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Vegetables and Pulses Outlook

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Potato Production at Highest Level Since 2000

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The next release is July 26, 2013.

Approved by the World Agricultural Outlook Board.

Weather impacted production of fresh vegetables in U.S. desert-growing regions, Mexico and Florida in early 2013 and February shipments of fresh-market vegetables were 14 percent below comparable levels from the previous year. The first-quarter 2013 grower price index for all vegetables is up 83 percent compared with the first quarter of 2012 and up almost 60 percent above fourth-quarter 2012.

According to the *California Processing Tomato Report*, National Agricultural Statistics Service, USDA, California tomato processors intend to contract 2.8 percent more processing tomatoes in 2013 than the previous year. A record yield of 49.8 tons per acre is expected—up 2.5 percent from last year. Assuming that processors carry through with these early intentions, 2013 output is projected to be 13 million short tons, second only to the record-setting output level of 13.3 million short tons from 2009.

In 2012, farmers grew 37.5 million hundredweight (cwt) more potatoes than the previous year. At 467 million cwt, this potato crop is the largest since 2000. Increased potato supplies have reduced prices and the total value of production. At $3.91 billion, the 2012 total value of production is down from the previous year but remains the second largest nominal value on record, behind 2011's record $4.04 billion.

The volume of China's vegetable exports more than tripled from under 3 million metric tons (mmt) during the late 1990s to a peak of over 10 mmt in 2011. While trade levels remain strong, the explosive growth rate for vegetable exports from China has diminished as attention shifts to meeting domestic demand.

President Obama signed the Food Safety Modernization Act (FSMA) into law in January 2011. Part of this legislation requires the U.S. Food and Drug Administration (FDA) to develop mandatory microbial food safety practices for produce growers. On January 4, 2013, FDA published the proposed rule—Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption (commonly known as the produce rule). The proposed preventive control rule was published at the same time.

Industry Overview

Fresh Vegetables: February 2013 shipment levels for selected fresh vegetables were down 14 percent from the previous year and 11 percent from the previous month. With volumes down, average grower prices for most fresh-market vegetables were up substantially in the first quarter of 2013 compared with depressed prices from the first quarter of 2012. Increases in the fresh vegetable Consumer Price Index (CPI) are also reported. The February 2013 CPI for all fresh vegetables rose 6.3 percent over the previous year.

Processing Vegetables: California's tomato processors anticipate contracting a total of 13 million short tons on 261,000 acres in 2013—2.8 percent more processing tomatoes than in 2012. Assuming that processors carry through with these early intentions, 2013 output would then be second only to the record-setting output level of 13.3 million tons in 2009. Production of all major vegetables (including tomatoes) used for processing increased 7 percent to 18.3 million short tons in 2012 in response to increased area harvested and higher yields.

Potatoes: The 2012 potato crop is forecast to exceed 467 million cwt, an expansion of 8.7 percent and the highest level since 2000. On February 1, 2013, 14 percent more potatoes were being held in storage than at the same time in 2012 (USDA/ NASS). Abundant potato supplies are driving fresh prices to the lowest levels since 2004. The season-average fresh price is projected to be $10.02 per cwt, for 2012 production compared with $12.82 per cwt farmers received for their 2011 crop. In contrast, current prices for processing potatoes are up slightly, supported by relatively strong export and domestic demand.

Bell peppers: Traditionally thought of as blocky green peppers, differentiation of bell peppers by color, shape, size, and growing environment is now important components of the U.S. market. Bell peppers are no longer a uniform product category on supermarket shelves. In 2012, per capita use reached a record at more than 11 pounds per person. Although growing, U.S. bell pepper production has not been high enough to satisfy domestic demand and the market incorporates an increasing reliance on imports.

Food Safety Modernization Act: President Obama signed the Food Safety Modernization Act (FSMA) into law in January 2011. Part of this legislation requires the U.S. Food and Drug Administration (FDA) to develop mandatory microbial food safety practices for produce growers. On January 4, 2013, FDA published the proposed rule—Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption (commonly known as the produce rule). The proposed preventive control rule was published at the same time.

China Vegetable Exports: China is the world's leading producer and consumer of vegetables and the boom in exports from China during the first decade of the 21st century was a major development in world vegetable markets. While trade levels remain strong, the explosive growth rate in vegetable exports from China has diminished as attention shifts to meeting domestic demand.

Longrun Outlook: Producer prices for vegetables are expected to increase by 0.7 percent annually on average from 2013 to 2022. U.S. imports of vegetables are projected to grow by 4.6 percent in value per year through 2022, whereas export value is projected to grow by 2.9 percent over the same period.

Table 1—U.S. vegetable industry at a glance, 2009-12

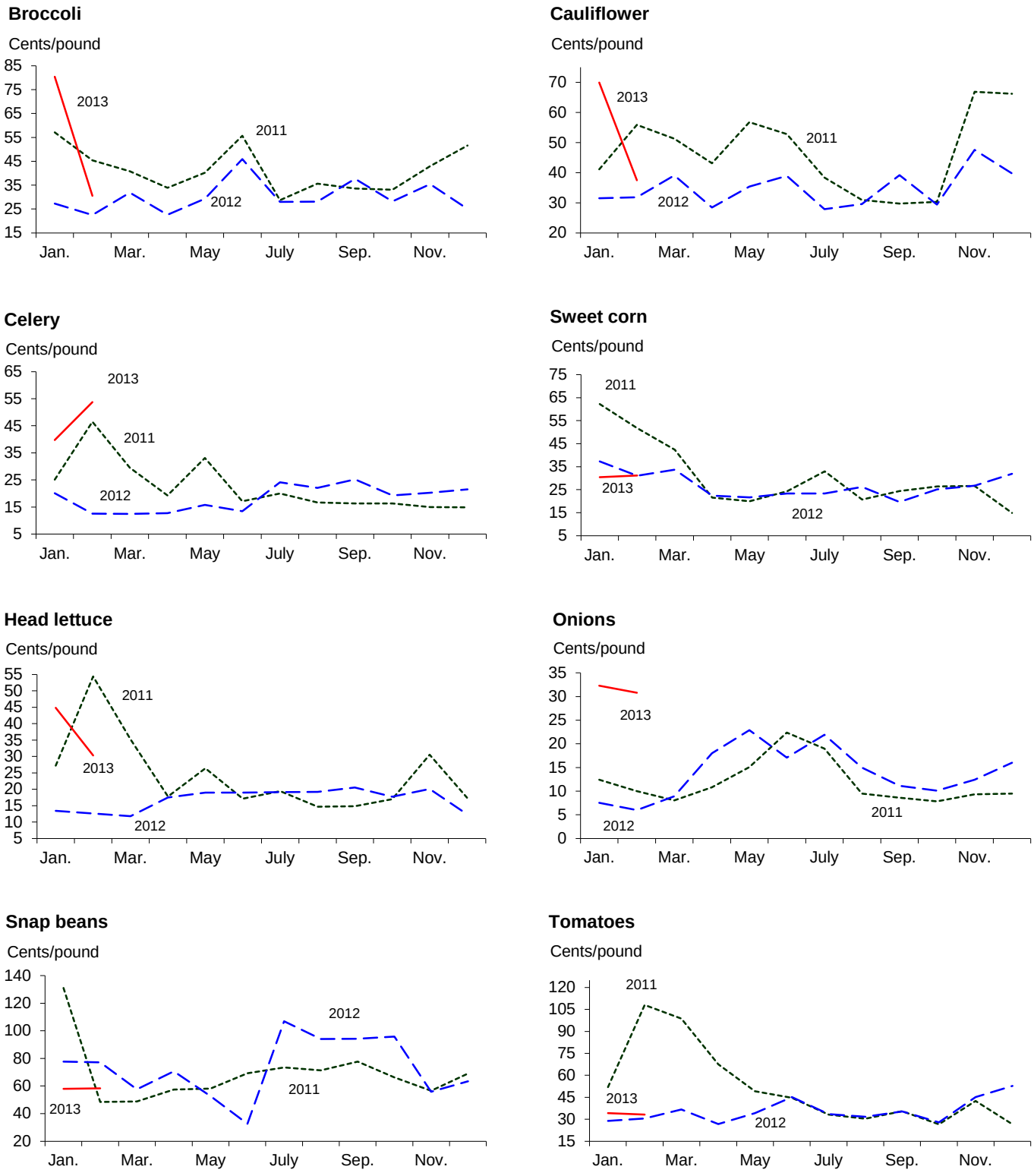
Item	Unit	2009	2010	2011	2012
Area harvested	1,000 ac.	6,617	6,952	5,656	6,662
Vegetables:					
Fresh (excl melon)	1,000 ac.	1,487	1,486	1,460	1,474
Processing	1,000 ac.	1,264	1,133	1,052	1,136
Potatoes	1,000 ac.	1,044	1,008	1,077	1,133
Dry beans	1,000 ac.	1,464	1,843	1,168	1,696
Other 2/	1,000 ac.	1,358	1,483	899	1,224
Production	Mil. cwt	1,261	1,200	1,186	1,273
Vegetables:					
Fresh (excl melon)	Mil. cwt	360	354	348	356
Processing	Mil. cwt	391	354	341	366
Potatoes	Mil. cwt	433	404	430	467
Dry beans	Mil. cwt	25	32	20	32
Other 2/	Mil. cwt	52	56	47	53
Crop value	$ mil.	18,217	18,091	18,010	18,287
Vegetables:					
Fresh (excl melon)	$ mil.	10,009	10,003	9,748	9,129
Processing	$ mil.	2,141	1,700	1,794	2,023
Potatoes	$ mil.	3,558	3,722	4,043	3,919
Dry beans	$ mil.	790	887	694	1,344
Mushrooms	$ mil.	959	924	1,018	1,099
Other 2/	$ mil.	760	856	713	773
Unit value 3/	$/cwt	14.45	15.08	15.19	14.36
Vegetables:					
Fresh (excl melon)	$/cwt	27.80	28.27	27.98	25.67
Processing	$/cwt	5.48	4.80	5.26	5.53
Potatoes	$/cwt	8.25	9.20	9.41	8.39
Dry beans	$/cwt	31.08	27.88	34.87	42.31
Other 2/	$/cwt	33.06	31.78	36.83	35.32
Trade					
Imports	$ mil.	7,969	9,200	10,388	10,314
Vegetables:					
Fresh (excl melon)	$ mil.	4,061	5,078	5,570	5,091
Processing 4/	$ mil.	2,149	2,311	2,693	2,802
Potatoes & products	$ mil.	1,012	997	1,124	1,198
Dry beans	$ mil.	134	140	165	154
Other 5/	$ mil.	613	674	835	1,069
Exports	$ mil.	5,172	5,629	6,073	6,233
Vegetables:					
Fresh (excl melon)	$ mil.	1,682	1,900	1,960	1,701
Processing 4/	$ mil.	1,178	1,240	1,396	1,483
Potatoes & products	$ mil.	1,179	1,255	1,512	1,695
Dry beans	$ mil.	306	305	285	433
Other 5/	$ mil.	827	929	919	921
Per capita use	Pounds	392	397	383	401
Vegetables:					
Fresh (excl melon)	Pounds	141	145	143	145
Processing	Pounds	122	120	112	119
Potatoes & products	Pounds	114	114	110	117
Dry beans	Pounds	6	7	6	6
Other 2/	Pounds	10	12	12	13

1/ ERS forecasts. 2/ Includes sweet potatoes, dry peas, lentils, and mushrooms (except for crop value). 3/ Ratio of total value to total production. 4/ Includes canned, frozen, and dried. Excludes potatoes, pulses, and mushrooms. 5/ Other includes mushrooms, dry peas, lentils, sweet potatoes, and vegetable seed. All trade data are on a calendar-year basis.
Note: Cwt = hundredweight, 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. Dept. of Commerce, U.S. Census Bureau.

Figure 1

Point-of-first-sale (farm/grower) price* for fresh-market vegetables



*February 2013 price is preliminary.
Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Fresh-Market Vegetables

Grower Prices Rise Sharply With Weather Impacts

Shipments of fresh vegetables were down in early 2013 as weather affected supply in U.S. desert-growing regions, Mexico, and Florida at various times. Warm weather in late 2012 pushed lettuce, broccoli, and cauliflower production ahead in the desert regions of Arizona and California. Quality suffered and yields were lower than anticipated due to the fast growth. A frost just before Christmas further reduced volume going into 2013 and temperatures fell below freezing several times in early and mid-January. Some growers reported production of broccoli and cauliflower were down as much as 25 percent and total January 2013 broccoli and cauliflower shipments (including imports) were down 1 and 14 percent, respectively, when compared with January 2012 levels. February 2013 broccoli shipments fell a further 6 percent but remained above levels from February 2012.

Lettuce volumes were also reduced and frost damage negatively impacted quality of some product. The Producer Price Index (PPI) for head lettuce rose over 60 percent between December 2012 and January 2013 and remained almost 80 points higher in February 2013. Average 1st quarter 2013 grower prices for head lettuce are projected to be over 150 percent greater than the previous year.

Mid-January freeze events damaged vegetable production in the Sonora and Sinaloa regions of Mexico, two important supply areas for fresh winter vegetables in the U.S. market. Immediate impacts were reported primarily for field production of

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

Item	Annual 2012	January 2013	February 2012	February 2013	Change previous: 2/ Month	Change previous: 2/ Year
	1,000 cwt				*Percent*	
Asparagus	3,194	228	694	359	57	-48
Snap beans	3,176	378	339	291	-23	-14
Broccoli	9,798	1,044	899	986	-6	10
Cabbage	10,653	1,208	1119	1,103	-9	-1
Chinese cabbage	5,939	85	136	75	-12	-45
Carrots	10,367	1,070	1024	766	-28	-25
Cauliflower	4,358	373	357	410	10	15
Celery	16,314	1,636	1438	1,450	-11	1
Sweet corn	14,619	590	627	560	-5	-11
Cucumbers	17,809	1,840	1815	1,326	-28	-27
Greens	2,343	257	214	247	-4	15
Head lettuce	29,117	2,236	2151	2,429	9	13
Romaine	19,127	1,420	1660	1,595	12	-4
Leaf lettuce	3,680	337	429	328	-3	-24
Herbs, misc.	1,865	218	179	207	-5	16
Onions, dry bulb	54,746	4,285	4984	3,003	-30	-40
Onions, green	3,635	319	327	304	-5	-7
Peppers, bell	17,721	1,891	1869	1,769	-6	-5
Peppers, chile	9,203	654	630	693	6	10
Squash	8,426	981	1027	782	-20	-24
Tomato, field, round	21,995	1,927	1943	1,708	-11	-12
Tomato, field, Roma	8,029	1,057	1118	935	-12	-16
Tomato, ghouse 3/	20,271	1,649	1807	1,604	-3	-11
Tomato, small 4/	3,840	450	368	421	-6	14
Selected total	239,835	26,133	27,154	23,351	-11	-14

1/ 1,000 cwt = 100,000 lbs. Data for 2013 are preliminary and include domestic and partial imports.
2/ Change from February 2013. 3/ All tomatoes produced under cover. 4/ 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, 2012-13

Commodity	2012				2013			Change
	1Q	2Q	3Q	4Q	1Q*	2Q*	3Q*	1st Q 1/
	Cents/pound							*Percent*
Asparagus	108.00	107.43	--	--	110.00	107.00	--	1.9
Broccoli	28.13	32.60	31.27	30.60	50.22	37.00	31.00	78.5
Carrots	26.47	27.50	24.30	26.70	28.83	30.00	25.00	8.9
Cauliflow er	34.23	34.23	32.23	38.87	51.38	46.00	33.00	50.1
Celery	15.07	14.00	23.80	20.27	37.54	19.50	17.00	149.1
Sw eet corn	34.00	22.43	23.03	26.53	36.65	23.75	25.50	7.8
Cucumbers	20.50	26.73	25.30	29.13	20.77	25.50	27.00	1.3
Lettuce, head	12.60	18.50	19.60	16.87	31.83	20.50	19.50	152.6
Onions, dry bulb	6.80	19.33	16.00	12.90	25.05	17.00	13.00	268.4
Snap beans	70.83	52.00	98.43	70.07	59.47	53.50	76.00	-16.0
Tomatoes, field	30.03	35.30	33.53	40.77	45.89	51.50	33.50	52.8
All vegetables 2/	118	152	154	137	216	165	150	83.1

-- = not available. * = USDA Economic Research Service forecast.
1/ Change in 1st quarter 2013 over 1st quarter 2012.
2/ Price index w ith base period of 1990-92 (the period w hen the index equaled 100).
Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Agricultural Prices* .

cucumbers, squash, peppers, eggplant, and tomato with covered technology mitigating some of the decreases in overall tomato and pepper crops from these areas. With the exception of chile peppers, shipments of these commodities were all lower in February 2013 than the previous month.

