United States Department of Agriculture

Vegetables and Pulses Outlook

Economic Research Service

Situation and Outlook

VGS-359

Oct. 27, 2017

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Flooding, Hurricanes, and Drought Disrupt Otherwise Strong Vegetable and Dry Pulse Markets

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Approved by the World Agricultural Outlook Board.

Major weather events have caused varying impacts across many vegetable and pulse regions and crops. However, overall, crops have responded with stronger production over previous periods despite the challenging conditions. During the first 6 months of 2017, prices at the point-of-first-sale (farm price) for most commercial fresh-market vegetables were above previous-year levels, despite increased shipments. Overall, 2017 shipment volume through August was up 2 percent from the 2016 year-to-date level and at parity with shipments from the same time in 2015.

Despite a national increase in shipments and although winter rains gave California some relief from the prolonged drought, State fresh vegetable shipments were slightly down from previous years. Flooding early in the season created a temporary delay in harvest, which resulted in a price spike during the spring. Additionally, major hurricanes that acutely affected Texas and Florida may cause further delays in harvest that have not been fully realized to date.

At 35.3 million hundredweight (cwt), the 2017 dry bean harvest is record-high and 6.6 million cwt above the 2016 production estimate. Lentil planted area surged to a new record of 1.109 million acres in 2017, but dry conditions sapped yields and resulted in a 41-percent decline in production. The dry pea harvest was hit by both lower planted and harvested area and reduced yields, which combined to decrease dry pea production by 45 percent from 2016.

U.S. fall-season potato growers planted 907,800 acres in 2017, down for the second consecutive year. Harvested area also declined 1 percent. Declines in the 2014/15 and 2015/16 marketing year potato prices are likely responsible for the area decrease.

Industry Overview

Table 1—U.S. vegetable and pulse industry at a glance, 2015-2017[1]

Item	Unit	2015	2016	2017f	Percent Change 2016-2017
Area harvested					
Vegetables Fresh	1,000 acres	1,378	1,402	1,390	-0.9
Vegetables Processing	1,000 acres	1,076	985	971	-1.5
Potatoes	1,000 acres	1,054	1,018	1,017	-0.1
Dry beans, peas and lentils	1,000 acres	3,267	3,796	4,117	8.4
Other[2]	1,000 acres	156	167	162	-3.1
Total	**1,000 acres**	**6,931**	**7,368**	**7,656**	**3.9**
Production					
Vegetables Fresh	Million cwt	352	359	365	1.7
Vegetables Processing	Million cwt	388	364	362	-0.5
Potatoes	Million cwt	441	441	431	-2.3
Dry beans, peas and lentils	Million cwt	54	69	68	-1.8
Other[2]	Million cwt	40	41	42	1.5
Total	**Million cwt**	**1,275**	**1,274**	**1,267**	**-0.5**
Crop value					
Vegetables Fresh	$ millions	11,784	10,517	10,799	2.7
Vegetables Processing	$ millions	2,234	1,994	1,974	-1.0
Potatoes	$ millions	3,863	3,925	3,814	-2.8
Dry beans, peas and lentils	$ millions	1,195	1,518	1,674	10.2
Other[2]	$ millions	1,869	1,897	1,958	3.2
Total	**$ millions**	**20,945**	**19,851**	**20,219**	**1.9**
Unit value[3]					
Vegetables Fresh	$/cwt	33.48	29.29	29.59	1.0
Vegetables Processing	$/cwt	5.75	5.48	5.45	-0.5
Potatoes	$/cwt	8.76	8.90	8.85	-0.6
Dry beans, peas and lentils	$/cwt	22.29	21.96	24.65	12.3
Other[2]	$/cwt	46.31	46.31	47.09	1.7
Total	**$/cwt**	**16.42**	**15.58**	**15.95**	**2.4**
Imports					
Vegetables Fresh	$ millions	6,605	7,475	6,854	-8.3
Vegetables Processing[4]	$ millions	3,269	3,433	3,599	4.8
Potatoes	$ millions	1,150	1,241	1,369	10.3
Dry beans, peas and lentils	$ millions	252	241	233	-3.2
Other[5]	$ millions	688	711	687	-3.4
Total	**$ millions**	**11,964**	**13,101**	**12,743**	**-2.7**
Exports					
Vegetables Fresh	$ millions	1,931	1,925	1,922	-0.1
Vegetables Processing[4]	$ millions	1,812	1,791	1,794	0.1
Potatoes	$ millions	1,672	1,737	1,815	4.5
Dry beans, peas and lentils	$ millions	700	826	969	17.3
Other[5]	$ millions	789	924	945	2.3
Total	**$ millions**	**6,904**	**7,203**	**7,445**	**3.4**
Per-capita availability					
Vegetables Fresh	Pounds	141.6	145.0	135.4	-6.6
Vegetables Processing	Pounds	101.2	106.5	111.2	4.3
Potatoes	Pounds	115.4	111.2	109.2	-1.8
Dry beans, peas and lentils	Pounds	8.3	8.5	8.5	-0.4
Other[2]	Pounds	11.5	11.2	12.2	8.9
Total	**Pounds**	**378.0**	**382.4**	**378.2**	**-1.1**

f = forecast. [1]Total rounded. [2]Includes sweet potatoes and mushrooms. [3]Ratio of total value to total production. [4]Includes canned, frozen, and dried. Excludes potatoes, pulses, and mushrooms. [5]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 Shipments Up

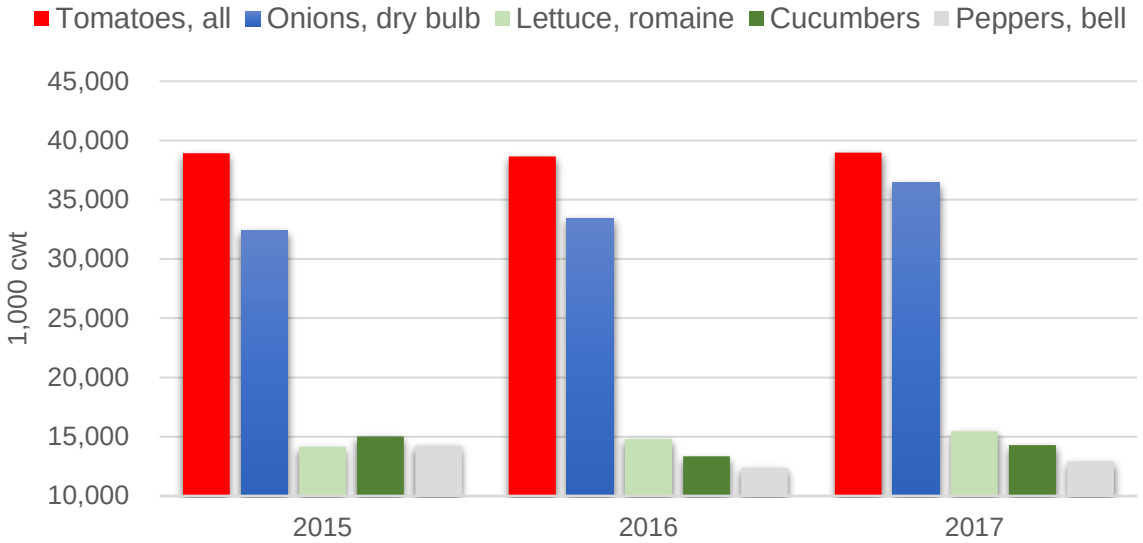
Year-to-date shipment volumes for many fresh-market vegetables in 2017 through August were mostly higher compared with the same period last year. Overall, volume was up 2 percent in the first 8 months of 2017 compared to 2016. If the continued level of shipments continue, 2017 is on track to outpace 2015 shipment levels as well (table 2). The increase was driven mainly by increases in dry bulb onions, carrots, romaine lettuce, cucumbers, bell peppers, and tomatoes as California experienced improved moisture that relieved prolonged drought conditions in the State (fig. 1). Improved moisture in Washington and Oregon also helped dry bulb onion conditions over last year as the percentage of the crop within good-to-excellent condition averaged 35 percent in 2017, up 3 percentage points from 1 year ago.

Table 2—Selected U.S. fresh-market vegetable shipments, 2015-2017[1]

	2015		2016		2017		YTD Change[2]
	Aug YTD	Annual	Aug YTD	Annual	Aug YTD	Annual	
	1,000 cwt						Percent
Asparagus	3,357	4,617	3,632	4,836	3,686	---	*1*
Snap beans	2,668	3,983	2,577	3,778	2,615	---	*1*
Broccoli	7,266	10,855	7,980	11,843	7,467	---	*-6*
Cabbage	7,848	11,715	5,939	9,013	6,299	---	*6*
Chinese Cabbage	737	937	755	1,052	629	---	*-17*
Carrots	7,400	10,901	7,615	10,673	8,202	---	*8*
Cauliflower	3,156	4,388	3,449	5,174	3,502	---	*2*
Celery	10,799	16,252	11,088	17,040	10,458	---	*-6*
Sweet corn	11,186	13,034	11,061	12,733	11,000	---	*-1*
Cucumbers	15,022	21,306	13,342	20,009	14,305	---	*7*
Greens	2,209	3,245	2,007	3,068	1,722	---	*-14*
Head lettuce	20,374	29,775	18,796	27,895	17,802	---	*-5*
Lettuce, romaine	14,163	21,363	14,811	22,698	15,449	---	*4*
Lettuce, others	3,513	5,410	3,482	5,156	3,554	---	*2*
Onions, dry bulb	32,382	50,668	33,418	50,411	36,448	---	*9*
Onions, green	2,491	3,629	2,587	3,855	2,665	---	*3*
Peppers, bell	14,229	20,219	12,370	18,166	12,923	---	*4*
Peppers, chile	5,760	10,088	6,318	12,238	6,421	---	*2*
Squash	6,753	10,055	7,502	11,523	7,214	---	*-4*
Tomato, field, round	13,196	18,630	11,050	16,820	11,672	---	*6*
Tomato, field, Roma	5,232	7,027	6,622	8,406	6,040	---	*-9*
Tomato, ghouse[3]	18,223	26,222	18,922	26,473	19,116	---	*1*
Tomato, small[4]	2,259	3,163	2,067	2,766	2,139	---	*3*
Selected total	**210,223**	**307,482**	**207,390**	**305,626**	**211,328**	**---**	***2***

[1]1,000 cwt = 100,000 lbs. Data for 2017 are preliminary and include domestic and partial imports. [2]Change from YTD August 2016. [3]All tomatoes produced under cover. [4]Grape and cherry tomatoes.
Source: USDA, Agricultural Marketing Service, Fruit and Vegetable Market News.

