/08	0	25,000	0	25,000	21,000	4,000	0
2008/09	0	25,300	0	25,300	21,300	4,000	0
2009/10	0	29,000	0	29,000	25,000	4,000	0
2010/11	0	32,000	0	32,000	28,000	4,000	0
<b>Algeria</b>							
2006/07	0	0	7,650	7,650	0	7,650	0
2007/08	0	0	7,900	7,900	0	7,900	0
2008/09	0	0	9,000	9,000	0	9,000	0
2009/10	0	0	7,300	7,300	0	7,300	0
2010/11	0	0	6,800	6,800	0	6,800	0
<b>Argentina</b>							
2006/07	0	36,000	0	36,000	28,900	7,100	0
2007/08	0	33,000	0	33,000	23,950	9,050	0
2008/09	0	30,000	0	30,000	22,200	7,800	0
2009/10	0	36,000	0	36,000	28,100	7,900	0
2010/11	0	37,000	0	37,000	29,000	8,000	0
<b>Australia</b>							
2006/07	0	15,000	27,475	42,475	5,700	36,775	0
2007/08	0	12,000	26,850	38,850	4,150	34,700	0
2008/09	0	16,000	26,600	42,600	4,500	38,100	0
2009/10	0	14,000	26,800	40,800	3,000	37,800	0
2010/11	0	15,000	25,000	40,000	3,000	37,000	0
<b>Brazil</b>							
2006/07	0	0	19,175	19,175	0	19,175	0
2007/08	0	0	22,700	22,700	0	22,700	0
2008/09	0	0	19,500	19,500	0	19,500	0
2009/10	0	0	27,000	27,000	0	27,000	0
2010/11	0	0	25,000	25,000	0	25,000	0
<b>Canada</b>							
2006/07	0	0	32,800	32,800	0	32,800	0
2007/08	0	0	32,500	32,500	0	32,500	0
2008/09	0	0	31,300	31,300	0	31,300	0
2009/10	0	0	29,300	29,300	0	29,300	0
2010/11	0	0	27,000	27,000	0	27,000	0
<b>Chile</b>							
2006/07	4,070	61,500	300	65,870	61,300	3,400	1,170
2007/08	1,170	67,350	300	68,820	65,600	2,700	520
2008/09	520	80,000	200	80,720	78,300	2,200	220
2009/10	220	67,000	600	67,820	65,000	2,720	100
2010/11	100	75,000	300	75,400	73,000	2,300	100
<b>China</b>							
2006/07	0	125,000	12,262	137,262	23,621	113,641	0
2007/08	0	150,000	13,600	163,600	31,874	131,726	0
2008/09	0	135,000	11,300	146,300	27,500	118,800	0
2009/10	0	150,000	13,300	163,300	48,000	115,300	0
2010/11	0	120,000	13,000	133,000	35,000	98,000	0
<b>Colombia</b>							
2006/07	0	0	5,750	5,750	0	5,750	0
2007/08	0	0	5,950	5,950	0	5,950	0
2008/09	0	0	6,000	6,000	0	6,000	0
2009/10	0	0	6,500	6,500	0	6,500	0
2010/11	0	0	6,000	6,000	0	6,000	0
<b>EU-27</b>							
2006/07	0	20,000	331,600	351,600	8,625	342,975	0

