

National Agricultural Statistics Service

Hawaii Agricultural Statistics Service
Hawaii Department of Agriculture
P.O. Box 22159
Honolulu, HI 96823-2159
Telephone: (808) 973-9588
Fax: (808) 973-2909

Hawaii Vegetables

Annual report of harvested acreage, production, and farm value

Mixed Year for Vegetables and Melons

The Hawaii Agricultural Statistics Service estimates production of vegetables and melons at 97.7 million pounds in 2000, down 2 percent from 1999's record high output. Despite the drop in production, farm revenues were at a record high \$45.5 million, up 6 percent from 1999.

Weather fair for vegetable and melon farming

Although weather conditions remained generally dry in 2000, the overall situation did not get severe enough to adversely affect the vital flow of irrigation water to farmers. As a result, average yields were higher for a majority of the State's vegetables and melons as crops benefitted from generally sunny skies, moderate temperatures, and adequate irrigation.

Rainfall readings from National Weather Service Hydronet stations show that the State's major vegetable and melon growing areas were relatively dry in 2000. The Kamuela area of Hawaii island received 51% of its normal rainfall, Maui's Kula region was at 40% of normal, and the Kunia area of Oahu got only 39% of their normal rainfall in 2000. In response to the dryness, water restrictions were imposed on Hawaii, Maui, and Molokai during the spring. For the most part, these notices were voluntary. A mandatory water-reduction notice was issued for Upcountry Maui in March, but farmers were exempt. No water conservation notices were issued for Kauai and Oahu during 2000.

State statistics page 3
Acreage, production, and farm value by crop.

County summaries pages 4-5
Narrative and statistical summary by county.

Changing face of Hawaii's vegetable and melon industry pages 6-7
A review of how the industry has changed in 10 years.

California fresh vegetable statistics page 8
Area harvested, production, price per cwt., and total value for 1999 and 2000.

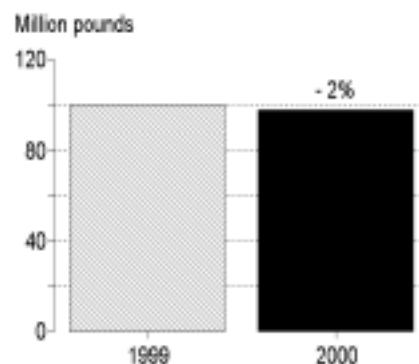
Donald A. Martin
State Agricultural Statistician

Ron Nakamura
Research Statistician

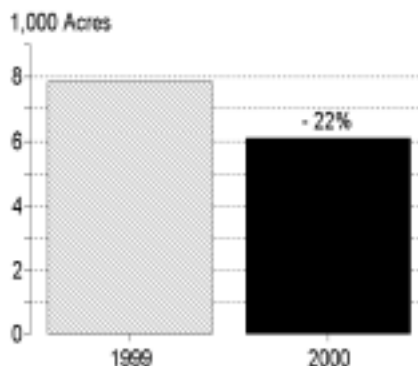
Elyse Taka
Statistical Assistant

Wendell Au
Naomi Landgraf
Robert Miyake
June Okamura
James Yamaki
Research Statisticians

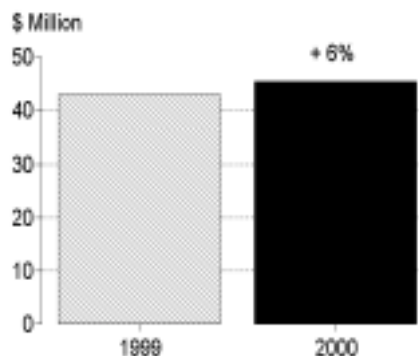
Production of Vegetables and Melons
State of Hawaii, 1999 - 2000



Acres Harvested of Vegetables and Melons
State of Hawaii, 1999 - 2000



Farm Value of Vegetables and Melons
State of Hawaii, 1999 - 2000



Farm revenues reach record high

Vegetable and melon growers rang up record-high farm revenues of \$45.5 million in 2000, up 6 percent from 1999. With overall production down 2 percent in 2000, the increase in farm revenues came mainly from a general rise in farm prices. Of the 25 individually-listed vegetables and melons, 15 showed an increase in farm price while only four (sweet corn, eggplant, sweet potatoes, and watercress) experienced a decline in average farm prices.

