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# Vegetables and Pulses Outlook

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## U.S. Dry Edible Pea Area Harvested Projected at Record-High

The 2016 estimate by USDA, National Agricultural Statistics Service for dry pea area harvested is set to be a new record. Record-setting planted area in 2016 and expectations of trend yields for both dry peas and lentils underpin significant increases in year-to-year production forecasts for both crops. Dry edible pea production is projected to increase 18 percent above 2015 to reach 22.3 million hundredweight (cwt). Lentil production is projected at 11.5 million cwt a 118 percent increase over the 2015 estimate.

During the first 6 months of 2016, prices at the point-of-first-sale (farm price) for most commercial fresh-market vegetables were above a year earlier, in part driven by reduced shipments. Overall, shipment volume was down 30 percent between June and July 2016 and 15 percent from July 2015. As California enters its fifth year of drought, there was reduced shipment volume from the State.

According to the August 26 *California Processing Tomato Report*, California tomato processors anticipate contracting a total of 12.8 million short tons in 2016—a 11-percent decrease from a year ago. Even with the reduced production forecast, supplies of most tomato products will likely be adequate given the plentiful stocks from last year’s large crop. Processing tomatoes account for three-fourths of annual processing vegetables (excluding potatoes and sweet potatoes) output.

The 2016 fall-season potato acreage indicates a 3-percent decline in planted and harvested acreage from a year ago. U.S. fall-season potato growers planted 916,400 acres in 2016—the lowest area since 2010. A number of factors likely contributed to the decline, including decreasing prices since the 2014/15 marketing year.

Reflecting continued demand, mushroom (*Agaricus* and others) volume sales reached 945.6 million pounds in the 2015/16 crop year (July-June), up 2 percent from a year ago. The farm value of mushrooms, however, declined 1 percent to \$1.2 billion in 2015/16 due to lower prices for *Agaricus* mushrooms.

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# Industry Overview

Table 1—U.S. vegetable and pulse industry at a glance, 2013-16<sup>1</sup>

Item	Unit	2013	2014	2015p	2016f	Percent Change 2015-16
<i>Area harvested</i>	1,000 acres	6,120	6,504	6,972	7,412	6.3
<i>Vegetables:</i>						
Fresh (excluding melons)	1,000 acres	1,425	1,393	1,395	1,404	0.7
Processing	1,000 acres	1,053	1,098	1,076	1,049	-2.5
Potatoes	1,000 acres	1,051	1,051	1,053	1,022	-3.0
Dry beans, peas and lentils	1,000 acres	2,474	2,824	3,292	3,772	14.6
Other <sup>2</sup>	1,000 acres	116	138	156	164	5.1
<i>Production</i>	Million cwt	1,218	1,275	1,270	1,267	-0.2
<i>Vegetables:</i>						
Fresh (excluding melons)	Million cwt	359	358	347	354	2.0
Processing	Million cwt	344	386	388	379	-2.5
Potatoes	Million cwt	435	442	440	428	-3.0
Dry beans, peas and lentils	Million cwt	46	50	54	63	17.4
Other <sup>2</sup>	Million cwt	34	39	40	44	8.9
<i>Crop value</i>	\$ millions	19,746	19,293	20,376	21,704	6.5
<i>Vegetables:</i>						
Fresh (excluding melons)	\$ millions	10,579	9,890	11,074	12,523	13.1
Processing	\$ millions	2,126	2,357	2,282	2,212	-3.1
Potatoes	\$ millions	4,017	3,928	3,848	3,745	-2.7
Dry beans, peas and lentils	\$ millions	1,323	1,296	1,263	1,294	2.5
Other <sup>2</sup>	\$ millions	1,701	1,823	1,908	1,930	1.1
<i>Unit value</i> <sup>3</sup>	\$/cwt	16.22	15.14	16.04	17.13	6.8
<i>Vegetables:</i>						
Fresh (excluding melons)	\$/cwt	29.45	27.66	31.91	35.39	10.9
Processing	\$/cwt	6.18	6.11	5.88	5.84	-0.6
Potatoes	\$/cwt	9.24	8.88	8.74	8.76	0.3
Dry beans, peas and lentils	\$/cwt	28.91	25.73	23.42	20.44	-12.7
Other <sup>2</sup>	\$/cwt	50.53	47.24	47.35	43.96	-7.2
<i>Trade</i>						
<i>Imports</i>	\$ millions	11,407	11,730	12,138	13,814	13.8
<i>Vegetables:</i>						
Fresh (excluding melons)	\$ millions	6,368	6,385	6,618	8,038	21.5
Processing <sup>4</sup>	\$ millions	2,882	3,083	3,269	3,387	3.6
Potatoes & products	\$ millions	1,176	1,177	1,152	1,254	8.9
Dry beans, peas and lentils	\$ millions	218	264	252	221	-12.4
Other <sup>5</sup>	\$ millions	763	820	847	914	7.9
<i>Exports</i>	\$ millions	6,725	6,979	6,799	7,025	3.3
<i>Vegetables:</i>						
Fresh (excluding melons)	\$ millions	2,146	2,183	2,087	2,209	5.9
Processing <sup>4</sup>	\$ millions	1,649	1,807	1,811	1,676	-7.5
Potatoes & products	\$ millions	1,676	1,698	1,672	1,734	3.7
Dry beans, peas and lentils	\$ millions	743	769	699	813	16.3
Other <sup>5</sup>	\$ millions	511	522	529	592	11.9
<i>Per-capita use</i>	Pounds	381.5	384.8	373.9	381.2	1.9
<i>Vegetables:</i>						
Fresh (excluding melons)	Pounds	140.6	141.7	139.7	139.7	0.04
Processing	Pounds	110.8	112.8	101.5	112.3	10.62
Potatoes & products	Pounds	113.3	112.1	113.7	109.2	-3.92
Dry beans, peas and lentils	Pounds	6.7	6.9	7.6	7.4	-2.03
Other <sup>2</sup>	Pounds	10.1	11.3	11.6	12.6	9.11

p = preliminary. f = forecast. <sup>1</sup>Total rounded. <sup>2</sup>Includes sweet potatoes and mushrooms. <sup>3</sup>Ratio of total value to total production. <sup>4</sup>Includes canned, frozen, and dried. Excludes potatoes, pulses, and mushrooms. <sup>5</sup>Other includes mushrooms, sweet potatoes, and vegetable seed. All trade data are on a calendar-year basis. Note: Hundredweight (cwt), a unit of measure equal to 100 pounds.

Sources: USDA, Economic Research Service, using data from USDA, National Agricultural Statistics Service, *Crop Production, Acreage, Agricultural Prices, Crop Values, Mushrooms, and Potatoes*; and from U.S. trade data from U.S. Department of Commerce, U.S. Census Bureau.

## Fresh-Market Vegetables

### *Fresh Vegetable Prices Up; Shipment Down*

According to USDA, Agricultural Marketing Service, shipment volumes for many fresh-market vegetables in July were lower compared with the previous year. Overall, volume was down 30 percent between June and July 2016 and 15 percent from July 2015. As California enters its fifth year of drought, there was reduced shipment volume from the State. For instance, shipments from Central California (which account for the majority of volume during summer months) were 8 percent below a year earlier in July. Florida shipped 84 percent of the field-grown round tomato market January to June of 2016. The State was also the source of 91 percent of the Roma/plum tomato supply and 99 percent of the cherry tomato supply. California, which does not ship field-grown round tomatoes until June, supplied more than 50 percent June to July of this year.

During the first 6 months of 2016, point-of-first-sale (farm price) for most commercial fresh-market vegetables were above a year earlier, in part driven by reduced shipments. Average prices for snap beans rose 97 percent from a year earlier, followed by onions (up 82 percent), sweet corn (up 60 percent), and celery (up 47 percent) among others. On the other side, January-June farm prices averaged lower for broccoli (down 28 percent), field tomatoes (down 19 percent), asparagus (down 12 percent), and head lettuce (down 12 percent). The price index for all vegetables were 7 percent higher than from 2015.

Table 2--Selected U.S. fresh-market vegetable shipments<sup>1</sup>

Item	Annual 2015	June 2016	July		Change previous <sup>2</sup> :	
			2015	2016	Month	Year
-----1,000 cwt-----					Percent	
Asparagus	4,618	415	323	221	-47	-32
Snap beans	3,973	213	131	97	-54	-26
Broccoli	10,855	889	680	741	-17	9
Cabbage	11,715	436	673	310	-29	-54
Chinese cabbage	937	83	46	72	-13	57
Carrots	10,901	1,017	908	735	-28	-19
Cauliflower	4,388	440	421	352	-20	-16
Celery	16,252	1,381	1,083	1,108	-20	2
Sweet corn	13,034	3,268	904	891	-73	-1
Cucumbers	21,306	1,008	1,350	488	-52	-64
Greens	3,256	293	101	136	-54	35
Head lettuce	29,775	2,420	2,527	2,169	-10	-14
Lettuce, romaine	21,363	1,607	1,520	1,436	-11	-6
Lettuce, others	5,424	509	434	347	-32	-20
Onions, dry bulb	50,668	4,097	3,868	3,687	-10	-5
Onions, green	3,629	296	281	234	-21	-17
Peppers, bell	20,219	1,638	1,387	981	-40	-29
Peppers, chile	10,017	740	745	756	2	1
Squash	10,053	534	302	316	-41	5
Tomato, field, round	18,339	1,664	1,356	1,147	-31	-15
Tomato, field, Roma	7,027	533	449	413	-23	-8
Tomato, ghouse <sup>3</sup>	26,222	2,444	1,953	1,603	-34	-18
Tomato, small <sup>4</sup>	3,047	167	107	94	-44	-12
Selected total	307,018	26,092	21,549	18,334	-30	-15

<sup>1</sup>1,000 cw t = 100,000 lbs. Data for 2016 are preliminary and include domestic and partial imports.

<sup>2</sup>Change from July 2016. <sup>3</sup>All tomatoes produced under cover. <sup>4</sup>Grape and cherry tomatoes.

Source: USDA, Agricultural Marketing Service, *Fruit and Vegetable Market News*.

Table 3—U.S. quarterly fresh-market grower (point-of-first-sale) prices, 2015-16

Commodity	2015			2016				Change 2nd Q <sup>1</sup> Percent
	2Q	3Q	4Q	1Q	2Q	3Q *	4Q *	
	-- Cents/pound (\$/cwt) --							
Asparagus	115.77	--	--	64.00	127.00	--	--	9.7
Snap beans	70.05	--	95.40	105.37	44.60	76.17	67.97	-36.3
Broccoli	31.60	48.40	69.30	12.17	45.57	31.62	42.53	44.2
Carrots	31.27	30.17	31.73	35.03	36.57	25.44	27.04	17.0
Cauliflower	51.80	43.13	124.53	48.07	65.97	34.86	62.87	27.3
Celery	21.00	21.10	30.80	38.63	15.67	16.87	18.99	-25.4
Sweet corn	28.03	31.83	32.77	56.67	28.63	23.94	26.46	2.1
Cucumbers	27.90	29.07	33.85	41.85	28.90	27.57	27.64	3.6
Lettuce, head	17.17	34.47	30.80	20.10	20.40	37.22	35.67	18.8
Onions, dry bulb	13.80	19.77	12.23	14.87	24.87	14.44	9.35	80.2
Tomatoes, field	34.23	37.80	41.20	38.07	24.67	30.88	40.62	-27.9
All vegetables <sup>2</sup>	105.00	106.00	121.00	110.00	107.00	97.00	100.00	1.9

-- = not available. \* = ERS forecast. <sup>1</sup>Change in 2nd quarter 2016 over 2nd quarter 2015.

<sup>2</sup>Price index with base period of 2011 (the period when the index equaled 100).

Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, *Agricultural Prices*.

### ***Retail Prices Up 1 Percent from Last Year***

The Consumer Price Index (CPI) for fresh-market vegetables rose 1 percent from a year ago this July. The CPI for potatoes and other vegetables also rose this period while tomatoes and lettuce decline 1.2 and 2.8 percent, respectively. Between June and July, CPI declined for lettuce even though the Producer Price Index (PPI) for lettuce was up 7 percent. Conversely, the CPI for tomatoes rose 0.7 percent between June and July while PPI decreased 31.3 percent.