**Raisin Production, Supply and Distribution (Continued)**  
Metric Tons (Dry Weight Basis)

Country Mktg Year	Beginning Stocks	Production	Imports	Total Supply	Exports	Domestic Consumption	Ending Stocks
2007/08	0	10,000	349,900	359,900	7,450	352,450	0
2008/09	0	10,000	325,000	335,000	7,600	327,400	0
2009/10	0	12,000	340,500	352,500	9,000	343,500	0
2010/11	0	10,000	315,000	325,000	9,000	316,000	0
<b>India</b>							
2006/07	0	0	6,900	6,900	0	6,900	0
2007/08	0	0	8,900	8,900	0	8,900	0
2008/09	0	0	9,200	9,200	0	9,200	0
2009/10	0	0	10,000	10,000	0	10,000	0
2010/11	0	0	9,000	9,000	0	9,000	0
<b>Iran</b>							
2006/07	0	130,000	0	130,000	103,000	27,000	0
2007/08	0	150,000	0	150,000	117,000	33,000	0
2008/09	0	60,000	0	60,000	40,000	20,000	0
2009/10	0	100,000	0	100,000	78,000	22,000	0
2010/11	0	125,000	0	125,000	100,000	25,000	0
<b>Japan</b>							
2006/07	0	0	31,850	31,850	0	31,850	0
2007/08	0	0	32,300	32,300	0	32,300	0
2008/09	0	0	27,300	27,300	0	27,300	0
2009/10	0	0	29,300	29,300	0	29,300	0
2010/11	0	0	27,000	27,000	0	27,000	0
<b>Malaysia</b>							
2006/07	0	0	5,200	5,200	0	5,200	0
2007/08	0	0	5,025	5,025	0	5,025	0
2008/09	0	0	5,950	5,950	0	5,950	0
2009/10	0	0	6,775	6,775	0	6,775	0
2010/11	0	0	6,300	6,300	0	6,300	0
<b>Mexico</b>							
2006/07	0	8,500	14,342	22,842	1,967	20,875	0
2007/08	0	8,500	13,100	21,600	3,200	18,400	0
2008/09	0	8,500	15,500	24,000	2,800	21,200	0
2009/10	0	8,300	16,100	24,400	2,400	22,000	0
2010/11	0	8,500	15,000	23,500	2,500	21,000	0
<b>Morocco</b>							
2006/07	0	0	6,500	6,500	0	6,500	0
2007/08	0	0	5,500	5,500	0	5,500	0
2008/09	0	0	7,500	7,500	0	7,500	0
2009/10	0	0	7,400	7,400	0	7,400	0
2010/11	0	0	7,000	7,000	0	7,000	0
<b>New Zealand</b>							
2006/07	0	0	7,925	7,925	0	7,925	0
2007/08	0	0	8,000	8,000	0	8,000	0
2008/09	0	0	7,400	7,400	0	7,400	0
2009/10	0	0	7,800	7,800	0	7,800	0
2010/11	0	0	7,400	7,400	0	7,400	0
<b>Norway</b>							
2006/07	0	0	4,600	4,600	0	4,600	0
2007/08	0	0	4,600	4,600	0	4,600	0
2008/09	0	0	4,500	4,500	0	4,500	0
2009/10	0	0	4,700	4,700	0	4,700	0
2010/11	0	0	4,400	4,400	0	4,400	0
<b>Peru</b>							
2006/07	0	0	5,625	5,625	0	5,625	0
2007/08	0	0	5,625	5,625	0	5,625	0
2008/09	0	0	6,425	6,425	0	6,425	0



# Raisin Production, Supply and Distribution (Continued)

Metric Tons (Dry Weight Basis)

Country Mktg Year	Beginning Stocks	Production	Imports	Total Supply	Exports	Domestic Consumption	Ending Stocks
2009/10	0	0	6,500	6,500	0	6,500	0
2010/11	0	0	6,000	6,000	0	6,000	0
<b>Russia</b>							
2006/07	0	0	70,325	70,325	0	70,325	0
2007/08	0	0	70,500	70,500	0	70,500	0
2008/09	0	0	64,500	64,500	0	64,500	0
2009/10	0	0	72,400	72,400	0	72,400	0
2010/11	0	0	68,000	68,000	0	68,000	0
<b>South Africa</b>							
2006/07	3,250	41,800	300	45,350	33,830	7,520	4,000
2007/08	4,000	40,200	100	44,300	38,800	3,500	2,000
2008/09	2,000	28,000	1,100	31,100	23,200	5,900	2,000
2009/10	2,000	43,000	2,300	47,300	40,000	6,800	500
2010/11	500	45,000	2,000	47,500	40,500	6,700	300
<b>Switzerland</b>							
2006/07	0	0	4,000	4,000	0	4,000	0
2007/08	0	0	4,800	4,800	0	4,800	0
2008/09	0	0	4,200	4,200	0	4,200	0
2009/10	0	0	4,000	4,000	0	4,000	0
2010/11	0	0	3,700	3,700	0	3,700	0
<b>Taiwan</b>							
2006/07	0	0	5,850	5,850	0	5,850	0
2007/08	0	0	6,325	6,325	0	6,325	0
2008/09	0	0	6,375	6,375	0	6,375	0
2009/10	0	0	7,500	7,500	0	7,500	0
2010/11	0	0	7,000	7,000	0	7,000	0
<b>Turkey</b>							
2006/07	61,924	280,000	1,000	342,924	263,800	36,000	43,124
2007/08	43,124	250,000	1,000	294,124	205,900	69,100	19,124
2008/09	19,124	310,000	2,100	331,224	274,900	50,377	5,947
2009/10	5,947	260,000	2,000	267,947	214,000	46,000	7,947
2010/11	7,947	240,000	1,800	249,747	205,000	40,000	4,747
<b>Ukraine</b>							
2006/07	0	0	19,725	19,725	0	19,725	0
2007/08	0	0	20,100	20,100	0	20,100	0
2008/09	0	0	16,000	16,000	0	16,000	0
2009/10	0	0	17,800	17,800	0	17,800	0
2010/11	0	0	16,500	16,500	0	16,500	0
<b>United States</b>							
2006/07	230,000	274,877	28,868	533,745	112,220	241,525	180,000
2007/08	180,000	321,143	21,625	522,768	152,385	220,383	150,000
2008/09	150,000	347,452	19,300	516,752	144,295	242,457	130,000
2009/10	130,000	294,835	20,000	444,835	170,000	224,835	50,000
2010/11	50,000	280,000	25,000	355,000	110,000	205,000	40,000
<b>Uzbekistan</b>							
2006/07	0	30,000	0	30,000	24,000	6,000	0
2007/08	0	37,000	0	37,000	29,700	7,300	0
2008/09	0	25,700	0	25,700	21,100	4,600	0
2009/10	0	26,000	0	26,000	21,700	4,300	0
2010/11	0	30,000	0	30,000	25,000	5,000	0
<b>Venezuela</b>							
2006/07	0	0	5,100	5,100	0	5,100	0
2007/08	0	0	7,400	7,400	0	7,400	0
2008/09	0	0	6,000	6,000	0	6,000	0
2009/10	0	0	6,200	6,200	0	6,200	0
2010/11	0	0	5,800	5,800	0	5,800	0