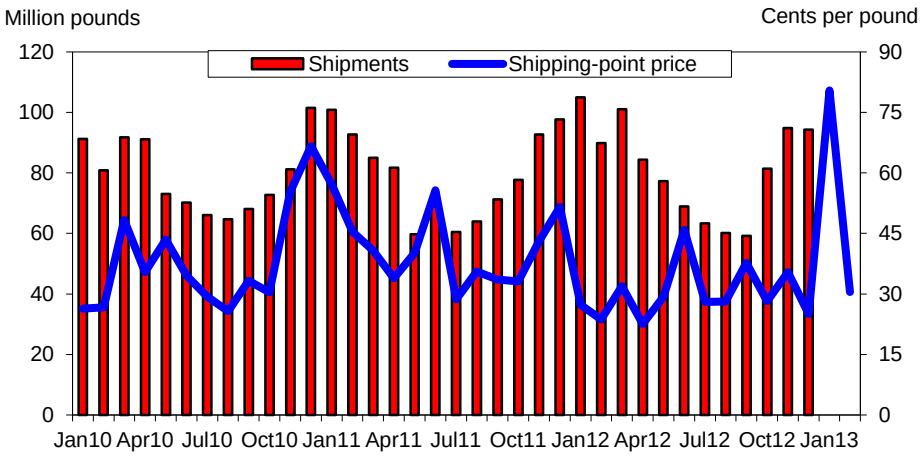
Florida weather was warmer than normal going into 2013 and some production areas reported crops ahead of schedule. Impacts from a mid-February frost were relatively minor as crops were at an early stage of development. Subsequent freeze events in early March had more immediate impact, particularly in sweet corn and green beans. Some areas reported losses up to 25 percent in beans and prices moved sharply upward in that market. Early March rains reportedly delayed plantings of some fresh vegetables in Georgia as well and cold weather in the State has pushed back harvest of Vidalia onions.

February 2013 shipments of many fresh-market vegetables were below their February 2012 levels. Volumes were down over 20 percent for carrots, cucumbers, leaf lettuce, and squash and down at least 40 percent for asparagus, Chinese cabbage, and dry onions. When compared with the previous month (January 2013), snap bean, carrot, cucumber, dry onion, and squash shipments each decreased over 20 percent while only shipments of asparagus, cauliflower, and Romaine lettuce were reported to have a 10-percent or greater increase.

With volumes down, average grower prices for most fresh-market vegetables were up substantially in the first quarter of 2013 compared with the depressed prices realized in the first quarter of 2012. The largest increases were seen in dry onions, iceberg lettuce, and celery. On average, the first-quarter snap bean prices remained slightly below their first-quarter 2012 levels, but prices rose quickly by March 2013. Shipping point prices for handpicked beans in Central and South Florida averaged $19.01 per bushel in January 2013 and $28.99 in the first half of March 2013 (USDA/AMS). Prices for machine-picked beans rose from $16.85/bushel to $28.99 in the same periods. The first-quarter 2013 grower price index for all vegetables is up 83 percent compared with first quarter of 2012 and up almost 80 points compared with fourth-quarter 2012.

Figure 2

U.S. broccoli, all uses: Shipments and shipping-point price, 2010-13 1/



1/ Includes both imports and domestic product. 2013 data is preliminary. February and March 2013 shipment data not yet available. Beginning January 2011, price reflects FOB shipping point basis. Prior months reflect delivered basis. Source: USDA, Agricultural Marketing Service, *Market News* (shipments) and USDA, National Agricultural Statistics Service (prices).

Given increases in shipping-point prices this winter, the February 2013 fresh-vegetable Producer Price Index (excluding potatoes) was over 40 percent above lows from February 2012, but below high levels realized in January 2013. With the exception of green peppers and spinach, the reported February PPI for all vegetables was up over the previous year's value. However, some moderation is already in evidence compared with the sharp increases in January 2013. The reported PPI for most vegetables was lower in February than in January of this year; exceptions were carrots, greens, and squash. For those crops, continued increases were reported.

Retail Prices Respond

More modest increases in the fresh vegetable Consumer Price Index (CPI) were reported between February 2012 and February 2013. Since the farm value is a relatively small component of the retail value of fresh vegetables, price changes at the farm do not typically result in an equivalent change at retail. The February 2013 CPI for all fresh vegetables was up 6.3 percent over the previous year with a small gain between January and February 2013. The February CPI for lettuce was up over 16 percent from the previous year and up less than 1 percent over January 2013.

Grower prices for tomatoes rose in the last 2 months of 2012 before moderating back towards the 2012 average in the first 2 months of 2013. According to the USDA, Agricultural Marketing Service's *Market News*, advertised retail prices at major supermarket outlets for fresh tomatoes were also higher in early 2013. Preliminary first-quarter 2013 advertised prices for round tomatoes were almost 18 percent above prices in first-quarter 2012 and almost 6 percent above the 2012 average.

Advertised retail prices for roma (plum type) tomatoes and tomatoes-on-the-vine were also up in the first quarter of 2013 compared with the previous year. The increases were driven largely by price spikes in January as levels have moderated more recently. Advertised retail prices for round, Roma, and tomatoes-on-the-vine dropped 12, 11, and 17 percent between January and the first half of March 2013.

Table 4--Fresh vegetables: Consumer and Producer Price Indexes 1/

Item	2012 Feb.	2012 Dec.	2013 Jan.	2013 Feb.	Change previous: 2/ Month	Change previous: 2/ Year
	---------- *Index* ----------				---- *Percent* ----	
Consumer Price Indexes (1982/84=100)						
Food at home	231.2	232.9	234.2	234.0	-0.1	1.2
Food away from home	235.6	240.4	240.7	240.9	0.1	2.2
Fresh vegetables	308.2	310.5	325.7	327.6	0.6	6.3
Potatoes	329.6	292.1	306.8	304.6	-0.7	-7.6
Tomatoes, all	298.3	331.1	327.3	312.0	-4.7	4.6
Lettuce, all	289.0	295.2	334.3	359.7	7.6	24.5
Other vegetables	314.0	318.0	333.5	336.1	0.8	7.0
Producer Price Indexes (Dec. 1991=100)						
Fresh vegetables (excl. potatoes) 3/	129.5	154.0	240.3	182.0	-24.3	40.5
Beets	104.7	140.0	126.6	124.6	-1.6	19.0
Cabbage 3/	170.5	231.2	278.0	237.1	-14.7	39.1
Carrots 3/	189.0	185.8	186.0	196.9	5.9	4.2
Cauliflower	44.6	38.7	141.9	44.7	-68.5	0.2
Greens	159.2	164.8	188.0	212.4	13.0	33.4
Lettuce 3/	121.9	121.8	358.6	198.6	-44.6	62.9
Onions, dry bulb 3/	86.0	188.0	341.3	303.7	-11.0	253.1
Peppers, green	230.1	203.9	238.5	192.1	-19.5	-16.5
Spinach	277.3	300.9	552.4	220.4	-60.1	-20.5
Squash	206.1	175.9	281.0	314.1	11.8	52.4
Tomatoes 3/	130.2	205.7	140.1	138.3	-1.3	6.2

1/ not seasonally adjusted. Data for Dec. 2012 and 2013 are preliminary. 2/ Change in February 2013 from previous month/year. 3/ Index base is 1982=100.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

National average advertised prices for selected vegetables during February 2013 were:

- asparagus rose almost 16 percent from a year earlier to $2.44/lb;
- green beans were steady at $1.48/lb;
- cabbage increased almost 9 percent to $0.50/lb;
- baby carrots were down 1 percent at $1.35/lb;
- celery rose almost 24 percent to $1.47/lb;
- sweet corn increased 6 percent to $0.47/ear;
- cucumbers increased 7 percent to $0.71/each;
- iceberg lettuce was down 1 percent at $1.06/head;
- zucchini squash was up 5 percent to $1.56/lb;
- round field-grown tomatoes were up over 10 percent to $1.12/lb;
- hothouse tomatoes on the vine rose 11 percent to $2.29/lb;
- green bell peppers rose almost 8 percent to $1.44/lb.

Suspension of Antidumping Investigation: Fresh Tomatoes from Mexico

On March 4, 2013 the U.S. Department of Commerce entered into an agreement with producers and exporters in Mexico to suspend the antidumping investigation on fresh tomatoes from Mexico. The initial investigation was initiated on April 25, 1996. The U.S. Department of Commerce first issued a preliminary determination of dumping and then announced a suspension agreement with principal Mexican producers/exporters at that time. The suspension has since been renegotiated with new agreements signed in 2002, 2008 and again in 2013.

Table 5--Suspension of antidumping investigation: Fresh tomatoes from Mexico, reference price 1/

Date	Tomato category	Reference price 2/
		----- $/lb -----
July 1 - October 22	Open field & adapted environment, other than specialty	0.2458
	Controlled environemnt, other than specialty	0.3251
	Specialty - loose	0.3568
	Specialty - packed	0.4679
October 23 - June 30	Open field & adapted environment, other than specialty	0.31
	Controlled environemnt, other than specialty	0.41
	Specialty - loose	0.45
	Specialty - packed	0.59

1/ For definition of terms used to define tomato category , see text of the agreement at http://ia.ita.doc.gov/tomato/2013-agreement/documents/Mexico-Tomatoes-Agreement-20130304.pdf
2/ Reference price refers to the price free-on-board (f.o.b.) from the selling agent.
Source: U.S. Department of Commerce.

While the investigation is suspended, the agreement sets minimum prices (called reference prices) that cover all fresh or chilled tomatoes of Mexican origin sold into the U.S. market. The basis for the agreement is a commitment by each signatory producer/exporter to sell the subject merchandise at or above the reference price, which will eliminate the injurious effects of exports of fresh tomatoes to the United States.

Included in the agreement are round, cherry, grape, plum, greenhouse and pear (Roma) tomatoes including fresh tomatoes imported for cutting up (e.g. tomatoes for use in fresh salsa or salad bars). Excluded from the agreement are tomatoes for processing.

The agreement accounts for changes that have occurred in the tomato industry since the signing of the original agreement and increases, from one to four, the number of tomato categories with established reference prices to better reflect the realities of the current tomato market. The 2013 agreement continues to account for a winter and a summer season.

Controlled environment tomatoes are defined as tomatoes grown in a fully enclosed permanent aluminum or fixed steel structure clad in glass, impermeable plastic, or polycarbonate using automated irrigation and climate control, including heating and ventilation capabilities, in an artificial medium using hydroponic methods. Specialty tomatoes include grape, cherry, heirloom and cocktail tomatoes.

For a copy of the March 2013 agreement, list of signatories, and other information see http://ia.ita.doc.gov/tomato/2013-agreement/2013-agreement.html. Copies of the earlier agreements are also available at http://ia.ita.doc.gov/tomato/.

Onion Crop Down, Prices Rise

In 2012, area planted to all fresh bulb onions fell slightly (less than 1 percent), offsetting the slight increase in 2011 acreage over the previous year. The 2012 decrease was driven by a decline in spring acreage which was down almost 13 percent. The drop in 2012 acreage planted and harvested to spring season onions in Texas more than offset State gains from the previous year. Acreage was also down in Georgia during 2012, while California acreage planted to spring onions continued to increase. Average national yields were down slightly to 296 cwt per acre. This slight (1-percent) decrease in yield and declining acreage resulted in a 16.6 percent drop in U.S. spring onion production in 2012 when compared with 2011. Average

Table 6--U.S. onions: Planted area by season, 2005-12

Item	2005	2006	2007	2008	2009	2010	2011	2012	Change 11/12
									Percent
Spring	40.7	40.5	33.0	31.2	29.9	28.4	33.1	28.9	-12.7
Summer									
Nonstorage 1/	20.3	20.8	20.7	20.1	17.9	19.1	19.3	20.2	4.7
Storage									
California 2/	31.8	33.1	30.0	32.5	32.6	30.1	30.6	31.0	1.3
Other States	78.4	81.3	83.2	76.8	76.9	77.7	72.9	74.9	2.6
Total storage	110.2	114.4	113.2	109.3	109.5	107.8	103.5	105.9	2.2
Total summer	130.5	135.2	133.9	129.4	127.4	126.9	122.8	126.1	2.6
U.S.	171.2	175.7	166.9	160.6	157.3	155.3	155.9	155.0	-0.6

-- = not available. p = preliminary. 1/ Nonstorage estimates for California began in 2000.
2/ Primarily dehydrated and other processing.
Source: USDA, National Agricultural Statistics Service, *Vegetables Summary*.

prices reported by USDA/NASS were up almost 26 percent, with the largest price increase in Georgia followed by Texas. Spring onion prices for California were reported to be down 14 percent in 2012.

Planted area was up almost 5 percent in summer nonstorage onions and over 2 percent in summer storage onions. Acreage in storage onions rebounded in New York, which had previously been experiencing a steady decline in harvested area. Harvested acreage in storage onions was also up in California, Washington, and Wisconsin. However average yield of storage onions dropped almost 6 percent and overall production was down to 5.4 billion pounds (a 1.5-percent decrease).

Area harvested for summer nonstorage onions reached 19,600 in 2012 while average yields were relatively unchanged compared with the previous year. Overall production was 10.9 million pounds (a 4-percent increase). Even with the expanded domestic production of nonstorage onions, prices in the category rebounded from low levels realized in 2011. Prices reported for 2012 summer nonstorage onions averaged $18.80 per cwt; up in New Mexico and Washington, and unchanged in California.

Fresh-Vegetable Balance of Trade Improved in 2012

With low domestic prices for many fresh vegetables, the balance of trade (exports minus imports) in the category improved somewhat in 2012 compared to 2011. Value of all fresh-vegetable exports increased 5 percent between the 2 years while import value fell over 8 percent. In terms of volume, the trade pattern was different with a 5-percent increase in imports and a 3 percent increase in exports during 2012 compared to the previous year. Since 2010 approximately 25 percent of fresh vegetables utilized in the U.S. have been imported each year, compared to less than 15 percent in the early 1990s.