According to the USDA Agricultural Marketing Service's *Market News*, average advertised prices at major national retail supermarket outlets for selected vegetables in July 2016 (compared to July 2015) were as follows:

- asparagus (green) fell 8 percent from July 2015 to \$2.82/lb
- green beans increased 13 percent to \$1.46/lb
- broccoli (crown cut) rose 12 percent to \$1.57/lb
- organic baby carrots increased 10 percent to \$1.76/lb
- baby carrots declined slightly (less than 1 percent) to \$1.30/lb
- cauliflower increased 11 percent to \$1.14/lb
- sweet corn rose 10 percent to 38 cents/ear
- organic kale greens increased 14 percent to \$1.55/bunch
- iceberg lettuce increased 3 percent to \$1.12/head
- Romaine lettuce fell 6 percent to \$1.14/each
- onions (green) rose 3 percent to 57 cents/bunch
- green bell peppers decreased 4 percent to \$1.43/lb
- round field-grown tomatoes increased 13 percent to \$1.55/lb
- Roma (plum-type) tomatoes decreased 2 percent to \$1.01/lb

Table 4--Fresh vegetables: Consumer and producer price indexes

Item	2015	2016		Change previous <sup>1</sup> :	
	July	June	July	Month	Year
	----- Index -----			---- Percent ----	
Consumer Price Indexes (1982/84 = 100)					
Food at home	241.5	238.4	238.2	-0.1	-1.4
Food away from home	255.9	262.5	263.1	0.2	2.8
Fresh vegetables	312.1	316.0	315.3	-0.2	1.0
Potatoes	338.8	337.9	341.5	1.1	0.8
Tomatoes, all	312.8	306.8	309.1	0.7	-1.2
Lettuce, all	292.7	296.1	284.5	-3.9	-2.8
Other vegetables	313.2	322.0	322.3	0.1	2.9
Producer Price Indexes (1991=100)					
Fresh vegetables (excl. potatoes) <sup>2</sup>	209.9	226.3	225.4	-0.4	7.4
Beets	145.9	110.7	88.8	-19.8	-39.1
Broccoli	127.5	186.2	148.1	-20.5	16.2
Cabbage <sup>2</sup>	131.1	230.5	223.0	-3.3	70.1
Carrots <sup>2</sup>	202.4	192.5	175.6	-8.8	-13.2
Cauliflower	47.9	68.4	48.3	-29.4	0.8
Celery <sup>2</sup>	202.7	164.3	188.0	14.4	-7.3
Cucumbers	313.8	323.1	323.1	0.0	3.0
Eggplants	298.5	304.0	367.4	20.9	23.1
Endive	574.0	488.9	476.0	-2.6	-17.1
Green peas	134.1	--	250.2	--	86.6
Greens	190.4	173.4	169.2	-2.4	-11.1
Lettuce <sup>2</sup>	334.1	251.6	269.2	7.0	-19.4
Onions, dry bulb <sup>2</sup>	271.5	200.8	205.5	2.3	-24.3
Peppers, green	493.5	415.6	371.6	-10.6	-24.7
Spinach	439.3	241.4	307.8	27.5	-29.9
Squash	236.2	291.7	232.1	-20.4	-1.7
Sweet corn <sup>2</sup>	153.1	135.7	216.2	59.3	41.2
Tomatoes <sup>2</sup>	165.5	267.9	184.0	-31.3	11.2

<sup>1</sup>Change in July 2016 from previous month/year. <sup>2</sup>Index base is 1982=100.

Source: U.S. Dept. of Labor, Bureau of Labor Statistics (<http://www.bls.gov/data/home.htm>).

### ***Fresh Imports and Exports Up***

According to the U.S. Census Bureau, during the first half (January-June) of 2016, the volume of fresh-market vegetable imports (excluding potatoes, sweet potatoes, melons, and mushrooms) rose 13 percent from a year earlier. With the exception of endive, import volume of all major vegetable categories increased during this period. Fresh-market tomatoes, which accounted of 28 percent of total imports, rose 16 percent or 323 million pounds, followed by squash at 99 million pounds (20 percent), sweet peppers at 90 million pounds (12 percent), and onions at 83 million pounds (15 percent). The top three sources of fresh-market vegetable imports so far in 2016 included Mexico (85 percent of the total), Canada (6 percent), and Peru (2 percent). Collectively, these countries represent 93 percent of fresh-market vegetable imports.

On the export side, U.S. fresh-vegetable export volume through June increased 2 percent to almost 1.9 billion pounds. Dry onions and cauliflower, which combined accounted 19 percent of total exports, contributed to most of the overall increase. Top foreign destinations for this period were Canada (76 percent of total exports),

followed by United Kingdom (6 percent), and Japan (5 percent). United Kingdom, which was ranked third place last year, moved up to second.

Table 5--Selected fresh-market vegetable trade volume, 2014-16<sup>1</sup>

Item	2015	January - June			Change
	Annual	2014	2015	2016	2015-16
	----- Million pounds -----				Percent
Exports, fresh:					
Onions, dry bulb	591	245	211	258	22
Lettuce, head	261	140	140	130	-7
Lettuce, other	432	243	222	221	0
Tomatoes	214	110	107	87	-19
Cauliflower	222	165	139	154	11
Carrots	179	148	120	118	-1
Celery	257	154	147	141	-4
Other	1,309	771	751	762	1
Total	3,464	1,975	1,838	1,871	2
Imports, fresh:					
Tomatoes, all	3,468	2,098	2,011	2,334	16
Cucumbers	1,785	987	1,034	1,104	7
Peppers, sweet	1,217	742	728	818	12
Lettuce, all	494	202	228	240	5
Onions, dry bulb	1,071	619	559	641	15
Peppers, chile	874	380	365	419	15
Squash <sup>2</sup>	820	500	498	597	20
Asparagus	431	271	250	326	31
Other	3,164	1,577	1,636	1,747	7
Total	13,326	7,376	7,309	8,226	13

<sup>1</sup>Excludes melons, potatoes, mushrooms, dry pulses, and sweet potatoes. <sup>2</sup>Excludes chayote.  
Source: USDA, Economic Research Service based on data from U.S. Department of Commerce, U.S. Census Bureau.

Table 6--Fresh-market vegetables: imports by country, 2014-16<sup>1</sup>

Item	2015	January - June			Change
	Annual	2014	2015	2016	2015-16
	----- Million pounds -----				Percent
Mexico	10,346	6,237	6,194	7,044	14
Canada	1,582	458	480	494	3
Peru	438	113	105	123	17
Costa Rica	209	106	101	112	11
China	105	55	49	47	-4
Others	646	406	379	407	7
Total	13,326	7,376	7,309	8,226	13

<sup>1</sup>Excludes melons, potatoes, mushrooms, dry pulses, and sweet potatoes.  
Source: USDA, Economic Research Service based on data from U.S. Department of Commerce, U.S. Census Bureau.

# Processing Vegetables

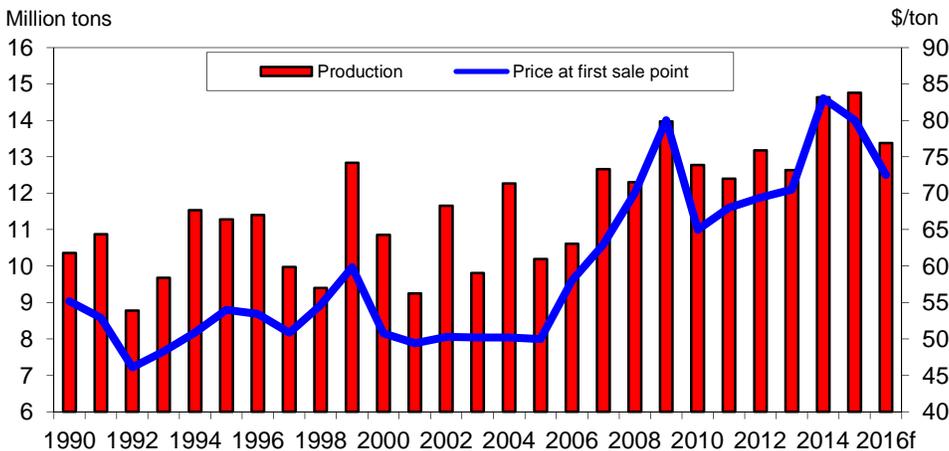
## Prospective Tomato Area Down

According to the August 26 *California Processing Tomato Report*, NASS, USDA, California tomato processors anticipate contracting a total of 12.8 million short tons in 2016—a 11-percent decrease from the amount produced under contract from 2015. Estimated contract acreage of 258,000 is 13 percent below last year’s contracted acreage. The decline in 2016 processing tomato crop is partly attributed to limited water supplies brought by the on-going California’s drought, higher disease and pest pressures, and possibly high stocks resulting from last year’s record-large crop and the strong U.S. dollar. Even with the reduced production forecast, supplies of most tomato products will likely be adequate given the plentiful stocks from last year’s large crop. According to the California League of Food Processors, June 1 inventories of U.S. processed tomato products (on a fresh-weight basis) were 39 percent above levels from the previous year.

When the intended contract production of processing tomatoes from California (12.8 million tons) is combined with the assumed small amount of State open-market (noncontract) purchases (0.1 million tons) and the expected production from other States (which averaged 0.5 million tons in 2013-15), the total U.S. crop of tomatoes for processing could reach 13.4 million tons in 2016—9 percent below 2015 and slightly below the last 5-year average. Processing tomatoes account for three-fourths of annual processing vegetables (excluding potatoes and sweet potatoes) output.

In addition to decreased contracted area, grower price for this season also declined. According to California Tomato Growers Association, the 2016 base price at the point of first delivery (excluding fees and incentives that vary by processor) for tomatoes destined for processing was set back in February at \$72.50 per short ton on a delivered-ton basis—down \$7.50 (or 10 percent) from a year ago.

Figure 1  
**U.S. processing tomatoes: Production and price at first delivery point<sup>1</sup>**



f = forecast. <sup>1</sup>Average price in California, excluding premiums.  
 Source: USDA, National Agricultural Statistics Service, and California Tomato Growers Association.

## ***Frozen Stocks at Record High Levels***

According to July 22 NASS *Cold Storage* report, stocks of frozen vegetables (excluding potatoes and adjusting cob corn to a cut basis) in cold storage warehouses on June 30 were up 10 percent from a year ago, a record high since the data was first recorded in 1962. Increases were noted for a majority of vegetables including sweet corn, green peas, and carrots, which combined accounted for 53 percent of cold storage.

Table 7--Frozen vegetables: U.S. cold storage holdings, June 30

Commodity	2014	2015	2016p	Change from a year ago
	----- 1,000 pounds -----			Percent
Asparagus	15,185	14,457	14,379	-1
Lima beans	34,333	41,133	40,247	-2
Snap beans	104,570	121,474	130,641	8
Broccoli	67,487	70,032	64,687	-8
Brussels sprouts	12,480	14,691	12,733	-13
Carrots	200,221	187,979	219,708	17
Cauliflower	16,497	18,203	22,412	23
Sweet corn, cut	250,726	262,028	294,266	12
Sweet corn, cob	101,087	88,817	95,281	7
Mixed vegetables	49,422	58,099	60,560	4
Okra	14,800	16,337	27,424	68
Onions, all	55,773	56,673	57,705	2
Blackeye peas	1,655	2,869	1,386	-52
Green peas	284,293	314,155	366,807	17
Southern greens	14,873	19,717	19,105	-3
Spinach	52,579	60,413	57,880	-4
Squash	42,958	39,517	42,121	7
Other vegetables	281,639	302,891	326,564	8
Total	1,600,578	1,689,485	1,853,906	10

p = Preliminary.

Source: USDA, National Agricultural Statistics Service, *Cold Storage*.

Given the decline in forecast production of processing tomatoes, which accounts for about three-fourths of total production, the 2016 estimates for total processing vegetable production could decline 2 to 3 percent. USDA will release its first look at contract area planted and production for select processing vegetables on August 30.

## ***Exports of Processed Vegetables Down***

From January to May 2016, the value of processed (canned, frozen, dried) vegetable imports represented a 5-percent increase over the previous year. Much of the gain in import value was contributed by canned vegetables (up 7 percent from last year) and frozen vegetables (up 10 percent). Dried and dehydrated vegetable import value declined 6 percent during this period due largely to decline in processed-tomato imports.

The value of processed vegetable exports during January-May decreased 8 percent from a year earlier, driven mainly by tomato products. For instance, exports of canned tomato products during the first 5 months of the 2016 calendar year decreased 17 percent to \$314 million from a year ago. Tomato paste, which accounts for the largest share, decreased 32 percent year-to-date.

The decline in tomato paste likely reflects the impact of the strong U.S. dollar; particularly in the Euro countries, important destinations for U.S. processors. The top-five foreign destinations during this period for canned products included Canada (43 percent), followed by Mexico (9 percent), Japan (8 percent), Netherlands (3 percent), and South Korea (3 percent). Italy, which was ranked in fourth place in 2014, dropped down to sixth place in 2015.

Table 8--Value of processed vegetable trade<sup>1</sup>

Item	2015	January - May			Change
	Annual	2014	2015	2016	2015-16
----- Million dollars -----					Percent
<b>Imports:</b>					
Canned	1,333	496	522	560	7
Tomato products	201	76	70	101	45
Frozen	1,004	418	426	468	10
Broccoli	305	131	134	140	4
Dehydrated <sup>2</sup>	722	289	310	292	-6
Peppers (exc. Paprika)	208	86	84	91	8
<b>Exports:</b>					
Canned	1,300	561	561	491	-12
Tomato products	835	374	377	314	-17
Frozen	312	125	132	138	5
Sweet corn	98	40	44	44	0
Dehydrated 2/	193	87	81	81	-1
Onion products	90	37	38	32	-15

<sup>1</sup>Excludes potatoes and mushrooms. <sup>2</sup>Also includes miscellaneous dried leguminous vegetables.