**Raisin Production, Supply and Distribution (Continued)**  
**Metric Tons (Dry Weight Basis)**

Country Mktg Year	Beginning Stocks	Production	Imports	Total Supply	Exports	Domestic Consumption	Ending Stocks
<b>World</b>							
World							
2006/07	299,244	1,042,677	655,122	1,997,043	682,463	1,086,286	228,294
2007/08	228,294	1,104,193	674,600	2,007,087	701,009	1,134,434	171,644
2008/09	171,644	1,075,952	632,250	1,879,846	667,695	1,073,984	138,167
2009/10	138,167	1,040,135	672,075	1,850,377	704,200	1,087,630	58,547
2010/11	58,547	1,017,500	630,000	1,706,047	660,000	1,000,900	45,147

Raisin marketing year for producer countries begins in August for northern hemisphere countries and January for southern hemisphere countries.

Raisin marketing year for non-producer countries begins in August.

Intra-EU trade excluded from EU-27 data.

## California Raisins Health and Nutrition Research

Updated February 19, 2009

### Antioxidants

#### 1. “Raisin Effects on Biomarkers of Coronary Heart Disease in Elderly Men and Women”

Maria Luz Fernandez, PhD, University of Connecticut

A randomized, controlled study with 17 men and women aged 50-70 years were involved in the study. They were encouraged to walk or to walk and eat 1 cup of raisins per day or just eat 1 cup of raisins per day. The intervention improved the lipid risk profile for all groups by resulting in a reduction in both total cholesterol and LDL-C. The authors suggested that the increase in fiber intake was a likely contributor to the reduction in LDL-C for RAISIN and RAISIN + WALK. The reduction in blood pressure for RAISIN and RAISIN + WALK may have resulted from antioxidant effects of the raisin polyphenols. In conclusion, risk factors for CVD were affected significantly by consuming raisins or increasing steps walked. Blood pressure, plasma total cholesterol and LDL-C were significantly decreased by all interventions, while walking lowered plasma TG. Raisins lowered the risk for inflammatory damage by decreasing one of the markers of inflammation associated with diabetes and coronary heart disease (tumor necrosis factor – alpha -TNF- $\alpha$ .).

#### 2. Raisins Deliver Antioxidants

Raisins rank among the top antioxidant foods, according to tests conducted by the U.S. Department of Agriculture (USDA). Antioxidants are important because they protect cells and their components from oxidative damage – a little like “rust prevention” for the body. Early findings suggest that eating plenty of fruits and vegetables high in antioxidants, such as raisins and spinach, may help slow the processes associated with aging in both body and brain and may help protect cell components from changes that lead to diseases such as cancer and coronary heart disease. Antioxidants protect cholesterol and other fats in the blood from oxidizing. This is critical because oxidized fats in the bloodstream are much more likely to be deposited on the artery wall or form clots which may lead to heart attack or stroke. Raisins are among the top contenders for convenient, accessible, affordable, all-season antioxidant foods.