Imports of tomatoes, cucumbers, and peppers (bell and chile) produced using protected-culture technology (i.e. greenhouse) continue to increase with over 95 percent of volume coming from North American Free Trade Agreement (NAFTA) partners in 2012. Import volume of greenhouse chile peppers from all sources rose 26 percent in 2012 compared with the previous year, while import volumes of greenhouse cucumbers, bell peppers and tomatoes increased 17, 11, and 9 percent respectively over the same period.

Even as import volume of fresh greenhouse vegetables increased, lower 2012 U.S. prices limited the increase in import value of these commodities. The value of imported greenhouse tomatoes from all sources actually fell 2 percent in 2012 when compared with the previous year. A notable exception was gains in both volume and value of greenhouse chili peppers, which were strong in Canada and non-NAFTA trade partners (primarily Netherlands). Greenhouse cucumber imports from Mexico also increased in volume (27 percent) and value (35 percent) in 2012.

Overall import volume of fresh vegetables (field and protected-culture technologies) from Mexico rose 6 percent in 2012 and import volume from Canada rose 4 percent. Between 2000 and 2012 Mexico supplied an average of 74 percent of fresh-vegetable imports to the United States with Canada supplying an additional 13 percent on average. Volume from China was down 6 percent between 2011 and 2012. Since 2000, fresh-vegetable imports to the United States from China have averaged less than 1.5 percent of the total annually.

Export shipments were almost 3 percent higher in 2012 than they were in 2011. The largest percentage increases were broccoli, followed by celery and head lettuce. Exports of dry bulb onions and carrots were down in 2012. Exports of fresh vegetables slowed in January 2013 compared to January 2012; an exception was carrots where export volume increased slightly. Since 2010, the percent of U.S. fresh vegetable supply exported has been less than 7 percent each year, compared to an average of almost 8 percent in the 1990s.

Table 7--Vegetables grown under cover: Imports, 2011-13 1/

	Annual		January		Change 2/
Item	2011	2012	2012	2013	2011-12
	---------- *$ million* ----------				*Percent*
Mexico					
Cucumbers	31.29	42.28	0.00	0.00	35
Peppers (bell)	233.20	255.23	45.14	36.90	9
Peppers (chile)	5.05	5.03	0.44	0.30	0
Tomatoes	924.11	937.49	106.49	115.21	1
Canada					
Cucumbers	80.35	79.16	0.00	0.00	-1
Peppers (bell)	174.11	185.11	0.03	0.01	6
Peppers (chile)	11.40	15.94	0.00	0.00	40
Tomatoes	293.13	259.78	0.65	1.36	-11
Others					
Cucumbers	3.76	3.49	0.00	0.00	-7
Peppers (bell)	56.56	38.30	2.06	1.78	-32
Peppers (chile)	1.02	1.43	0.10	0.19	40
Tomatoes	16.47	15.68	3.95	3.47	-5
Total					
Cucumbers	115.40	124.93	0.00	0.00	8
Peppers (bell)	463.87	478.64	47.23	38.70	3
Peppers (chile)	17.47	22.41	0.55	0.49	28
Tomatoes	1,233.72	1,212.95	111.09	120.03	-2

1/ includes products defined as greenhouse production by HS code.
2/ change is annual total from 2011 to 2012.
Source: USDA, Economic Research Service based on data from U.S. Department of Commerce, U.S. Census Bureau.

Table 8-Selected fresh-market vegetable trade volume, 2011-13 1/

Item	Annual		January		Change 4/
	2011	2012	2012	2013	2011-12
	1,000 cwt				*Percent*
Exports, fresh:					
Onions, dry bulb	7,010	6,480	506	464	-8
Lettuce, other	4,637	4,808	419	370	4
Tomatoes	2,526	2,580	208	206	2
Lettuce, head	2,963	3,099	232	182	5
Broccoli	2,375	2,953	283	124	24
Carrots	2,387	2,370	203	211	-1
Celery	2,608	2,842	251	247	9
Other	14,772	15,212	1,234	1,172	3
Total	39,276	40,345	3,335	2,977	3
Imports, fresh:					
Tomatoes, all	32,871	33,791	3,616	3,326	3
Protected 2/	14,713	15,965	1,604	1,620	9
Roma (plum)	12,050	12,241	1,278	1,095	2
Cucumbers, all	13,100	14,540	1,887	1,829	11
Protected 2/	2,009	2,341	0	0	17
Peppers, sweet, all	9,324	11,489	1,586	1,511	23
Protected 2/	5,056	5,622	628	496	11
Onions, dry bulb	8,689	8,494	841	911	-2
Peppers, chile	7,859	8,268	602	616	5
Protected 2/	205	257	10	9	26
Squash 3/	5,988	6,622	802	867	11
Asparagus, all	3,850	4,130	469	242	7
Other	30,813	30,513	3,215	4,296	-1
Total	112,494	117,846	13,017	13,597	5

1/ Excludes melons, potatoes, mushrooms, dry pulses, and sweet potatoes. 2/ Grown under cover.
3/ Excludes chayote. 4/ Change in annual total from 2011 to 2012.
Source: USDA, Economic Research Service based on data from U.S. Department of Commerce, U.S. Census Bureau.

Table 9--Fresh-market vegetables: Imports by country, 2011-13 1/

Item	Annual		January		Change
	2011	2012	2012	2013	2011-12 2/
	1,000 cwt				*Percent*
Mexico	86,174	91,095	11,159	10,914	6
Canada	12,352	12,846	384	512	4
Peru	3,870	3,756	290	468	-3
Costa Rica	2,053	2,027	159	182	-1
China	1,724	1,626	150	109	-6
Others	6,321	6,495	875	1,412	3
Total	112,494	117,846	13,017	13,597	5

1/ Excludes melons, potatoes, mushrooms, dry pulses, and sweet potatoes.
2/ Change in annual total from 2011 to 2012.
Source: USDA, Economic Research Service based on data from U.S. Department of Commerce, U.S. Census Bureau.

Processing Vegetables

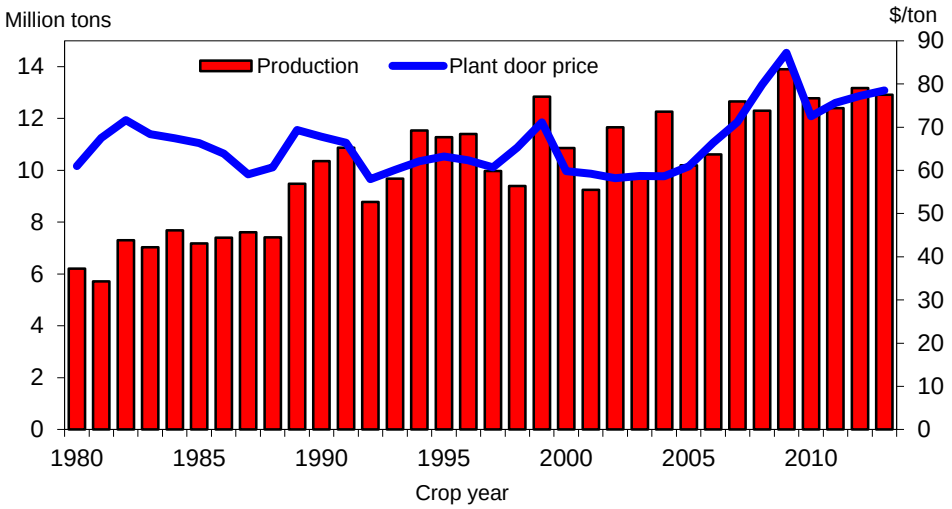
Prospective Tomato Area Up

According to the January 18 *California Processing Tomato Report*, NASS, USDA, California tomato processors anticipate contracting a total of 13 million short tons on 261,000 acres in 2013—2.8 percent more processing tomatoes than in 2012. A record statewide yield of 49.8 tons per acre is also expected during this season by processors—up 2.5 percent from last year. Assuming that processors carry through with these early intentions, 2013 output would then be second only to the record-setting output of 13.3 million tons in 2009. California produces almost 97 percent of the tomatoes grown nationally for processed products such as sauces, paste, soup, juice, and ketchup. When the intended contract production from California 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 2010-12), the total U.S. crop of tomatoes for processing could reach 13.6 million tons in 2013—the second highest on record.

According to the California Tomato Growers Association, negotiations on this year's tomato contracts are proceeding with discussions of base price and late season premiums and solids. Price negotiations were contentious last year, dragging agreement over a base price into the summer, when settlement was reached at the average base price (price at the first delivery point, excluding premiums) of $69.40 per short ton. This year is likely to be contentious again, in part due to the high production costs and strong demand for exports.

According to industry data, the tomato stocks on December 1, 2012 were up slightly from last year's levels while 6-month disappearance levels dropped 2 percent from last year. Even with this decline, it is still considered by the industry's standpoint to be a "good" amount. Export demand continues to drive stock movement during this period.

Figure 3
U.S. processing tomatoes: Production and delivered (plant-door) price



Sources: USDA, National Agricultural Statistics Service, *Vegetables Annual Summary,* except 2013's estimate, which is a projection from USDA, Economic Research Service.

Table 10--Processing vegetables: Consumer and Producer Price Indexes 1/

Item	2012 Jan.	2012 Dec.	2013 Jan.	Change previous: 2/ Month	Change previous: 2/ Year
	---------- *Index* ----------			---- *Percent* ----	
Consumer Price Indexes (1997=100)					
Processed fruits and vegetables	155.6	154.3	157.7	2.2	1.3
Canned vegetables	167.4	164.2	168.5	2.6	0.7
Frozen vegetables (1982-84=100)	207.2	201.6	206.2	2.3	-0.4
Dry beans, peas, lentils	195.3	198.0	196.9	-0.6	0.8
Olives, pickles, relishes	139.1	136.1	135.4	-0.5	-2.6
Producer Price Indexes (1982=100)					
Canned vegetables and juices	171.3	173.4	174.9	0.9	2.1
Pickles and products	220.9	223.5	221.3	-1.0	0.2
Tomato catsup and sauces 3/	154.5	154.6	157.4	1.8	1.9
Canned dry beans	159.7	166.1	166.0	-0.1	3.9
Vegetable juices 3/	125.0	125.8	125.6	-0.2	0.5
Frozen vegetables	193.8	193.9	194.2	0.2	0.2
Dried/dehy. fruit & vegetables	207.3	214.9	218.1	1.5	5.2

1/ Not seasonally adjusted. 2/ Change in January 2013 from the previous month/year.
3/ Index base year is 1987.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Processed Prices Up in 2012

According to data from The Food Institute, wholesale (list) prices, which represent prices offered by processors, rose for most processed vegetable products in 2012. In particular, prices for frozen green peas increased 27 percent for retail-sized bags and 29 percent for consumer-sized bags over the previous year. Frozen whole-kernel sweet corn and snap beans also increased 9-12 percent, while offered prices for cauliflower, okra, and spinach remained unchanged during the period. Likewise, wholesale (list) prices for canned sweet corn, snap beans, green peas, carrots, and beets climbed for all sizes (with the exception of tomato paste (55-gallon drum), which remained unchanged).

Producer Price Index (PPI) values for canned vegetables and juice, frozen vegetables, and dried/dehydrated fruit and vegetables were up slightly from a year ago this January. Consumer-level prices also rose according to the Consumer Price Index (CPI). The CPI for processed fruits and vegetables climbed 1.3 percent from last January and 2.2 percent between December 2012 and January 2013. Frozen vegetable CPI rose slightly from December but fell 0.4 percent compared to January 2012.

Production Output and Processing Area Rebound in 2012

Production of the major vegetables used for processing increased 7 percent to 18.3 million short tons in 2012 in response to increased area harvested and higher yields. Seven of the 11 surveyed crops (snap beans, lima beans, broccoli, sweet corn, cucumbers for pickles, green peas, and tomatoes) registered increased output compared with 2011. Production of tomatoes used for canned products rose 6 percent as area, yields, and prices increased. Other crops that experienced substantial gain from last year were lima beans for freezing (43 percent), green peas for canning (39 percent), lima beans for canning (38 percent), and green peas for freezing (32 percent).

Table 11--Annual U.S. production of selected processing vegetables

Item	Average 2008-09	2010	2011	2012	Change 2011-12
	---------- *1,000 short tons* ----------				*Percent*
Canning:					
Tomatoes	13,138.2	12,776.3	12,396.2	13,178.8	6
Sweet corn	1,433.1	1,244.3	1,126.0	1,235.9	10
Snap beans	559.0	511.1	464.9	460.6	-1
Cucumbers	557.9	551.4	482.0	494.1	2
Green peas	301.1	125.1	94.0	130.4	39
Spinach	11.6	7.6	17.6	19.8	13
Lima beans	4.8	5.4	3.6	4.9	38
Asparagus	6.1	2.1	3.1	2.2	-29
Subtotal	16,011.7	15,223.3	14,587.4	15,526.6	6
Freezing:					
Sweet corn	1,600.2	1,449.9	1,501.3	1,710.4	14
Snap beans	253.2	255.0	216.0	272.9	26
Green peas	259.8	220.6	200.9	264.9	32
Spinach	88.1	142.3	127.6	103.6	-19
Lima beans	43.8	56.8	39.1	56.0	43
Asparagus	4.7	3.9	5.4	4.9	-10
Subtotal	2,249.7	2,128.5	2,090.3	2,412.6	15
Dual use:					
Carrots	378.1	317.1	338.6	322.2	-5
Broccoli	28.9	20.5	19.7	19.8	1
Cauliflower	8.3	5.8	12.5	7.4	-41
Subtotal	415.2	343.4	370.8	349.4	-6
Selected total	18,676.6	17,695.1	17,048.5	18,288.5	7

Source: USDA, National Agricultural Statistics Service, *Vegetables Annual Summary.*

In contrast, production output for processed asparagus, cauliflower and carrots declined as both area and yields dropped. Spinach production for freezing also decreased while spinach for canning increased during this period. After potatoes (which are not included here), the top processing vegetables in terms of production volume were tomatoes, sweet corn, and snap beans. These three crops, which accounted for approximately 98 percent of the total production volume, were responsible for the majority of the change from last year.

With gains in per-acre yields and upward trends in production, the value of production for processing vegetables also rose 13 percent in 2012 to $2.0 billion. As with production, the top three crops in terms of farm value were tomatoes ($1.0 billion), sweet corn ($373 million), and snap beans ($192 million). The top three processing vegetable states were California ($1.0 billion), Wisconsin ($196 million), and Minnesota ($195 million).

Imports of Processed Vegetables Up

The United States continued to be a net importer of processed canned, frozen, and dried vegetables (excluding mushrooms and potatoes) during 2012 (January to December). Import value, which totaled $2.8 billion in 2012, exceeded export value by $1.3 billion.

The 2012 value of processed (canned, frozen, dried) vegetable imports represented a 4-percent increase over the previous year. Much of the gain in import value was contributed by dried and dehydrated vegetables (up 16 percent from last year) and frozen vegetables (up 3 percent). Canned vegetable imports declined 2 percent during this period due largely to decline in processed-tomato imports.

The jump in dried and dehydrated vegetable imports was propelled by gains in dried leeks, cassava starch, and onions. Among frozen vegetable imports, gains were driven by sweet corn, spinach, snap beans, and Chinese vegetables (among others).