Source: USDA, Economic Research Service using data of the U.S. Department of Commerce, U.S. Census Bureau.

Table 9--Value of processed vegetable exports by selected country<sup>1</sup>

Item	2015	January - May			Change
	Annual	2014	2015	2016	2015-16
----- Million dollars -----					Percent
<b>Canned</b>	1,300	561	561	491	-12
Canada	561	206	232	222	-4
Mexico	116	47	47	48	4
Japan	110	46	45	37	-16
Italy	33	49	21	14	-31
Others	480	212	216	168	-22
<b>Frozen</b>	312	125	132	138	5
Canada	109	47	46	46	1
Japan	64	29	30	29	-5
Mexico	27	11	11	17	58
Hong Kong	14	4	6	7	15
Others	98	34	39	40	1
<b>Dehydrated<sup>2</sup></b>	193	87	81	81	-1
Canada	54	20	22	27	26
Japan	21	8	9	8	-18
Indonesia	15	6	6	5	-21
Mexico	14	8	6	6	4
Others	89	44	38	35	-9

<sup>1</sup>Excludes potatoes and mushrooms. <sup>2</sup>Also includes miscellaneous dried leguminous vegetables.

Source: USDA, Economic Research Service using data of the U.S. Department of Commerce, U.S. Census Bureau.

# Potatoes

## Fall Area Down, Summer Area Up

According to the August 12 NASS *Crop Production* report, the 2016 fall-season potato acreage indicates a 3-percent decline in planted and harvested acreage from a year ago. U.S. fall-season potato growers planted 916,400 acres in 2016—the lowest area since 2010. A number of factors are likely responsible for the decline, including decreasing prices since the 2014/15 marketing year. At the State level,

- Of the 14 fall-potato-producing States, only Michigan, Nebraska, Montana, and Alaska reported an increase in planted acreage. Idaho, which accounts for 35 percent of all planted area, remained unchanged while Washington, Colorado, Maine, and New York reported a decline.
- Planted area was up for the summer-potato crop, exceeding the spring crop for the first time since 1994. At 62,600 acres, summer planting was up 24 percent from 2015, while spring plantings decreased 26 percent to 52,000 acres. At 19.2 million cwt, summer forecast production, as estimated by NASS, is up 22 percent from 2015.
- The combined U.S. planted area for all potatoes in 2016 totaled 1.031 million acres, down from last year's 1.065 million acres.

Table 10--Potatoes by season and selected State: Area, yield, and production

Season & State	Area				Yield		Production	
	Planted		Harvested		2015	2016	2015	2016
	2015	2016	2015	2016				
	---1,000 acres---				---Cwt---		---1,000 cwt---	
<b>Spring</b>								
CA <sup>1</sup>	23.0	25.0	22.7	24.7	430	410	9,761	10,127
FL	30.0	27.0	29.6	26.2	230	250	6,808	6,550
U.S.	70.1	52.0	68.5	50.9	296	328	20,251	16,677
<b>Summer<sup>2</sup></b>								
TX	20.0	20.0	18.2	18.8	375	375	6,825	7,050
MS	8.5	8.9	8.1	8.4	305	300	2,471	2,520
IL	7.5	8.0	6.9	7.7	380	390	2,622	3,003
VA	5.0	4.4	4.7	4.2	220	290	1,034	1,218
KS	3.8	4.1	3.6	4.0	335	315	1,206	1,260
U.S.	50.5	62.6	47.1	60.1	334	310	15,734	19,218
<b>Fall</b>								
ID	325.0	325.0	324.0	325.0	402		130,320	
WA	170.0	165.0	170.0	165.0	590		100,300	
ND	82.0	82.0	80.0	80.0	340		27,200	
WI	63.0	63.0	62.5	62.5	440		27,500	
CO	58.2	56.6	58.0	56.3	394		22,857	
ME	51.0	49.0	50.5	48.5	320		16,160	
MI	46.0	48.0	45.0	47.5	390		17,550	
MN	41.0	41.0	40.5	40.0	400		16,200	
OR	39.0	39.0	38.9	39.0	560		21,784	
U.S.	944.6	916.4	937.7	911.1	431		404,513	
<b>U.S. total</b>	1065.2	1031.0	1053.3	1022.1	418		440,498	

Cwt = hundredweight (100 pounds).

<sup>1</sup>Starting in 2010, California winter and summer estimates are included in the spring estimates.

<sup>2</sup>Beginning in 2016, summer potato estimates began for North Carolina and discontinued for Delaware.

Source: USDA, National Agricultural Statistics Service, *Crop Production*.

- According to the August 1 NASS *CropProgress* report, harvest was underway even as the weather heats up in Idaho, Oregon, and Washington, with temperature reported up to 14 degrees above normal. With only 2 percent of potato crop harvested, crop reporters rated 78 percent of the Idaho potato crop, 70 percent of Oregon, and 83 percent of Washington in good condition.
- Given the decline in forecast acreage this fall and spring combined with yields closely matching last year, the 2016 potato crop is projected to range from 425 to 430 million hundredweight (cwt)—about 2 or 3 percent below last year. The first official USDA estimate of fall potato production will be released in the November 9 *Crop Production* report. The fall crop has accounted for about 91 percent of annual potato output during the last 10 years.

### **Prices Remain Flat**

During the first 11 months of the marketing year (September-June), prices received by potato growers for all potatoes averaged \$8.74 per cwt, down less than 1 percent from last year. However, March, April, and June prices stayed higher than last year's levels—up 3, 6, and 6 percent respectively. The preliminary price for all potatoes in June was \$9.83 per cwt, 11 cents below May and the third-highest price recorded so far this marketing year. During September through June, grower prices for fresh-market potatoes averaged \$9.23 (4 percent below year-previous levels), while grower prices for processing potatoes, down 1 percent, averaged \$8.10. In Idaho, processing potato prices averaged \$7.05 per cwt during September to June, a decrease of 11 percent from last year.

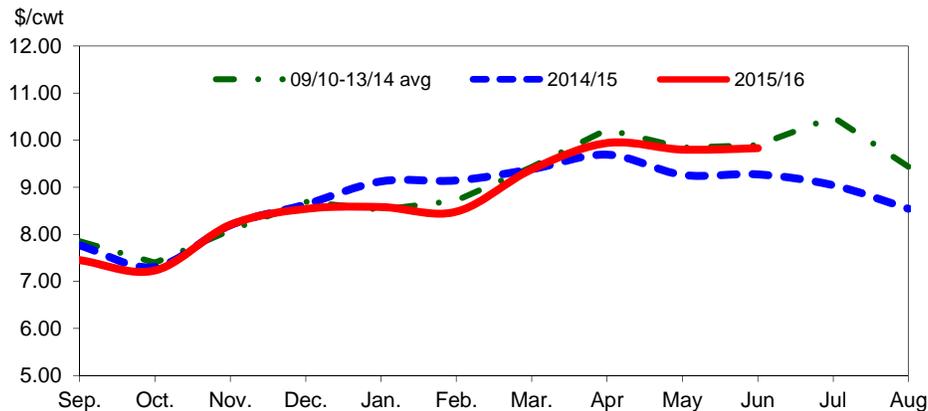
Table 11--U.S. potatoes: Monthly grower and retail prices, 2015-16

Crop year & month	Grower prices			Retail prices	
	All uses	Fresh	Processing	Fresh	Chips
----- Dollars/pound -----					
<b>2015</b>					
June	0.093	0.101	0.089	0.647	4.442
July	0.090	0.098	0.088	0.668	4.480
August	0.085	0.111	0.077	0.661	4.411
September	0.075	0.084	0.072	0.650	4.504
October	0.072	0.087	0.069	0.655	4.355
November	0.082	0.086	0.079	0.633	4.490
December	0.085	0.089	0.083	0.637	4.413
<b>2016</b>					
January	0.086	0.088	0.083	0.659	4.444
February	0.085	0.085	0.081	0.659	4.421
March	0.094	0.088	0.083	0.652	4.622
April	0.099	0.091	0.087	0.652	4.544
May	0.098	0.108	0.084	0.679	4.462
June	0.098	0.117	0.090	0.688	4.477
Percent change from June 2015	6.0	16.1	1.7	6.3	0.8

Source: USDA, National Agricultural Statistics Service, *Agricultural Prices* and U.S. Dept. of Labor, Bureau of Labor Statistics, Consumer Price Index average price data.

Figure 2

**U.S. potatoes: Average monthly price received, 2015/16 and previous marketing years<sup>1</sup>**



<sup>1</sup>Marketing year is September - August. June 2016 is preliminary. Average price of potatoes sold for all uses, including table stock, processing, seed, and livestock feed.  
Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Prices at the retail level, on the other hand, have been higher during the first 10 months of the marketing year, with prices for frozen French fries averaging 4 percent above a year earlier (September-June) and prices for fresh potatoes averaging 1 percent higher.

**Potato Exports Up**

During the September-June period, U.S. exports of all potatoes and potato products (including starch) totaled \$1.4 billion—5 percent above a year earlier. The increase of U.S. potato exports is largely attributed to Asia markets. Exports to Japan, China, and South Korea, among other Asian countries, rose 9, 44, and 5 percent, respectively. Exports to Canada and Mexico, on the other hand, decreased during this period. Japan remained the leading foreign market with 20 percent of export value, followed by Canada (16 percent), Mexico (14 percent), China (9 percent), and South Korea (7 percent).

Table 12--U.S. potatoes exports (all uses): Marketing year trade value to date, 2013/14-2015/16<sup>1</sup>

Markets	Mkt year 2014/15	September - June			Change 14/15-15/16
		2013/14	2014/15	2015/16	
		----- Million dollars -----			Percent
Japan	306.0	316.0	260.3	285.0	9
Canada	301.6	251.3	245.8	223.6	-9
Mexico	242.1	197.2	204.9	200.4	-2
China (Mainland)	111.7	100.3	84.7	121.8	44
South Korea	104.4	91.9	88.9	93.0	5
Philippines	78.1	71.4	62.6	77.5	24
Taiwan	52.8	51.3	42.2	52.0	23
Malaysia	45.5	48.4	36.3	38.7	7
Others	393.1	336.9	328.2	328.9	0
<b>Total</b>	<b>1,635.5</b>	<b>1,464.8</b>	<b>1,353.9</b>	<b>1,420.9</b>	<b>5</b>

<sup>1</sup>Based on a marketing year that runs September through August.

Source: USDA, Economic Research Service using data from U.S. Department of Commerce, U.S. Census Bureau.

While exports are expanding, U.S. potato imports are also increasing. All potatoes and potato products imported during the first 10 months of the 2015/16 marketing year totaled \$1.03 billion—7 percent above a year earlier.

Table 13--U.S. potatoes (all uses): Marketing year trade value to date, 2013/14-2015/16<sup>1</sup>

Item	Mkt year	September - June		Change	
	2014/15	2013/14	2014/15	2015/16	14/15-15/16
		<i>Million dollars</i>		<i>Percent</i>	
<b>Exports</b>					
Fresh market	182.4	157.1	145.2	146.2	1
Seed	6.6	8.3	6.0	6.8	12
Frozen fries	919.0	855.6	765.4	840.9	10
Other frozen	108.2	112.9	91.6	98.1	7
Chips	197.0	154.4	163.6	159.6	-2
Flakes/granules	115.7	88.0	95.5	86.0	-10
Canned/prep	73.6	58.7	59.2	60.1	1
Flour, meal, dried	23.8	23.1	20.1	15.9	-21
Starch	9.0	6.8	7.3	7.4	2
Total	1,635.5	1,464.8	1,353.9	1,420.9	5
<b>Imports</b>					
Fresh market	122.7	138.2	112.5	140.6	25
Seed	22.7	27.6	22.7	24.1	7
Frozen fries	611.1	537.4	503.4	569.1	13
Other frozen	118.8	102.7	106.2	75.1	-29
Chips	65.4	39.3	53.5	57.1	7
Flakes/granules	38.8	38.2	31.6	32.1	2
Canned/prep	81.6	70.7	67.1	69.4	3
Flour, meal, dried	5.3	1.7	4.9	1.8	-63
Starch	67.8	58.7	55.7	57.5	3
Total	1,134.2	1,014.6	957.5	1,026.8	7

<sup>1</sup>Based on a marketing year that runs September through August.

Source: USDA, Economic Research Service using data from U.S. Department of Commerce, U.S. Census Bureau.

## Mushrooms

### *Sales Volume Up, Value Down*

The NASS *Mushrooms* report indicates that the farm value of all mushrooms (*Agaricus* and others), which have been trending upward even as production volume continued to rise, receded 1 percent to \$1.2 billion during the 2015/16 crop year (July-June). Total U.S. mushroom sales volume increased 2 percent to an all-time high of 945.6 million pounds in 2015/16. This gain in sales volume was attributed to a record yield of *Agaricus* mushrooms, which accounted for 97 percent of all mushrooms produced in the United States. *Agaricus* production was up in both Pennsylvania and California—the top-two-producing States—which combined accounted for 76 percent of total sales volume.