#### 3. “Raisins, Cyclo-oxygenase – 2 and Cancer Prevention”

Andrew J. Dannenberg, M.D., New York-Presbyterian Hospital/ Weill Medical College of Cornell University, New York, NY.

One of the antioxidant compounds in raisins and some other fruits and vegetables is catechin. When catechins were fed to tumor-prone mice by the noted cancer researcher Dr. Andrew Dannenberg and his colleagues, there was a 70 percent reduction in the

Source: CALIFORNIA RAISIN MARKETING BOARD

number of tumors compared to control animals (not fed additional catechin). This type of study adds to the body of evidence linking phytochemical components of fruits and vegetables to reduction in the risk of colorectal cancer, colorectal adenomas and other gastrointestinal tumors.

#### 4. "Antioxidant Capacity and Cholesterol Concentration in Human Subjects"

Carl L. Keen, Ph.D., Professor and Chair, Department of Nutrition, University of California – Davis, Davis, California.

Subjects eating raisins (4 servings) daily for 4 weeks increased the plasma antioxidant capacity. This in turn decreased the level of circulating oxidized low-density lipoprotein (LDL), so-called bad cholesterol, in subjects. High levels of LDL cholesterol are associated with increased cardiovascular disease. Oxidized LDL is especially problematic because the oxidized particles in the bloodstream are more likely to add to plaque on the artery wall. These data clearly show raisins are an important part of a diet that encourages 8 to 13 servings of fruit and vegetables loaded with important phytochemicals and antioxidants.

#### 5. "Value of Raisins for Reduction of Oxidative Stress, Endothelial Dysfunction, and Inflammation in Obesity"

Janet Walberg Rankin, Ph.D., Professor in Human Nutrition, Foods, and Exercise, Virginia Tech., Blacksburg, Virginia.

Research expert on oxidative stress and disease, Janet Walberg Rankin, studied the effect of raisins with their important antioxidant contribution on oxidative stress and inflammation in overweight subjects. It is well known that oxidative stress triggers an inflammatory response that increases disease risk. Together with graduate student Mary Whitlock, Dr. Rankin looked at whether the modest, easily accessible raisin can benefit obese individuals. They showed lowered levels of markers of inflammation, C-reactive peptide (CRP) and interleukin-6 (IL-6). These findings are important because those eating high fat meals or who are obese have elevated levels of CRP and IL-6. High levels of these components adversely affect proper blood vessel functioning. Thus, those with high oxidative stress tend to have blood vessels that do not appropriately dilate and relax.

Foods, such as raisins, that are good sources of antioxidants, especially flavonoids and phenolics, can be helpful in fighting oxidation stress and improving blood vessel function.

#### 6. Raisin effects on in vitro demineralization of teeth

Clifton Carey, PhD, Director of Administration, American Dental Association – Paffenbarger Research Center

Strong evidence exists that food particles retained on the teeth will lead to

Demineralization of the tooth enamel and dental caries. (caries) (Kashket et al, 1996). This led to the idea that foods which are perceived as ‘sticky’ will be more cariogenic than non-sticky snack foods. Raisins have been perceived by the general public and by pediatric dentists as the ninth stickiest food out of a list of twenty-one popular snacks. Despite this, there is no evidence that raisins contribute to the demineralization of teeth. In fact measurement of food that is on the tooth 5 minutes after swallowing showed that foods that are less soluble in oral fluids are retained for longer times. Specifically, raisins although perceived as quite sticky, they are easily cleared from the oral cavity. These observations suggest that raisins may not contribute to tooth demineralization significantly because the sugars are removed from the dentition before the plaque mass has the opportunity to generate sufficient acid to lower the pH below 5.5. There is also research that shows that raisins contain compounds that inhibit the *in vitro* growth of *S. mutans*, thus making raisins less cariogenic than other foods. However, the *in vitro* research with 10% raisin juice showed that it had the potential to demineralize tooth enamel but that this was less than orange juice with its citric acid.

#### 7. “Raisins as a Functional Food for Oral Health”

Christine D. Wu, M.S., Ph.D., Professor, Department of Periodontics, University of Illinois, College of Dentistry, Chicago, Illinois.