Leading all individual vegetables and melons in terms of farm value were tomato growers with \$8.6 million in 2000, up 9 percent from 1999. Watermelons were a distant second at \$3.2 million, up 32 percent. Eleven other vegetables had farm revenues in excess of \$1 million in 2000, including a 24-percent gain for snap beans and new record-highs for Italian squash at \$1.0 million and sweet corn at \$1.3 million.

Significant gains in farm value were also made by dry onions at \$3.1 million (up 34 percent) and the combined category of Other Vegetables and Melons with a total of \$9.7 million (up 7 percent). Pooled into this combined category are more than 70 different vegetables and melons. This diverse mixture includes high-volume crops such as taro leaves, sprouts, melons, and green leaf lettuce. Also included are high-valued crops like organic vegetables, baby vegetables, ethnic vegetables, and specialty salad mix greens.

Of the 12 vegetables that showed a decline in farm value during 2000, sweet potatoes had the largest drop due to a lower farm price and a drop in production. The 11-percent decrease in the farm value of green onions was directly related to a 12-percent decline in production.

Tomato remains top volume producer

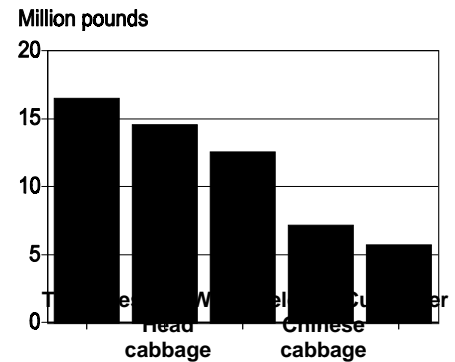
Production of vegetables and melons totaled 97.7 million pounds in 2000, down 2 percent from the record-high 100 million pounds in 1999. Leading all vegetables and melons for the second consecutive year were tomatoes (field-grown and greenhouse tomatoes combined) with a 2000 harvest of 16.5 million pounds, down 2 percent from 1999's record-high of 16.8 million pounds.

A boost in yields kept head cabbage growers in second place with production estimated at 14.6 million pounds, up 2 percent from 1999 and the second largest harvest in the past 8 years. Watermelons remained third as improved yields resulted in a harvest of 12.6 million pounds in 2000, up 11 percent from 1999.

Among the remaining crops, two produced record-high harvests in 2000. Dry onion growers achieved a new record-high harvest with 4.3 million pounds in 2000, up 26 percent from 1999 and 23 percent more than the previous record high set in 1998. Italian squash farmers also achieved a record harvest in 2000 with 2.2 million pounds, up 16 percent from

1999. Just missing a record-high harvest were sweet corn growers with 2.4 million pounds in 2000, second only to the 2.6 million pounds of sweet corn harvested in 1946. Production of snap beans was also notable at 1.2 million pounds, up 20 percent from 1999 and the largest annual output since 1985.

Top 5 vegetables and melons based on volume State of Hawaii, 2000



Vegetables with the largest percentage change in farm value *

State of Hawaii, 2000

Commodity	1999	2000	Change
	----- \$1,000 -----		Percent
Largest increases			
Dry Onions	2,278	3,053	34
Watermelon	2,394	3,150	32
Snap beans	880	1,092	24
Largest decreases			
Sweet potatoes	1,827	1,500	-18
Green onions	1,445	1,290	-11
Watercress	1,116	1,067	-4

* Minimum farm value of \$1 million in 2000.