Sales volume of *Agaricus* mushrooms (fresh and processed) rose 2 percent to 921.6 million pounds in 2015/16. A rise in volume was realized across *Agaricus* mushroom varieties, with white-button mushrooms increasing 1 percent to 756.4 million pounds and brown mushrooms (including portobello and crimini) trending upward 3 percent to 165.1 million pounds. Sales value climbed up for brown mushrooms, netting \$248.2 million, while white mushrooms declined 3 percent due to a 5-cent drop in the season average price (point-of-first-sale) from \$1.17 in 2014/15 to \$1.12 in 2015/16. White mushrooms accounted for 82 percent of all *Agaricus* sales in 2015/16 season.

Within market segment, sales volume of fresh *Agaricus* mushrooms totaled 827.2 million pounds, up 1 percent from 2014/15 season, while processed mushroom sales rose 5 percent. Notably, the share of fresh-market mushroom continued to expand, reaching 90 percent of total *Agaricus* sales. Meanwhile, the average price producers received for fresh-market and processing-market mushrooms declined 3 and 5 percent from last year and is reported below the last-3-year average.

The sales volume of specialty mushrooms (excluding brown *Agaricus*), most of which are sold in the fresh market, also increased in the 2015/16 season—up 17 percent to 24.1 million pounds. Even as production expanded, growers received higher average prices across all categories covered—thus contributing to the record-level value of sales for all specialty mushrooms of \$95 million in 2015/16.

Table 14--U.S. *Agaricus* mushrooms: Sales, price, and value, selected States

State	Volume of sales		Price		Value of sales	
	2014/15	2015/16	2014/15	2015/16	2014/15	2015/16
	1,000 pounds		Dollars per pound		1,000 dollars	
Pennsylvania	584,050	593,997	0.95	0.96	554,419	570,480
California	105,623	109,951	1.93	1.86	204,218	204,593
Other States	217,518	217,604	1.65	1.47	359,734	320,580
United States	907,191	921,552	1.23	1.19	1,118,371	1,095,653

Notes: Includes portobello and crimini.

Source: USDA, National Agricultural Statistics Service, *Mushrooms*.

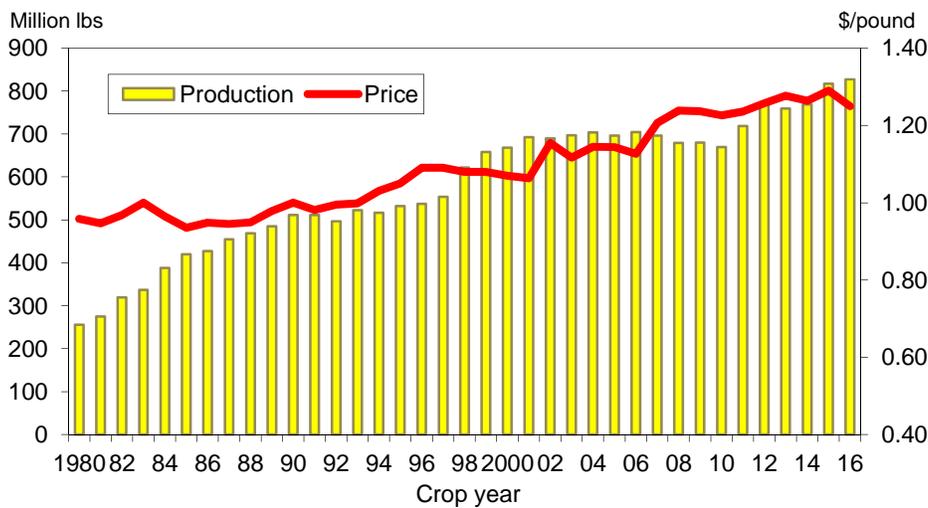
Table 15--U.S. Mushrooms: Sales, price, and value

Item	Volume of sales		Price		Value of sales	
	2014/15	2015/16	2014/15	2015/16	2014/15	2015/16
	1,000 pounds		Dollars per pound		1,000 dollars	
Agaricus	907,191	921,552	1.23	1.19	1,118,371	1,095,653
White	746,443	756,442	1.17	1.12	876,032	847,434
Brown <sup>1</sup>	160,748	165,110	1.51	1.50	242,339	248,219
All specialty	20,632	24,087	3.54	3.94	72,986	95,019
Shiitake	9,251	9,743	3.26	3.61	30,151	35,219
Oyster	7,724	10,054	3.19	3.60	24,610	36,173
Other	3,657	4,290	4.98	5.51	18,225	23,627
Total	927,823	945,639	1.28	1.26	1,191,357	1,190,672

<sup>1</sup>Includes portobello and crimini.

Source: USDA, National Agricultural Statistics Service, *Mushrooms*.

Figure 3  
U.S. fresh-market *Agaricus* mushrooms: Sales volume and producer price



Notes: Crop year (July-June) ends with year listed (e.g., 1980 = 1979/80).

Source: USDA, National Agricultural Statistics Service, *Mushrooms*.

Another segment with an upward trend in sales volume is certified organic mushrooms. Growers in this market produced 91.1 million pounds of certified organic mushrooms in 2015/16, up 30.4 million pounds from last season. The share of organic mushrooms currently accounts for 7 percent of the total sales volume—reflecting strong consumer demand.

Intended *Agaricus* bed and tray production area (total fillings) for the 2016/17 season is expected to rise 2 percent to 143 million square feet. Assuming current yields, the 2016/17 output of *Agaricus* mushrooms is expected to increase slightly.

## Dry Edible Beans

### *Dry Edible Bean Area Planted, Production Down Slightly in 2016*

The August USDA-NASS *Crop Production* report provides by class planted area of all dry beans and updated projections for the all dry bean and garbanzo bean forecasts. All bean planted area for 2016 rose slightly less than 2 percent from the July projection to 1.716 million acres. The current all bean planted projection is about 3 percent lower than the August 2015 forecast. The latest garbanzo bean planted area projection is almost 40,000 acres above last month's forecast and is currently pegged at 321,000 acres. The month-to-month boost in the garbanzo bean planted area projection lifts the 2016 figure fully 55 percent above the 2015 estimate.

Planted area for all but 4 of the 11 major dry bean producing States is anticipated to rise in 2016. Michigan is set to lose 55,000 acres of dry beans relative to 2015; Minnesota is down 20,000 acres, and Colorado and Texas are down 5,000 and 6,000 acres, respectively. Gains in Idaho and Washington State, each up an estimated 20,000 acres, help to offset losses elsewhere. While not a perennial top bean-growing State, Montana's all dry bean planted area is set to increase by 52,000 acres from the 2015 estimate to 101,000, or approximately 6 percent of total U.S. area planted to beans.

Planted area for each of the six major garbanzo bean-producing States is up in 2016; planted area in Montana alone is projected up 54,000 acres from 2015. Planted area for most other dry bean categories is projected to decline in 2016 with notable year-to-year changes projected for black (down 24 percent), light red kidney (down 58 percent), dark red kidney (down 26 percent), small red (down 33 percent), baby lima (down 24 percent), cranberry (down 60 percent), and other dry beans (down 38 percent).

In 2016, growers are forecast to have planted 210,000 acres of large garbanzo (also known as chickpeas) beans, up 74,700 acres from 2015. Small chickpea planted area is up 54 percent in 2016 to 111,100 acres.

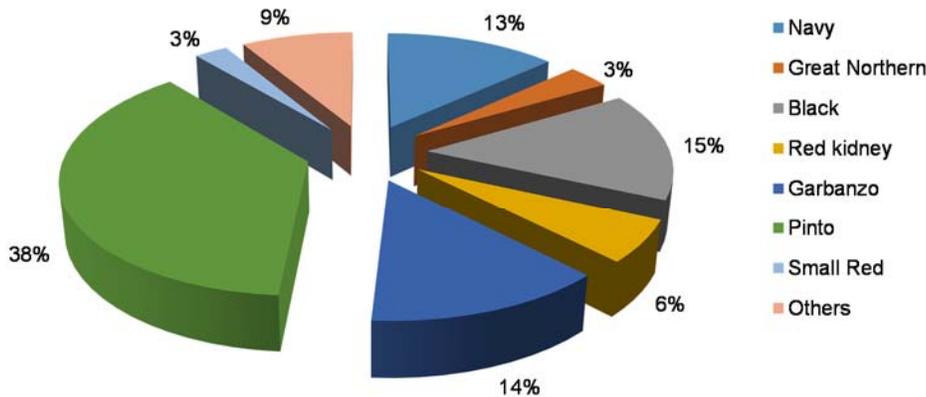
Table 16--U.S. dry beans: Planted acres by class, 2012-16<sup>1</sup>

Item	2012	2013	2014	2015	2016f	Change
						2015-16
-----1,000 acres-----						Percent
Pinto	729.7	485.1	609.9	580.1	644.2	11.0
Navy	262.8	174.2	240.7	235.4	201.4	-14.4
Black	216.8	143.1	226.4	332.4	252.1	-24.2
Garbanzo	207.9	220.7	215.1	207.5	321.1	54.7
Great Northern	55.6	75.5	107.1	44.7	45.5	1.8
Lt. red kidney	40.2	43.2	55.2	67.2	28.3	-57.9
Dk. red kidney	46.2	46.7	59.3	79.3	59.0	-25.6
Blackeye	37.4	41.8	31.3	37.2	35.4	-4.8
Small red	40.0	26.0	34.7	53.7	36.1	-32.8
Pink	29.4	23.5	22.4	19.5	19.4	-0.5
Baby lima	12.9	6.8	14.9	8.9	6.8	-23.6
Large lima	9.7	6.7	8.1	10.7	13.8	29.0
Cranberry	4.7	4.1	5.8	8.2	3.3	-59.8
Others	48.0	62.3	68.4	74.5	46.4	-37.7
<b>United States</b>	<b>1,742.5</b>	<b>1,359.7</b>	<b>1,701.6</b>	<b>1,764.4</b>	<b>1,716.5</b>	<b>-2.7</b>

<sup>1</sup>Planted area for 2016 are preliminary

Source: USDA, National Agricultural Statistics Service, *Crop Production*.

Figure 4  
**Projected 2016 dry bean production, by class**



Sources: USDA, National Agricultural Statistics Service, *Crop Production* and USDA, Economic Research Service

The more than fifty percent increase in both large and small chickpea planted area is attributable significant increase plantings in Montana and Washington State. Nationally, growth in chickpea planted area is supported by the 2015/16 farm-gate season average price, which rose \$1.40 over the previous year to \$28.30 per cwt., and expectations of continued, strong domestic garbanzo bean consumption.

USDA-NASS reports projected all dry bean production for 2016 as 29.433 million hundredweight, down slightly from the 30.121 million produced in 2015. The current forecast, is about 59 million pounds, or 2 percent below the 2015 volume. The following by class production changes are projected for the 2016/17 marketing year: pinto up 16 percent, navy down 14 percent, great northern up 7 percent, black down 20 percent, all lima up 9 percent, all red kidney down 38 percent, blackeye down 2 percent, garbanzo up 58 percent, small white down 35 percent, small red down 30 percent, Pink up 16 percent, cranberry down 72 percent, and other beans down 33 percent.

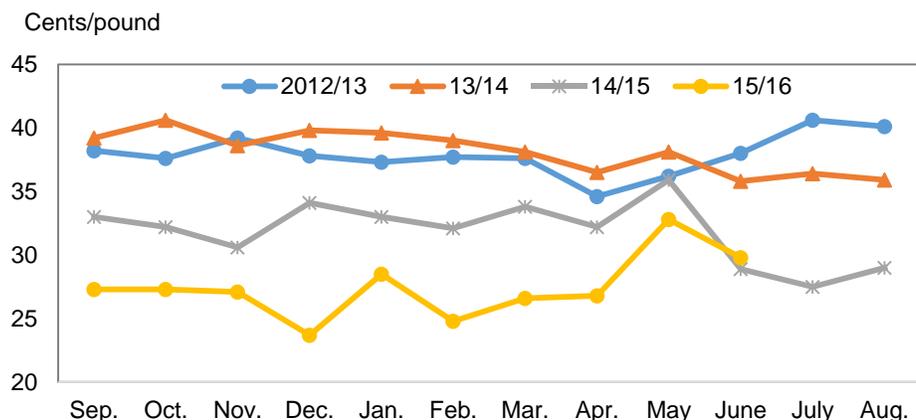
### ***Monthly Bean Prices for 2015/16 Lower Than 2014/15***

Average monthly grower prices for dry beans in 2015/16 have generally followed a similar, seasonal pattern to 2014/15 prices, albeit at a lower starting price level. The all dry bean price in September 2015 was 27.3 cents per pound and compares to 33.0 cent per pound for the same month in 2014. Prices in both 2014/15 and, as observed so far in the 2015/16 marketing year, are well-below relatively higher prices observed in the 2012/13 and 2013/14 marketing years. Historic-high prices were received by growers in 2011/12, when the season average grower price peaked at 42.1 cents per pound. In all but one month of the current marketing year, monthly prices have lagged behind 2014/15 prices by 3 to 10 cents per pound. In June, the average U.S. dry bean monthly grower price fell 3 cents from the May price, but is about 1 cent per pound higher than the June 2015 price.