Figure 1—Select fresh-market January to August vegetable shipments

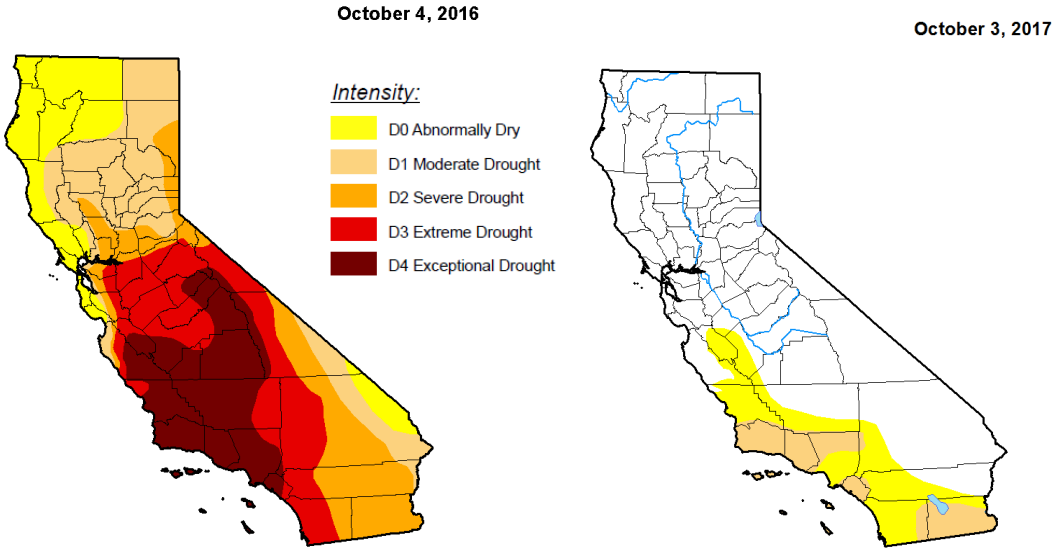


August year to date, YTD (year over year).
Source: USDA, Agricultural Marketing Service, Fruit and Vegetable Market News.

Grower Prices Volatile in Response to an Active Weather Season

California's extended drought came to an official end in 2017 (fig. 2). A heavy snowpack from the 2016-2017 winter, which accounts for approximately 30 percent of California's overall water needs, and heavy, drenching rains in early spring helped to relieve the State's ongoing water shortage.

Figure 2 – Current California drought conditions versus 1 year ago



Source: United States Drought Monitor

Although some lingering effects still remain, particularly with the recharging of underground aquifers, most of the restrictions imposed by the drought state of emergency, issued by the Governor in January 2014, ended in April 2017 (United States Geological Survey). This has translated into improved quality and early production for the State, which drives markets for many individual fresh and processed vegetable commodities.

During the first 6 months of 2017, point-of-first-sale (farm price) for most commercial fresh-market vegetables were above a year earlier. The price index for all vegetables was over 16 percent higher (table 3).Average prices for celery rose 149 percent from a year earlier, followed by broccoli (up 67 percent), head lettuce (up 66 percent), and snap beans (up 58 percent), among others. Conversely, April-June farm prices averaged lower for onions (down 34 percent), carrots (down 26 percent), and asparagus (down 12 percent).

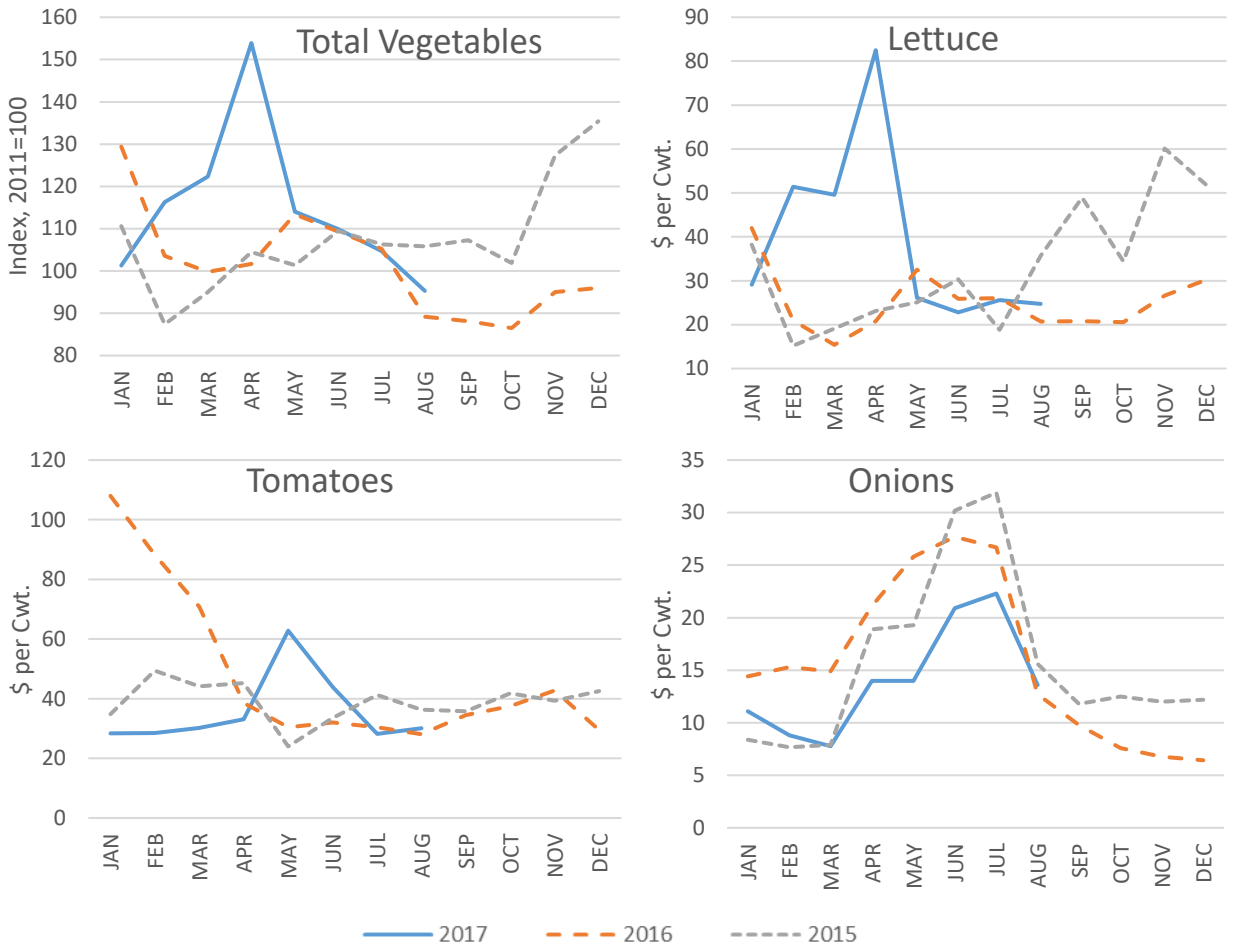
Total vegetable prices for 2017 have remained consistently above 2016 levels overall. One driving factor was the price spike that occurred in early spring. In April, prices for total vegetables rose 26 percent from the previous month, primarily driven by a spike in lettuce prices, which increased to $82.5 per cwt, 66 percent above the previous month and nearly three times the April 2016 price. Flooding in California, brought on by heavy rains early in the year, delayed planting and harvesting of many leafy greens. California accounts for approximately 74 percent of total lettuce production. Celery prices in May also experienced a dramatic jump, likely due to the same rains; however, unlike lettuce, celery is not a significant driver of the overall vegetable price. Other crops, such as tomatoes and onions, which are grown in a wider variety of States and have different marketing windows, were less affected by the West Coast rains, and their prices remained more stable (fig. 3).

Table 3—U.S. quarterly fresh-market grower (point-of-first-sale) prices, 2016-2017

	2016				2017				Change
Commodity	1Q	2Q	3Q	4Q	IQ	2Q	3Q *	4Q *	2nd Q[1]
				-- Cents/pound ($/cwt) --					*Percent*
Asparagus	109.00	127.00	---	---	96.60	111.83	--	--	-11.9
Snap beans	105.37	44.60	89.10	72.97	50.43	70.60	83.50	78.75	58.3
Broccoli	36.17	45.57	33.67	36.13	60.23	76.23	63.25	81.25	67.3
Carrots	35.03	36.57	29.37	28.57	28.33	27.10	24.25	24.50	-25.9
Cauliflower	48.07	65.97	40.93	55.43	85.23	87.40	57.75	123.50	32.5
Celery	38.63	21.67	16.63	20.83	19.20	53.87	30.50	51.25	148.6
Sweet corn	56.67	28.63	27.10	36.17	30.93	31.63	26.25	30.50	10.5
Cucumbers	41.85	28.90	20.50	22.30	38.50	34.80	28.00	31.75	20.4
Lettuce, head	26.10	26.40	22.50	25.80	43.37	43.80	48.25	63.25	65.9
Onions, dry bulb	14.87	24.87	16.39	6.92	9.23	16.30	13.50	7.25	-34.5
Tomatoes, field	89.07	33.67	31.00	36.57	29.03	46.60	31.25	35.25	38.4
All vegetables[2]	**110.93**	**108.13**	**94.30**	**92.50**	**113.30**	**125.93**	**113.75**	**121.25**	**16.5**

-- = not available. * = ERS forecast, rounded to 25-cent level. [1]Change in 2nd quarter 2017 over 2nd quarter 2016.
[2]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.

Figure 3 – Early 2017 price spike driven by flooding in California



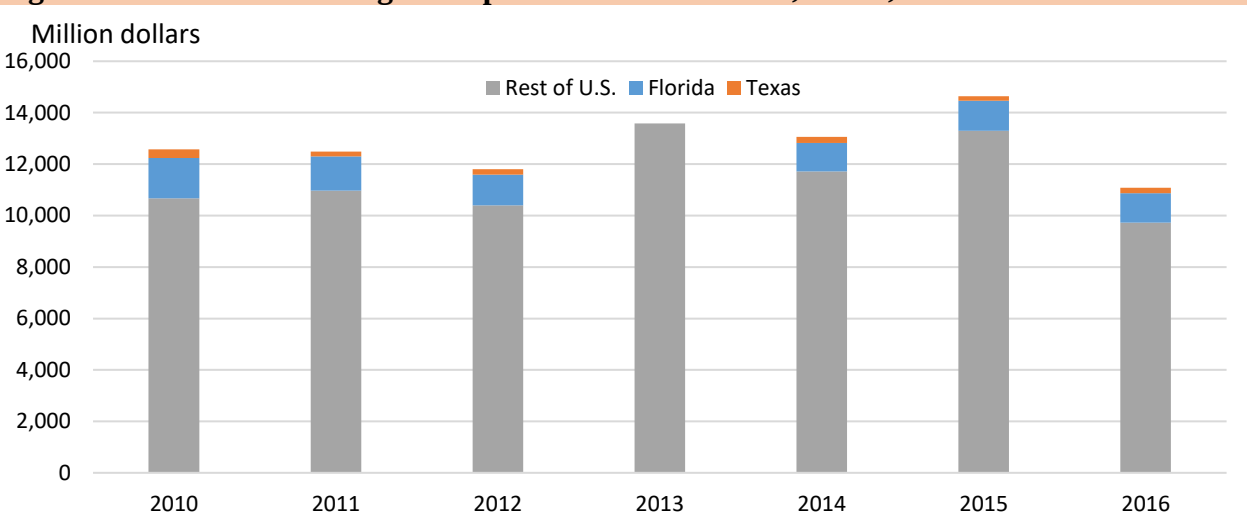
Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Fresh Vegetable Feature:
Windy, Wet Weather Hits Key Winter Vegetable-Growing States

During what has become an active hurricane season, two powerful hurricanes made landfall in the southern United States within a few weeks of each other. Although each impacted a vegetable producing State (Texas and Florida), the timing seems to have only minimally impacted vegetable markets, primarily causing a delay in plantings. The first storm, Hurricane Harvey, hit Rockport, Texas on August 25. Over a 4-day period, affected areas of Texas, primarily in and around Houston, received up to 40 inches or more of rain, making Hurricane Harvey the wettest storm ever to hit the continental United States. On August 30, a second cyclone developed in the Atlantic, eventually becoming Hurricane Irma, which reached Category 5 status. On September 10, Hurricane Irma made its U.S. landfall on Cudjoe Key, Florida. While Irma weakened as it moved up the Florida Coast, a large swath of the State was affected by high winds and damaging rains.