2000 Vegetable and Melon Statistics

Vegetable and melons: Acreage, production, and value State of Hawaii, 1999 and 2000 ¹

Commodity	Harvested acreage ^{2/}		Production		Farm value	
	1999	2000	1999	2000	1999	2000
	-----Acres-----		-----1,000 pounds-----		-----1,000 dollars-----	
Beans, snap	200	210	1,000	1,200	880	1,092
Bittermelon	40	20	550	300	407	255
Broccoli	75	100	300	400	150	240
Burdock	20	15	250	180	375	270
Cabbage, Chinese	330	320	7,500	7,200	1,425	1,512
Cabbage, head	550	540	14,300	14,600	2,574	2,774
Cabbage, mustard	140	130	1,600	1,500	623	645
Celery	50	50	1,300	1,100	377	341
Corn, sweet	450	440	1,700	2,400	1,086	1,320
Cucumbers	470	400	5,800	5,700	2,494	2,508
Daikon	300	350	2,700	3,100	756	870
Eggplant	70	50	1,500	1,200	1,140	840
Lettuce	170	150	1,500	1,300	735	650
Onions, dry	350	340	3,400	4,300	2,278	3,053
Onions, green	195	150	1,700	1,500	1,445	1,290
Peppers, green	195	200	3,000	2,800	1,590	1,541
Pumpkins	50	15	450	170	176	77
Radish	15	10	130	100	81	63
Romaine	240	190	2,700	2,000	999	860
Squash, Italian	180	180	1,900	2,200	855	1,033
Squash, Oriental	30	25	600	600	216	222
Sweet potatoes	340	260	2,900	2,500	1,827	1,500
Tomatoes	420	500	16,800	16,500	7,896	8,580
Watercress	35	45	970	970	1,116	1,067
Watermelon	570	560	11,400	12,600	2,394	3,150
Other vegetables and melons	2,355	850	14,000	11,300	9,095	9,718
Total vegetables and melons	7,840	6,100	99,950	97,720	42,990	45,471

^{1/} Sum of island estimates may not add to State total due to rounding. Only selected crops are shown separately. All other vegetables and melons are included in the "Other vegetables and melons" category. Does not include ginger root and herbs.

^{2/} Vegetables and melons: Acreage harvested (e.g., 1 acre planted and harvested 3 times during the year = 3 harvested acres). Watercress: Average acreage during the year.

County Summaries

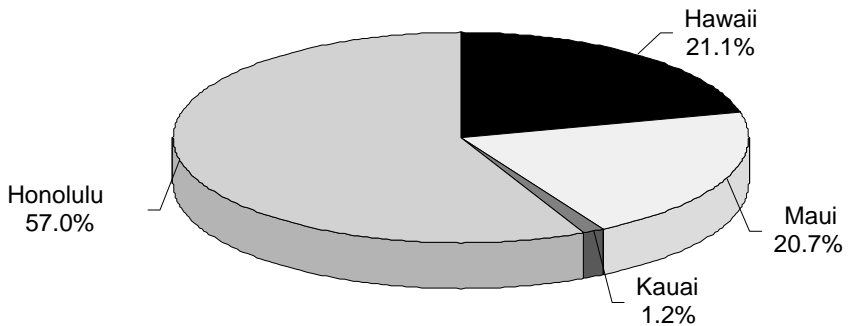
Honolulu leads counties in production of vegetables and melons

Honolulu county accounted for 57.0 percent of the State's total production of vegetables and melons in 2000, an increase from its 53.1 percent share in 1999. Kauai county also increased its share of the total to 1.2 percent, up from 1.0 percent in 1999. On the other hand, Hawaii and Maui counties recorded declining shares at 21.1 percent (down from 24.0 percent) and 20.7 percent (down from 22.0 percent) respectively.