U.S. exports of processed vegetables also rose during 2012 to $1.5 billion. A gain in export value was realized across most canned, dried, and frozen vegetable products. The top five foreign destinations during this period included Canada (with 43 percent of all processed vegetables value), followed by Japan (9.3 percent), Mexico (9.2 percent), Italy (4.5 percent), and South Korea (4.1 percent). Mexico, which was ranked second place in 2011, dropped down to third place in 2012.

Table 12--Value of U.S. processed vegetable trade 1/

	January - December				Change
Item	2009	2010	2011	2012	2011-12
		--Million dollars--			*Percent*
Imports:					
Canned	1,002	1,063	1,150	1,128	-2
Tomato products	191	197	171	166	-3
Frozen	718	730	873	898	3
Broccoli	238	243	291	288	-1
Dehydrated 2/	430	518	671	776	16
Garlic	30	49	59	50	-14
Total	2,150	2,311	2,693	2,802	4
Exports:					
Canned	785	835	944	1,015	8
Tomato products	487	519	606	612	1
Frozen	227	234	269	283	5
Sweet corn	70	70	86	88	3
Dehydrated 2/	167	171	182	185	1
Onion products	85	84	82	80	-3
Total	1,179	1,240	1,396	1,483	6

1/ Excludes potatoes and mushrooms. 2/ Includes dried.
Source: USDA, Economic Research Service calculations based on data of the U.S. Department of Commerce, U.S. Census Bureau.

Table 13--Value of U.S. canned vegetable exports by destination 1/

	January - December				Change
Source	2009	2010	2011	2012	2011-12
		--Million dollars--			Percent
Canada	329	366	405	434	7
Italy	65	36	27	46	72
Mexico	78	80	106	94	-12
Japan	59	65	69	94	38
South Korea	32	36	34	42	24
Others	222	252	303	306	1
Total	785	835	944	1,015	8

1/ Excludes potatoes and mushrooms.
Source: USDA, Economic Research Service calculations based on data of the U.S. Department of Commerce, U.S. Census Bureau.

Potatoes

Total Production Up 8.7 Percent, at Highest Level Since 2000

In 2012, farmers grew 37.5 million cwt more potatoes than the previous year. At 467 million cwt, this potato crop is the largest since 2000 when 523 million cwt was produced. Contributing factors to the increase include a 5-percent expansion in harvested area and a 3-percent rise in average yields, relative to 2011. Harvested area in each of the 13 major potato-producing States (see table for list) grew by an average of 5 percent with notable gains in Nebraska (16 percent), North Dakota (9 percent), Idaho (8 percent), and Maine (6 percent). Nationally, harvested acres grew by a total of 55,700 acres; 50,400 of these acres were located in the top 13 States and account for 90 percent of national expansion.

In 2012, yields across all States and seasons are expected to average 412 cwt per acre, an increase of 13 cwt over the 399 cwt per acre realized in 2011. Only the 2009 national average yield of 414 cwt is higher than the current estimate. Despite year-to-year yield gains, dry and hot weather in several potato-growing regions of the country created less than ideal growing conditions and curtailed further yield progress. A return to normal weather patterns and soil moisture levels in 2013 could assist farmers to boost yields beyond 2012 levels.

Idaho Grows Fall Production by 14 Million cwt

A 31.4-million-cwt surge in fall production relative to 2011 levels accounts for approximately 84 percent of the total gain in 2012 production. Total fall production rose to 422.5 million cwt, up from 391.2 in 2011. Growth in fall acreage can largely be attributed to an expansion of acres grown under contract to processing and dehydration operations. Many of this year's additional potatoes are located in areas with high processing capacities including Idaho and North Dakota.

Table 14--Fall potato production, 13 top-producing States

State	2011	2012	Change
	----*Million cwt*----		*Percent*
North Dakota	18.9	25.2	33.6
Nebraska	7.8	10.1	30.1
New York	4.1	4.7	16.1
Wisconsin	25.9	29.4	13.5
Minnesota	16.7	18.8	12.7
Idaho	128.8	143.2	11.2
Maine	14.3	15.7	9.5
Michigan	15.2	15.9	4.9
California	4.3	4.3	0.0
Washington	97.6	97.6	0.0
Colorado	21.3	21.0	-1.3
Oregon	23.3	23.0	-1.3
Montana	3.8	3.7	-1.3
13-State total	381.9	412.8	8.1
U.S. total	391.2	422.5	8.0

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

An 11-percent increase in fall production from Idaho accounted for more than 14 million cwt or nearly half (46 percent) of the total year-to-year growth in national fall potato output. North Dakota contributed an additional 6.3 million cwt of fall potatoes in 2012 compared to 2011. Only 4 of the top 13 potato-producing States (WA, MT, CO, OR) reported declines in fall production. On the whole, these cutbacks are modest, totaling just 638,000 cwt, and are dwarfed by the 31.5 million cwt expansion of fall production harvested in the remaining States.

Spring and Summer Harvests Contribute To Surplus

While spring and summer production collectively account for slightly less than 10 percent of the total 2012 harvest, combined production in these two seasons grew by 6.1 million cwt relative to 2011 and contributed 16 percent of the year-to-year national growth in total potato production. Output gains in Texas (up 31 percent over 2011), North Carolina (up 14 percent), and California (up 6 percent), help to increase 2012 spring production by 5 percent relative to 2011 levels.

Year-to-year gains in spring production are overshadowed by a 38 percent, 5 million cwt expansion of summer production. Every State that reported summer production in 2012 experienced growth in yields and, with the exception of Delaware, these gains were in the double and triple-digits. Favorable growing conditions aided Missouri and Texas to each reap remarkable yield improvements of more than 130 cwt per acre in 2012. Summer harvested acres in California, Illinois, Missouri, and New Jersey offset acreage declines in Kansas, Texas, and Virginia, resulting in a net expansion of 5 percent for 2012.

Florida Production Impact From Dual Freeze Events Unclear

Industry reports expect improvement in Florida's winter potato yields over the previous year though a forecast reduction in harvested acres is likely to temper these gains. Two January and February freeze events in North and Northeast/Costal Florida may further reduce harvested area and are likely to negatively impact yields, though the full extent of the damage is not yet clear. When the second freeze took place in the East Palatka and Hastings areas, some chip potatoes were in early development stages. Covered potatoes likely avoided damage while others may experience developmental setbacks resulting in delayed harvest. Reports indicate that uncovered and relatively mature table stock potatoes, especially those that were too big to cover, could have suffered severe damage with some acres in the most damaged areas being a total loss. Historically, Florida's winter production has comprised approximately 30-50 percent of the national winter potato crop and about 2-percent of total annual U.S. production.

Lower Prices Drive Down Total Value of Production

Abundant potato supplies are driving prices and, ultimately, the total value of production lower. At $3.91 billion, the 2012 total value of production is down from the previous year but remains the second largest nominal value on record, behind 2011's record $4.04 billion. These high values mask issues of reduced grower profitability. With 37.5 million cwt more potatoes for the market to clear in 2012, prices have faced significant downward pressure. Consequently, the sales value of production-per-harvested acre has fallen from $3,754 in 2011 to $3,460 in 2012. On

average, producers are realizing about $300 fewer dollars in sales-per-acre, putting additional financial strain on operations that are dealing with increased input costs. The difficult economic situation faced by some producers has received attention from the Federal Government which has taken action to reduce the production surplus.

USDA Announces Intentions To Purchase $25 Million Worth of Potatoes

In early December, USDA Marketing and Regulatory Programs Under Secretary Edward Avalos announced the intention to make up to $25 million available to purchase approximately 3 million cwt of fresh and processed potatoes to be used in Federal nutrition assistance programs. The Federal purchase will move up to 0.6-percent of 2012 potatoes from mainstream markets channels and will potentially clear roughly 8 percent of the year-to-year production expansion.

The most recent announcement follows an October USDA press release indicating that 240 metric tons of dehydrated potato granules and 320 metric tons of dehydrated potato flakes were purchased under the McGovern-Dole Food for Education and Child Nutrition Program. Potato products purchased via this program will be utilized by Counterpart International in Cameroon to supplement a school feeding program. Ultimately, 1,986 metric tons of dehydrated potatoes will be purchased and distributed as part of this program.

Prices Fall as Production and Frozen Inventories Rise

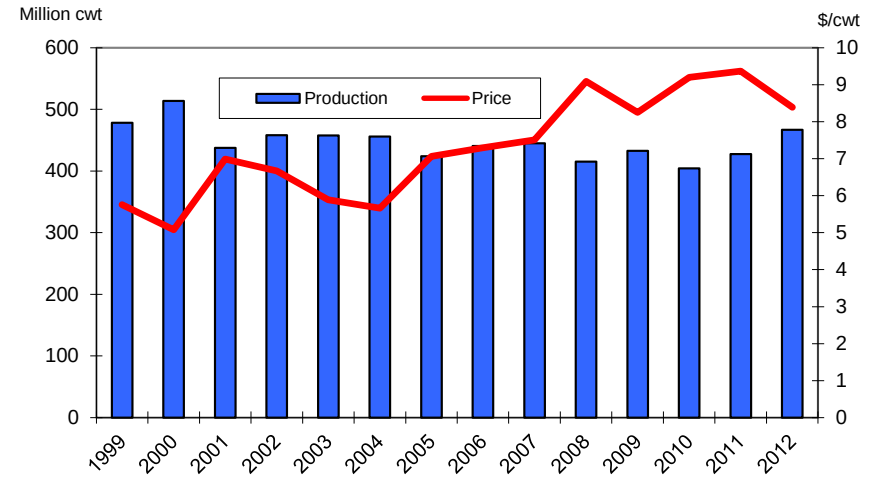
Derived 2012 fresh-market prices have been negatively impacted by expanded potato supplies and are projected to be down 22 percent relative to the previous season's price of $12.82 per cwt.[1] By comparison, the anticipated 2012 price is the lowest fresh-price projection since 2004 and is forecast at $10.07 per cwt; a year-to-year drop of $2.75. Prices for processing potatoes are forecast to be up slightly in 2012, boosted by comparatively strong domestic and export demand. The 2012 average farmer price for processing potatoes is projected to reach $8.06 per cwt; the 2011 price was $7.84.

[1] Per UDSA/NASS, unit prices for 2012 are derived from the estimated value of production; pre-2012 prices are derived from the value of sales.

Taking into account all production, regardless of end use, results in an estimated average farm price of $8.39 per cwt, a drop of $1.02 relative to the 2011 marketing year price of $9.41. If realized, this price drop will be the largest negative year-to-year change since the 1996/97 marketing year when average prices fell by $1.84 per cwt in a 12-month period.

Whether prices recover or fall further before the start of the next marketing year is conditional on which market factors dominate. The removal of some potatoes from normal market channels via livestock feeding, government programs and higher-than-average storage losses in combination with potential growth in exports may pull prices out of a seasonal low. However, if domestic and export demand wanes, processing use slows, planting intentions reveal a return to 2012 acreage levels in 2013, or shrinkage and quality-associated reductions in storage levels are below expectations, prices may continue to decline.

Figure 4
Potato prices drop as production surges



Source: USDA National Agricultural Statistics Service, *Crop Production* and *Agricultural Prices*.
Production across all seasons and marketing-year-average price.

February 1 Potato Stocks: Inventories Up 14 Percent From February 2012

The most recent *Potato Stocks* report by USDA/NASS indicates that as of February 1, the 13 major potato-producing States held 214 million cwt of potatoes in storage or about 46 percent of the crop harvested in 2012. Approximately 14 percent and 26.5 million cwt more potatoes were held in storage on February 1, 2013 as compared to the same time in 2012.

The report further indicates that 155 million cwt of potato were held in the West (CO, CA, WA, OR, ID, and MT), an increase of 9 percent or 12.7 million cwt versus last year's estimate. Stocks held in Central States (ND, WI, MN, MI, and NE) increased by 11.3 million cwt, a notable 31-percent year-to-year gain. Stocks held in Maine and New York grew by 30 percent or roughly 2.5 million cwt The season-to-date shrink and loss estimate, at 18.9 million cwt, is up slightly from the same date in 2012 and serves to underscore concerns about the overall quality and longevity of crops that may have been stressed by extreme summer heat and/or prolonged storage.

At 199 million cwt, potato production less stocks (i.e. "potato disappearance") is 2 percent above the February 1, 2012 figure. Operations in the 9 major processing States have used 107 million cwt of potatoes this season, down 2 percent from the same period last year. Dehydrating usage accounts for 20.8 million cwt of total processing, virtually unchanged from last year.

Fourth-Quarter Fresh Import Value Reduced by One-Third

Plentiful domestic supplies and low potato prices have reduced incentives to look abroad for table stock. October-December 2012 imports of fresh/chilled potatoes are down $14.8 million and valued at less than two-thirds of last year's imports in the same period. At 1.26 million cwt, fresh imports represent about 66 percent of the 2011 fourth-quarter total, by volume. Potato starch imports are also down and are valued at $8.5 million less than shipments in the fourth quarter of 2011.

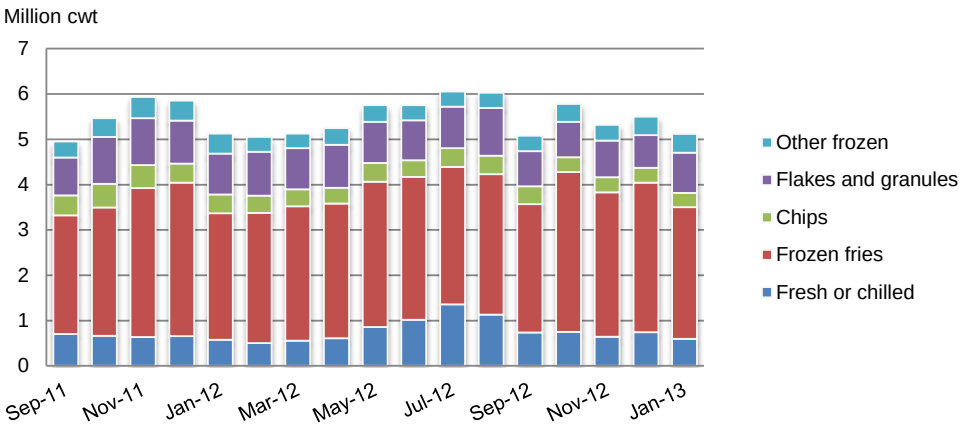
Comparing the same time period, frozen french fry and other frozen imports are up by $19.1 and $3.1 million, respectively. Most frozen imports originate from Canada, which has experienced its own bumper crop of potatoes. The combination of high-efficiency processing facilities and low input costs generates frozen potato products that are competitive with domestic production, despite abundant U.S. supplies.

Exports Strengthen on Competitive Prices and Weak Dollar

Improvements in fourth quarter 2012 frozen french fry exports help to raise the total value of all potato exports by $10.4 compared to the same time in 2011. Aided by competitive prices, strong demand from trade partners, and a weaker U.S. dollar, fourth-quarter fry exports are $20.8 million higher than the same period in 2011 and total $252.2 million. Fresh/chilled shipments, at $40.3 million, are down 9 percent compared to Oct.-Dec. of last year due to strong competition from Canada. Shipments of fresh potatoes for chipping purposes are aggregated into the fresh category; however, trade discussion indicates growth in fresh chipping-type potatoes to Asian-Pacific destinations. In September of 2012, the United States Potato Board announced that multiyear efforts to expand fresh potato trade to China had paved the way for the country's first import shipment: 14 metric tons containing multiple varieties of fresh potatoes.