3

Figure 4 – Value of fresh vegetable production for Florida, Texas, and rest of U.S.[1]



[1]State-level data not reported for 2013.
Source: USDA, National Agricultural Statistics Service; USDA, ERS.

Florida and Texas are both important winter-vegetable-growing States. In 2016, the farm gate value of Florida's vegetable production exceeded $1,191 million, behind only California and Arizona. The farm value of Texas' vegetable production ranked 9th nationally at $233 million. Both States provide fresh produce during winter months when cultivation is limited in more northern climates. Florida, in particular, is a key source of tomatoes, bell peppers, green beans, cucumbers, and more in late fall and winter months and has earned the nickname "winter vegetable capital of America" (fig. 4).

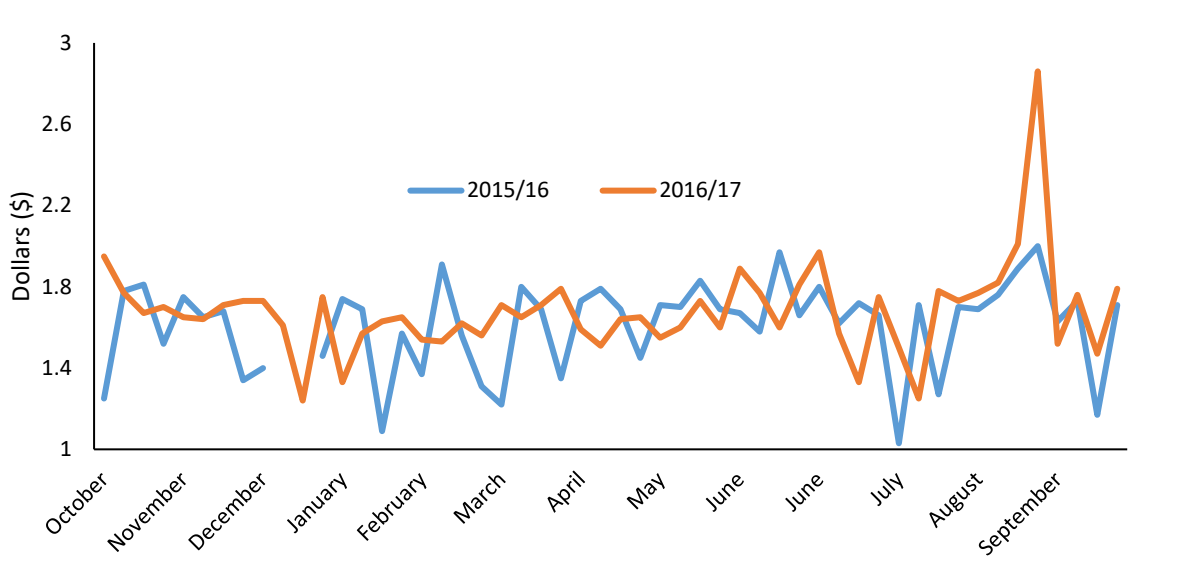
In Florida, total agricultural losses attributable to Hurricane Irma are estimated by the State Agricultural Commissioner's office to exceed $2.5 billion. The citrus crop was hardest hit, with revised production estimates ranging from 21 to 55 percent below 2016/17. Vegetable producers were spared the full brunt of the storm's impacts as only a small fraction of fields were planted when Hurricane Irma passed through major production regions in the South and Central portions of the State.

However, unplanted fields are reported to have sustained damage due to loss of row covers, drip tape, and soil treatments that had been applied in preparation for planting. Fields that remained underwater for several days or longer could not be planted, delaying the production of vegetables that would typically be available in retail locations near Thanksgiving.

The availability of tomato and other seedlings is also expected to be reduced due to the destruction of greenhouses. The University of Florida notes that structural damage to Florida's agricultural sector, post-Hurricane Irma, is widespread. Although not a major mushroom-producing State, the Florida mushroom industry, in particular, suffered losses, and industry

sources are reporting a locally tightening market. While causality cannot be definitively established, prices for 8-ounce packages of white mushrooms in Southeast grocery stores spiked immediately following Hurricane Irma when supplies were most disrupted. Prices have largely stabilized and returned to normal levels of fluctuation since then (fig. 5).

Figure 5 –Average weekly retail prices for white mushrooms in Southeast grocery stores



Source: USDA, Agricultural Marketing Service.

The Rio Grande Valley, located in the southernmost portion of Texas, is the primary fruit and vegetable production region in the State. With the effects of the very slow moving Hurricane Harvey largely limited to eastern coastal areas of Texas and southern Louisiana, the impact of the storm on regional vegetable production is ultimately expected to be minimal. However, transportation out of Texas Gulf ports to export destinations was greatly reduced immediately following the storm. Since fresh vegetables are largely transported domestically via refrigerated truck, limited access to export ports is of greater importance to grains such as wheat.

Post-storm, USDA-AMS data largely indicate that vegetable shipments within the continental United States remained stable. Trade data from the U.S. Census Bureau, currently available only through August, will potentially reveal additional storm effects such as markedly reduced exports. Additionally, once U.S. Census Bureau data is available through September, more details on the volume of supplementary imports will be available. Increased produce imports from neighboring Mexico and other trade partners may indicate an effort to offset hurricane-related produce losses in the Texas and Florida.

In the short term, these weather events appear to have had little effect on vegetable prices. The longer term storm impacts remain to be seen, especially for citrus and nursery crops. Based on preliminary data , both hurricanes appear to have occurred early enough in the winter vegetable growing season that only minor disruptions to the supply of vegetables to market and slight delays in cultivation were experienced.

Retail Prices Up 2 Percent From Last Year

The overall Consumer Price Index (CPI) for fresh-market vegetables rose 2 percent from a year ago this August. For the same period, the CPI for potatoes, tomatoes, lettuce, and other vegetables also rose, while the Producer Price Index (PPI) for tomatoes decreased 10 percent. Between July and August 2017, the CPI increased for lettuce even though the PPI for lettuce was down 30 percent. Conversely, the CPI for tomatoes declined between July and August, while PPI increased 48.8 percent (table 4).

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

Item	2016	2017		Change from previous[1]	
	Aug	July	Aug	Month	Year
	---------- *Index* ----------			---- *Percent* ----	
Consumer Price Indexes (1982/84=100)					
Food at home	238.3	239.4	239.0	-0.2	0.3
Food away from home	263.6	268.6	269.5	0.3	2.2
Fresh vegetables	314.0	320.3	320.4	0.0	2.1
Potatoes	346.4	351.8	352.1	0.1	1.7
Tomatoes, all	312.8	320.5	319.5	-0.3	2.1
Lettuce, all	284.4	281.3	289.5	2.9	1.8
Other vegetables	316.8	325.6	323.8	-0.5	2.2
Producer Price Indexes (12/1991=100)					
Fresh vegetables (excl. potatoes) 2/	184.8	211.8	185.4	-12.5	0.3
Beets	90.8	106.1	112.7	6.2	24.1
Broccoli	108.2	175.3	143.8	-18.0	32.9
Cabbage	248.6	174.3	129.4	-25.8	-47.9
Carrot	175.6	148.2	161.5	9.0	-8.0
Cauliflower	38.2	54.4	39.8	-26.8	4.2
Celery	170.7	377.4	156.7	-58.5	-8.2
Cucumber	319.3	337.3	262.1	-22.3	-17.9
Eggplant	--	287.5	314.7	9.5	--
Endive	436.5	699.9	503.0	-28.1	15.2
Green peas	139.5	--	--	--	--
Greens	177.8	176.8	192.0	8.6	8.0
Lettuce[2]	155.6	239.2	167.0	-30.2	7.3
Onions, dry bulb[2]	169.2	190.0	163.3	-14.1	-3.5
Peppers, green	273.2	456.9	252.9	-44.6	-7.4
Spinach	243.0	349.6	371.7	6.3	53.0
Squash	418.3	403.0	549.8	36.4	31.4
Sweet corn	128.7	154.1	158.6	2.9	23.2
Tomatoes[2]	245.9	148.9	221.6	48.8	-9.9

[1]Change in August 2017 from previous month/year. [2]Index base is 1982=100.
Source: U.S. Dept. of Labor, Bureau of Labor Statistics (http://www.bls.gov/data/home.htm).

Fresh Exports Down and Imports Unchanged

According to the U.S. Census Bureau, during January-August 2017, the volume of fresh-market vegetable imports (excluding potatoes, sweet potatoes, melons, and mushrooms) was unchanged from a year earlier. Fresh-market tomatoes, which accounted for 27 percent of total imports, declined 5 percent or 138 million pounds, followed by squash, which declined 21 million pounds (down 3 percent), cucumbers, down 14 million pounds (1 percent), and chile peppers, down 11 million pounds (2 percent). All lettuce imports climbed 20 percent from previous-year levels to 399 million pounds. Fresh lettuce imports spiked in April at 67 million pounds (89 percent higher than 2016 imports), the same month flooding in California created harvest delays in domestic lettuce production (table 5). The top three sources of fresh-market vegetable imports so far in 2017 include Mexico (82 percent of the total), Canada (10 percent), and Peru (2 percent). Canada and Peru declined from last year, while Mexico increased 1 percent. Collectively, these countries represent 93 percent of fresh-market vegetable imports (table 6).

U.S. fresh-vegetable export volume through August decreased 4 percent to 2.3 billion pounds. Dry onions and other fresh vegetables combined accounted for 55 percent of total exports and accounted for most of the overall volume decline (table 5). Top foreign destinations for this period were Canada (82 percent of total exports), followed by Taiwan (4.5 percent), and Mexico (4.4 percent). Japan, which was ranked second place last year, moved down to fourth.