Hawaii county

Big Island farmers produced 20.6 million pounds of vegetables and melons during 2000, down 14 percent from 1999. Most of the drop in production was due to a 36-percent decline in sweet potatoes and a 51-percent decline in Other Vegetables and Melons. The county's top three crops in terms of volume were Chinese cabbage, head cabbage, and daikon. Some of the county's more prominent crops in the category of Other Vegetables and

Distribution of vegetable and melon production by county
State of Hawaii - 2000



Melons were green and red leaf lettuce, sprouts, and various specialty leafy vegetables.

Total farm value of all vegetables and melons for Hawaii county is estimated at \$9.1 million, down 13 percent from 1999. Chinese cabbage was the highest farm revenue vegetable in Hawaii county with

sweet potatoes a close second.

Total harvested acreage of vegetables and melons is estimated at 1,560 acres in 2000, down 22 percent from 1999 mainly due to acreage reductions in sweet potatoes and the combined category of Other Vegetables and Melons.

Maui county

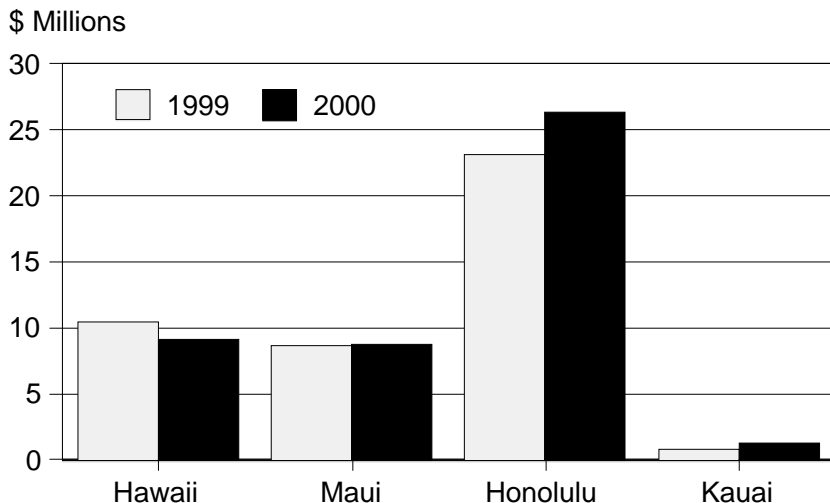
Maui county produced 20.2 million pounds of vegetables and melons during 2000, down 8 percent from 1999. Some of the high volume crops that experienced a decrease in 2000 were dry onions (-7%), tomatoes (-24%), Chinese cabbage (-12%), and head cabbage (-7%).

Total farm revenues are estimated at \$8.7 million for 2000, up 1 percent from 1999. Dry onions remained the top dollar crop in Maui county with tomatoes coming in second.

Maui county farmers harvested 1,315 acres of vegetables and melons in 2000, down 6 percent from 1999. Reductions in Chinese cabbage, romaine, and tomatoes were major contributors to the overall decline.

Farm value of vegetables and melons by county

State of Hawaii, 1999 and 2000



County Summaries

Honolulu county

Vegetable and melon farmers on the island of Oahu led all other counties in 2000 by harvesting 3,080 acres, producing 55.7 million pounds, and generating farm revenues of \$26.4 million. Honolulu county also accounted for at least 50 percent of the production for 11 vegetables and melons.

The three major crops on Oahu were tomatoes, watermelons, and head cabbage. Together, these three crops accounted for 56 percent of all production on Oahu, 41 percent of total farm revenues, and 37 percent of the total harvested acreage during 2000. Other Oahu vegetable crops that had production in excess of one million pounds were cucumbers, green peppers, dry onions, and green onions.

In terms of farm value, tomatoes outdistanced all others with \$6.6 million, up 21 percent from 1999. Tomatoes also accounted for 25 percent of the entire county's farm value.

Kauai county

Total production of all vegetables and melons is estimated at 1.2 pounds for 2000, up 22 percent from 1999. Most of the increase occurred in the combined category of Other Vegetables and Melons with asparagus, salad mix vegetable, and sprouts being major contributors.