Raisins contain compounds including oleanolic acid that inhibit *in vitro* growth of *Streptococcus mutans*, one of the major bacteria in the mouth responsible for tooth decay. Oleanolic acid and other compounds in raisins also inhibit organisms associated with periodontal disease, including *Porphyromonas gingivalis* and *Fusobacterium nucleatum*. Oleanolic acid is effective in suppressing *in vitro* plaque formation by *Streptococcus mutans*. Prevention of plaque formation on the tooth surface is critical both for preventing tooth decay and promoting healthy gums.

### **Food Preservation**

#### 8. “Phenolic Content, Antioxidant Activity and Antimicrobial Properties of Raisins in Food Systems”

Luis Cisneros-Zevallos, Ph.D., Assistant Professor, Department of Horticultural Sciences, Texas A&M University, College Station, Texas.

Raisins have a considerable concentration of phenolic compounds. This analysis showed that they were quinic and gallic acid, chlorogenic and caffeic acids, catechin, and epicatechin. Golden raisins have more of many of these compounds because the antioxidant effect of the sulfite used in golden raisins inhibits the loss of these compounds. Raisin juice extracts and concentrates also have significantly increased numbers of these compounds, so they have the potential to reduce the growth of harmful microorganisms and prevent browning of cut produce. According to studies conducted by Luis Cisneros-Zevallos and his team at Texas A&M, raisin extracts were shown to reduce the growth of known food pathogens such as *Listeria monocytogenes* and *Escherichia*

*coli* 0157:H7 in a variety of model food systems. This has great importance to food safety and to the produce industry as a non-food additive solution to help extend the shelf life of food and reduce food-borne disease.

9. "Inhibition of Lipid Oxidation by Raisin Paste in Cooked Ground Meat"

Daren Cornforth, Ph.D., Professor, Nutrition & Food Sciences, Utah State University, Logan, Utah.

Raisins are recognized as a good source of dietary antioxidants. Adding raisin paste or extract to cooked ground beef or pork at just 1% to 2% of the weight improved its flavor after storage due to inhibition of rancidity by the antioxidants. Addition of the raisin extract to chicken at the same levels was also effective but did cause the meat to darken. In all cases the addition of the small amount of raisins did not affect the flavor of the meat.

10. "Evaluation of the Potential Anti-Microbial Properties of Raisins and Their Application in Food Safety and Preservation"

Mark A. Daeschel, Ph.D., Professor, Food Microbiology and Safety, Oregon State University, Corvallis, Oregon.

Pathogenic bacteria, including *Escherichia coli* 0157:H7, *Staphylococcus aureus* and *Listeria monocytogenes*, were inhibited in jerky systems containing 25% or 50% raisins. Raisins were shown to have the same preservative properties as sodium nitrite in meat systems. Raisins' innate combination of antioxidants, sugar and acids were shown to be as effective as the sodium nitrite in inhibiting organisms that cause food-borne disease and in maintaining food safety. This is good news because producers of jerky, sausages, hot dogs and other cured meats may be able to reduce or eliminate the use of nitrite additives.

Use of raisins to replace sodium nitrite in cured meats has many health benefits. First, the nitrite may form cancer-causing nitrosamines during digestion. Second, unlike the sodium nitrite, raisins add no sodium. This is important for those on sodium-restricted diets. Third, addition of raisins may improve the overall nutritional profile of cured meats, such as jerky, since the raisins provide antioxidants and make it possible to produce a palatable product that is lower in fat.

**Fiber**

11. "Raisin Dietary Fiber: Composition and Characteristics"

Mary Ellen Camire, Ph.D., Professor, Department of Food Science and Human Nutrition, University of Maine, Orono, Maine.

Dietary fiber and other components may reduce the risk of heart disease and cancer by

binding bile acids and causing their elimination from the body. Camire's study confirms that eating fibrous foods, such as raisins, caused the elimination of bile acids. This in turn stimulates the body to replace the excreted bile acids using its own cholesterol, thus potentially lowering serum cholesterol and the risk of coronary heart disease. Furthermore, bile acids that are bound by fibers such as those in raisins will not be metabolized in the gut to a more toxic form that can cause harmful changes on the colonic wall, and this may potentially reduce cancer risk.

#### 12. "Raisins as a Source of Inulin"

Medallion Labs, Minneapolis, Minnesota.