Table 5--Selected fresh-market vegetable trade volume, 2015-2017[1]

	2016	January-August			Change
	Annual	2015	2016	2017	2016-17
		Million pounds			*Percent*
Exports, fresh:					
Onions, dry bulb	662	319	381	374	-2
Lettuce, head	269	186	174	176	1
Lettuce, other	427	283	279	280	0
Tomatoes	187	148	120	133	11
Cauliflower	274	170	186	169	-9
Carrots	171	141	136	126	-7
Celery	256	177	172	158	-8
Other	1,385	939	966	890	-8
Total	**3,631**	**2,362**	**2,413**	**2,306**	**-4**
Imports, fresh:					
Tomatoes, all	3,938	2,451	2,836	2,698	-5
Cucumbers	1,925	1,253	1,345	1,330	-1
Peppers, sweet	1,422	862	995	1,008	1
Lettuce, all	481	309	332	399	20
Onions, dry bulb	1,149	695	781	797	2
Peppers, chile	1,003	509	581	570	-2
Squash[2]	964	525	629	607	-3
Asparagus	473	301	337	355	5
Other	3,384	2,061	2,232	2,304	3
Total	**14,739**	**8,965**	**10,068**	**10,068**	**0**

[1]Excludes melons, potatoes, mushrooms, dry pulses, and sweet potatoes. [2]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: U.S. imports by country, 2015-2017[1]

Item	2016 Annual	January - August 2015	January - August 2016	January - August 2017	Change 2016-17
	---------- Million pounds ----------				Percent
Mexico	11,562	7,196	8,148	8,243	1
Canada	1,665	938	1,013	999	-1
Peru	451	167	182	163	-11
Costa Rica	223	134	146	130	-11
China	106	65	65	56	-14
Others	732	465	514	477	-7
Total	**14,739**	**8,965**	**10,068**	**10,068**	**0**

[1]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.

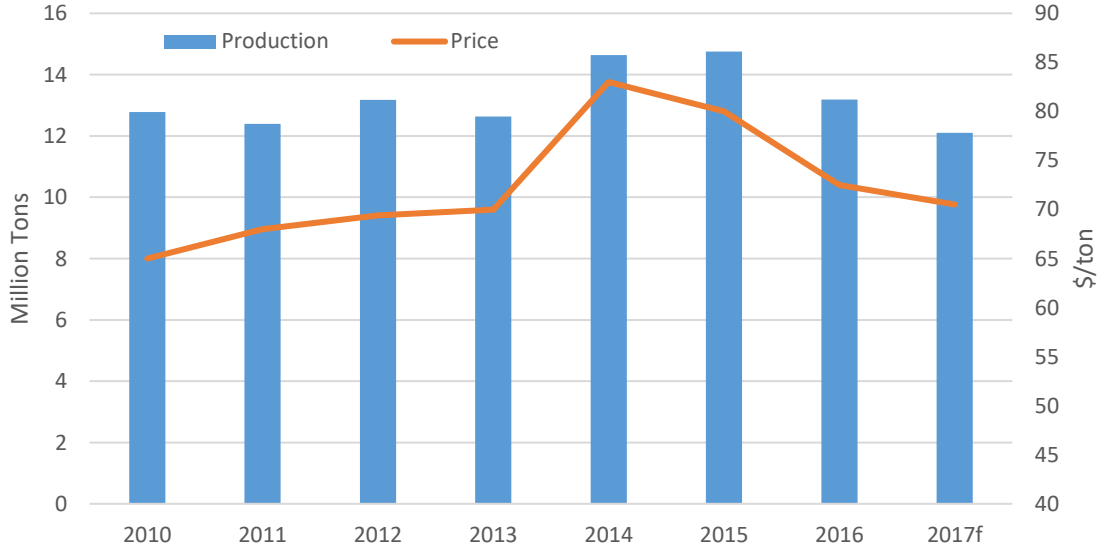
Processing Vegetables

Prospective Tomato Area Continues To Drop

California tomato processors report they anticipate contracting a total of 11.5 million short tons in 2017—an 8-percent decrease from the amount produced under contract in 2016. Estimated contract acreage of 233,000 is 10 percent below last year's level. The decline in the 2017 processing tomato crop is partly attributed to lingering issues brought by California's earlier drought and high stocks remaining from 2015's record-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 10 percent above levels from the previous year. Even with the reduced production forecast, supplies of most tomato products will likely be adequate given the large stocks.

Combining the intended contract production of processing tomatoes from California (11.5 million tons) 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 2014-17) suggests the total U.S. crop of tomatoes for processing could reach 12.1 million tons in 2017—10 percent below 2016 and 3 percent below the 5-year average. Processing tomatoes account for three-fourths of the output of annual processing vegetables (excluding potatoes and sweet potatoes).

Figure 6 – Production and price[1] of U.S. processing tomatoes, 2010-2017



f-forecast. [1]Average price at first delivery point in California, excluding premiums.
Source: USDA National Agricultural Statistics Service and California Tomato Growers Association.

With relatively high stocks in addition to decreased contracted area, grower prices for this season also declined for the third consecutive year. According to the California Tomato Growers Association, the 2017 base price at the point of first delivery (excluding fees and incentives that vary by processor) for tomatoes destined for processing was reduced in February to $70.50 per short ton on a delivered-ton basis—down $2 (or 3 percent) from a year ago (fig. 6).

Frozen Stocks Dip Slightly Below Last Year's Record-High Levels

Stocks of frozen vegetables (excluding potatoes and adjusting cob corn to a cut basis) in cold storage warehouses on August 30 were down only 2 percent from a year ago, which was a record high since the data were first recorded in 1962. Although aggregate stocks were down, there were still large percentage increases in some commodities; notably cauliflower, onions, and blackeye peas. Declines were noted for a majority of vegetables, including sweet corn, green peas, snap beans, and carrots, which combined accounted for 58 percent of cold storage stocks (table 7). Relatively fewer stocks on hand may be largely the result of stronger prices so far in 2017.

Table 7—Frozen vegetables: U.S. cold storage holdings, 2015-2017 (August 30)

Commodity	2015	2016	2017p	Change from a year ago
	---------- *1,000 pounds* --------			*Percent*
Asparagus	14,270	12,697	12,102	-5
Lima beans	44,819	45,577	33,807	-26
Snap beans	239,545	261,480	212,494	-19
Broccoli	77,723	72,192	67,536	-6
Brussels sprouts	12,241	12,265	14,101	15
Carrots	163,816	197,595	186,440	-6
Cauliflower	15,146	18,853	26,193	39
Sweet corn, cut	446,215	464,716	377,400	-19
Sweet corn, cob	165,657	177,551	181,921	2
Mixed vegetables	60,109	65,596	72,540	11
Okra	48,184	46,536	38,821	-17
Onions, all	53,428	61,991	73,667	19
Blackeye peas	2,121	1,332	1,900	43
Green peas	397,020	437,827	410,645	-6
Southern greens	12,050	18,049	18,517	3
Spinach	48,267	54,125	61,732	14
Squash	49,943	52,030	48,758	-6
Other vegetables	364,047	405,041	518,802	28
Total	**2,214,601**	**2,405,453**	**2,357,376**	**-2**

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

Processed Vegetable Exports and Imports Up

From January to August 2017, the value of processed (canned, frozen, dried) vegetable imports rose 5 percent from the previous year. The gain is driven by canned vegetables (up 9 percent from last year), and frozen vegetables (up 5 percent). Dried and dehydrated vegetables declined 1 percent.

Table 8—Value of processed vegetable trade, 2015-2017[1]

Item	2016 Annual	January-August 2015	January-August 2016	January-August 2017	Change 2016-17
	Million dollars				*Percent*
Imports:					
Canned	1,424	842	882	962	9
Tomato products	237	115	156	118	-24
Frozen	1,096	658	722	757	5
Broccoli	320	203	213	199	-7
Dehydrated[2]	725	485	467	464	-1
Peppers (exc. Paprika)	211	128	139	131	-6
Exports:					
Canned	1,229	899	801	777	-3
Tomato products	786	594	506	466	-8
Frozen	357	208	230	246	7
Sweet corn	112	66	73	75	4
Dehydrated 2/	206	129	129	140	8
Onion products	80	57	50	52	3

[1]Excludes potatoes and mushrooms. [2]Also includes miscellaneous dried leguminous vegetables.
Source: USDA, Economic Research Service using data of the U.S. Department of Commerce, U.S. Census Bureau.

The value of processed vegetable exports during January to August grew less than 1 percent from a year earlier, driven mainly by frozen and dried products. Exports of frozen products during the first 8 months of the 2017 calendar year increased 7 percent to $246 million from a year ago. Sweet corn, which accounted for 30 percent of total frozen exports in 2017, increased 4 percent year-to-date. Dehydrated onions accounted for 37 percent of total dehydrated exports and increased 3 percent. These increases were realized despite the impact of the continued strong U.S. dollar during the period (table 8).

The top-four foreign destinations during this period for all canned products included Canada (47 percent), followed by Mexico (9 percent), Japan (8 percent), and South Korea (3 percent) (table 9).

Table 9—Value of processed vegetable exports by selected countries, 2015-2017[1]

Item	2016 Annual	January-August 2015	January-August 2016	January-August 2017	Change 2016-17
	---------- Million dollars ----------				Percent
Canned	**1,229**	**899**	**801**	**777**	**-3**
Canada	544	382	369	359	-3
Mexico	113	75	78	65	-16
Japan	99	77	66	75	15
South Korea	42	30	26	29	9
Others	432	336	262	249	-5
Frozen	**357**	**208**	**230**	**246**	**7**
Canada	110	73	73	79	7
Japan	75	44	49	48	-2
Mexico	42	16	28	23	-17
Hong Kong	15	9	10	8	-20
Others	115	64	70	88	25
Dehydrated[2]	**206**	**129**	**129**	**140**	**8**
Canada	61	36	44	42	-5
Japan	21	14	12	14	12
Indonesia	14	10	8	8	-3
Mexico	14	9	10	11	15
Others	95	59	55	65	18

[1]Excludes potatoes and mushrooms. [2]Also includes miscellaneous dried leguminous vegetables.
Source: USDA, Economic Research Service using U.S. Department of Commerce, U.S. Census Bureau data.

Potatoes

Fall Area Down, Summer Area Up

The 2017 fall-season potato acreage indicates a 2-percent decline in planted and a 1-percent decline in harvested acreage from a year ago. U.S. fall-season potato growers planted 907,800 acres in 2017—the lowest area since 2010. Consecutive declines in the 2013/14 and 2014/15 marketing year potato prices are likely responsible for the area decreases.

Three States accounting for almost half of the 2017 crop area led the decline: Idaho, North Dakota, and Wisconsin all had planted area declines of 34, 9, and 7 percent, respectively.

Planted area continued its rise for the summer-potato crop. At 66,000 acres, 2017 summer planting was up 6 percent from 2016 levels, while spring plantings also increased 6 percent to 54,000 acres in 2017. The 2017 summer plantings have surpassed the spring area planted for the second consecutive year. At 20.2 million cwt, summer forecast production, as estimated by NASS, is up over 3 percent from 2016. The combined U.S. planted area for all potatoes in 2017 totaled 1.028 million acres, down from last year's 1.037 million acres (table 10).