Total farm value is estimated at \$1.2 million, up 57 percent from 1999. The large gain in farm revenues can be attributed to the increased production of relatively high-valued crops that comprise the combined category of Other Vegetables and Melons.

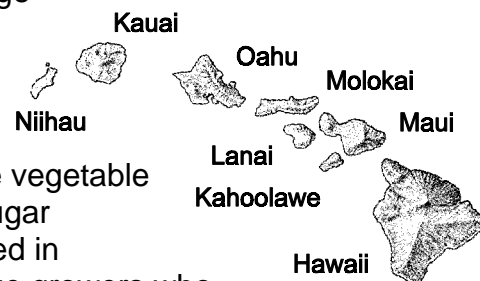
Vegetables and Melons By Counties, State of Hawaii 1996-2000

County	Harvested Acreage	Production (000 lbs.)	Farm Value (\$1,000)
State			
1996	6,020	81,615	30,873
1997	6,270	87,450	34,159
1998	6,255	93,355	39,660
1999	7,840	99,950	42,990
2000	6,100	97,720	45,471
Hawaii			
1996	1,910	22,480	8,755
1997	1,830	23,270	9,211
1998	1,760	22,555	9,057
1999	2,000	23,950	10,421
2000	1,560	20,575	9,097
Maui			
1996	1,565	26,220	10,839
1997	1,455	26,300	11,069
1998	1,540	27,205	11,083
1999	1,395	21,940	8,650
2000	1,315	20,225	8,731
Honolulu			
1996	2,490	32,585	11,049
1997	2,865	36,960	13,141
1998	2,820	42,830	18,765
1999	4,300	53,100	23,121
2000	3,080	55,740	26,388
Kauai			
1996	55	330	230
1997	120	920	738
1998	135	765	755
1999	140	960	798
2000	145	1,170	1,249

Hawaii's Vegetables and Melons

A ten-year review

Hawaii's production of vegetables and melons grew at an average annual rate of 2 percent from 1991 to 2000. Underlying the modest-looking growth rate were significant changes that were taking place in the vegetable and melon industry as the State adjusted to the decline of the sugar industry. Certainly the wane of sugarcane played a key role in the expansion of the vegetable and melon industry by providing land, water, and a pool of ex-sugar workers that found vegetable farming a good way to stay involved in agriculture. However, a major role was also played by a few large growers who had the entrepreneurial spirit to take advantage of the decade's changing times.



Acreage ♦ Production ♦ Farm Value

Harvested acreage increased at an average annual rate of 2 percent over the last ten years. Where the vegetables and melons were being grown, however, has changed dramatically.

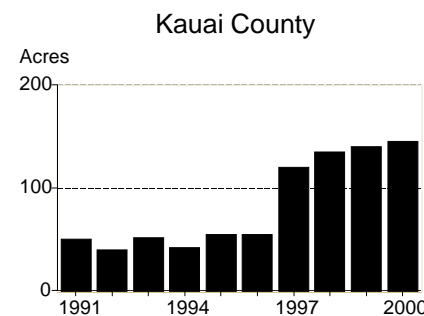
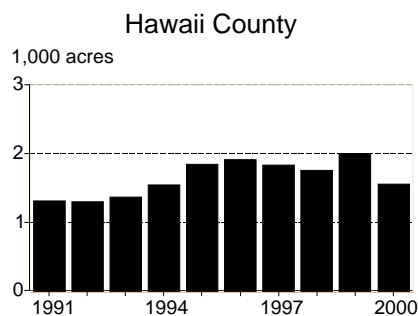
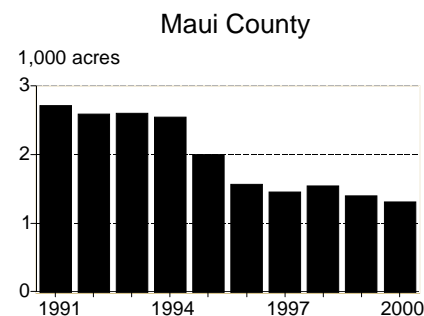
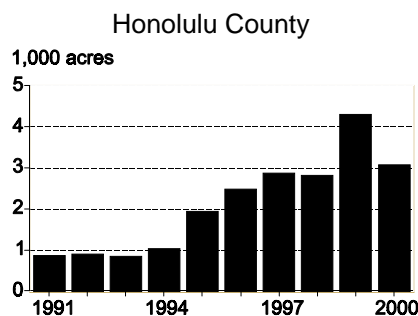
In 1991, Maui county (islands of Maui, Molokai, and Lanai) farmers harvested 55 percent of the entire State's vegetable and melon acreage. This situation changed over the next few years as the diminishing presence of sugarcane in the other counties provided the resources that spurred a shift in the vegetable and melon industry.

