

Current Trends in Cucurbit Production in the U.S.

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Cucurbit crop production in the U.S. is broken down into seven major classes of crops: cucumber-fresh, cucumber-processing, cantaloupe, honeydew, pumpkin, squash, and watermelon. Total U.S. field production of all classes is slightly below 109 million metric tons on 229,000 hectares, with a value of \$1.43 billion. The bulk of cucurbit production is centered in a few states, such as Florida, North Carolina, Michigan, Texas, California, and Georgia. Florida has been the leader in fresh market production of cucumber, squash, and watermelon, while Michigan leads production of processed cucumbers, and California and Arizona lead production of honeydews and cantaloupe. In recent years, some competition has begun on production of fresh market cucumbers from greenhouse sources. Mexico and Canada lead the countries importing fresh market cucurbits into the U.S.

The top 15 vegetables produced in the U.S. by acreage, production, and value are potato, lettuce, sweet corn, onions, watermelon, broccoli, tomato, snap bean, cantaloupe, carrots, cabbage, cucumber, bell pepper, squash, strawberry (Table 1, 2 and 3). Potato and lettuce rank 1st and 2nd for all three categories. Of the other top 15 commodities, the cucurbit crops watermelon, cantaloupe, cucumber and squash rank 5th, 9th, 12th, and 14th in harvested area, respectively. For total production, these crops rank 4th, 11th, 13th, and 14th, respectively. Though these cucurbit commodities are in the top 15 ranking, they all fall to the bottom of the list when it relates to total value. Watermelon, cantaloupe, squash, and cucumber come in at 11th, 12th, 14th, and 15th, respectively, for total production value. Of the \$11 billion U.S. vegetable industry, these four cucurbit crops contribute about 9.5% of the value, while the majority of the value is contributed via potato, lettuce, strawberry, and tomato (68%).

Cucurbit crop production has changed greatly over the last 10 years (Table 4). In 1994, reports for processing cucumber, pumpkin and squash were not available on the national level, but were available in 2004. Harvested area for fresh market cucumber dropped nearly in half from 1994 to 2004, however production increased slightly. Harvested area for cantaloupe dropped significantly from greater than 40,000 ha to approximately 15,000 ha. Regardless of the drop in acreage, production for cantaloupe increased more than four-fold. Honeydew acreage, much like that of cantaloupe, decreased to nearly one-third in 2004 from that in 1994, but production increased slightly. Production area for watermelon also decreased to less than one-fourth the area in 1994, but unlike fresh market cucumber, cantaloupe and honeydew, production slightly decreased. Processing cucumber is a significant portion of the cucumber industry based on data available in 2004 (Table 4). Both acreage and tons produced far exceed those figures reported for fresh market cucumber. Furthermore, pumpkin and squash production now exceeds that reported for honeydew, which may explain why in 2004 these crops were included in the government reports.

Though acreage decreased for cucumber, cantaloupe, honeydew, and watermelon, production increased or remained similar from 1994 to 2004. These events may be explained by the implementation of improved cultivars and technology at the farm level. Many of these crops were once a second crop behind a more valuable commodity such as tomato, but may now be grown solely as an initial crop using plastic mulch and drip irrigation. The loss of acreage may be a result in the loss of entire farms, possible due to

older generation of families getting out of the farming business entirely. Much of the desirable farm land in the state of Florida is being converted for urban development around coastal areas. Other farms may have gone out of business due to market competition from foreign imports, especially from Mexico.

When comparing these same six cucurbit crops for yield and value changes from 1994 to 2004, nearly all crops increased in yield per hectare and value per carton (1 carton = 45 kg), leading to an overall increase in total value per crop (Table 5). Only cantaloupe decreased slightly in value per carton, but because yield per hectare increased 21%, total value resulted in a slight increase as well.

Though reasons for these changes are not uniformly established, watermelon production value has increased dramatically in the conversion from seeded to seedless watermelon. Seedless watermelon yields are slightly higher than traditional seeded watermelons, but more so, they demand a much higher price at retail.