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

Season & State		Area				Yield		Production	
		Planted		Harvested					
		2016	2017	2016	2017	2016	2017	2016	2017
		---------- 1,000 acres ----------				---Cwt---		---1,000 cwt ---	
Spring	CA[1]	26.0	28.0	25.1	27.5	390	425	9,789	11,688
	FL	25.0	26.0	22.9	25.2	235	240	5,382	6,048
	U.S	**51.0**	**54.0**	**48.0**	**52.7**	**316**	**337**	**15,171**	**17,736**
Summer[2]	TX	20.0	22.0	19.6	21.0	395	395	7,742	8,295
	NC	14.0	14.3	13.6	13.5	220	230	2,992	3,105
	MO	8.2	9.1	7.9	8.7	305	290	2,410	2,523
	IL	7.0	7.7	6.9	7.6	380	350	2,622	2,660
	VA	4.4	4.7	4.1	4.1	290	240	1,189	984
	KS	4.2	3.9	4.2	3.8	300	350	1,260	1,330
	U.S	**62.2**	**66.0**	**60.7**	**62.9**	**323**	**322**	**19,602**	**20,248**
Fall	ID	325.0	310.0	324.0	309.0	430		139,320	
	WA	170.0	170.0	169.0	170.0	625		105,625	
	ND	80.0	78.0	72.0	76.0	300		21,600	
	WI	65.0	60.0	64.0	59.5	435		27,840	
	CO	57.3	57.2	57.1	56.9	389		22,236	
	ME	47.0	48.0	46.5	47.5	325		15,113	
	MI	47.0	47.5	46.0	47.0	370		17,020	
	MN	43.0	45.0	42.0	44.0	400		16,800	
	OR	39.0	38.0	38.9	37.9	590		22,951	
	U.S	**923.8**	**907.8**	**909.6**	**901.4**	**447**		**406,638**	
U.S. total		**1037.0**	**1027.8**	**1018.3**	**1017.0**	**433**		**441,411**	

Cwt = hundredweight (100 pounds). [1]Starting in 2010, California winter and summer estimates are included in the spring estimates. [2]Beginning in 2016, summer potato estimates began for North Carolina and discontinued for Delaware.
Source: USDA, National Agricultural Statistics Service, Crop Production.

As of October 16, the potato harvest was wrapping up in Idaho, despite a slower pace earlier in the month due to cooler weather and precipitation. Idaho potato crop condition rated good is 62 percent compared to 82 percent the same week last year. Colorado, Oregon, and Minnesota also experienced a slower potato harvest pace as of October 16 compared to last year. The crop condition in Colorado's San Luis Valley is rated 55 percent good, compared to 66 percent good last year (USDA NASS).

Given the increase in acreage this spring and summer and forecast fall acreage expected to decline, combined with yields closely matching last year, the 2017 potato crop is projected to range from 428 to 441 million hundredweight (cwt)—between 0 and 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.

Average Prices Mixed

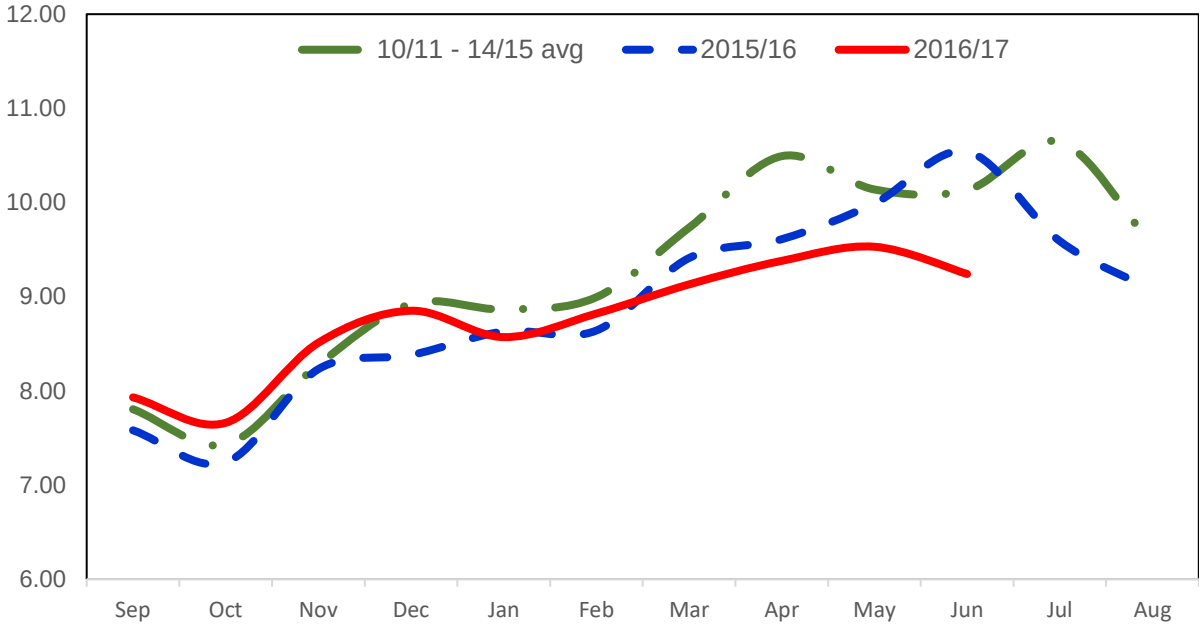
During the first 11 months of the marketing year (September-July), prices received by potato growers for all potatoes averaged $0.088 per pound, down less than 1 percent from last year.

Table 11—U.S. potatoes: Monthly grower and retail prices, 2016-2017

Crop year & month	Grower prices			Retail prices	
	All uses	Fresh	Processing	Fresh	Chips
	Dollars/pound				
2016					
July	0.096	0.117	0.087	0.699	4.444
August	0.089	0.120	0.076	0.711	4.427
September	0.078	0.093	0.072	0.702	4.440
October	0.075	0.090	0.070	0.691	4.507
November	0.081	0.089	0.076	0.697	4.391
December	0.085	0.087	0.083	0.686	4.353
2017					
January	0.086	0.083	0.083	0.696	4.390
February	0.088	0.084	0.081	0.703	4.334
March	0.091	0.087	0.081	0.689	4.365
April	0.094	0.084	0.083	0.698	4.369
May	0.095	0.094	0.089	0.706	4.439
June	0.092	0.103	0.086	0.733	4.428
July	0.093	0.108	0.082	0.752	4.391
Percent change from July 2016	-2.8	-8.0	-5.7	7.6	-1.2

Source: USDA, National Agricultural Statistics Service, Agricultural Prices and U.S. Dept. of Labor, Bureau of Labor Statistics.

Figure 7—U.S. fresh potatoes: Average monthly price received, 2016/17 and previous[1]



[1]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*.

Despite relatively strong prices early in the year, during the usual peak period for all potato prices, April, May and June, prices were lower than last year's levels—down over 6 percent, and down over 5 percent from the past 3-year average all-potato price (fig. 7).

From September through July, grower prices for fresh-market potatoes averaged $0.094 per pound--6 percent below year-previous levels. Prices were lower at the retail level for chip potatoes during the first 11 months of the marketing year (September-July), and averaged 2 percent below a year earlier while retail prices for fresh potatoes averaged 7 percent higher (table 11).

Potato Exports Continue Up

During the September-August marketing year, U.S. exports of all potatoes and potato products (including starch) totaled $1.8 billion—5 percent above a year earlier. The increase in U.S. potato exports is largely attributed to higher exports to Japan (up 9 percent) and Canada (up 10 percent). Japan remained the leading foreign market with 21 percent of export value, followed by Canada (18 percent), Mexico (14 percent), and China and South Korea (6 percent each) (table 12).

Table 12--U.S. potatoes exports (all uses): Marketing year[1] trade value, 2014/15-2016/17

Markets	September - August 2014/15	2015/16	2016/17	Change 15/16-16/17
	---------- *Million dollars* ----------			*Percent*
Japan	306.0	338.2	369.6	9
Canada	301.5	287.2	315.5	10
Mexico	242.2	238.0	243.7	2
China (Mainland)	111.7	145.1	100.1	-31
South Korea	104.4	110.2	109.2	-1
Philippines	78.1	92.9	95.7	3
Taiwan	52.8	66.1	84.4	28
Malaysia	45.5	47.2	57.9	23
Others	393.2	394.8	422.4	7
Total	**1,635.5**	**1,719.8**	**1,798.4**	**5**

[1]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, driven by increased demand from Taiwan ($8.5 million in 2016/17), the Philippines ($7.6 million), and Malaysia ($1 million), U.S. potato imports are also increasing. All potatoes and potato products imported during the 2016/17 marketing year totaled $1.33 billion—9 percent above a year earlier. Imported potatoes are comprised primarily of frozen fries, which represent over half of total potato import value. Canada currently accounts for 98 percent of all frozen fries imported (table 13).

Table 13—U.S. potatoes (all uses): Marketing year trade value to date, 2014/15-2016/17[1]

Item	Mkt year 2014/15	2015/16	2016/17	Change 15/16-16/17
	---------- *Million dollars* ----------			*Percent*
Exports				
Fresh market	182.3	189.7	205.8	8
Seed	6.6	7.8	25.8	231
Frozen fries	919.1	1,004.3	1,034.8	3
Other frozen	108.2	120.5	134.7	12
Chips	197.0	194.0	198.0	2
Flakes/granules	115.8	100.8	101.0	0
Canned/prep	73.6	75.8	73.0	-4
Flour, meal, dried	23.8	17.8	14.5	-19
Starch	9.0	9.0	10.9	21
Total	**1,635.5**	**1,719.8**	**1,798.4**	**5**
Imports				
Fresh market	122.7	158.0	188.2	19
Seed	22.7	24.7	26.2	6
Frozen fries	611.1	685.5	731.2	7
Other frozen	118.8	88.2	102.5	16
Chips	65.4	69.0	73.7	7
Flakes/granules	38.8	39.2	46.1	17
Canned/prep	81.6	82.9	84.9	2
Flour, meal, dried	5.3	2.2	4.9	121
Starch	67.8	70.3	68.1	-3
Total	**1,134.2**	**1,220.0**	**1,325.8**	**9**

[1]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 Down, Value Up

The farm value of all mushrooms (Agaricus and others), rose 3 percent to $1.2 billion during the 2016/17 crop year (July-June). Despite a 2-percent decline, the 2016/17 crop year mushroom sales volume is at a second all-time high. (table 14). The gain in total sales value was attributed to a 5-cents per pound price increase of Agaricus mushrooms. Agaricus production was down in both Pennsylvania and California—the top-two-producing States—which combined accounted for 75 percent of total sales volume (table 15).

A volume decline of 2 percent was realized in the white-button mushroom variety to 736.3 million pounds. Brown mushrooms (including Portobello and Crimini) increased 1 percent to 166.9 million pounds. Sales value climbed for brown mushrooms, to $262.6 million, and white mushrooms increased 1 percent due to a 4-cent increase in the season-average price (point-of-first-sale) from $1.13 in 2015/16 to $1.17 in 2016/17. White mushrooms accounted for 71 percent of all Agaricus sales in 2016/17 season (table 14).