In each month of the fourth-quarter of 2012, exports of potato flakes and granules were down, relative to 2011 figures. Exports of chips also declined in final quarter of 2012, with drops in October and November, relative to the 2011 benchmark. Collectively, sales fell by $4.8 million in both chip and flake/granule markets. Most chips that are exported are produced by Pringles, which was sold to the Kellogg's company in 2012. Factors related to the acquisition may account for the decline in 2012 chip exports. Chip trade may pick up in the months to come following the company's recent announcement of efforts to shore up Pringle's market share abroad via the introduction of new flavors in several key markets.

Figure 5
U.S. potatoes: Export volume, monthly September 2011-January 2013



Note: All weights are fresh-weight equivalent.
Source: Prepared by USDA, Economic Research Service from data of the U.S. Department of Commerce, U.S. Census Bureau.

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Vegetables and Pulses Data

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 four sections:

Outlook Tables, in Excel and PDF format, contain recent data on fresh and processing vegetables, acreage, production, prices, and U.S. trade, as well as data on potatoes, sweet potatoes, mushrooms, and dry pulse crops. Tables are grouped into 6 subsections. Eventually, data contained in the Vegetables and Pulses Outlook tables will be encompassed in the Data by Category and Data by Commodity series.

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.

E-mail Notification

Readers of ERS outlook reports have two ways they can receive an e-mail notice about release of reports and associated data.

• Receive timely notification (soon after the report is posted on the web) via USDA's Economics, Statistics and Market Information System (which is housed at Cornell University's Mann Library). Go to http://usda.mannlib.cornell.edu/MannUsda/aboutEmailService.do and follow the instructions to receive e-mail notices about ERS, Agricultural Marketing Service, National Agricultural Statistics Service, and World Agricultural Outlook Board products.

• Receive weekly notification (on Friday afternoon) via the ERS website. Click here and follow the instructions to receive notices about ERS outlook reports, *Amber Waves* magazine, and other reports and data products on specific topics. ERS also offers RSS (really simple syndication) feeds for all ERS products. Go to http://www.ers.usda.gov/rss to get started.

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

Web Sites

A. Vegetables and Pulses Outlook: The home page of this report. http://www.ers.usda.gov/topics/crops/vegetables-pulses/market-outlook.aspx

B. 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

C. 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

D. 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

E. 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. http://www.marketnews.usda.gov/portal/fv

F. 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

G. 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

H. 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/htp/fruit_veg.asp

United States Department of Agriculture

Economic Research Service

Situation and Outlook

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Vegetables and Pulses Outlook: Special Article

Commodity Highlight: Bell Peppers*

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Approved by the World Agricultural Outlook Board.

For U.S. consumers, bell peppers are no longer a uniform product category on supermarket shelves. Traditionally thought of as blocky green peppers, differentiation among peppers by color, shape, and growing environment are now important components of the U.S. market.

Bell peppers are widely grown in the United States. According to the 2007 Census of Agriculture data, 9,572 farms were producing bell peppers in that year with the majority (9,379 farms) harvesting peppers for sale in the fresh market. The remaining 2 percent of farms reported harvesting primarily for the processed market. According to USDA, Economic Research Service calculations, farm cash receipts for fresh-market green peppers averaged almost $640 million annually between 2009 and 2011.

Growing Per Capita Use

U.S. per capita use of bell peppers remained relatively steady through the 1960s and 1970s at 2.0 and 2.5 pounds per person respectively. Average use approached 4 pounds per person in the 1980s and was over 7 pounds per person in the 1990s. Growth has continued since 2000, but slowed to just 2 percent per year on average between 2000 and 2012. In 2012, per capita use reached a record at more than 11 pounds per person.

U.S. Production

The majority of bell peppers produced in the United States are still grown in the field on raised beds using drip irrigation and mulch. Domestic field production has been increasing since 1960 with the steepest upward trend during the 1980s. Growth continued after 1990, albeit at a slower rate. In 2012, over 1,860 million pounds of field-grown bell peppers were harvested from 55,500 acres in the U.S.

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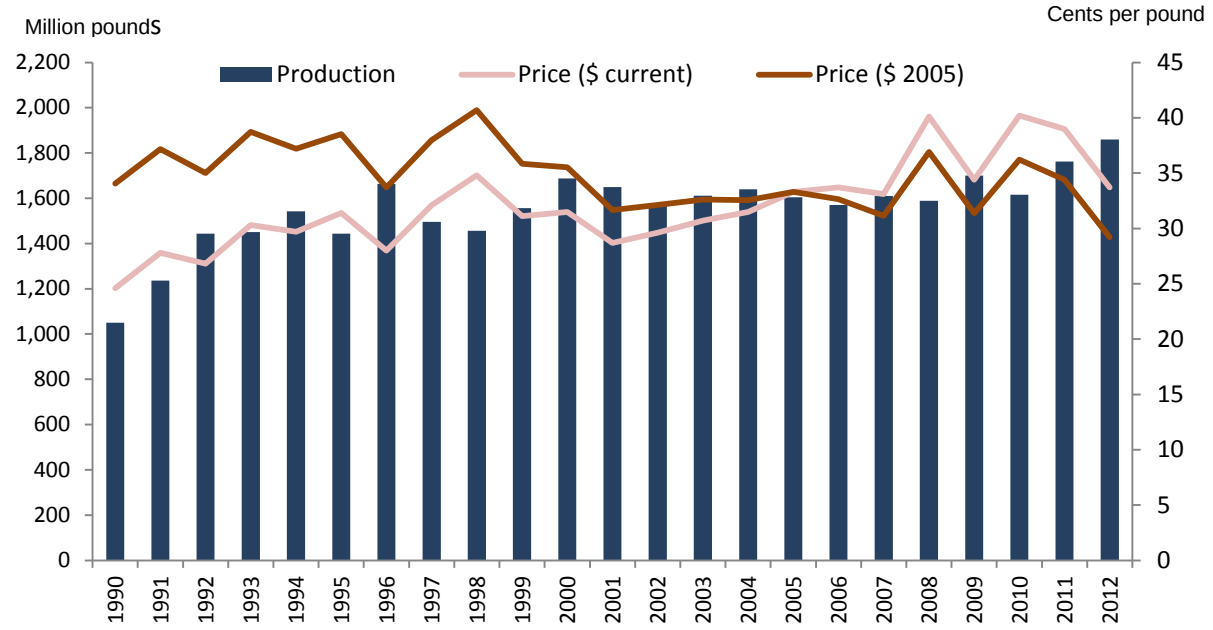
* Sabrina Correll is a former summer intern and Suzanne Thornsbury is a cross-commodity analyst, Crops Branch, Market and Trade Economics Division, Economic Research Service, USDA.

Figure 1--U.S. bell peppers: Production and season-average grower price, 1990-2012 1/



1/ fresh and processing use

Source: USDA, National Agricultural Statistics Service.

While peppers are grown on a large number of farms across the U.S., production volumes are more concentrated. Between 2008 and 2012, California produced 51 percent of U.S. field-grown bell pepper volume, followed by Florida with 26 percent, Georgia and New Jersey with 6 percent each, North Carolina with 5 percent, Ohio with 4 percent, and Michigan with 2 percent.

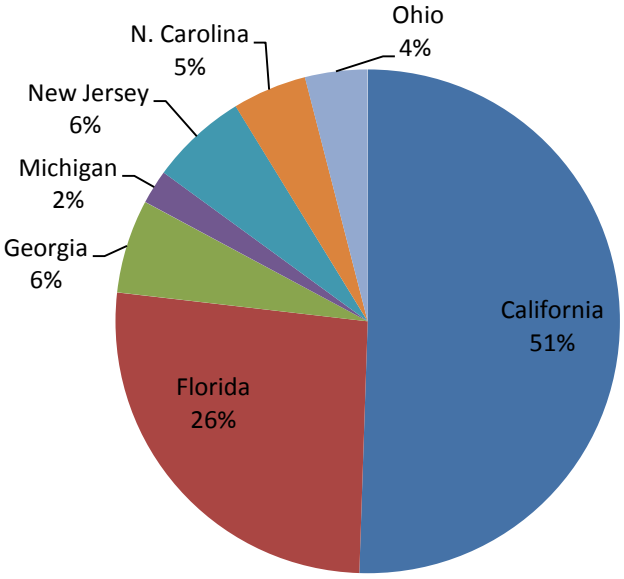
The use of protected-culture technologies (e.g. greenhouse, shadehouse) for peppers has increased over time, but data on the extent and use from year to year are not readily available. The Census of Agriculture revealed an increase in greenhouse pepper operations (both pungent and nonpungent) in the United States from 165 in 1998 to 265 in 2007. In 2007 greenhouse pepper yields averaged 64,500 pounds per acre, double the average yield of 31,340 pounds for field-grown peppers reported by NASS in that year. In 2007 bell pepper production from greenhouse systems totaled over 1.8 million pounds, 3.5 percent of which was grown using hydroponics.

From a global perspective, the U.S. ranked 6th in production of green peppers (both chile and bell/nonpungent) between 2007 and 2011 with approximately 3 percent of reported world production. The largest producers over that period were China with 51 percent of global production, Mexico (7 percent), Turkey (7 percent), Indonesia (5 percent), and Spain (3 percent). While the Netherlands accounted for less than 1 percent of the harvested area of peppers worldwide and ranked 9th in overall production, yields were by far the highest averaging over 237,000 pounds per acre between 2007 and 2011 due to wide use of intensive production practices using protected-culture technologies.

Imports Now Account for Half of Domestic Bell Pepper Use

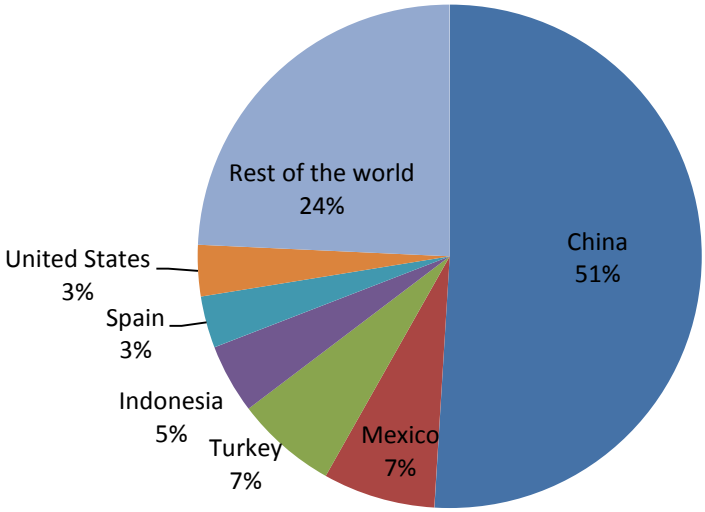
Although increasing, U.S. bell pepper production has not been high enough to satisfy growing domestic demand and imports have accounted for a larger share of the market. Import share of use (fresh and processing bell peppers) has been rising since data were first collected in 1960. In the 1990s, imported share of consumption averaged just over 32 percent, rising to over 45 percent between 2000 and 2012. From 2008 to 2012 the average share of imports was even higher at almost 51 percent, after reaching a record of 53 percent in 2010.

Figure 2--Share of bell pepper production in top 7 States (fresh & processing)*



*Average share of U.S. production, 2007-11
Source: USDA, National Agricultural Statistics Service, *Vegetables Summary*.

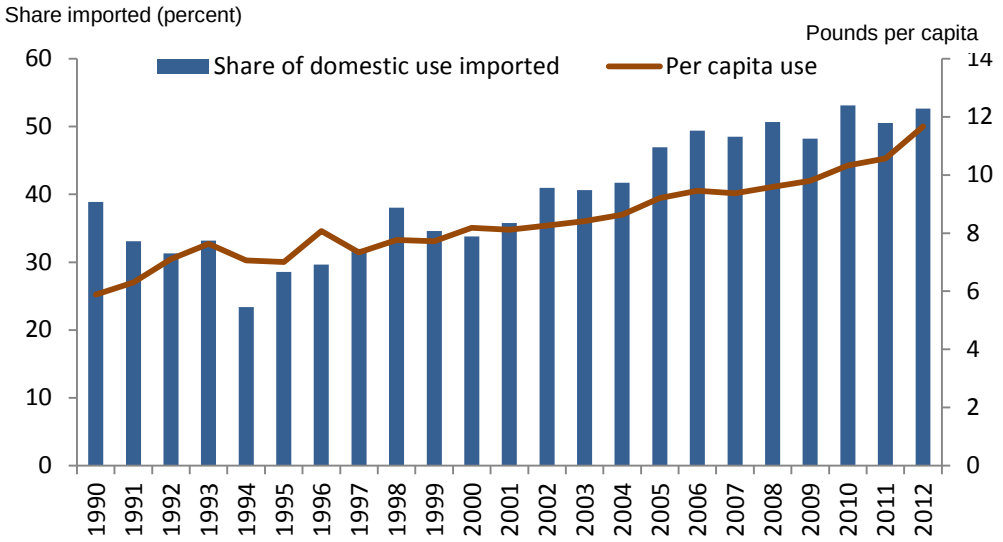
Figure 3--Top 7 world producers of green chiles and peppers*



* Average share of 2007-11 world production.
Source: United Nations, Food and Agricultural Organization.

Annual import volumes were relatively steady in the 1980s, but climbed in the 1990s with 7.4 percent average annual growth in volume imported between 2008 and 2012. In these last 5 years, import volume of all bell peppers (fresh and processed) averaged 1.6 billion pounds on a fresh-weight basis (over 910 million of which were fresh), reaching a record 1.9 billion pounds in 2012 (1.1 billion pounds of which were fresh). While the average growth rate in fresh pepper imports has been higher than that for processed peppers over time, levels in both markets continue to increase.

Figure 4--U.S. bell pepper share of use imported and per capita use, 1990-2012



Source: USDA, Economic Research Service.

In 2012, Mexico supplied over 75 percent of fresh bell pepper imports to the U.S. Canada was the next largest supplier, accounting for 17.5 percent of fresh import volume, followed by the Netherlands with 3 percent and the Dominican Republic with 1.5 percent. The majority of fresh imports enter the U.S. in the first quarter of the calendar year when domestic shipments are typically lower. This contra-seasonal pattern was stronger in the 1990s compared with 2000-09 and 2010-12. In processed markets, China (36 percent), India (31 percent), and Mexico (23 percent) were the largest import suppliers of dried & dehydrated bell peppers during 2012 while Peru (56 percent), Turkey (32 percent), and Spain (7 percent) dominated the relatively small import market for canned bell peppers.

U.S. exports of bell peppers pale in comparison to imports. Export volumes have averaged less than 15 percent of import volumes annually since 1990. Export value averaged $98 million annually between 2008 and 2012. By far the largest export market for U.S. fresh bell peppers is Canada, accounting for approximately 95 percent of the total.

Differentiating Through Product Color

Peppers available in the market today include elongated, square (or blocky), and miniature in multiple colors (red, yellow, orange, and purple, as well as green). Color has become an import way to differentiate peppers and can significantly affect price. Colored peppers (other than green) cost more to produce because they are actually ripened green peppers with the final color determined by variety. Extra time spent maturing on the vine often means greater yield losses for the grower with increased exposure to weather and pest uncertainty.