Changes in production area for cucumber, cantaloupe, honeydew, pumpkin, squash, and watermelon for the top five production states shows that for nearly all crops and all states, acreage has declined from 1994 to 2004 (Table 6). For both fresh market and processing cucumber, as well as squash, acreage increased only for Michigan. Cantaloupe acreage increased for the states of Arizona and Georgia. Honeydew production was only reported for three states in which all three decreased with acreage decline in the state of Texas in 2004 to less than one-half from 10 years earlier. For pumpkin, acreage increased for 4 out of 5 states, and decreased only in the state of California. Watermelon acreage increased or remained the same for 3 states, Florida, Georgia and California, and declined for Texas and North Carolina. As mentioned previously, these changes in acreage at the state level are a result of farm dynamics and market competition.

In 2004, Florida ranked 2nd for production of fresh market cucumber, 4th for processing cucumber, 1st for squash production and 3rd for watermelon production (Table 7). Combined, these four crops contribute a farm gate value of nearly \$200 million to the Florida economy, or 14% of Florida's vegetable industry (FDACS, 2005).

Competition from Mexico and Canada has increased over the last decade. Mexico now exports nearly \$5.8 billion in cucumbers, squash, and melons to the U.S. market and Canada exports approximately \$60 million in cucumbers (USDA-FAS, 2004). While all of the imports of Canadian cucumber are produced in greenhouses, only about 10% of Mexican cucumbers are from greenhouses (Steta, 2004). Figures of the Mexican greenhouse industry are changing rapidly and the percentage of cucumber imports from greenhouses will increase dramatically in the next few years as the acreage of Mexican greenhouses has increased to nearly 3000 hectares in 2004 from 1000 in 2001 (Steta, 2004). Competition from these two countries has the potential to further change the dynamics of the U.S. cucurbit industry. Mexico has lower labor costs, low fossil fuel inputs and great ability to expand their industry and marketing power by implementing greenhouse technology from Dutch, Israeli, Spanish, French, Canadian, and Mexican innovators. On the other hand, the Canadian greenhouse industry has well-developed production and marketing strategies currently in place to proceed in a highly competitive industry (Cantliffe and Vansickle, 2002).

The U.S. cucurbit industry has held strong for its commodities. As technology advances and consumers continue to demand a high-quality product, the U.S. cucurbit industry will continue to prosper.

Literature Cited

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Tables

Table 1. Top 15 vegetables in the U.S.: harvested area (hectares).

Rank	Crop	Year (2004)
1	Potato	4730845
2	Lettuce (all types)	131382
3	Sweet corn	99711
4	Onions	67495
5	Watermelon	57186
6	Broccoli	55850
7	Tomato	51192
8	Snap bean	37625
9	Cantaloupe	36430
10	Carrots	33980
11	Cabbage	30720
12	Cucumber	22750
13	Bell pepper	22235
14	Squash	21303
15	Strawberry	20898

Source: National Agriculture Statistics Service, U.S. Department of Agriculture.
<http://www.usda.gov/nass/> (last accessed 2 Sept. 2005).

Table 2. Top 15 vegetables in the U.S.: total production (1000 MT).

Rank	Crop	Year (2004)
1	Potato	20536
2	Lettuce (all types)	4938
3	Onions	3640
4	Watermelon	1657
5	Tomato	1625
6	Sweet corn	1310
7	Carrots	1204
8	Cabbage	1127
9	Strawberry	996
10	Broccoli	933
11	Cantaloupe	912
12	Bell pepper	756
13	Cucumber	434
14	Squash	349
15	Snap bean	266

Source: National Agriculture Statistics Service, U.S. Department of Agriculture.
<http://www.usda.gov/nass/> (last accessed 2 Sept. 2005).

Table 3. Top 15 vegetables in the U.S.: total value (1000 US dollars).