Table 14—U.S. Mushrooms: Sales, price, and value

Item	Volume of sales		Price		Value of sales	
	2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
	1,000 pounds		*Dollars per pound*		*1,000 dollars*	
Agaricus	**919,012**	**903,141**	**1.20**	**1.25**	**1,098,745**	**1,125,838**
White	753,869	736,256	1.13	1.17	850,494	863,238
Brown[1]	165,143	166,885	1.50	1.57	248,251	262,600
All specialty	**24,402**	**25,464**	**3.79**	**3.78**	**92,572**	**96,183**
Shiitake	10,111	10,987	3.26	3.89	32,959	40,743
Oyster	10,001	10,469	3.60	3.10	35,986	34,091
Other	4,290	4,008	5.51	5.33	23,627	21,349
Total	**943,414**	**928,605**	**1.26**	**1.32**	**1,191,317**	**1,222,021**

[1]Includes Portobello and Crimini.
Source: USDA, National Agricultural Statistics Service, Mushrooms.

Within market segment, sales volume of fresh Agaricus mushrooms totaled 812.4 million pounds, down 1 percent from 2015/16 season, while processed mushroom sales declined 4 percent from the previous year. Fresh-market mushrooms represent 88 percent of total Agaricus sales. The average price producers received for fresh-market mushrooms rose 4 percent and the price for processing-market mushrooms declined 4 percent from last year, although still reported above the previous 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 2016/17 season—up 4 percent to 25.5 million pounds. The resulting slight decline in average grower price was more than offset by the increase in production, boosting the value of production to $96 million in 2016/17.

Table 15—U.S. Agaricus mushrooms: Sales, price, and value, selected States

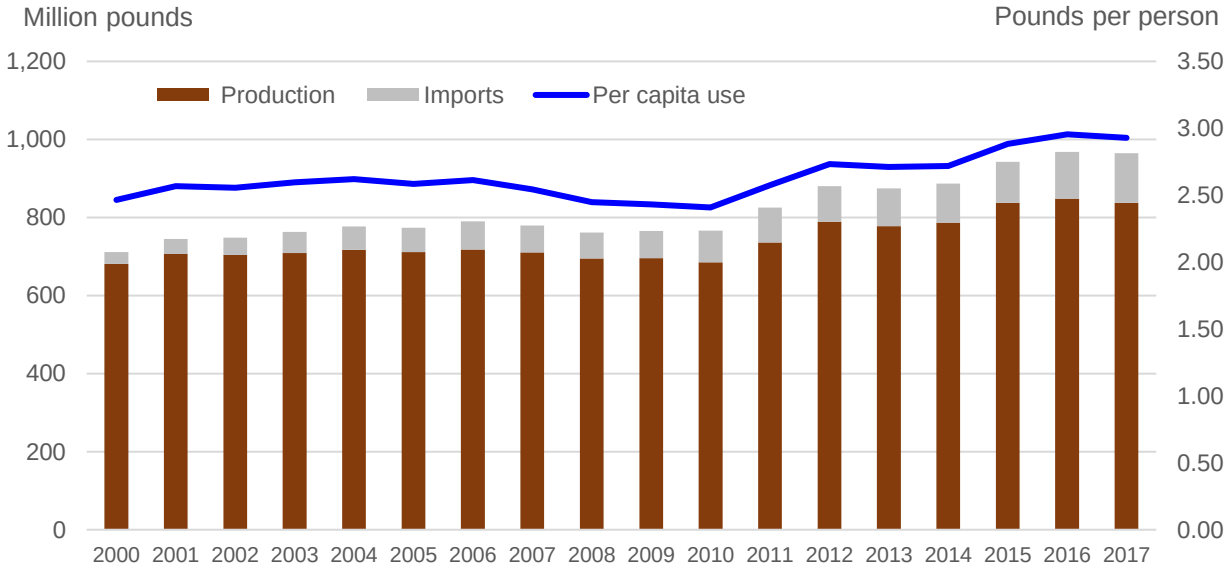
State	Volume of sales		Price		Value of sales	
	2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
	1,000 pounds		*Dollars per pound*		*1,000 dollars*	
Pennsylvania	587,459	577,566	0.97	0.97	569,103	559,987
California	109,951	101,681	1.86	1.98	204,593	201,702
Other States	221,602	223,894	1.47	1.63	325,049	364,149
United States	**919,012**	**903,141**	**1.20**	**1.25**	**1,098,745**	**1,125,838**

Includes Portobello and Crimini.
Source: USDA, National Agricultural Statistics Service, Mushrooms.

Trade Increasingly Important in the Fresh and Processed Industry

Reflecting both lower area and yield, U.S. production of fresh mushrooms (Agaricus and Specialty) declined to 838 million pounds in the 2016/17 crop year, a decline of over 1 percent. Per capita availability, which had been steadily climbing since the 2010/11 crop year, experienced a slight decline to 2.9 pounds per person during the 2016/17 crop year, down 1 percent from 2015/16. U.S. fresh mushroom imports grew to 127 million pounds in the 2016/17 crop year and continue to be increasingly important to per capita availability. In the 2016/17 marketing year, the percent of imported fresh mushrooms available peaked at just over 13 percent of total domestic availability (fig. 8). According to USDA Agricultural Marketing Services Market News, advertised retail prices for Agaricus white-button mushrooms averaged $2.26 per 8-ounce package during June through August 2017, down 1 percent from same period last year.

Figure 8 – Domestic supply and per capita use of fresh Agaricus mushrooms



Source: USDA, National Agricultural Statistics Service, Mushrooms.

Processed production of U.S. mushrooms totaled 91 million pounds in the 2016/17 crop year, a decline of over 4 percent. Pennsylvania produced over 73 percent of the processed production last year. While Pennsylvania increased production during the 2016/17 crop year, the overall decline was led by other Northeastern States. The 2016/17 processed mushroom production represents the second lowest in 10 years. Imports of processed U.S. mushrooms (canned, dry, and frozen) declined 2 percent from last year to 255 million pounds in the 2016/17 marketing year. Canned processed mushrooms comprise more than half of total U.S. imported processed mushrooms.

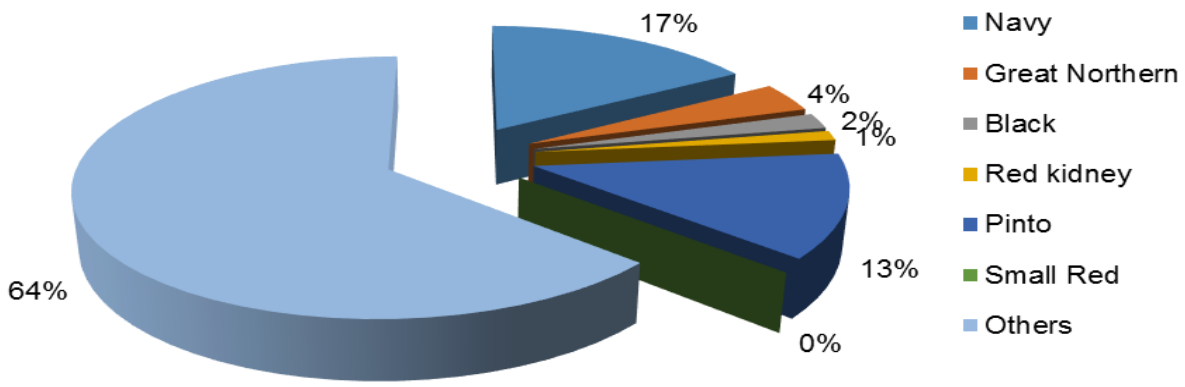
Total shipments of U.S. mushrooms reached 27.9 million pounds for the January-August 2017 period, dwarfing the previous year's shipments of 15.0 million pounds and the highest for the period in the past 8 years.

Dry Pulses

Despite Drought, Dry Bean Production Surges to New Record-High

Despite drought-affected yields, significantly increased harvested area boosted 2017 all-dry-bean production to 35.3 million hundredweight (cwt), 6.6 million cwt above the 2016 estimate and about 1.6 million cwt above the previous record of 33.8 million cwt set in 1991. Production gains are largely based on increased harvested area in Montana (up 1.3 million cwt), Nebraska (up 1.3 million cwt), and North Dakota (up 2.1 million cwt). A total of 8 out of 11 reporting States indicated increased production in 2017. Production shares were virtually unchanged by class for 2017 compared to 2016 (fig. 9).

Figure 9: Projected 2017 dry bean production, by class 1/



1/ Excludes garbanzo bean production.
Sources: USDA, National Agricultural Statistics Service, *Crop Production* and USDA, Economic Research Service Projections.

In all but two reporting States, harvested area for 2017 exceeded the 2016 estimate. A total of 2.033 million acres of dry beans were harvested in 2017, representing an increase of more than 30 percent relative to the 1.558 million acres harvested in 2016. According to the USDA, ERS Farm Sector Income Forecast, returns from growing specialty crops, including pulse crops, were projected to be higher relative to many commodity row crops in 2017. For example, after experiencing low wheat prices in the 2016/17 marketing year, farmers in traditional spring wheat growing States, including Minnesota, Montana and North Dakota, increased dry bean harvested area by more than 291,000 acres--representing 14 percent of total dry bean area harvested--while spring wheat planted area fell by 400,000 acres. Net farm income from wheat production is estimated at $62,000 (per farm) for 2017, compared to $244,000 per farm for specialty crops.

Prospects for a much larger dry bean harvest in 2017, based on surging planted and harvested area alone, were dampened some by below average yields in several drought-affected States in the West and Northern Plains. Year-to-year, the largest yield decline was for Montana, where yields fell by more than 520 pounds per acre or 32 percent. Estimated dry bean yields in Montana, at 1,100 pounds per acre, are the lowest since 1944 when Montana farmers realized 1,083 pounds per acre. Idaho and Washington experienced a less profound and prolonged drought than the Northern Plains; however, persistent dryness sapped yields by 270 pounds per acre in Idaho relative to 2016 and by 280 pounds per acre in Washington. Nationally, average

dry bean yields are projected to be 105 pounds per acre lower, down about 6 percent relative to 2016.