In May and June of 2015, the all dry bean grower price was 10.6 cents per pound and 2.7 percent higher than the all dry bean price estimated for the same months in 2016. Prices for several categories of beans are lower year-to-year and include black, dark red kidney, and small red beans. For pinto, navy, and garbanzo, beans, prices in May and June of 2016 are higher and help to offset some of the effects of price declines for other classes on the all bean price.

Monthly aggregate dry bean prices for key bean-producing States are generally lower in 2015/2016 than observed in 2014/2015. Prices for May 2016 were lower across the United States than a year prior and down more than 30 percent in Idaho and Michigan. May and June prices for 2016 are higher for North Dakota, a key pinto, navy, and black bean producing State. Higher relative prices in North Dakota provides support to the U.S. pinto bean price, projected up from 2015.

Figure 6  
U.S. dry edible beans: Average monthly grower price



Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Table 17--U.S. dry beans: Monthly grower prices for selected classes, 2015-16

Commodity	State	2015		2016 1/		Chg. prev. year:	
		May	June	May	June	May	June
--- Cents per pound ---							
All dry beans	US	40.60	40.10	36.30	39.00	-10.6	-2.7
Pinto	ND-MN	23.00	22.88	25.40	27.25	10.4	19.1
Navy	ND-MN	40.00	40.00	--	--	--	--
Black	MI	38.50	38.50	26.50	27.63	-31.2	-28.2
Great Northern	NE-WY	--	--	25.17	--	--	--
Garbanzo	ID-WA	29.00	29.60	33.40	33.50	15.2	13.2
Light red kidney	CO-NE	48.00	48.00	53.13	--	10.7	--
Dark red kidney	MN-WI	57.50	--	30.40	30.88	-47.1	--
Pink	ID-WA	--	26.00	--	--	--	--
Small red	ID-WA	40.00	40.00	29.50	29.25	-26.3	--
Babylima	CA	--	--	--	--	--	--
Large lima	CA	--	--	--	--	--	--
Blackeye	CA	--	--	--	--	--	--

-- = not available. 1/2016 prices are preliminary.

Source: USDA, Agricultural Marketing Service, *Livestock and Grain Market News*.

Table 18--U.S. dry beans: Monthly grower prices for selected States, 2015-16

Commodity	2015		2016 1/		Chg. prev. year:	
	May	June	May	June	May	June
	--- Cents per pound ---				--- Percent ---	
United States	35.90	28.90	32.80	29.80	-8.64	3.11
California	--	--	75.00	--	--	--
Colorado	--	--	25.60	28.20	--	--
Idaho	39.20	29.60	25.40	--	-35.20	--
Michigan	38.90	45.10	27.00	30.00	-30.59	-33.48
Minnesota	--	26.70	26.00	26.60	--	-0.37
Nebraska	25.40	--	--	--	--	--
North Dakota	25.40	23.70	25.90	27.30	1.97	15.19

-- = not available. 1/ 2016 prices are preliminary.

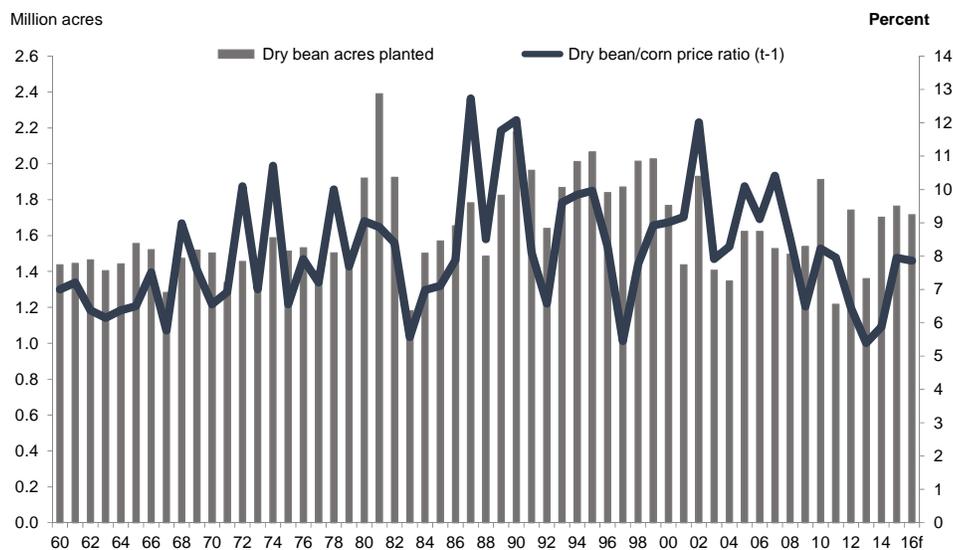
Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

### All Bean Grower Price for 2016/17 Projected to Decline

The all dry bean average farm price for 2016/17 is projected to be \$27.71 per hundred weight, about one dollar less than the USDA-NASS-reported 2015/16 average price of \$28.70 per cwt. The near 3.5 percent year-to-year price decrease is, in part, attributable to a significant year-to-year decline in the projected season average corn price. Corn and dry bean prices tend to move in a similar direction. For 2016, the season average corn price is projected at \$3.15 per bushel, a decline of nearly 12.5 percent from the 2015/16 price.

Relative dry bean and corn prices also impact dry bean planted area. Specifically, when dry bean prices are relatively high, compared to corn prices in the same year, acreage of dry beans typically increases in the following year. This relationship was affirmed in 2015 when, despite lower bean and corn prices, dry bean prices fell by a proportionally-smaller amount and dry bean planted area increased in the following year.

Figure 5  
U.S. dry bean acres and dry bean/corn price ratio



Sources: USDA, Economic Research Service (price ratio) and USDA, National Agricultural Statistics Service (acres planted). 2016 values are forecast and noted with an "f"; 2015 values are preliminary and noted with a "p".

## Export Volume Projected Up Slightly in 2015/16

Trade data is available for the first 10 month of the current marketing year, September, 2015 through June, 2016. The 2015/16 marketing year export projection is based on weighting trade volumes, to date, by the proportion exports in the same time period in the previous year. For 2014/15, exports in the first 10 months of the marketing year comprised 88.4 percent of total exports. In light of the current pace and expectations for sales for the balance of the marketing year, exports are projected at 992.6 million pounds for 2015/16. Export sales through the first 10 months totaled 877.8 million pounds and exceeds the 2014/15 pace by about 10 million pounds. The all dry bean export forecast is supported by notable year-over-year increases in volume projected exports of pinto (up 102 percent), black (up 28 percent), light red kidney (up 107 percent), large lima (up 21 percent), chickpeas (up 35 percent), blackeye (up nearly 126 percent), pink beans (up 53 percent), and cranberry (up 29 percent). Year-to-year gains in exports of these bean classes is offset by declines for great northern beans (down 55 percent), dark red kidney (down 13 percent), baby lima (down 50 percent), small red (down 55 percent), small white (down 34 percent) and other dry beans (down 3 percent).

From September 2015 through June 2016, the top dry edible bean export destinations are Mexico, Canada, United Kingdom, Dominican Republic, and Italy. Collectively, sales to the top 10 dry bean exports markets accounts for approximately 79 percent of year to date U.S. exports, a smaller proportion than in 2014/15. Total exports from September 2015 through June 2016 are up 10.3 million pounds for all markets and compare to 867 million pounds for the same period in 2014/15. Year-to-date, exports to Mexico, United Kingdom, and Dominican Republic are up 5.6 million pounds, 500,000 pounds, and 3.2 million pound, respectively. Exports to several key markets have declined, notably sales to Canada, Spain, Italy, France, and Japan which are down 4.4 million pounds, 200,000 pounds, 2 million pounds, 1.1 million pounds, and nearly 2 million pounds, respectively.

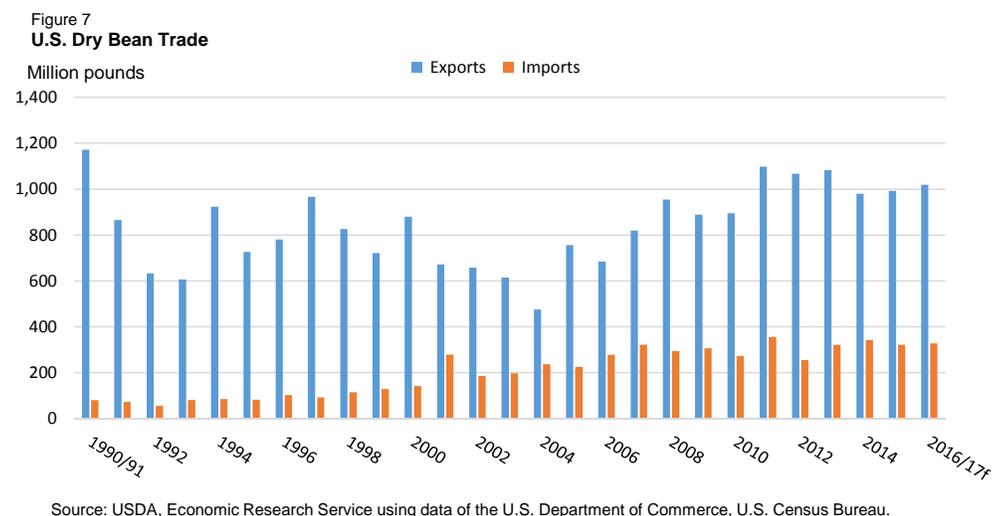


Table 19 -- U.S. dry bean crop year export volume to date, by selected destination 1/ 2/

Destination	Marketing Year		Sept.-June	Sept.-June
	2013/14	2014/15	2014/15	2015/16
----- 1,000 cwt (bags) -----				
Canada	1,935	1,809	1,744	1,307
Mexico	1,456	1,719	1,480	2,037
Spain	644	360	335	311
Italy	592	859	816	616
United Kingdom	1,204	979	815	868
Dominican Rep.	464	643	524	840
France	310	361	348	234
Japan	248	347	358	168
Other	3,828	2,332	2,611	2,565
<b>Total</b>	<b>10,432</b>	<b>9,408</b>	<b>8,674</b>	<b>8,778</b>

1/ Marketing year is September - August. cwt = hundredweight.

2/ Includes commercial sales and movement under food aid programs such as PL-480.

Source: U.S. Department of Commerce, U.S. Census Bureau.

Export volume to Mexico, a major U.S. black bean export market, has recovered from the same period in 2014/15. Black bean exports to Mexico are expected to be up slightly in 2015/16 and 20 million pounds higher than the recent low of 78 million pounds experienced in 2013/14. Exports of black beans to Mexico peaked at nearly 250 million pounds in 2009/10 and averaged 240 million pounds between 2008/09-2010/11 before steadily declining through 2013/14.

Fully 42 percent of the U.S. navy bean crop is projected to be exported by the conclusion of the 2015/16 marketing year. Garbanzo bean exports are projected to grow by 28 percent through the conclusion of the current marketing year. Through June 2016, garbanzo bean imports are down approximately 10 percent and exports have exceeded imports by more than 50 million pounds. As recently as 2008/09, the United States was a net importer of garbanzo beans; in subsequent marketing years domestic production has risen such that the United States has become a net exporter of the bean. Major markets for U.S. garbanzo beans include Canada, Spain, Italy, Turkey, and India.

### ***Dry Bean Imports Projected Down for 2015/16***

U.S. dry bean imports are expected to total 320.7 million pounds in 2015/16. Ten months of import data provide a good picture of import trends for the marketing year; the 12 month projection is based on the proportion of imports in the first 10 months. In 2014/15, dry bean imports totaled 276.2 million pounds or about 81 percent of total imports for the marketing year in the first 10 months. Ultimately, in 2014/15 the import total reach 342.1 million pounds. The 10 month proportion of total sales for 2014/15 is slightly lower than in previous years when an average of 85 percent of imports was sold in the first 10 months of the marketing year.

When compared with the previous marketing year, 2014/15 imports of the following classes increased: pintos (up 2 percent), great northern (up 54 percent), black (up 7 percent), baby lima (up 13 percent), garbanzo (up 18 percent), and cranberry (up 155 percent). Imports of cranberry beans are up significantly and are largely sourced from Canada. For the first 10 months of the marketing year, total dry bean imports from Canada, China, Mexico, and Peru are all down as compared

to the same period in 2014/15. Notably, imports from Mexico are down 9 million pounds from September to June.

Table 20--U.S. dry bean crop-year import volume projection 1/

Bean class	Marketing Year		
	2013/14	2014/15	2015/16 2/
	----- 1,000 cwt (bags) -----		
Black	389	392	422
Garbanzo, all	649	640	754
Pinto	211	156	159
Small red	81	105	103
Navy	95	62	26
Dark-red kidney	260	163	93
Light-red kidney	107	257	235
Other 3/	1,547	1,646	1,414
Total	3,339	3,421	3,207

1/ Crop year is September - August. cwt = hundredweight. 2/ ERS Projection. 3/ Excludes guar seeds.