Not surprisingly, the major shift was to Oahu where over 70 percent of the population resides and large amounts of land and water became available after the last sugarcane field was harvested in 1996. Mainly due to the enterprising efforts of two large growers, Honolulu county's share of total vegetable and melon harvested acreage grew from 18 percent in 1991 to 51 percent by 2000. Conversely, Maui county's share dropped to 22 percent by the end of the ten-year period.

Vegetable and melon acreage on the islands of Hawaii and Kauai have also increased in recent years as the cultivation of sugarcane waned in those areas. Increases in acreage on these islands, however, have

been limited by their local market size. Together, Kauai and Hawaii counties accounted for 28 percent of the vegetable and melon harvested acreage, the same percentage as in 1991.

Vegetables and Melons Harvested acres, 1991-2000



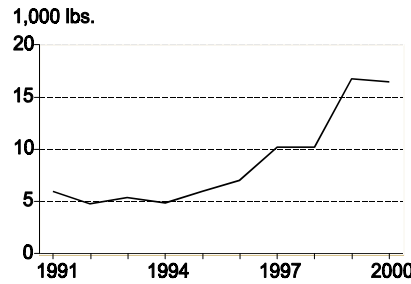
Production of vegetables and melons increased 24 percent from 78.5 million pounds in 1991 to 97.7 million pounds in 2000.

While traditional crops such as watermelons, head cabbage, and Chinese cabbage continue to be a major part of the vegetable industry just as they did in 1991, other crops have gained a larger share of the total. One of those crops is tomato which experienced a 175-percent increase in production between 1991 and 2000. Ten years ago tomatoes were fourth in terms of volume at 6.0 million pounds, today it occupies the top spot at 16.5 million pounds. Italian squash (also known as zucchini) went from a harvest of 710,000 pounds in 1991 to 2.2 million pounds in 2000, a 210-percent increase. On the other hand, the production of some crops have declined. Most notable of these has been lettuce - both head and semi-head. In 1991 lettuce production was estimated at 3.0 million pounds, but disease problems have since reduced output to a total of 1.3 million pounds for 2000, a 57 percent decline.

Just as acreage has shifted from Maui county to Honolulu county, so has the center of production for certain crops. Most evident among these is the production of watermelons and head cabbage (see chart). In 1991, Maui county accounted for 78 percent of the State's head cabbage production. By 2000, Maui's share dropped to 36