Table 16--U.S. dry beans: Planted acres by class, 2013-17[1]

Item	2013	2014	2015	2016p	2017f	Change 2016-17
						Percent
Pinto	485.1	609.9	580.6	706.4	621.7	-12.0
Navy	174.2	240.7	235.5	191.7	203.0	5.9
Black	143.1	226.4	332.2	230.2	271.0	17.7
Garbanzo	220.7	215.1	207.5	325.3	603.8	85.6
Great Northern	75.5	107.1	44.7	41.7	41.7	0.0
Lt. red kidney	43.2	55.2	67.2	22.4	42.4	89.3
Dk. red kidney	46.7	59.3	79.3	53.0	52.8	-0.4
Blackeye	41.8	31.3	37.2	37.5	26.6	-29.1
Small red	26.0	34.7	53.7	33.8	22.3	-34.0
Pink	23.5	22.4	19.5	16.1	10.3	-36.0
Baby lima	6.8	14.9	8.9	7.9	7.9	0.0
Large lima	6.7	8.1	10.7	13.7	9.0	-34.3
Cranberry	4.1	5.8	8.2	3.6	4.8	33.3
Others	62.3	68.4	74.4	62.4	79.9	28.1
United States	1,359.7	1,701.6	1,764.7	1,662.0	2,111.5	27.0

[1]Planted areas for 2016 are preliminary

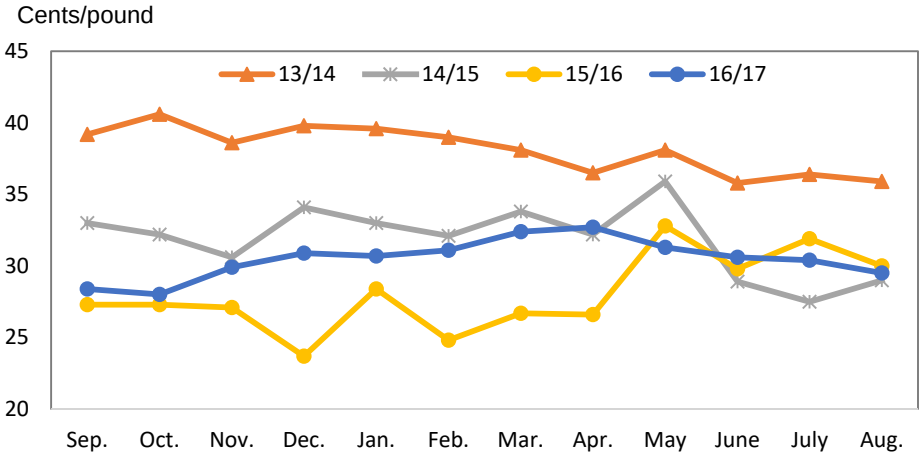
Source: USDA, National Agricultural Statistics Service, *Crop Production.*

A significant share of increased planted and harvested dry bean area is attributable to expanded pinto, navy, and black bean production. These three classes account for 78 percent of area planted in 2017, slightly higher than in 2016. For other classes of dry beans, planted area generally increased with the exception of dark red kidney, blackeye, small red, and pink beans (table 16). Collectively, these four classes of dry beans saw planted area reduced by 28,400 acres, which was more than offset by 200,400 acres gained for other classes.

Monthly Bean Prices for 2016/17

Average monthly grower prices for dry beans in 2016/17 have been generally higher and less variable than prices in 2015/16, while still lower than other recent marketing years (fig. 10). Significant carry-in from the 2015/16 marketing year increased supplies in 2016/17 and was not offset by significant increases in all dry bean aggregate (including garbanzo bean) export sales or domestic use. Due both to seasonal price variation and the expectation of another sizable harvest in 2017, the all-dry-bean price continued to decline following the 2016/17 marketing year high in April of 32.7 cents per pound. In August, the same month that USDA, NASS reported that 2017 dry bean production would be near record levels, the all dry bean price dropped nearly a full cent per pound. In October, USDA NASS revised upward the 2017 all-dry-bean production forecast, which is likely to put further downward pressure on the marketing year and monthly prices.

Figure 10: U.S. dry edible beans: Average monthly grower price



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

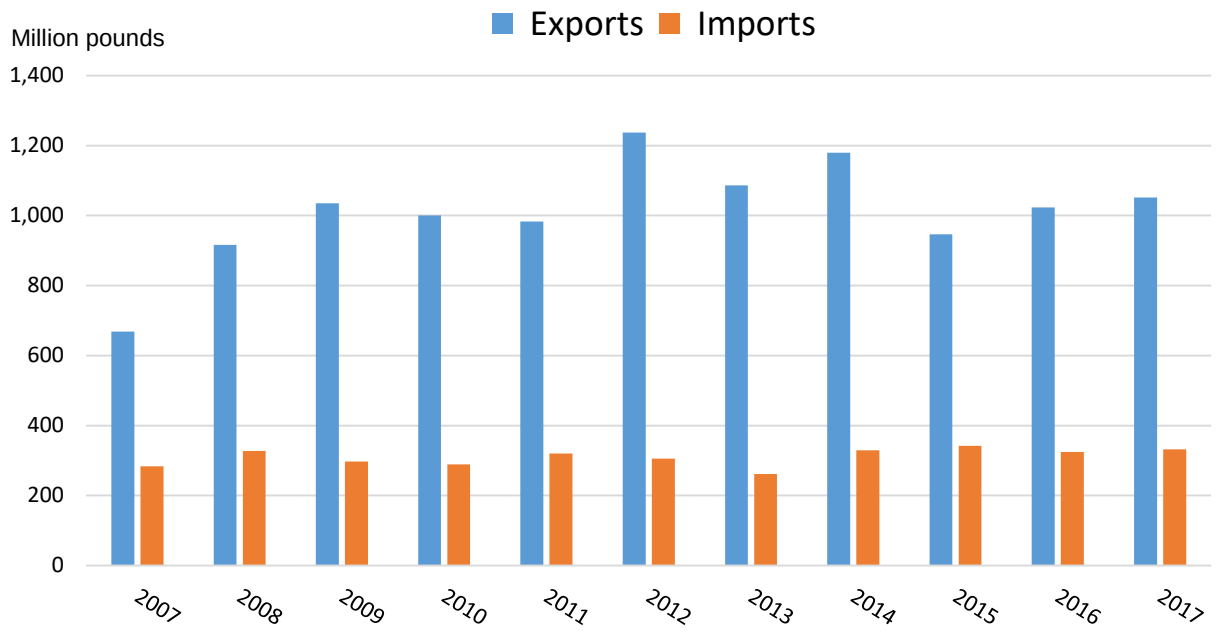
All-Bean Grower Price for 2017 Projected To Decline

The projected all-dry-bean price for calendar year 2016 is 30.2 cents per pound. The 2017 price (January through December) is projected to reflect the reality of burgeoning bean supplies and subsequently lower prices through the end of the calendar year and is currently projected at 27.9 cents per pound. While lower year-to-year, the all-dry-bean price forecast for 2017 is still above the 2015 estimate of 27.3 cents per pound and well above unadjusted prices received by farmers in the early and mid-2000s. On a marketing year basis, the all-dry-bean average farm price for 2016/17 is projected to be 27.7 cent per pound, about one dollar less than the USDA-NASS-reported 2015/16 average price of 28.7 cents per pound.

Export Volume Projected Up Slightly in 2017

U.S. dry bean exports for 2017 are forecast to exceed the previous year by about 28 million pounds. For 2017, export sales through August, the most recent month of trade data available from the U.S. Census Bureau, total 658.0 million pounds. In 2016, 63 percent of total exports for the year were sold by the same month. Using this proportion to scale exports, 1,052 million pounds of exports are projected for 2017 (fig. 11). The all-dry-bean export forecast is supported by notable year-over-year increases in projected exports of dark red kidney beans(up 30 percent), small red (up 44 percent), black eye (up 14 percent), and small white (up 95 percent). Year-to-year gains in exports of these bean classes are offset by declines for pinto beans (down 104 percent), navy (down 34 percent), great northern (down 11 percent), black beans (down 4 percent), light red kidney (down 9 percent), baby and large limas (down 7 and 20 percent, respectively), pink (down less than 1 percent, and cranberry (down 14 percent).

Figure 11: U.S. dry bean trade [1/]



1/Chart is inclusive of garbanzo beans.
Source: USDA, Economic Research Service using data of the U.S. Department of Commerce, U.S. Census

Table 17--U.S. dry bean calendar year export volume, by selected destination[1/]

Destination	2015	2016	2016 (Jan-Aug)	2017 (Jan-Aug)
	---------- *Million Pounds* ----------			
Mexico	166.3	196.1	160.9	127.4
Canada	146.4	143.3	90.1	94.3
Dominican Republic	98.4	72.6	45.9	19.5
United Kingdom	96.9	74.8	46.8	44.2
Italy	69.6	57.2	34.1	62.1
Brazil	0.0	26.3	2.8	5.4
South Africa	37.3	22.6	16.2	13.6
Haiti	17.4	21.6	14.8	6.5
France	26.5	21.2	18.0	8.1
Colombia	26.9	15.6	10.2	9.4
Other	155.8	169.4	96.8	116.6
Total 2/	841.5	820.8	536.5	507.3

1/ Includes commercial sales and movement under food aid programs such as PL-480.
2/ Excludes garbanzo bean and seed volume.
Source: USDA, Economic Research Service using data from Department of Commerce, U.S. Census Bureau.

From January 2017 through August 2017, the top dry-edible-bean export destinations have been Mexico, Canada, Dominican Republic, the United Kingdom, and Italy. To date, the top 10 export markets have collectively accounted for more than 77 percent of all exports sales compared to 82 percent in 2016. In the absence of garbanzo bean export sales (Note: fig. 11 is inclusive of garbanzo beans), U.S. dry bean exports have trended down in recent years. Based on preliminary data through August, non-garbanzo dry bean sales are expected to decline relative to 2016. Sales to Mexico are notably down year-to-year and largely based on reduced black and pinto bean sales. Despite the decline, Mexico remains the number one export market for U.S. dry beans (table 17).

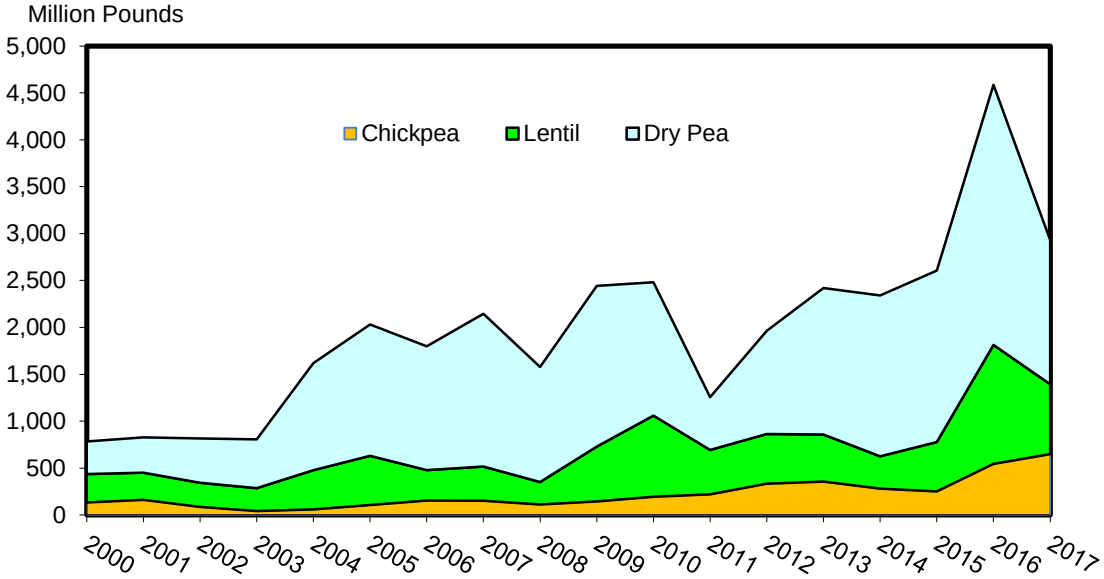
Exports to Canada are up slightly through the first 8 months of 2017, based on increased shipments of great northern beans. These beans are often processed in Canada before being exported elsewhere. Production is proximate to the Canadian border and facilitates cross-border trade. The U.S. dollar weakened through the first several months of 2017, which would otherwise support increased exports, all else held constant. In recent weeks, the U.S. dollar has begun to strengthen. Downward pressure on exports, created by a now-strengthening dollar, is expected to be offset by generally declining dry bean prices through the balance of the calendar year.