Source: U.S. Department of Commerce, U.S. Census Bureau.

## Dry Peas and Lentils

### ***2016 Dry Edible Peas Area Harvested Projected at Record-High***

From the USDA NASS August 12 *Crop Production* report, area harvested to dry edible peas (excluding Austrian winter peas) is forecast at 1.202 million acres for 2016. This figure is unchanged from the July report and nearly 11 percent above last year's record-high area harvested of 1.0835 million acres. The sizeable increase in 2016 harvested area continues an upward trend and builds on an increase of over 20 percent that took place between 2014 and 2015. Dry edible pea harvested area is projected to be up despite year-to-year decline in planted area for three of the top seven dry pea-producing States. Harvested area in Idaho, Montana, and Washington State are forecast to be down 16,000 acres, 40,000 acres, and 8,000 acres, respectively. Harvested area losses in these States are more than offset by gains in Nebraska, North Dakota, Oregon, and South Dakota. In North Dakota alone, growers expect to harvest 105,000 more acres of dry edible peas in 2016, as compared to 2015. For 2016, about 40 percent of estimated dry edible pea harvested area is in North Dakota.

For the week ending August 14, the USDA-NASS *Crop Condition* report indicates that 59 percent of the dry edible pea crop was rated good to excellent in North Dakota and compares to 82 percent rated similarly in 2015. Crop development is slightly behind last year's pace, with the dropping leaves measure being 7 points behind the 2015 figure. Significant rains in the eastern portion of the State have replenished topsoil moisture levels in recent weeks, aiding crop conditions. In Montana, damaging hail and variable amounts of rain, but otherwise hot and dry conditions have modestly affected the cultivation pace. For the week ending August 14, 76 percent of dry edible bean area had been harvested and compares to 84 percent harvested by the same period in 2015.

Area planted to chickpeas in 2016 rose significantly, up 55 percent from the 2015 estimate, and helps to lift the all dry pea planted area projection. Plantings of both large (garbanzo or Kabuli varieties) chickpeas and small (Desi variety) chickpeas are up 55 and 54 percent, respectively and are suggestive of expectations of continued strong consumer demand for chickpea--containing products, including hummus.

### ***Lentil Harvested Area Projection Surges in 2016***

In 2016, lentil harvested area is forecast to reach a new record high. Planted area in 2016 increased by 437,000 acres with over 95 percent projected to be harvested. According the August USDA-NASS *Crop Production* report, 930,000 acres were seeded to the crop and 888,000 are expected to be harvested. This is an over 85-percent increase from the 2015 figure which, at 476,000 acres, was the second highest harvested area estimate on record. Lentil harvested area for 2016 is projected to be fully 254,000 acres above the previous record of 634,000 realized in 2010. Each major lentil- producing State is projected to experience double-digit growth in harvested area; Idaho (up 37 percent), Montana (up 130 percent), North Dakota (up 56 percent), and Washington State (up 34 percent). The first USDA-NASS U.S. production estimate for 2016 dry peas and lentils will be released in the November 9 *Crop Production* report.

Table 21--Dry peas and lentils: Harvested area

Item	2013	2014	2015	2016	Change 2015-16
	----- 1,000 acres -----				Percent
Dry peas	797.0	899.5	1,083.5	1,202.0	11
Austrian winter peas	14.1	16.8	21.0	24.0	14
Lentils, all	347.0	259.0	476.0	888.0	87
Chickpeas, total	218.6	212.1	203.1	277.5	37
Small chickpeas	47.2	66.6	71.9	90.6	26
Large chickpeas	171.4	145.5	131.2	186.9	42
Total	1,376.7	1,387.4	1,783.6	2,391.5	34

Source: USDA, National Agricultural Statistics Service, *Crop Production*.

### ***Dry Edible Pea and Lentil Production***

Record-setting planted area and expectations of trend yields for both dry peas and lentils underpins significant year-to-year production increases for both crops. Dry edible pea production is raised 18 percent from the 2015 figure to 22.3 million hundredweight (cwt). Lentil production is projected at 11.5 million cwt a 118 percent increase over the 2015 estimate. Strong prices in 2014/15 and through the 2015/16 marketing years have encouraged growers to cultivate more dry peas and lentils. In key production States including Idaho, Montana, and North Dakota, prices of commodity crops such as wheat, corn, and barley have declined each year since the 2013/14 marketing year. Wheat prices have fallen more than \$3 per bushel during that time period, while corn and barley prices have fallen about \$1.30 and \$1.10 per bushel. As prices of these commodity crops have fallen, dry pea and lentil prices have generally risen, making their production increasingly appealing to growers that have the option to cultivate these pulse crops.

### ***2015/16 Prices Generally Strengthened Through the Season***

Over the course of the 2015/16 marketing year, lentil prices fluctuated considerably, rising from a low of 25.8 cents per pound in August 2015 to a high of 42.7 cents per pound in May 2016. In June 2015, lentils were priced, on average, at 27.2 cents per pound. For June 2016, the most recent month for which USDA-NASS reports an average monthly lentil price, growers received 40.4 cents per pound of lentils. Strong lentil prices are reflective of a tightening supply situation ahead of harvest and steady demand from domestic and export markets. Both classes of chickpeas prices improved relative to the 2014/15 marketing year. In June 2016, the all chickpea price of 30.4 cents per pound was 4.5 cents higher than in June 2015. The small chickpea price for June 2016 is 28.5 cents per pound and fully 8.3 cents higher than the comparable price in 2015.

Table 22--U.S. dry peas and lentils: Monthly grower prices by class, 2015/16

	Dry peas	Chickpeas			Austrian winter peas	Lentils
		All	Large	Small		
<b>2015/16</b>		-----cents per pound-----				
July	11.3	29.9	30.6	--	--	30.1
August	10.6	28.6	29.3	20.7	--	25.8
September	12.4	28.7	29.4	23.5	--	28.4
October	10.9	26.6	27.2	22.9	26.3	29.4
November	12.1	27.0	29.1	24.9	--	31.8
December	12.5	28.2	32.2	25.2	--	29.5
January	13.2	28.6	34.0	22.2	--	31.4
February	14.9	28.9	32.6	24.8	--	36.0
March	13.7	29.2	30.7	24.8	--	38.8
April	17.2	28.4	32.5	25.2	--	36.2
May	16.7	29.0	30.7	27.3	--	42.7
June	13.0	30.4	34.9	28.5	--	40.4

-- = not available.

Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

### ***Lentil Grower Prices Up for 2016/17; Dry Pea Prices Down***

Based on the current USDA Farm Service Agency (FSA) forecast, the season average lentil price for 2015/16 is projected at \$30.90 per cwt, a sizeable increase over the 2014/15 price of \$24.40 per cwt. Projected gains for the 2015/16 lentil price are reflective of largely sustained demand from export markets which comprised 86 percent and 71 percent of total use in 2014/15 and 2015/16, respectively. With international demand for lentils projected to remain strong in the new marketing year, FSA projects another year-to-year increase in 2016/17 despite the potential for record-setting production levels in 2016. The current FSA forecast pegs the out-year price at about 2 percent above the current marketing year or \$31.50 per cwt.

The 2015/16 dry pea price is forecast at \$12.80 per cwt by USDA-FSA, an 80 cent increase from the 2014/15 price. For 2016/17, with the potential for record-setting production dry pea prices are expected to fall by 30 cents to \$12.50 per cwt, a roughly 2 percent decline from the 2015/16 season average projected price.

### ***Dry Pea and Lentil Exports Down Slightly in 2015/16, Remain Strong***

During the 2015/16 marketing year (July-June), combined export volume for dry peas, chickpeas, and lentils (excluding seeds), was down just slightly more than 1 percent from the 2014/15 projection. A 20-percent decline in chickpeas exports in 2015/16 is largely responsible for lowering aggregate exports; most other dry pea categories experienced growth in exports in 2015/16. Notably, yellow, split, and miscellaneous pea exports rose a collective 139,106 cwt.

Exports to key trading partners remain well above the 5-year average despite declining in 2015/16, as compared to 2014/15. In particular, exports to India, which peaked at 681.7 million cwt in 2014/15, fell to 575.3 million cwt in 2015/16. While lower in the most recent marketing year, exports to India are significantly higher than the 5-year average and are reflective of largely sustained demand for U.S. lentils. Sales of dry peas and lentils to Pakistan were up 13 percent, to nearly 19

million cwt, in 2015/16. Exports sales to Canada, Mexico, and China are down 46 percent, 22 percent, and 37 percent, respectively, as compared to 2014/15. Smaller sales to a variety of markets around the globe, including some shipments that supported food aid efforts, generally offset the noted declines to specific markets.

Table 23--U.S. dry peas & lentils: Foreign trade volume by class

Item	Market year (July-June)			Change
	2013/14	2014/15	2015/16	15/16-14/15
	----- 1,000 cwt -----			Percent
<b>Exports:</b>				
Green peas	3,593.1	2,889.5	2,147.6	-26
Yellow peas	2,919.6	3,463.8	3,517.8	2
Split peas	1,531.8	1,412.7	2,578.6	83
Austrian winter pea	44.5	16.8	11.1	-34
Misc. dry peas	1,546.3	2,326.6	2,464.5	6
Chickpeas, all	1,030.2	889.8	1,188.5	34
Lentils, all	3,538.8	5,602.5	4,502.5	-20
Planting seed, all	475.7	598.7	611.9	2
Total (without seeds)	14,204.3	16,601.8	16,410.5	-1
Total (with seeds)	14,680.0	17,200.5	17,022.4	-1

Source: U.S. Department of Commerce, U.S. Census Bureau.

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Vegetables and Pulses Data provides users with comprehensive statistics on fresh and processed vegetables and pulses in the United States, as well as global production and trade data for these sectors. It harmonizes and integrates data from the ERS market outlook program with data collected by different Federal and international statistical agencies to facilitate analyses of economic performance over time, and across domestic and foreign markets.

The data are currently organized in three sections:

[Yearbook Tables](#), in Excel and a single PDF file, contain a time series of annual data for U.S. farm acreage, production, prices, trade, per capita use, and more. Eventually, data contained in the Vegetables and Pulses Yearbook tables will be encompassed in the Data by Category and Data by Commodity series.

[Data by Category](#) (e.g., price, trade production) provides current import and export data, producer and retail price indexes, and a few retail prices.

[Data by Commodity](#) provides current import and export data for more than 40 individual fresh and processed vegetable and pulse commodities.

## *Web Sites*

**ERS Vegetables and Pulses Data:** The home page for Vegetables and Pulses data.  
<http://www.ers.usda.gov/data-products/vegetables-and-pulses-data.aspx>

**Vegetables and Pulses Topics Page:** This ERS site contains some background information on the U.S. vegetables and dry pulses sectors, special articles, and links to more vegetables and pulses information.  
<http://www.ers.usda.gov/topics/crops/vegetables-pulses.aspx>

**Organic Production:** This site contains ERS-collected data from USDA-accredited State and private certification groups.  
<http://www.ers.usda.gov/data-products/organic-production.aspx>

**Loss-Adjusted Food Availability Data:** This ERS site provides historical data on per-capita food use adjusted for losses.  
[http://www.ers.usda.gov/data-products/food-availability-\(per-capita\)-data-system/](http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system/)

**USDA AMS Market News:** Agricultural Marketing Service's web site containing fresh shipments, f.o.b. and terminal market prices, weekly truck rates, annual reports, and more.  
<https://www.marketnews.usda.gov/mnp/fv-home>

**USDA FAS Trade Data—GATS:** This online application allows the user to freely access and download detailed U.S. export and import data.  
<http://www.fas.usda.gov/gats/default.aspx>

**NASS Vegetables:** Links to USDA, National Agricultural Statistics Service's annual reports on vegetables and melons.  
<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1183>

**FAS Fruit and Vegetable Analysis Page:** USDA, Foreign Agricultural Services page with special articles, country horticultural reports, presentation and charts, data, and links.  
<http://www.fas.usda.gov/commodities/fruits-and-vegetables>

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## Vegetables and Pulses Outlook: Special Article

# Dietary Assessment of U.S. Vegetable and Dry Pulse Crops Sector--Updated<sup>1</sup>

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Approved by the  
World Agricultural  
Outlook Board.

The United States is among the world's top five producers of vegetables (FAOSTAT, 2015). The vegetable and pulse sector (excluding melons), encompassing a wide array of crops and products and hundreds of independent markets within the food marketing system, accounted for \$17.3 billion in 2010-14 in terms of value of production and about 6.4 million acres harvested in terms of land use. When compared with food grains, the value of this sector exceeded the combined value of rice, rye, and wheat (about \$16.7 billion) despite vegetables and pulses being harvested on about a tenth of the combined harvested area of these food commodities in the United States. But beyond its monetary value and importance to the farm economy, the benefits from increasing consumption of vegetables and pulses could improve the quality of U.S. consumer diets while stimulating production for the industry.