California raisins are a good source of inulin, a naturally occurring fiber-like carbohydrate that helps keep the colon healthy. Independent laboratory analysis by Medallion Labs, a laboratory known for their analytical work for nutrition labeling in the U.S., showed that a standard 1/4-cup serving of California raisins contains 1.5 grams of inulin. Recommended daily intake levels of inulin have yet to be established. However, inulin is one of the soluble fibers. Health benefits of inulin are the subject of active research and new functions are being documented. Some of these include its effects on cholesterol levels and gut health. Its role as a prebiotic has received much attention because prebiotics are important to support immune function both in the gut and in the body.

#### 13. "Beneficial Effects of Raisins on Colonic Function with Possible Implications for the Prevention of Colon Cancer"

Gene A. Spiller, Ph.D., Head, Sphera Foundation and Health Research Studies Center, Los Altos, California.

The combination of dietary fiber and tartaric acid in sun-dried raisins plays an important role in colon function and health. The study was designed to test the hypothesis that eating 2 to 4 servings of raisins per day may improve colonic health. Research by Dr. Spiller found a positive correlation between consuming sun-dried raisins and a reduction in some colon cancer risk factors. For example, raisins increased fecal weight and caused material to move through the colon faster (called faster transit time). Increased transit time and increased fecal weight is important not only to have a properly functioning gastrointestinal tract and to reduce constipation and hemorrhoids, it also means that any toxic materials that might be in the diet or produced by metabolism in the gut will have little time to adversely affect the colon wall. Raisins reduced the alkalinity in the colon. Both the faster transit and lowered pH are associated with reduced colon cancer risk. The authors concluded that 2 servings of raisins per day caused moderate but beneficial changes in colon function.

### **Glycemic Effects, Sustainable Energy and Healthy Snacks**

#### 14. "Glycemic Index in the Management of Type 2 Diabetes Mellitus"



Carla Miller, PhD, RD, Ohio State University

The glycemic index of the diet decreased following a 9-week intervention in which 109 diabetics were instructed to increase their intake of fruit and dried fruit, total dietary fiber (including soluble and insoluble fiber) and the percentages of energy from protein and total fat (including saturated and monounsaturated fat) improved. IN addition to a changed GI of the diet, there was a significant reduction in body weight and body mass index (weight (kg)/height (m<sup>2</sup>)) in both men and women and a significant reduction in waist circumference in men. More fruit including raisins and other dried fruit was consumed following the intervention, which is consistent with the dietary pattern recommended in the Dietary Guidelines 2005. These studies show the importance of fruit, including dried fruit, and dietary fiber in the diet of diabetics. Thus, a carbohydrate-controlled portion of raisins can readily be incorporated into a well-constructed diabetic diet.

15. "Determination of the Glycemic and Insulinemic Responses to Raisins and the Application of Raisins as a Pre-exercise Snack for Persons with Impaired Glucose Tolerance"

Craig Mattern, Assistant Professor, State University of New York at Brockport

Raisins fed as a pre-exercise food to 22 exercisers (approximately half with normal and abnormal glucose tolerance) resulted in similar increases in blood glucose to those observed with a popular energy bar. These observed increases in blood glucose for raisins and energy bar were less than a standardized glucodex solution. The blood insulin response to the pre-exercise meal with raisins, especially in a sedentary population, produced statistically lower insulin values than the standardized glucose solution or the energy bar. All three test substances including Raisins resulted in similar mobilization of free fatty acids from adipose tissue during exercise. Thus, raisins resulted in a similar glucose response during exercise when compared to an energy bar and were less than the standardized glucose solution. The good news is that the insulin responses to raisin ingestion prior to, and in the early phases of exercise, were more favorable than those observed with the energy bar. Thus, raisins can be an excellent food for use by exercisers to help deliver the right kind of carbohydrates.

16. "Determination of the Glycemic and Insulinemic Indexes of Raisins in Three Populations"

Steve Hertzler, Ph.D., Assistant Professor of Nutrition, The Ohio State University, Columbus, Ohio.

The glycemic index (G.I.) and insulin index (I.I.) of raisins was determined on three different populations. In 10 sedentary adults, the G.I. of raisins was determined to be an average of 49.4. A nearly identical G.I. value for raisins was found for 10 prediabetic individuals. In the 11 endurance athletes, the G.I. of raisins was 62.3. As expected, the highest insulin index was found in prediabetic subjects (I.I. = 54.4) and the lowest was



found in sedentary subjects (I.I. = 47.3). While the I.I. for athletes was 51.9, the overall insulin excursion in trained athletes was not nearly as great, showing the effects of training on insulin sensitivity and glucose utilization.