Despite Record Plantings, Lentil Production Falls on Yield Drop

For the fourth year in a row, lentil planted area increased, setting a new record of 1.109 million acres for 2017. With planted area up 176,000 acres from the 2016 figure and 54,000 acres above the March *Prospective Plantings* projection, early lentil forecasts were on track for a record-setting level of production. However, with much of U.S. lentil production concentrated in drought-affected Montana and North Dakota, yield prospects declined as the drought intensified and persisted through the growing season. In Montana, where 61 percent of this year's lentil harvest was grown, yields fell 51 percent from 2016 levels to 700 pounds per acre, the lowest reported yield since 2006. In North Dakota, yields were down 45 percent from last year's 1,270 pounds per acre to 700 pounds. While still producing about 25 percent of total U.S. lentils, North Dakota's harvest was half the size of the 2016 production. In aggregate, U.S. lentil production for 2017 is forecast at 745.7 million pounds, down from 1,268.5 million in 2016.

Drought in the Northern Plains and Eastern section of the Pacific Northwest also affected production for dry peas in 2017. While a 17-percent year-to-year decline in planted area supported earlier projections for a modest decrease in production, drought conditions in key dry-pea-growing States-Idaho, Montana, and North Dakota pushed yields well below trend, further cutting into production expectations. Production in these three States, representing 82 percent of total 2017 dry pea production, is forecast to be down, 42, 54, and 43 percent, respectively. In aggregate, U.S. dry pea production for 2017 is forecast at 1,536.7 million pounds, down nearly 45 percent from 2016 (fig. 12).

Figure 12: U.S. dry pea, lentil, and chickpea production



Source: USDA, National Agricultural Statistics Service.

Area planted to chickpeas (also known as garbanzo beans) is up 86 percent in 2017 to a record-setting 603,800 acres. Area planted to small (Desi) chickpeas rose 57 percent, while sowings of large (Kabuli) chickpeas rose a staggering 101 percent (table 18). Kabuli chickpeas are lighter in color with a thinner skin, making them ideal for preparations such as hummus. Growing domestic demand for chickpea-containing products, especially hummus, as well as generally rising exports, have supported domestic farm gate prices and encouraged cultivation. Yields for chickpeas have not been updated by NASS for 2017, though revised figures are expected in December. Like that of dry peas and lentils, chickpea production is concentrated in the Northern and Western regions of the United States where drought affected yields of many other crops. In 2016, nearly 30 percent of U.S, chickpea production was cultivated in Montana, and a similar proportion is expected for the 2017 crop. At this time, trending yields underpin the ERS chickpea production projection and do not reflect abnormally dry or drought conditions.

Table 18--Dry peas and lentils: Planted area

Item	2014	2015	2016	2017	Change 2016-17
	---------- *1,000 acres* ----------				*Percent*
Dry peas	935.0	1,143.0	1,382.0	1,153.0	-17
Austrian winter peas	24.0	34.0	38.0	29.0	-24
Lentils, all	281.0	493.0	933.0	1,109.0	19
Chickpeas, total	212.1	202.3	325.3	603.8	86
Small chickpeas	66.6	71.7	113.8	178.2	57
Large chickpeas	145.5	130.6	211.5	425.6	101
Total	1,664.2	2,074.6	3,003.6	3,498.6	16

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

Exports Surge in 2016/17 with Key Markets Boosting Purchases

Increased plantings of dry peas, lentils, and chickpeas have been supported in the past several years by increasing domestic demand and generally strengthening exports. Key trade partner India has been an important market for U.S. green and yellow peas, in particular. However, following a below-average monsoon season that decreased local production and led to above-average imports in 2015/16, sales to India declined slightly through the July-June marketing year in 2016/17.

Expanded sales to other historically strong markets for U.S. dry peas and lentils more than offset the slight decline in demand from India. Notably, demand from China nearly doubled to 90,000 metric tons in 2016/17. Sales to Mexico, Columbia, and Djibouti (a trade portal for shipments to Ethiopia) also more than doubled. Smaller volume exports to other countries increased year-to-year and lifted the total from 736,700 metric tons in 2015/16 to 959,200 in 2016/17 (table 19).

Table 19--U.S. dry pea, lentil, and chickpea marketing year export volume, by selected destination [1/ 2/ 3/]

	July-June			
Destination	2013/14	2014/15	2015/16	2016/17
	1,000 cwt			
India	4,712.3	6,925.4	5,900.6	5,803.4
China	1,363.2	1,602.3	1,008.5	1,979.3
Spain	1,009.8	840.4	967.7	1,240.3
Peru	558.3	619.0	604.5	828.3
Mexico	584.5	482.2	356.9	753.0
Colombia	183.7	240.6	262.3	659.1
Djibouti 4/	385.5	599.2	258.8	639.5
Ethiopia	441.5	306.0	1,734.7	532.9
Turkey	282.5	207.7	198.3	501.1
Other	4,684.2	4,771.1	4,900.1	8,173.2
Total	14,205.6	16,593.9	16,192.5	21,110.0

1/ Includes commercial sales and movement under food aid programs. 2/Chickpea marketing year is September-August; reported export data is adjusted to July-June basis. 3/ Includes chickpeas, Austrian peas; excludes seeds. 4/Food aid shipments to Ethiopia are often routed through Djibouti.

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

Table 20--U.S. dry peas, lentils: Export volume by class

Item	July-June 2013/14	2014/15	2015/16	2016/17	Year-to-Year Change 16/17-15/16
	1,000 cwt				Percent
Exports:					
Green peas	3,594.0	2,890.3	2,148.8	4,297.7	100%
Yellow peas	2,919.6	3,463.8	3,512.3	3,686.5	5%
Split peas	1,532.2	1,413.1	2,560.9	1,672.7	-35%
Austrian winter pea	44.5	16.8	11.1	23.8	114%
Misc. dry peas	1,545.4	2,322.0	2,293.6	1,562.9	-32%
Chickpeas, all 1/	1,030.2	889.8	1,181.7	2,447.0	107%
Lentils, all	3,539.7	5,598.1	4,484.2	7,419.4	65%
Planting seed, all	799.5	849.5	1,073.7	2,764.1	157%
Total (without seeds)	14,205.6	16,593.9	16,192.5	21,110.0	30%
Total (with seeds)	15,005.1	17,443.5	17,266.2	23,874.1	38%

1/ Chickpea marketing year is September-August; reported export data is adjusted to July-June basis.

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

In the first few months of the 2017/18 marketing year, U.S. dry pea exports are slightly below the pace of trade observed in July and August of the 2016/17 marketing year. Waning dry pea exports are likely due to constrained supply following a harvest that fell well-below initial volume expectations. Both Canada and Australia, strong competitors in the India pulses market, experienced dry conditions this year. Lentil exports through the first 2 months of the new marketing year are approximately 65 percent higher than for the same time in 2016 (table 20) and likely reflect an improved competitive position. Despite a lower-than-expected lentil harvest in 2017, ample supplies of old- crop lentils have put downward pressure on prices in recent months. In March 2017, the U.S. average farm gate price for lentils was $32 per hundredweight (cwt); in August the price per cwt had fallen to $25.2. Lower prices aid the competitive position of U.S. lentils in the world market and support the recent export surge.

Dry pea and lentil imports for the 2016/17 marketing year totaled 134,159 hundredweight, down about 8 percent from 2015/16 levels and attributable to increased domestic production. Imports in the first 2 months of the 2017/18 marketing year show a 50-percent increase in dry peas, due largely to expanded imports of split peas from Canada, and a 15-percent decline in lentil imports.

Abundant Supplies Provide Downward Pressure on Prices

In 2016/17, dry pea and lentil prices generally weakened, relative to 2015/16, as a result of record-large production and supplies. Monthly dry pea and lentil prices for July 2016 through June 2017 reflect this trend and are mostly lower than for the same month a year earlier (table 21). Chickpea prices have shown resilience, and some monthly prices for 2016/17 are above those of the same time last year. However, the sales-weighted marketing year price of $23.5 per

cwt is more than $5 per cwt below the 2015/16 level and reflects the reality of ample supplies and carryout into the 2017/18 marketing year.

Table 21--U.S. dry peas and lentils: Monthly grower prices by class, 2015/16 and 2016/17

	Dry peas 1/		Chickpeas All 2/		Lentils	
	2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
Month	----------cents per pound----------					
July	11.3	11.6	29.9	36.6	30.1	36.6
August	10.6	10.5	28.6	27.2	25.8	27.2
September	12.3	10.4	28.6	26.6	28.2	26.6
October	10.9	13.7	26.6	27.1	29.4	27.1
November	12.1	10.9	27.0	27.6	31.8	27.6
December	12.5	11.3	27.2	31.5	30.2	31.5
January	13.2	10.7	28.8	29.2	31.6	29.2
February	14.9	11.6	28.9	31.5	36.0	31.5
March	13.7	11.0	29.2	32.0	38.8	32.0
April	17.3	11.5	28.4	29.8	36.2	29.8
May	16.7	11.6	29.0	30.4	42.7	30.4
June	13.0	10.8	30.4	28.7	40.4	28.7
Marketing Year Price	12.8	11.0	28.7	23.5	31.0	33.5

-- = not available. 1/Dry pea and lentil marketing year is July-June. 2/Chickpea marketing year is Sept-Aug.
Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

As farmers considered alternative crops and weighed potential returns for the 2017/18 marketing year, low wheat, corn, and soybean prices favored expanded pulse crop acreage. A record planted area was sown to lentils and chickpeas; however, drought conditions suppressed yields and reduced production to pre-2016/17 levels. Expectations of more-constrained supplies in the new marketing year have helped to sustain prices above levels expected under normal yields and despite sizable carryin from the 2016/17 marketing year. Strong domestic demand, level-to-growing export sales, and strengthening wheat and other commodity prices also provide support for prices in 2017/18.

Per Capita Availability of Chickpeas Expected To Rise as Lentils Fall

Continued growth in demand for chickpea-containing products such as hummus, have helped support prices and encouraged plantings and production. Increased domestic supplies have lifted the per capita availability forecast for chickpeas for the last 2 years. In 2016, chickpea per capita availability was estimated at 1.20 pounds per person, up 0.60 pounds from 2015. For 2017, per capita chickpea availability is forecast to rise again and to reach 1.70 pounds per person, a new record-high.

Domestic lentil supplies were bolstered by record production in 2016/17, lifting per capita availability by nearly 0.60 pounds to 0.91 pounds per person. With greatly reduced supplies and expectations of robust export demand in 2017/18, domestic use is constrained and projected per capita availability is lowered to 0.48 pounds.

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Vegetable 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.

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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. vegetable and dry pulses sectors, special articles, and links to more vegetable and pulses information.
http://www.ers.usda.gov/topics/crops/vegetables-pulses.aspx

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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

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http://www.fas.usda.gov/gats/default.aspx

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

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