Rank	Crop	Year (2004)
1	Potato	2,564,165
2	Lettuce (all types)	2,064,897
3	Strawberry	1,471,251
4	Tomato	1,342,478
5	Onions	863,295
6	Broccoli	676,683
7	Sweet corn	618,790
8	Bell pepper	576,375
9	Carrots	543,098
10	Cabbage	346,775
11	Watermelon	313,458
12	Cantaloupe	300,578
13	Snap bean	267,005
14	Squash	222,718
15	Cucumber	212,734

Source: National Agriculture Statistics Service, U.S. Department of Agriculture.
<http://www.usda.gov/nass/> (last accessed 2 Sept. 2005).

Table 4. US cucurbit crop production, 1994 vs. 2004.

Crop	Harvested area (ha)	Tons produced (1000 kg)
1994		
Cucumber (F)	23,263	427,441
Cucumber (P)	n/a	n/a
Cantaloupe	40,820	815,248
Honeydew	10,975	214,606
Pumpkin	n/a	n/a
Squash	n/a	n/a
Watermelon	82,170	1,781,133
2004		
Cucumber (F)	9,213	434,340
Cucumber (P)	18,620	1,054,800
Cantaloupe	14,755	912,150
Honeydew	3,560	229,005
Pumpkin	7,400	448,875
Squash	8,628	349,020
Watermelon	23,160	1,656,720

Source: National Agricultural Statistics Service, U.S. Department of Agriculture. Vegetable Summary 1994 and 2004. F = fresh market, P = processed. n/a = data not available.

Table 5. US cucurbit crop value, 1994 vs. 2004.

Crop	Yield per ha (kg)	\$ per 45 kg	Total value (\$1000)
1994			
Cucumber	18360	16.00	150,925
Cantaloupe	19954	16.60	298,067
Honeydew	19524	16.40	77,473
Pumpkin	n/a	n/a	n/a
Squash	n/a	n/a	n/a
Watermelon	21657	6.80	267,828
2004			
Cucumber	19245	22.00	212,734
Cantaloupe	25245	14.80	300,578
Honeydew	26265	17.60	89,731
Pumpkin	24772	10.00	99,835
Squash	16515	28.70	222,718
Watermelon	29202	8.51	313,458

Source: National Agricultural Statistics Service, U.S. Department of Agriculture. Vegetable Summary 1994 and 2004. n/a = data not available.

Table 7. Cucurbit production in Florida, 2004.

Crop	Harvested area (ha)	Total produced (1000 kg)	Value (\$1000)
Cucumber (F)	4333	114181	50,522
Cucumber (P)	2635	116950	32,874
Squash	4172	60791	45,392
Watermelon	10125	363200	67,200

Source: National Agricultural Statistics Service, U.S. Department of Agriculture. Vegetable Summary 2004. F = fresh market, P = processing.

Table 6. Comparison for production area per top five U.S. states for cucurbit crops, 1999 vs. 2004.

State	1999	2004
Cucumber (F)		
Georgia	6075	5670
Florida	4375	4333
North Carolina	2600	2552
Michigan	2835	3000
California	2633	1377
Cucumber (P)		
Michigan	10935	13975
North Carolina	6966	6683
Texas	4131	2673
Florida	2754	2635
Wisconsin	2106	1863
Cantaloupe		
California	23288	20655
Arizona	6035	7169
Texas	4374	3038
Georgia	2228	2673
Indiana	1215	1094
Honeydew		
California	8305	7250
Arizona	1700	1015
Texas	1134	530
Pumpkin		
Illinois	3605	5063
Pennsylvania	2592	3445
California	2390	1782
New York	2310	2552
Ohio	2228	2511
Squash		
Florida	4536	4172
Georgia	4253	4050
California	3362	3038
Michigan	2147	2835
North Carolina	1620	1215
Watermelon		
Texas	16200	11138
Florida	10935	10935
Georgia	9720	12151
California	4982	5468
North Carolina	4050	3038

Source: National Agricultural Statistics Service, U.S. Department of Agriculture. Vegetable Summary 1994 and 2004.