Increasing the average U.S. consumer's intake of vegetables and pulses has been a mainstay of the *Dietary Guidelines for Americans*, which is published jointly by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services. Since 1980, the guidelines have provided dietary recommendations based on the most current scientific evidence for Americans over 2 years old. The core dietary messages have remained consistent, even as subsequent editions change slightly to reflect the latest scientific and medical information on nutrition and health. The 2015-2020 *Dietary Guidelines* stress the importance of increasing the amount of vegetables, fruit, whole grains, low-fat dairy, and seafood in order to close nutrient gaps and move toward healthier eating patterns. U.S. consumers, on average, for various reasons, have not met the recommended amount for vegetables (Stewart et al., 2016; Buzby et al., 2014).

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## Trends in Per-Capita Use

The volume of vegetables and dry pulses in the U.S. food supply declined 8 percent, from an average of 420 pounds per person in 2000-04 to 387 pounds per person in 2010-14. The per-capita use data (also called disappearance or availability) is based on the measurement of commodity supplies moving through production and trade channels for domestic use. The data does not directly measure what individuals eat, but rather serves as an indicator of consumption trends over time.

Many factors influence what people eat, including changes in food prices and income levels; availability of food through domestic production and trade; tastes and preferences; product convenience; exposure to new cuisines; and evolving dietary guidelines. Much of the decline in per-capita vegetable and pulse use during the 2000-04 to 2010-14 period has been driven by declining use of potatoes, followed by head lettuce, sweet corn, and carrots, among others. Per-capita use of potatoes during this period decreased 17 percent from 136.2 to 112.8 pounds, even though domestic production has been on the rise. A number of factors likely contributed to the decline in potato use; for instance, the growth in demand of export markets. Potato exports rose from just under 10 percent of production in 2000-04 to an average of 15 percent in 2010-14. Per-capita use of head lettuce declined during this period from 22.5 pounds per person to the 15.2 pounds as consumers switched to dark-green and leafy products like romaine and leaf lettuce, collard greens, kale, and mustard greens.

Table 1— Per-capita use and consumption of vegetables and dry pulses, 2000-04 and 2010-14

Item	Per-capita use <sup>1</sup>		Change, 2000-04 to 2010-14	2010-14 Loss- adjusted food availability <sup>2</sup>
	2000-04	2010-14		
	<i>Pounds, fresh-weight equivalent</i>		<i>Percent</i>	<i>Cups/day</i>
Commerical vegetables by market category:				
Fresh market	200.2	186.9	-7	0.8
Processing market	219.3	200.6	-9	0.8
Canning	100.7	93.7	-7	0.2
Freezing	78.7	68.9	-12	0.2
Others (dehydrated and chips)	32.9	30.8	-6	0.2
Dry pulses (i.e. legumes)	7.1	7.2	2	0.2
Vegetables by <i>Guidelines'</i> subgroups <sup>3</sup> :				
Dark-green vegetables <sup>4</sup>	22.7	25.3	12	0.2
Escarole, romaine, and leaf lettuces	10.1	11.8	17	0.1
Broccoli	7.8	8.8	13	0.0
Red and orange vegetables <sup>4</sup>	109.4	109.6	0	0.2
Tomatoes	88.6	87.9	-1	0.2
Carrots	12.2	10.1	-17	0.0
Starchy vegetables <sup>4</sup>	166.4	138.7	-17	0.6
Potatoes	136.2	112.8	-17	0.6
Sweet corn	26.6	23.1	-13	0.0
Other vegetables <sup>4</sup>	114.0	106.6	-7	0.5
Onions	21.0	20.3	-4	0.1
Head lettuce	22.5	15.2	-32	0.1
Dry pulses (i.e. legumes)	7.1	7.2	2	0.2
Total vegetables and pulses	419.6	387.4	-8	1.7

<sup>1</sup>Aggregate data, unadjusted for cooking losses, plate waste, and other losses. <sup>2</sup>Adjusted for cooking losses, plate waste, and other losses. According to the 2015-2020 *Dietary Guidelines*, 1 cup of raw or cooked vegetables; 1 cup vegetable juice; 2 cups of leafy salad greens; or 1/2 cup dried vegetables can be considered 1 cup from the vegetable group. <sup>3</sup>Includes fresh and processed vegetables. <sup>4</sup>Includes food item(s) not shown separately.

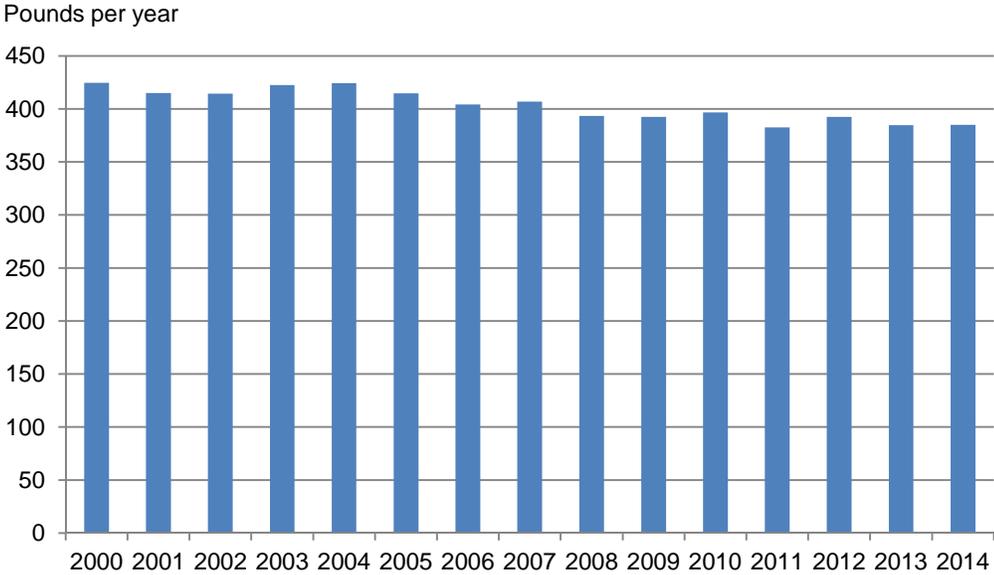
Source: USDA, Economic Research Service.

In terms of share, the majority of per-capita vegetable availability in 2010-14 came from potatoes, tomatoes, sweet corn, onions, and head lettuce (29, 23, 6, 5, and 4 percent, respectively). Within this market segment, the bulk of frozen vegetables came from frozen potatoes. For example, the frozen potato share was 70 percent in 2010-14, down from 73 percent in 2000-04.

Other notable trends include the following:

- Between 2000-04 and 2010-14, fresh-market vegetables in the U.S. food supply declined 7 percent, though not all items within this market segment declined.
- Sweet potatoes, bell peppers, romaine and leaf lettuce, and tomatoes all contributed to the growth in availability of fresh vegetables from 2000-04 to 2010-2014.
- Dark-green and leafy products such as collard greens, kale, mustard greens, and romaine lettuce trended upward (12 percent). Meanwhile, the availability of potatoes, head lettuce, cabbage, and carrots, among others, dropped between 2000-04 and 2010-14.
- Within the processing market, frozen vegetable availability decreased 12 percent, from 78.7 pounds per person in 2000-04 to 68.9 pounds per person in 2010-14. Potatoes were the primary driver behind this decline in vegetables for freezing, followed by carrots and sweet corn. In contrast, the availability of frozen broccoli and miscellaneous vegetables (collards, kale, mustard greens, okra, blackeye peas, pumpkin, etc.) grew 0.2 and 0.9 pounds per person, respectively, during this period.
- Availability of potatoes for chips rose 5 percent, from 16.6 pounds per person in 2000-04 to 17.4 pounds per person in 2010-14.
- Dry pulses (i.e., legumes) increased 2 percent, from 7.1 pounds per person in 2000-04 to 7.2 pounds per person in 2010-14. Pinto beans’ share of legumes accounted in 2010-14 for one-third, followed by black beans. Per-capita use of chickpeas (garbanzo) more than doubled during this period, driven primarily by growing demand for hummus.

Figure 1  
Per capita availability of vegetables and pulses flat since mid-2000s



Includes potatoes, sweet potatoes, and mushrooms.  
Source: USDA, Economic Research Service, 2016 *Vegetables and Pulses Yearbook*.

## Dietary Assessment of Vegetables and Dry Pulses

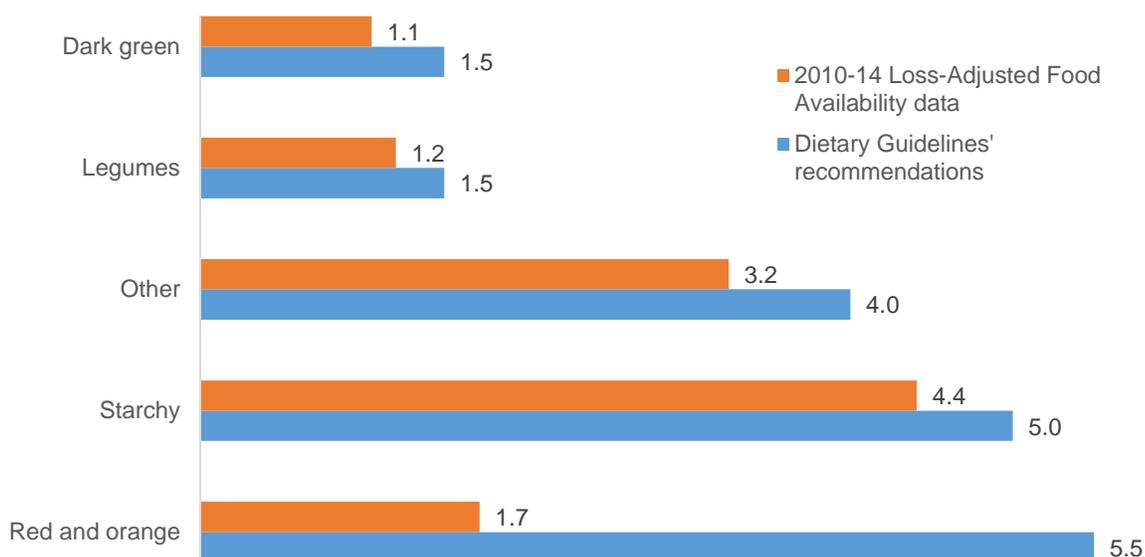
Despite public campaigns and increased public awareness of the importance of increasing vegetable intake, Americans have not fully adopted the Federal *dietary guidelines* recommendations. According to the ERS Loss-Adjusted Food Availability data, the average American consumed about 1.7 cups per day in 2010-14—unchanged since 2005 and well below the 2015-2020 *Dietary Guidelines for Americans* daily recommendations of 2.5 cups (based on the 2,000-calorie-per-day reference level). The Loss-Adjusted Food Availability data adjusts the per-capita use data for losses from farm-to-fork and then converts volume in pounds-per-year to cup-equivalents per day.<sup>2</sup> The data does not measure food intake but rather serves a closer approximation of what people consume.

In addition to the overall recommendations for vegetables, the *Guidelines* also encourage choosing a variety of vegetables, since some are higher in certain vitamins and minerals than others. As such, current recommendations are that consumers select from five vegetable subgroups several times per week in order to optimize nutrient intake. On a weekly basis, the *Guidelines* recommend a diet consisting of dark-green (1.5 cups), red and orange vegetables (5.5 cups), legumes (1.5 cups), starchy vegetables (5 cups), and other vegetables (4 cups). Americans, on average, have not met the recommended amount for any for the five subgroups. For other and starchy vegetables, 3.2 cups and 4.4 cups were consumed per week respectively. Consumption of red and orange vegetables (2.1 cups), dark-green vegetables (1.1), and legumes (1.2) were furthest from the recommended guideline levels.

For Americans to meet the *Guidelines*' recommendations, their intake for overall vegetable (including legumes) would need to increase by 50 percent (0.84 cup per person per day). In terms of variety, Americans would need to substantially increase their consumption of red and orange vegetables by 220 percent, followed by dark greens by 43 percent, legumes by 25 percent, starchy vegetables by 13 percent, and other vegetables by 23 percent.

Figure 2  
2010-14 Loss-Adjusted Food Availability data compared with 2015-2020 *Dietary Guidelines* recommendations for a 2,000-calorie diet

Cup-equivalents per capita per week



Note: Other vegetables for example include artichokes, asparagus, snap beans, etc. The dietary recommendations is based on based on the 2,000-calorie-per-day reference level.

<sup>2</sup> The Loss-Adjusted Food Availability data series, as noted on ERS website, is considered preliminary data.

**This special article is drawn from...**

U.S. Department of Agriculture, Economic Research Service. [Vegetable and Pulses Yearbook](#), March 2016.

U.S. Department of Agriculture, Economic Research Service. [Loss-Adjusted Food Availability Data](#).

U.S. Department of Agriculture and U.S. Department of Health and Human Services. [Dietary Guidelines for Americans](#), 2015-2020, eighth edition.

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## Vegetables and Pulses Outlook: Special Article

# An Overview of Organic Vegetable Production in the United States<sup>1,2</sup>

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Approved by the  
World Agricultural  
Outlook Board.