Interestingly, California raisins in this study came in as a moderate glycemic food, which is different from the 'high' classification they are given in published tables. Data for published tables have not been collected on California raisins, and the population studied is not from the United States.

#### 17. "Raisin Consumption and Exercise Performance of Endurance Athletes"

Mark Kern, Ph.D., Department of Exercise and Nutritional Sciences, University of California – San Diego, San Diego, California.

Raisins were shown to be a good alternative to sports gels in a study conducted with endurance athletes under two different conditions. In studies by Mark Kern, San Diego State professor and author of the CRC Desk Reference on Sports Nutrition (2005, CRC Press), endurance-trained cyclists (4 males and 4 females) completed two feeding-performance trials where changes in metabolism and cycling performance were compared after consumption of raisins (a moderate to low glycemic index food) versus a commercial sports gel (a high glycemic index food). There were no differences in performance in the 45 minute cycling trial (at 75% VO<sub>2</sub>max). No gastrointestinal discomfort was reported with either the gel or raisins. Measures of metabolic substrates after exercise were the same with both the sports gel and raisins except there were more free fatty acids after the pre-exercise ingestion of raisins. This increase in the free fatty acids indicates that raisins subtly, but favorably, improved metabolism. The authors concluded that raisins have similar performance effects to commercial sports gel products, but raisins are a better alternative since they provide more micronutrients, an acid-neutralizing load to the kidneys and are a more cost-effective and convenient food for use during exercise.

#### 18. "The Effects of a Raisin-Peanut Pre-Event Meal on Indices of Energy and Fatigue in Young, Trained Soccer Players (10-12 Years of Age) Playing a Standard Game"

Gene A. Spiller, Ph.D., Head, Sphera Foundation and Health Research and Studies Center, Los Altos, California.

Feeding raisins along with peanuts and water to 10 to 12 year old children prior to a soccer game resulted in lower increases in blood glucose and insulin than a snack of a white bagel and lemonade. This is important because it means a more steady fuel supply to the exercising muscle of the young players. Lower insulin levels are advantageous because high levels of circulating insulin can promote the laying down of fat and may lead to insulin resistance, a concern among U.S. children today, where rates of obesity and type-2 diabetes are increasing dramatically.

## FUNDED CROP PRODUCTION RESEARCH

### FY 2004-2005

- Development of Improved Raisin Grapes for Mechanical Harvest Including Types Resistant to Powdery Mildew, by David Ramming
- Breeding Rootstocks Resistant to Aggressive Root-Knot Nematodes, by Peter Cousins
- Development, Testing and Introduction of Grape Rootstocks with Broad and Durable Nematode Resistance, by Howard Ferris and M. Andrew Walker
- Developing Sustainable Control Options for the Vine Mealybug in California, by Kent Daane
- Investigation of the Grape Mealybug Complex and its Natural Enemies to Improve Biological Control, by Kent Daane and Mark Battany
- Use of Vine Mealybug Sex Pheromone for Monitoring and Mating Disruption, by Walt Bentley and Kent Daane
- Leafroll Disease Revisited, by D.A. Golino
- Develop and Implement Control Methods for Eutypa Dieback, by Doug Gubler
- Investigations Into Pathogenicity of *Phomopsis viticola* as a Cause of Cankers and Bud Death in Grapes, by George Leavitt
- Pheromones for Sampling Major Mealybug Pests in California Vineyards, by Jocelyn Millar
- Physiological Implications of Harvest Pruning Raisin Grapes, by Matthew Fidelibus
- Evaluation of Training Systems, Trellises, Row Direction, and Grape Cultivars in Dry-on-the-Vine (DOV) Raisin Production, by Matthew Fidelibus
- Evaluation of Canopy Separation and Defoliation Practices for Mechanized Raisin Harvest on traditional Trellises, by Matthew Fidelibus
- Evaluation of Nematode Resistant Rootstocks for Use with Early Ripening Raisin Varieties Grown for Dried-on-the-Vine Raisin Production, by Stephan Vasquez
- Raisin Research on DOV Using the Within Row Alternate Bearing Method (WRAB DOV), by Bill Peacock