Consumers typically pay a premium for orange, red, yellow or purple bell peppers over green ones. Between 2008 and 2012, advertised retail prices averaged $2.45 per pound nationally for conventionally grown red peppers, 70 percent more than field-grown green peppers (USDA/AMS). Similar price patterns are reported in wholesale markets where prices for red and yellow peppers were approximately 2.5 times higher than those for green peppers in 2011. Orange peppers commanded the highest wholesale price, 3 times that of green peppers. Packaging, which includes multiple item bags or “stoplight packs” has proven to be an important marketing strategy that takes advantage of the color options now available in peppers.

Table 1--U.S. bell peppers, all uses: Supply, utilization, and price, farm weight, 1960-2012

Year	Supply			Disappearance			Season-average price		Trade share of:	
	Production 1/	Imports 2/	Total	Exports 2/	Total	Per capita use	Current dollars 1/	Constant dollars 1/ 3/	Consumption imported	Supply exported
	---------- Million pounds ----------					Lbs/person	$/cwt	2005$/cwt	---- Percent ----	
1960s	407.2	23.3	430.5	14.2	416.2	2.2	9.5	46.9	5.0	3.3
1970s	493.5	97.9	591.4	36.5	554.9	2.6	15.4	47.4	17.4	5.9
1980s	769.0	187.9	956.9	80.2	876.7	3.7	22.8	38.4	21.7	8.5
1990s	1,433.6	614.5	2,048.1	139.8	1,908.4	7.2	29.7	36.9	32.3	6.9
2000	1,687.9	781.2	2,469.1	157.6	2,311.5	8.19	31.50	35.53	33.8	6.4
2001	1,649.4	828.9	2,478.3	161.7	2,316.6	8.12	28.70	31.66	35.8	6.5
2002	1,566.8	975.6	2,542.4	161.3	2,381.1	8.26	29.60	32.13	41.0	6.3
2003	1,611.8	994.5	2,606.3	159.2	2,447.0	8.41	30.70	32.62	40.6	6.1
2004	1,640.0	1,057.4	2,697.4	162.8	2,534.6	8.64	31.50	32.55	41.7	6.0
2005	1,603.6	1,279.4	2,883.0	156.4	2,726.6	9.21	33.30	33.30	46.9	5.4
2006	1,571.0	1,396.5	2,967.5	139.8	2,827.7	9.46	33.70	32.64	49.4	4.7
2007	1,610.0	1,370.9	2,980.9	152.8	2,828.1	9.36	33.10	31.14	48.5	5.1
2008	1,588.8	1,447.4	3,036.2	147.0	2,889.2	9.48	40.10	36.92	50.1	4.8
2009	1,699.7	1,453.3	3,153.0	139.9	3,013.1	9.80	34.40	31.38	48.2	4.4
2010	1,615.6	1,700.2	3,315.8	115.9	3,199.9	10.33	40.20	36.22	53.1	3.5
2011	1,761.8	1,666.0	3,427.8	131.2	3,296.7	10.57	39.00	34.41	50.5	3.8
2012 p	1,859.3	1,931.2	3,790.4	122.6	3,667.8	11.67	33.70	29.21	52.7	3.2

P = preliminary. --- = not available. Cwt = 100 pounds. 3/1/2013

1/ Source: USDA, National Agricultural Statistics Services. From 1990-91, production was estimated by ERS based on available State data. In 2000, NASS added estimates for Georgia, New York, and Pennsylvania. Domestic production excludes non-bell sweet peppers such as pimiento and banana. 2/ Source: U.S. Dept. of Commerce, U.S. Census Bureau. Includes canned and dehydrated imports, adjusted to a fresh-weight basis. Conversion factors for peppers: Canned to fresh = 2.41, Dried/dehy to fresh = 8.0.
3/ Grower prices for 1981-91 based on available State data. Deflated by the gross domestic product implicit price deflator, 2005=100.
Source: USDA, Economic Research Service.

Despite the premium for color, individual multicolored peppers are the least desirable for wholesalers. For example, a pepper labeled “red and green” or “turning red” brought less than one-third the price per pound than that of a fully red pepper in 2011 (USDA/AMS). Color-transitioning peppers commanded almost one-third less than even uniformly green peppers at wholesale.

Differentiating With Protected-Culture Technologies

Protected-culture technologies for pepper production come in many forms that allow the grower some degree of control over various factors including weather events, pests, water and land use, pesticides, and fertilizer inputs. Shade houses are open structures that screen plants from extreme sunlight and wind. Greenhouses use glass or plastic to keep out pests and provide greater control over growing conditions including temperature, humidity, and atmospheric composition. Currently, greenhouse definitions and labels are not standardized, which has caused some tension in the industry as producers and handlers seek to differentiate their products for consumers.

Consumers may not always be able to tell the difference between field- and protected-culture peppers when making a purchase. However, retailers often mention more even supplies and consistent quality as positive attributes of peppers grown with protected-culture technologies. According to AC Nielsen data from 2009, peppers grown in greenhouses accounted for over one-fourth of total pepper sales between late 2008 and September 2009, with volume of sales increasing rapidly from year to year.

The U.S. Department of Commerce began collecting trade data for bell peppers grown under cover (identified as greenhouse in HS codes) in 2002. Since that time, both the volume and share of protected-culture pepper imports has been on the rise. From 2008 to 2012, imports averaged over 440 million pounds per year. In 2012, a record high of 555 million pounds accounted for 48 percent of total fresh bell pepper imports to the U.S. While this was a record volume, the actual share of bell peppers grown under cover peaked in 2011 at 53 percent.

Table 2--Average monthly bell pepper shipments in the United States by source

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	annual volume (100,000 pounds)											
Domestic:												
1990-99	358	277	413	563	697	664	422	233	247	366	542	478
2000-09	516	507	712	896	1099	1183	819	749	760	883	879	564
2010-12	325	359	523	659	831	1144	899	944	881	901	961	498
Imports:												
1990-99	617	608	519	277	161	101	90	92	108	87	153	419
2000-09	973	820	785	604	475	269	237	296	323	289	374	720
2010-12	1450	1306	1080	924	846	372	373	516	612	444	588	1011
	percent of annual volume from source											
Domestic:												
1990-99	7.0	5.5	7.9	11.0	13.4	12.9	7.6	4.0	4.2	6.4	10.5	9.6
2000-09	5.4	5.3	7.5	9.4	11.5	12.3	8.5	7.8	7.9	9.2	9.2	5.9
2010-12	3.6	3.9	5.6	7.2	9.4	12.8	10.2	10.7	9.9	10.2	10.9	5.5
Imports:												
1990-99	19.8	19.4	16.1	8.3	4.5	3.0	2.7	2.7	3.0	2.6	4.6	13.3
2000-09	15.9	13.4	12.7	9.8	7.8	4.3	3.8	4.8	5.2	4.6	6.0	11.6
2010-12	15.3	13.8	11.3	9.7	8.9	4.0	3.9	5.4	6.4	4.7	6.2	10.6

Source: USDA, Economic Research Service based on data from USDA, Agricultural Marketing Service, *Fresh Fruit and Vegetable Shipments*.

Mexico is by far the largest supplier of bell peppers grown under cover to the United States, averaging 45 percent of imports between 2002 and 2012, and 62 percent of imports in the last 5 years. Prior to 2006, Canada had been the foreign supply leader but in 2012 Canadian shipments accounted for only 23 percent of protected-culture imports, followed by the Netherlands with 5 percent. From all sources, import volumes tend to be highest December through April. Imports from Mexico are higher during the winter and early spring months while Canada and the Netherlands are primary import suppliers during the summer months.

Mexico Makes Use of Shade Houses

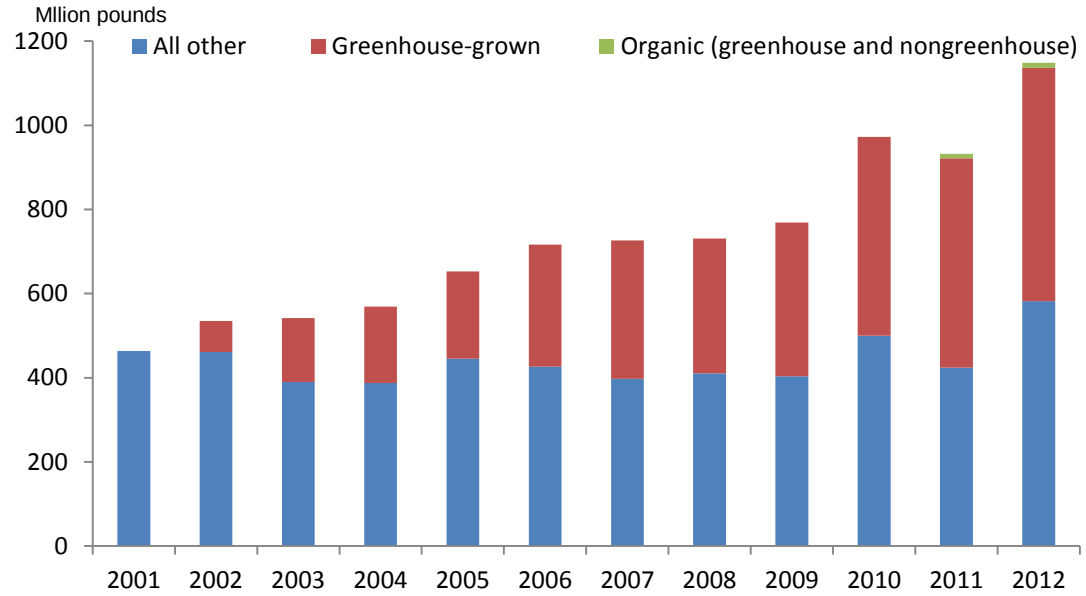
In Mexico, use of protected-culture technologies for all fruit and vegetables is on the rise; up from 1,850 acres in 1999 to 37,000 acres in 2010 (USDA, Foreign Agricultural Service, 2010). The majority of the vegetables grown in these systems are tomatoes, but other crops including cucumbers and peppers are popular as well. Protected-culture technologies are reported to be concentrated in Sinaloa (28 percent), Baja California (14 percent), Baja California Sur (11 percent), Sonora (11 percent) and Jalisco (10 percent). The Mexican Government has invested in infrastructure for protected agriculture because of the potential to produce more volume and as a way to improve employment opportunities in rural communities. Still, not every operation that moved to protected-culture technologies has been successful and there are reports of abandoned structures, particularly in the last few years.

Most operations (reported at over 50 percent) prefer shade houses to greenhouses because of their lower costs and greater adaptability to Mexico's warm climate. More intensive technologies — such as hydroponics — are rare, but many operations rely on drip irrigation. Export markets for higher-valued bell peppers from protected-culture technologies are those counties with strict import standards (because quality and safety standards are easier to attain in the more controlled environment) and higher average incomes.

Canada Invests in Greenhouse Technology

Between 2008 and 2011, the total area used for all greenhouse fruit and vegetable production in Canada steadily increased, averaging 125 million square feet (Statistics Canada). In 2011, Canada produced 199 million pounds of

Figure 5--U.S. bell pepper imports by type of production, 2001-12



* Data reporting for greenhouse-grown peppers began in 2002, Data reporting for organic peppers began in 2011.
Source: U.S. Department of Commerce, U.S. Census Bureau.

greenhouse peppers worth C$300 million. Production is nearly year-round, with harvest beginning in March and extending through December. The area under rigid plastic has decreased significantly over time in favor of glass or polyethylene protection. Nearly two-thirds of production is concentrated in Ontario, followed with most of the rest in British Columbia.

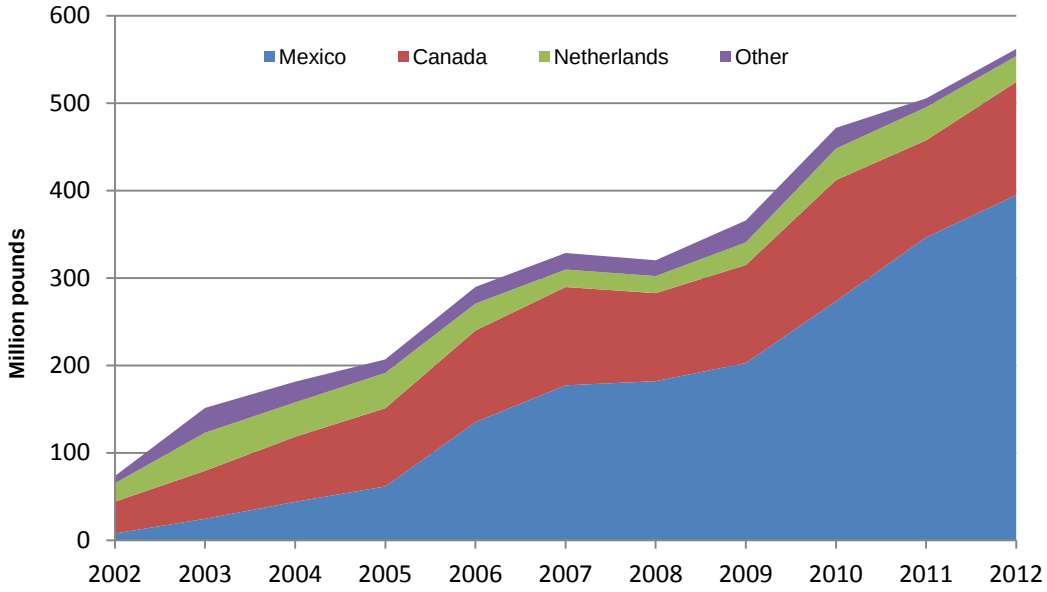
Canadian greenhouse pepper production dwarfs that of field production. In 2010 twice as many peppers were produced using protected-culture technologies compared with field production. The majority of both field and greenhouse peppers are exported to the United States, but again greenhouse peppers dominate with two-thirds of the shipments to the U.S. grown in protected-culture technology systems.

U.S. Protected-Culture Technology Pepper Industry Is Smallest in North America

High yields and the opportunity to extend the regular growing season create an opportunity for higher returns to growers, which has contributed to growth in the use of protected-technologies for vegetables in the United States. Still there are significant challenges for greenhouse production of bell peppers. Initial investment, maintenance costs, and management intensity are high relative to field production. In particular, when compared with commodities more widely produced in protected-culture technology systems (i.e. tomatoes, cucumbers) growers have encountered difficulty in interplanting peppers. Interplanting is a practice vital to maintaining continuous output from a given space; thus maximizing return per square foot.

Greater downtime between planting cycles for bell peppers has limited growth in the use of protected-technology systems relative to other vegetable crops. While the total number of greenhouse operations did increase over the past decade, there was a decrease in space dedicated to pepper production. Total area declined from 1.5 million square feet for pepper production in 1998 to 1.2 million square feet in 2007. Total sales also declined from $5.3 million to $2.2 million. Production by State is impossible to define fully due to disclosure restrictions by NASS. However in 2007, New York reported the largest number of greenhouse pepper operations with 29, while California reported the largest production with over one-third of national output.

Figure 6--U.S. greenhouse pepper imports by country, 2002-12*



* includes organic and nonorganic peppers
Source: U.S. Commerce Department, U.S. Census Bureau.