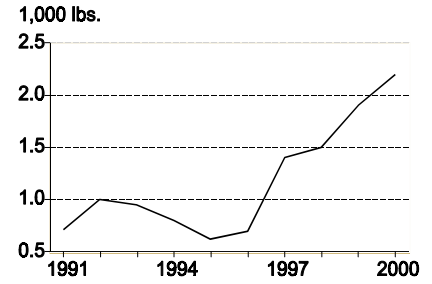


Tomato Production
State of Hawaii, 1991-2000

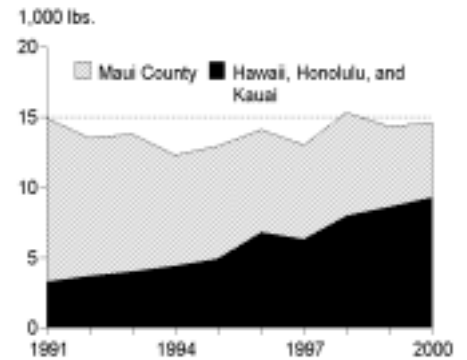


percent while the combined share for the other counties increased from 22 percent in 1991 to 64 percent in 2000. Another shift in production is continuing to occur in sweet potatoes. In 1991, Maui county dominated production with 88 percent of the State's total. Largely related to the demise of sugarcane, production of sweet potatoes increased on the other islands and by 2000, 75 percent of all sweet potatoes were produced in areas outside of Maui county.

Italian Squash Production
State of Hawaii, 1991-2000

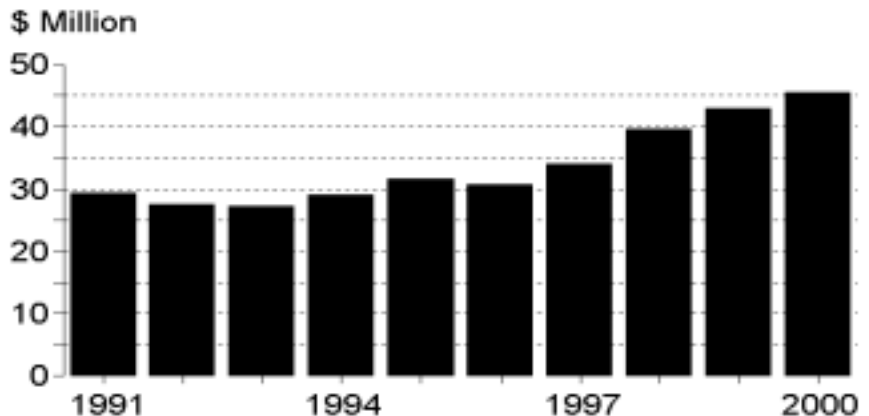


Head Cabbage Production
by County
State of Hawaii, 1991-2000



Farm value of Hawaii's vegetable and melon industry has increased at an average annual rate of 4 percent over the last ten years and 8 percent in the last five years. One of the major contributors has been the combined category of Other Vegetables and Melons. This group of over 70 vegetables and melons accounted for 21 percent of the State's total 2000 farm revenues and has been growing at an average annual rate of 25 percent for the last five years.

Farm Value of Vegetables and Melons
State of Hawaii, 1991 - 2000



California Vegetable Summary

California Fresh Market Vegetable Crops, 1999 and 2000

Crop	Area Harvested		Production		Price Per Cwt. ¹		Total Value	
	1999	2000	1999	2000	1999	2000	1999	2000
	<i>Acres</i>		<i>1,000 cwt.</i>		<i>Dollars</i>		<i>\$1,000</i>	
Asparagus	33,800	37,000	1,115	1,184	142.00	122.00	158,330	144,448
Snap Beans	5,100	5,500	485	550	58.90	57.10	28,567	31,405
Bell Peppers	22,500	29,200	7,425	8,929	29.80	28.80	220,997	257,367
Cabbage	12,500	13,700	4,000	5,069	13.40	15.70	53,600	79,583
Carrots	87,000	86,500	25,665	25,085	17.20	13.40	441,438	336,139
Celery	25,000	23,500	17,500	16,568	12.00	18.70	209,940	309,711
Cucumbers	6,500	6,500	2,015	1,853	26.80	28.40	54,002	52,625
Head Lettuce	140,000	143,500	53,200	53,095	13.70	18.90	728,840	1,003,496
Romaine	31,000	35,000	9,765	10,290	18.00	19.80	175,770	203,742
Watermelons	14,700	12,300	6,321	6,150	9.80	11.80	61,946	72,570

¹ Price is on a packed and loaded basis, f.o.b. shipping point.

Source: California Agricultural Statistics Service