## **FUNDED CROP PRODUCTION RESEARCH**

### **FY 2005-2006**

- Raisin Research on DOV Using the Within Row Alternate Bearing Method (WRAB DOV), by Bill Peacock
- Evaluation of Training Systems, Trellises, Row Direction, and Grape Cultivars for Dry-on-Vine (DOV) Raisin Production, by Matthew Fidelibus
- Evaluation of Canopy Separation and Defoliation Practices for Mechanized Raisin Harvest on Traditional Trellises, by Matthew Fidelibus and Stephan Vasquez
- Overhead Arbor Trellis Systems: Canopy Structure and Function in Relation to Irrigation Requirements, by Matthew Fidelibus and Stephan Vasquez
- Physiological Implications of Harvest Pruning Raisin Grapes, by Matthew Fidelibus and D. Smart
- Development of Improved Raisin Grapes for Mechanical Harvest including Types Resistant to Powdery Mildew, by David Ramming
- Development, Testing and Introduction of Grape Rootstocks with Broad and Durable Nematode Resistance, by Howard Ferris and M. Andrew Walker
- Breeding Rootstocks Resistant to Aggressive Root-Knot Nematodes, by Peter Cousins
- Sustainable Controls for Vine Mealybug: Mating Disruption, by Kent Daane

## **FUNDED CROP PRODUCTION RESEARCH**

### **FY 2006-2007**

- Cost of Feasibility of Mechanically Harvested Continuous Tray Dried Raisins, by Stephan Vasquez
- Overhead Arbor Trellis Systems: Canopy Structure and Function in Relation to Irrigation Requirements, by Matthew Fidelibus, Lawrence Schwanki, and Stephan Vasquez
- Evaluation of novel abscission agents to facilitate mechanical harvesting of raisin grapes, by Matthew Fidelibus and Carlos Crisosto
- Development of improved raisin grapes for mechanical harvest including types resistant to powdery mildew, by David Ramming
- Sustainable Controls for Vine Mealybug: Mating Disruption, by Kent Daane and Walt Bentley
- Development, Testing and Introduction of Grape Rootstocks with Broad and Durable Nematode Resistance, by Howard Ferris and M. Andrew Walker
- Grapevine Cultivar and Drying Method Effects on Raisin Yield and Quality, by Matthew Fidelibus and Hildegard Heymann
- Breeding Rootstocks Resistant to Aggressive Root-Knot Nematodes, by Peter Cousins

## **FUNDED CROP PRODUCTION RESEARCH**

### **FY 2007-2008**

- Water use of Thompson Seedless grapevines growing in a weighing lysimeter and trained to an overhead trellis system used for dried on the vine (DOV) raisin production, by Larry Williams
- Evaluation of novel abscission agents to facilitate mechanical harvesting of raisin grapes, by Matthew Fidelibus
- Grapevine cultivar and drying method effects on raisin yield and quality, by David Ramming
- Development, Testing and Introduction of Grape Rootstocks with Broad and Durable Nematode Resistance, by Howard Ferris and M. Andrew Walker
- Breeding Rootstocks Resistant to Aggressive Root-Knot Nematodes, by Peter Cousins
- Sustainable Controls for Vine Mealybug: Mating Disruption, by Kent Daane

## **FUNDED CROP PRODUCTION RESEARCH**

### **FY 2008-2009**

- Evaluation of novel abscission agents to facilitate mechanical harvesting of raisin grapes, by Matthew Fidelibus
- Grapevine Cultivar and Drying Method Effects on Raisin Yield and Quality, by Matthew Fidelibus and Hildegard Heymann
- Development of improved raisin grapes for mechanical harvest including types resistant to powdery mildew, by David Ramming
- Breeding Rootstocks Resistant to Aggressive Root-Knot Nematodes, by Peter Cousins
- Spider mite management, by N. Mills
- Sustainable Controls for Vine Mealybug: Mating Disruption, by Kent Daane
- Sustainable Controls for Vine Mealybug: Biological Control, by Kent Daane

## **FUNDED CROP PRODUCTION RESEARCH**

### **FY 2009-2010**

- Breeding Rootstocks Resistant to Aggressive Root-Knot Nematodes, by Peter Cousins
- Advancing maturity of raisin cultivars using potassium sprays applied to fruit just prior or during the ripening phase, by Bill Peacock
- Development of improved raisin grapes for mechanical harvest including types resistant to powdery mildew, by David Ramming
- Sustainable Controls for Vine Mealybug, by Kent Daane
- Movento, Much More Than an Insect Growth Regulator, by M. McKenry
- Identifying raisin moth damage in raisin production systems, by Stephan Vasquez
- Evaluation of abscission agents for grapes, by Matthew Fidelibus

# Raisin Administrative Committee

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## COMMITTEE ALTERNATES

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Dustin Fuller – **Field Rep.**  
Frank Nersesian – **Field Rep.**