Organic: Another Way to Differentiate Peppers

USDA/NASS first collected data on domestic organic bell pepper production in 2008. That year there were 1,044 operations producing 12 million pounds of organic bell peppers on 870 acres across the U.S. California led production with nearly 8 million pounds or 75 percent of the total. Sales of organic bell peppers (market value) totaled $8 million. By 2011, there were fewer farms (502) producing 15.5 million pounds of certified organic bell peppers on 901 acres. Sales totaled over $11 million and production remained concentrated in California with 412 farms and 11.1 million pounds of output. In 2011, Florida had 83 certified organic bell pepper operations producing almost 2 million pounds.

Although organic product makes up only a small share of all bell pepper imports, in 2011 about 41 percent of the organic peppers available for domestic consumption were imported. That year the United States imported 10.7 million pounds of organic bell peppers (1.1 percent of total bell pepper imports). Volume was slightly higher in 2012 at 12.2 million pounds. The vast majority (86 percent) of these imports came from Mexico, followed by the Netherlands with 12 percent. It worthwhile to note that in 2012, 60 percent of U.S. organic bell pepper imports came from protected-culture technology systems. Currently, there are no data available for U.S. exports of organic bell peppers. However, as the U.S. only exports a small share of domestic pepper production the figure is likely very small.

Advertised retail prices of organic green peppers averaged $1.95 per pound or 36 percent more than their nonorganic counterparts between 2009 and 2011 (USDA/AMS). In 2011 when data on advertised prices for red organic peppers became available, this category commanded the highest premium. Annual average price for organic red peppers was $4.02 per pound in 2011 versus $2.00 for organic green peppers, $2.53 for nonorganic red peppers, and $1.44 for nonorganic green peppers. Price patterns were similar in 2012 with reported advertised prices (annual average) at $3.09, $2.10, $2.49, and $1.44 per pound for organic red peppers, organic green peppers, nonorganic red peppers, and nonorganic green peppers respectively.

Bell peppers with the highest reported wholesale price in 2011 were organic, red, and greenhouse grown (USDA/AMS). Average wholesale prices for green conventional field-grown peppers were less than 20 percent as much in the same year. Peppers grown in greenhouses, but without organic certification, still received a substantial premium over nonorganic field-grown peppers.

More Choices for Consumers

Bell peppers are no longer a uniform product category. Combinations of color, growing technologies, shape, size, and/or organic production practices all exist in differentiated bell pepper markets. Traditional blocky peppers can now be found in red, yellow, orange, and purple as well as green. With a sweet taste, fewer seeds, and convenience as a snack, miniature varieties are growing in popularity at both retail food stores and foodservice outlets. Production and sales of elongated peppers in multiple colors have expanded rapidly. More expensive growing methods such as greenhouse or organic are most often (but not always) used for colored pepper production that offers the possibility of higher returns. Development of new varieties has expanded offerings in multiple shapes and sizes and promises to widen the choices available to consumers even further.

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United States Department of Agriculture

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Situation and Outlook

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Vegetables and Pulses Outlook: Special Article

The Food Safety Modernization Act and the Produce Rule*

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Approved by the World Agricultural Outlook Board.

In January 2011, President Obama signed the Food Safety Modernization Act (FSMA) into law. Part of this legislation requires the U.S. Food and Drug Administration (FDA) to develop mandatory microbial food safety practices for produce growers. On January 16, 2013, FDA published the proposed rule regulating produce—Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption—commonly known as the produce rule (*Federal Register*, 2013a). The produce rule establishes science-based minimum standards for the safe production and harvesting of those types of fruits and vegetables that are raw agricultural commodities for which FDA has determined such standards minimize the risk of serious adverse health consequences or death. While the proposed produce rule is the focus of this article, it is not the only part of FSMA that will affect the produce industry. Some produce operations may fall under the proposed preventive control rule (published at the same time as the produce rule) (*Federal Register*, 2013b). Additional rules that may apply to produce are not yet published.

From Voluntary to Mandatory Practices

A series of high-profile foodborne illness outbreaks in the mid-1990s, traced back to fresh raspberries and spring mix, first focused attention on microbial contamination of produce (Calvin, 2003). In 1998, FDA published a voluntary guidance document on good agricultural practices (GAPs) titled *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables* to help producers reduce the risk of microbial contamination. For fresh and fresh-cut produce there is no effective microbial elimination step such as pasteurization for milk; as a result, GAPs focus on reducing the risk of microbial contamination but do not eliminate the risk.

Use of GAPs became standard industry procedure for some, but not all, growers. In 2004, after more outbreaks, FDA met with the produce industry to encourage them

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to develop voluntary commodity-specific good agricultural practices (CSGs) that targeted specific risk factors for individual commodities with a history of problems. Some CSGs developed into voluntary or mandatory food safety programs, most often for industries that had experienced foodborne illness outbreaks traced to their commodity. A few examples demonstrate the variety of tools industry groups have used to accomplish this task.

After the 2006 foodborne illness outbreak linked to California spinach, the California leafy greens industry developed the California Leafy Greens Marketing Agreement (Calvin, 2007). Although membership is voluntary, members must comply with food safety metrics and face audits to remain certified as members. The agreement uses California Department of Food and Agriculture (CDFA) auditors licensed and trained by USDA's Agricultural Marketing Service (AMS). Most California leafy greens handlers belong to the marketing agreement but foodborne illness outbreaks linked to California leafy greens have continued to occur. Arizona has a similar marketing agreement for leafy greens. Leafy greens operations in other States often choose to produce in accordance with the California Leafy Greens Marketing Agreement metrics. In 2009, several organizations proposed a national leafy greens marketing agreement. In 2011, based on evidence received at a public hearing, AMS published a proposed rule recommending establishment of a national marketing agreement and invited public comment. Now the industry waits for AMS to decide how or whether to proceed with an agreement.

California cantaloupe growers, who faced market backlash from outbreaks linked to cantaloupe in other States in 2011 and 2012, voted in 2012 to add food safety requirements to an existing State marketing order. A marketing order, unlike an agreement, is mandatory for all operations in the defined region. The industry expects the marketing order to be in operation in May for the beginning of the 2013 season. Recent outbreaks were linked to Colorado, North Carolina, and Indiana—areas with much smaller cantaloupe production than California. In 2012, the cantaloupe producers in the Rocky Ford region of Colorado formed the Rocky Ford Cantaloupe Growers Association. A condition of membership is a mandatory GAPs audit conducted by Colorado Department of Agriculture auditors licensed and trained by AMS. This organization, which is limited to growers in the Rocky Ford area, has 18 grower members. In 2013, growers started the Eastern Cantaloupe Growers Association which is open to any growers from east of the Rocky Mountains to the east coast. Individual growers apply for membership showing they have complied with the specific food safety standards of the organization and agreeing to one unannounced audit during the season from an approved third-party auditor. Both the Rocky Ford Growers Association and the Eastern Cantaloupe Growers Associations formed as voluntary trade associations, bypassing marketing orders and agreements.

About the time FDA identified tomatoes as one of the commodities that needed CSGs (2004), Florida tomato growers tried to include food safety in their existing Federal marketing order. After discussions with AMS, the Florida tomato industry eventually turned to State statutes to make the food safety standards mandatory beginning in 2007 (*Federal Register*, 2013a, p. 3514). California tomato farmers tried to include food safety practices in their existing State marketing order but did not receive CDFA approval. In 2007, a group of growers, representing about 90 percent of California fresh-market tomato production, started a cooperative that requires that participants employ GAPs with audits conducted by CDFA auditors licensed and trained by AMS.

There are no current statistics on use of GAPs or other food safety practices in the United States. Growers could adopt higher food safety standards to minimize their own business risks, to respond to buyer demands, or to participate in industry food safety programs. Those who were proactive in adopting food safety practices may not face many additional requirements with FSMA; others may face substantial new requirements.

Despite organized efforts over the last two decades to reduce the risk of foodborne illness in produce, the latest research from the Centers for Disease Control and Prevention found that 46 percent of foodborne illnesses in the period 1998-2008 were attributed to produce (Painter et al, 2013). Of course, these data do not reflect more recent activities to improve food safety. Continued outbreaks linked to produce put pressure on Congress to do more about this problem.

Even when the final mandatory produce rule is in operation, voluntary or mandatory industry programs may still fill a need. A grower organization may impose tougher standards based on the consensus of the industry while FDA

might have to wait for scientific evidence to show that a more aggressive standard has merit. With large industry and government investment, however, new research is quickly becoming available. Grower organizations are nimble and can quickly require new practices as new risks or solutions appear; government regulations tend to require far more coordination, legal review, and public scrutiny, so therefore take much longer to develop. Many of the grower programs include mandatory annual audits; FDA will not be able to inspect all farms every year under FSMA. The proposed rule states "With a community as large and diverse as the produce farming industry, it is not reasonable to expect that industry-wide compliance can be gained primarily through inspection and enforcement, though, of course, inspection and enforcement must be a component of our efforts. Inspections will, of necessity, be targeted to those farms that present the greatest risk (*Federal Register*, 2013a, p. 3609)." The rule then states that rigorous audits under the national or regional marketing agreements can be an important tool for fostering compliance, as can nonregulatory audits initiated by growers, packers, and buyers. Grower organizations may want to continue their programs with mandatory annual audits to minimize the risk to the industry. Also, retail and foodservice buyers might prefer the mandatory annual audits the industry food safety programs provide.

FSMA Product Coverage

The proposed produce rule applies to most raw produce (fruit and vegetables, including mushrooms, sprouts, peanuts, tree nuts, and herbs) for human consumption. Produce not covered by the rule include:

- Certain specified produce commodities that are rarely consumed raw.[1]
- Produce that is not a raw agricultural commodity (RAC). A RAC is defined as "any food in its raw or natural state, including all fruits that are washed, colored, or otherwise treated in their unpeeled natural form prior to marketing." A head of lettuce packed in the field for sale is a RAC. If a head of lettuce is processed into a bagged salad it is a processed product, not a RAC. Processed products for off-farm use fall under other FDA regulations. The proposed produce rule applies to activities within the "farm" definition. It states "A farm that chooses to transform its RACs into processed foods should be considered to have chosen to expand its business beyond the traditional business of a farm."
- Produce that qualifies under the exemption for products that receive commercial processing that adequately reduces the presence of microorganisms of public health significance—although documentation is still required.
- Produce used only for personal or on-farm consumption.

FSMA Farm Coverage

All farms in the United States that grow, harvest, pack, or hold produce are covered with the following exemptions:

- Produce from farms that have an average annual value of food sold during the previous 3-year period of $25,000 or less.
- A qualified exemption for farms with food sales averaging less than $500,000 per year during the last 3 years AND the farm sales to qualified end-users must exceed sales to others (the Tester Amendment). Qualified end users are the direct consumer (an individual, not a business) of the food or a restaurant or retail food establishment that is located in the same State as the farm or not more than 275 miles away. But even those that qualify for the exemption must comply with certain labeling requirements. Also, FDA can withdraw the qualified exemption.

[1] Commodities exempted under the proposed rule are: arrowhead, arrowroot, artichokes, asparagus, beets, black-eyed peas, bok choy, Brussels sprouts, chickpeas, collard greens, crabapples, cranberries, eggplant, figs, ginger root, kale, kidney beans, lentils, lima beans, okra, parsnips, peanuts, pinto beans, plantains, potatoes, pumpkin, rhubarb, rutabaga, sugarbeet, sweet corn, sweet potatoes, taro, turnips, water chestnuts, winter squash (acorn and butternut squash), and yams.

FSMA Food Safety Practices Covered

The produce rule focuses on prevention of microbial contamination of produce, not product testing, except for sprouts in certain conditions. Some of the major food safety practices that are addressed in the proposed rule include standards directed to:

- Personnel qualifications and training
- Health and hygiene
- Agricultural water
- Biological soil amendments of animal origin and human waste
- Domesticated and wild animals
- Growing, harvesting, packing and holding activities
- Equipment, tools, buildings, and sanitation
- Sprouts

See the proposed produce rule and FSMA web page for complete details on the specific food safety practices (*Federal Register*, 2013a; U.S. FDA, 2013).

From Proposed Rule to Final Rule and Implementation

Now that the proposed rule has been published, the public has until May 16, 2013 to provide comments (FDA has received several requests to extend the comment period). In addition, FDA is holding listening sessions to hear public comments. After the May deadline, FDA will consider the comments and decide whether revisions are needed. Once FDA issues a final rule, it becomes effective 60 days later but producers would not have to comply immediately with the new rule. Most farms would have 2 years to comply. For the produce rule, FDA defines small farms as those with more than $250,000 but not more than $500,000 in food sales (on a rolling basis, average annual monetary value of food sold during the previous 3-year period); these farms would have 3 years to comply.[2] FDA defines very small farms as those with more than $25,000 but no more than $250,000 in food sales; these farms would have 4 years to comply. All farms, regardless of size, would have 2 additional years to comply with some of the water requirements of the produce rule. FDA is sponsoring training activities to help farms come into compliance. The Produce Safety Alliance was established under a cooperate agreement between FDA, USDA, and Cornell University to improve understanding and implementation of GAPs with curriculum development and training. There is also a Sprouts Safety Alliance.

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Situation and Outlook

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Vegetables and Pulses Outlook: Special Article

China's Vegetable Exports Peak as Attention Shifts to Domestic Market*

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Approved by the World Agricultural Outlook Board.

China is the world's leading producer and consumer of vegetables and its boom in exports during the first decade of the 21st century was a major development in world vegetable markets. More recently China's explosive growth rate in vegetable exports has diminished as attention shifts to meeting domestic demand.

The volume of China's vegetable exports (Harmonized System codes 07 and 2001-2005) more than tripled from under 3 million metric tons (mmt) during the late 1990s to a peak of over 10 mmt in 2011 (fig. 1). Annual growth exceeded 20 percent during several years in the early 2000s following China's accession to the World Trade Organization in December 2001. But China's vegetable exports demonstrated little growth in most years after 2007. There was a brief resurgence in growth rate during 2011, but the volume fell 5 percent during 2012. Vegetables were the only one of China's major agricultural commodities that showed a decrease in export volume during 2012.

China's slowdown in vegetable exports coincided with slow economic growth worldwide, suggesting weak external demand is one factor behind the peak in exports (Zhang et al., 2012). Import barriers imposed in Indonesia and some other markets also played a role. However, structural changes in the Chinese economy and rising prices suggest that China's role in world vegetable markets may have peaked.