In 2014, the United States was the world's largest market for organic foods valued at \$30.5 billion, followed by Germany (\$8.9 billion), France (\$5.4 billion), and China (\$4.2 billion) (Willer and Lernoud, 2015). Also in 2011, the United States had 5.4 million acres of organic agricultural land, which accounted for a 0.6 percent total of its agricultural land (USDA-ERS, 2013). From 2008 to 2014 sales from organic farming in the United States grew an average of 12 percent annually, from \$3.2 billion in 2008 to \$5.5 billion in 2014. However, this growth did not occur evenly and has been driven mainly by organic vegetable and fruit production. These commodity groups are normally comprised of high value crops and their share of organic acreage to total acreage are the highest within the organic sector, according to data from the 2014 National Organic Producer Survey.

### *U.S. Organic Vegetable Production*

The 2014 National Organic Producer Survey presents organic production data at the commodity level for the United States and by State. The data are grouped as field crops, vegetables, fruit & tree nuts, and livestock & animal products. For each commodity listed as a vegetable crop by USDA NASS, the organic percentage of its production relative to total production is derived in terms of harvested area (acres) and number of operations. The overall average percentage of organic vegetable production is 8.4 percent of total vegetable acreage and 16.2 percent in number of total operations. These shares are 3.1 and 3.6 times higher than for organic field crops. While field crops, and particularly grains, hold a large share of the American diet, they are still largely conventionally produced. Meanwhile, vegetable crops, a comparatively smaller part of diets in the United States, are more frequently produced as organic. As an example, spinach or celery both have small shares in the U.S. diet yet have a high organic share of total operations (table 1).

<sup>1</sup> Gustavo Ferreira is an economist with Market and Trade Economics Division, Economic Research Service, USDA.

<sup>2</sup> Zachary Turk is a former student intern with Market and Trade Economics Division, Economic Research Service, USDA.

Table 1--U.S. organic field grown vegetable production shares, 2014

Crop	Organic operations <sup>1</sup> (number)	Organic area harvested (acres)	Average operation size in crop (acres)	Organic operations as a % of 2012 U.S. total	Organic area as a % of 2012 U.S. total
Artichokes	61	--	--	36.5	--
Snap beans, fresh	843	1,525	2.0	4.1	1.6
Snap beans, processing	65	4,356	67.0	2.5	2.5
Broccoli	716	8,571	12.0	19.7	6.6
Cabbage <sup>2</sup>	1,099	2,275	2.1	22.5	3.1
Carrots	1,062	8,972	8.4	23.8	9.0
Cauliflower	316	1,745	5.5	23.8	4.1
Celery	190	2,235	11.8	38.9	6.9
Garlic	968	722	0.7	28.4	3.0
Herbs, fresh cut	574	3,050	5.3	25.5	33.7
Lettuce, all	1,063	32,122	30.2	18.5	9.9
Onions <sup>3</sup>	1,487	--	--	24.0	--
Peas, green	385	9,624	25.0	4.6	4.5
Peppers, bell	881	1,196	1.4	7.6	2.4
Potatoes	953	12,082	12.7	4.5	1.0
Spinach	411	18,000	43.8	25.8	38.8
Squash, all	1,347	6,826	5.1	9.6	11.7
Sweet corn	432	11,811	27.3	1.7	2.1
Sweet potatoes	302	6,005	19.9	13.7	4.8
Tomatoes, fresh	1,847	3,107	1.7	5.9	2.6
Tomatoes, processing	88	4,545	51.6	3.5	1.6
Vegetables, other	2,056	19,475	9.5	25.5	26.2

Source: 2014 National Organic Producer Survey, 2012 Census of Agriculture.

<sup>1</sup> Organic operations include certified and exempt organic farms. Exemption from certification requires \$5,000 or less in organic sales annually.

<sup>2</sup> The 2014 Organic Survey breaks down organic cabbages into green, red and other. The 2012 Census of Agriculture classifies cabbages as Chinese or head. The totals from each source include all the aforementioned categories and were used to estimate the organic operation and area shares.

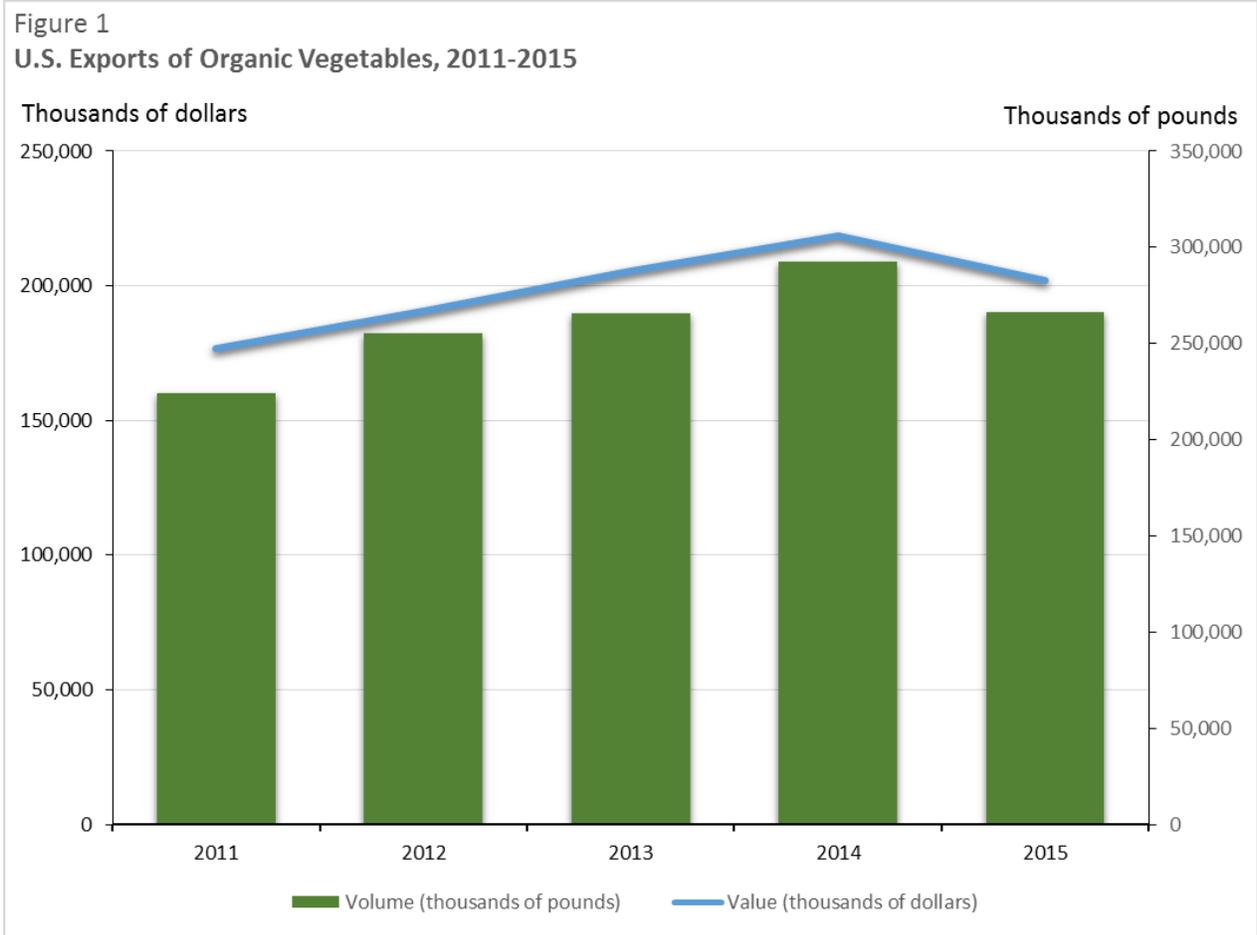
<sup>3</sup>The 2014 Organic Survey breaks down organic onions into dry, red (fresh), yellow (fresh), white (fresh), and yellow (processing). The 2012 Census of Agriculture classifies onions as dry. Total acreage of organic onions, average size of organic onion farms, and organic onion acreage as a share of total onion production area were not estimated because acreage data for organic white (fresh) and yellow (processing) onions is not disclosed in the 2014 Organic Survey. The totals from each source include all the aforementioned categories and were used to estimate the organic operations share.

In 2014, fresh tomatoes, onions and squash had the largest number of U.S. organic operations with 1,847, 1,487 and 1,347 farms, respectively. Nevertheless, these operations are relatively small in size; less than 2 acres for tomato and 5 acres for squash producers. Organic production accounted for relatively small portions of total land and number of farms for these two commodities. Lettuce was the vegetable crop with the largest area allocated to organic production at 32,122 acres, and organic lettuce farms were among the larger ones in size averaging 30 acres. However, less than 10 percent of the total area used for lettuce production in the United States was under organic production methods in 2014 (table 1).

Spinach and fresh herbs are examples of commodities where organic production accounts for a significant share of total production area. Specifically, organic spinach accounted for almost 39 percent of total spinach acres in 2014. For fresh herbs, that share was close to 34 percent. On the other side of the spectrum, production of organic tomatoes for processing, sweet corn, potatoes and snap beans (fresh and processed) are characterized by smaller shares of total farms and acreage. Vegetables with larger shares of organic farms include celery (38.9 percent), artichokes (36.5 percent), and garlic (28.4 percent). These are followed by organic spinach and fresh herbs, with both exceeding a 25 percent share. It is important to note that production of organic artichokes is concentrated in only 61 farms (table 1).

**Exports of Organic Vegetables**

The Department of Commerce, Census Bureau currently collects data on 33 organic export products, most of which are fresh or chilled fruit and vegetables.<sup>3</sup> However, when the first data was tabulated on organic commodities back in 2011, there were just 23 items. Those ten added commodities included three vegetables (organic cabbage, beets, and peas). These products are categorized by what are called Harmonized Codes in the U.S. Census Bureau’s Schedule B, which is the official statistical system for classifying about 8,000 U.S. commodities that are exported to the world. Data on the original 23 commodities shows that U.S. exports of organic vegetables increased slightly from January 2011 to December 2014 and then experienced a slight decrease in 2015. This was the case for exported value and volume (fig. 1). Canada and Mexico are the top export markets for most of the U.S. organic vegetables.



<sup>3</sup> The Census tracks the exports of the following 33 organic commodities: cabbage, cucumbers, grapefruit, pears, potatoes, cherry tomato, Roma plum tomato, tomato other, onion sets, cauliflower, broccoli, head lettuce, lettuce not head, carrots, celery, peppers, spinach, oranges, lemons, grapes, apples, cherries, strawberries, cult blueberries, coffee roast, tomato sauce (excluding Ketchup), beet, peas, asparagus, limes, watermelon, peach, and berries.

The importance of specific commodities relative to total tracked U.S. organic vegetable exports depends on whether value or volume is used as the ranking measure. In 2015, organic onions, carrots and cauliflower accounted for nearly 53 percent of the volume of organic vegetables exported. On the other hand, lettuce (not head), spinach and carrots were the top three commodities in terms of their share of the total value exported. Organic spinach and lettuce are examples of relatively low-volume but high-value organic exports, likely due to their perishability. For the 2011-2015 period, organic onions and head lettuce had the highest growth in export value with 356 percent and 151 percent increases, respectively. These increases have been driven by Mexico, which represented 99 percent of the export market for onions and 61 percent for head lettuce in 2015.

On the other hand, Roma plum and cherry tomatoes experienced the largest reductions in exports with 53 and 36 percent decreases, respectively. Once again, the decrease in organic tomato exports was the result of lower exports to its main market, Mexico. The export value of all other vegetables remained fairly stable and registered only small increases or decreases between 2011 and 2015.

Table 2--Ranking of U.S. organic vegetable exports by volume and value, 2015

Commodity	Export volume (thousands of pounds)	Organic vegetable exports as a share of U.S. total	Commodity	Export value (thousands of dollars)	Organic vegetable exports as a share of U.S. total
Onion Sets	52,877	19.9%	Lettuce Not Head	56,576	28.0%
Carrots	43,735	16.4%	Spinach	38,672	19.1%
Cauliflower	43,612	16.4%	Carrots	25,885	12.8%
Lettuce Not Head	34,384	12.9%	Cauliflower	21,036	10.4%
Celery	22,622	8.5%	Onion Sets	10,679	5.3%
Spinach	15,461	5.8%	Broccoli	10,672	5.3%
Broccoli	14,768	5.5%	Celery	9,647	4.8%
Potatoes	8,918	3.4%	Cherry Tomato	9,119	4.5%
Head Lettuce	8,601	3.2%	Tomato Other	8,028	4.0%
Tomato Other	7,431	2.8%	Peppers	3,812	1.9%
Cherry Tomato	5,531	2.1%	Head Lettuce	3,352	1.7%
Peppers	4,945	1.9%	Potatoes	2,133	1.1%
Roma Plum Tomato	3,021	1.1%	Roma Plum Tomato	2,038	1.0%
Asparagus	253	0.1%	Asparagus	539	0.3%

Source: Prepared by USDA, Economic Research Service using data from U.S. Department of Commerce, U.S. Census Bureau.

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