China's earlier surge was propelled by the low prices of the country's exported vegetables, but rising prices contributed to the recent slowdown by reducing demand. During the late 1990s and early 2000s, most commodity prices were declining and Chinese farmers and officials were eager to export. Prices began rising over the past decade as Chinese producers, traders and processors were affected by escalating costs of labor and farm inputs. The average value per kilogram of two of China's leading vegetable exports—garlic and dry beans—reflect these trends (fig. 2). The average unit value of these exports fell during

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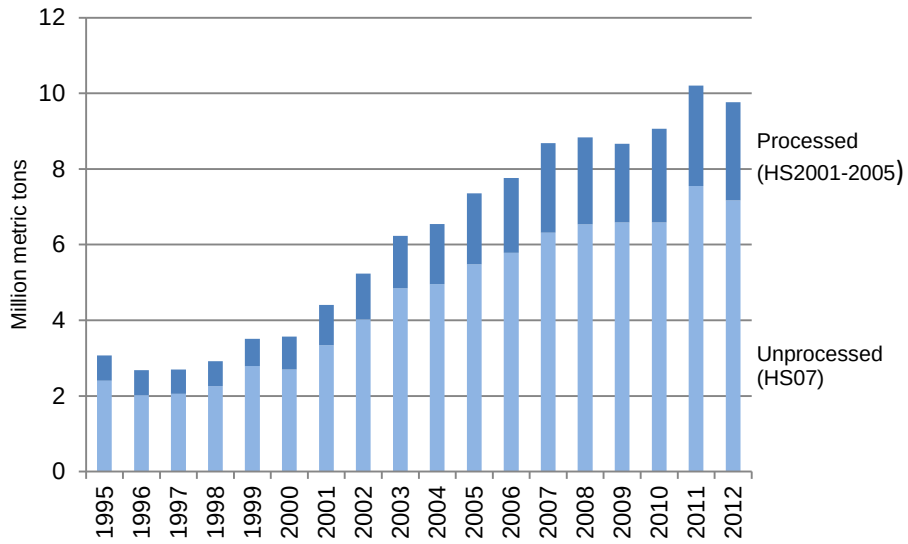
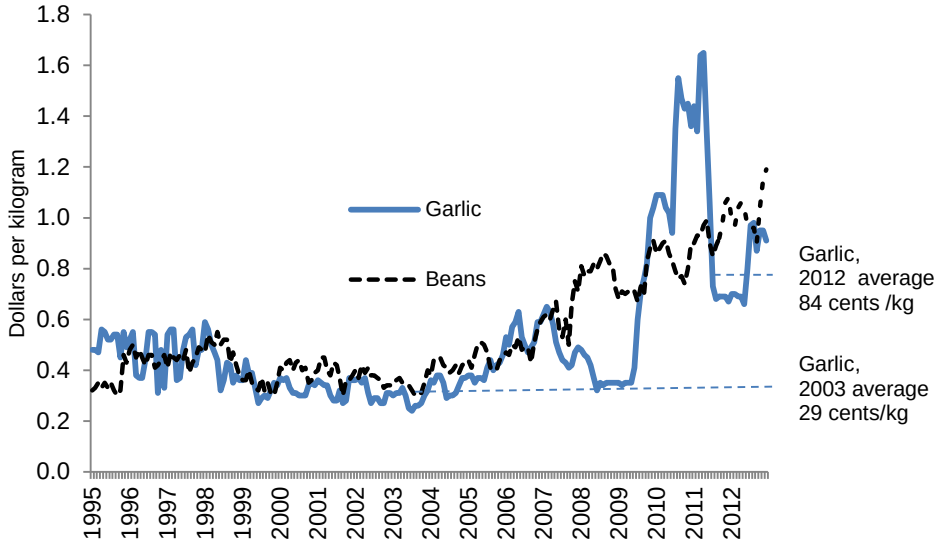
1998-2003, suggesting a decline in prices. Since then, prices of both commodities have been more volatile, but their export prices more than doubled from 2003 to 2012. The export unit value of beans climbed at a relatively steady rate, although its export price displayed sharp increases and decreases each year. The export unit value of garlic was even more volatile. It rose to over 60 cents/kg during 2006 and 2007 but then fell to 35 cents/kg during 2008-09. The garlic price then rose as high as $1.55/kg during 2010 before plunging to 84 cents/kg during 2012.

Figure 1
China vegetable exports, 1995-2012



Source: Estimated by USDA, Economic Research Service from Chinese customs statistics accessed through Global Trade Information Services, Inc., Global Trade Atlas.

Figure 2
Average unit value of China exports of garlic and beans, 1995-12



Note: Chart shows average value per kilogram of China exports for garlic and onions (HS0703) and dried and shelled legumes (HS0713).
Source: USDA, Economic Research Service calculations using China customs statistics accessed from Global Trade Information Services, Inc., Global Trade Atlas.

Exports Influenced by Rising Prices in Domestic Market

The volatility and rising trend in export prices reflects trends in China's domestic market. China's 10-mmt export total equals less than 2 percent of the country's vegetable production. China's rapid pace of urbanization and industrialization has disrupted traditional modes of supplying vegetables to domestic consumers and contributed to rising prices. High and volatile prices have become a matter of national concern in China during recent years.

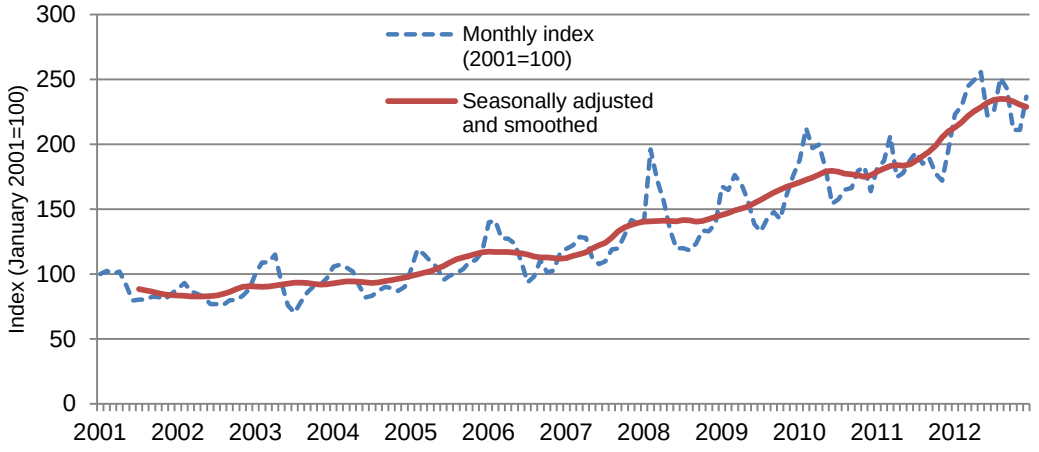
Vegetables have traditionally been considered one of China's most cost-competitive agricultural products because their production is labor intensive. However, labor costs have been soaring as off-farm employment opportunities improved. Farms and processors must now pay higher wages and often have trouble attracting enough workers. For example, production cost statistics indicate that labor costs for garlic rose nearly ten-fold during 2001-11, rising from under $15 to $142 per acre. Costs of fertilizer, pesticides, high-quality seeds, fuel, and rents for stores and market stalls are all rising as well. Farmers who produce on a large scale must pay land rents of $500 or more per acre, much higher than in past years.

The rapid expansion of Chinese cities has encroached on fields on city outskirts that traditionally supplied vegetables to cities. City vegetable supplies now commonly come from distant regions and pass through multiple levels of traders and distributors before reaching retail markets, adding costs, as well as losses from waste and spoilage (*Farmers Daily*, 2011; Hu, 2010).

USDA/ERS estimated a China retail vegetable price index for 2001-12 to illustrate the growth in domestic vegetable prices. The index is based on national average city prices for a selection of vegetables reported monthly by China's Price Bureau from 2001 to 2008 and China's National Bureau of Statistics for 2009-12. The index shows wide swings in domestic vegetable prices and a general rising trend that is consistent with the pattern in export prices.

Like the per unit export values shown in figure 2, the seasonally adjusted index began rising in 2003 (fig. 3). From 2005 to 2012 the adjusted index rose about 130 percent. The adjusted index—which uses a moving-average technique to smooth seasonal and unusual fluctuations in prices—rose at a relatively steady pace. The unadjusted index shows regular price spikes including a period during 2010 when a combination of supply factors and alleged speculation led to soaring prices of garlic, mung beans, ginger, and chili peppers and during 2008 when cold weather and ice storms disrupted production in southern China (Yan, 2010).

Figure 3
China retail vegetable price index, monthly 2001-12



Note: Estimated from average urban retail vegetable prices reported by NDRC (2001-2008) and NBS (2009-2012) using a Jevons index based on a geometric average of relative price changes. The adjusted index is a simple moving average of the Jevons index.
Source: Estimated by USDA, Economic Research Service from China National Bureau of Statistics (NBS) and National Development and Reform Commision (NDRC) data.

Volatility in the Domestic Market

The fluctuations in per unit garlic export values shown in figure 2 are the most prominent example of a "roller coaster" pattern that has become common in many vegetable markets in China. Garlic prices in China's Jinxiang County, the leading garlic-producing area, fell to less than 10 cents/kg during 2007-08 and many farmers cut back on production. By 2010, supplies had shrunk due to reduced area and weather problems and soaring garlic prices became a topic of national attention. That year the average wholesale price soared to over $2 per kg. News media also reported that speculators sought to manipulate prices on electronic commodity exchanges and stockpile garlic in warehouses. (A number of the exchanges have now been closed by officials.) The high price stimulated more production but prices fell to under 50 cents/kg in 2011.

Small-scale farmers often have no means of storing their harvest, and their earnings are vulnerable to constant fluctuations in price. Following the 2012 harvest, the garlic price in Jinxiang rose from 56 cents/kg in May to $1.50 in mid-June, before falling to 75 cents/kg in late July. Farmers say their breakeven price is about 95 cents/kg, so most would have made no profit unless they timed sales during the peak period.[1]

Domestic Market Gets More Attention

China's export-oriented supply chains are often set up to supply overseas markets and are weakly integrated with domestic markets. Perhaps the clearest example is the processed-tomato industry. China is one of the world's three largest tomato-processing countries and accounts for one-fourth of global trade, but domestic consumption of tomato paste and canned tomatoes is minimal. The industry was developed in Xinjiang Autonomous Region in China's far northwest in the 1980s and is dominated by three Chinese companies (Tuohuti, 2011). Processed tomato output grew at annual rates of 50 percent in the early 2000s. Growth slowed as off-farm opportunities made tomato production less attractive for Xinjiang farmers, and the costs of raw materials and labor increased for processors. Exports from Xinjiang fell about 25 percent in 2012 as the global market faced a glut of tomato products (Xinjiang Net, 2013).

Tomatoes, garlic and other vegetables are still predominantly grown by small farmers, purchased by small traders and brokers and then delivered to processing companies, but the character of marketing links is gradually changing. With strong impetus to gain control over raw material supplies, processors, trading companies and supermarket chains are developing backward linkages with "production bases." Forming such bases was a common strategy for exporters but is now spreading to domestic market suppliers as well (Gale and Hu, 2012).

Stark differences in the character of supply chains for exports and domestic markets are gradually narrowing as the domestic market becomes more lucrative. The large volumes purchased by supermarket and restaurant chains and distributors are attracting more companies to vegetable production. Many farmers have formed cooperatives to supply such customers, and some sell directly to supermarket chains or operate their own shops or "wet market" stalls in cities (Hu, 2010). A few community-supported agriculture (CSA) organizations have been set up in Chinese cities (Gale, 2011). Some urban consumers are now willing to pay higher prices for vegetables with organic or other certifications.

Policies Aim To Reduce Domestic Vegetable Costs

In recent years, policy focus has shifted from boosting exports to supplying domestic markets. When China entered the WTO in 2001, agricultural officials identified vegetables as one of the country's most competitive agricultural subsectors and formulated plans to form "export bases" to boost exports. More recently policy has shifted toward the domestic market to address concerns about high domestic prices.The Chinese Government has enacted numerous measures to respond to the rapid increase in domestic vegetable prices. Initiatives intended to boost domestic vegetable production and reduce marketing costs since 2010 include:

[1]Prices were gathered by one of the authors during field research in Jinxiang County.

"Green channel" waivers of taxes, tolls, and market-entry fees and expedited inspections for trucks carrying fresh produce

- A renewed "vegetable basket" supply and marketing system that encourages local authorities to subsidize greenhouses, extension, farmer cooperatives, marketing and processing companies, and market facilities to ensure city food supplies
- A waiver of value added tax (VAT) for vegetable traders and processors serving the domestic market beginning January 2012 (most producers of vegetables were already exempt from VAT)
- VAT rebates for exports of vegetables were eliminated beginning March 2012
- Encouraging supermarkets, cafeterias and restaurants to purchase produce directly from farmer cooperatives.
- Reduced electricity and water rates for vegetable distributors, market stalls and storage facilities
- Setting up local vegetable reserves and compensation systems to curb price fluctuations and help producers cope with market risks
- Building centers for trading, storing and distributing vegetables in major production regions through a network of "vegetable garden" projects
- Close monitoring of supermarket entrance and shelf fees charged to vegetable suppliers

While the domestic market is attracting more policy attention, officials have not given up on exporting. During 2012, Shandong Province—China's leading vegetable export region—designated several multicounty "agricultural export safety and quality demonstration prefectures." These projects plan a broad set of investments in infrastructure, testing facilities, safety-related certifications and traceability systems to facilitate exports by increasing the confidence of foreign buyers in Shandong's products. This follows a "green card" plan formulated by Shandong agriculture officials in 2004 to overcome "technical barriers" to agricultural exports by spreading awareness of standards, safe pesticide use and setting up demonstration farms that use "good agricultural practices."

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Vegetables and Pulses Outlook: Special Article

Longrun Outlook: Projections for Vegetable and Pulse Markets*

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The farm value of vegetables and pulses is forecast to grow 1.2 percent per year on average over the next decade (based on calendar years), from $20 billion in 2012 to $22 billion in 2022. This growth is largely driven by the 1.4-percent annual increase in fresh-market vegetable farm value. Potato farm value is projected to climb 1.3 percent per year through 2022, the same average increase as processing vegetables. Prices received by vegetable growers over the next decade are expected to rise less than 1 percent annually. Vegetable farm receipts as a share of total U.S. horticultural farm receipts remain around 32 percent, smaller than the 44-percent share for fruits and nuts, but larger than 24 percent for nursery and greenhouse crops.

Production Projected To Reach 131 Billion Pounds in a Decade

U.S. production of all vegetables and pulses, which amounted to 125 billion pounds in 2012, is projected to expand to more than 131 billion pounds in 2022—an average 0.5-percent annual increase. While production of fresh-market vegetables is expected to grow 1.6 percent on average per year in the next decade, production growth rates for processing vegetables and potatoes are much slower at zero and negative 0.4 percent, respectively. Consumers' preference for fresh produce such as pre-cut salads is a factor favoring fresh-market vegetables. The faster growth of vegetable production for the fresh market is in part also influenced by low natural gas prices. Lower heating costs for commercial greenhouses that grow vegetables will spur more production of fresh-market crops such as vine tomatoes, colored sweet peppers, cucumbers, lettuce, eggplant, and herbs, especially during the winter months.

Greater production of fresh-market vegetables is partly attributed to the estimated 0.2-percent expansion of vegetable acreage—from 6.75 million acres in 2012 to 6.9 million acres in 2022. Average annual acreage planted for U.S. vegetable

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Table 1--Production and crop value for vegetables and pulses, 2010-22

Crop group	2010	2012p	2014	2016	2018	2020	2022
				-- Billion pounds --			
Production:							
All vegetables	120.7	125.1	124.7	126.3	127.9	129.6	131.2
Fresh market	56.9	41.4	45.9	46.5	47.1	47.7	48.3
Processing	37.8	39.6	37.7	38.2	38.7	39.1	39.6
Potatoes	33.0	39.1	36.2	36.6	36.9	37.3	37.7
Pulses 1/	5.5	4.9	4.8	5.0	5.2	5.4	5.6
Exports 2/	18.4	20.3	21.6	22.9	24.3	25.8	27.3
Imports 2/	22.1	23.7	25.3	27.1	29.0	31.0	33.1
Farm value:				*-- Billion $ --*			
All vegetables	20.4	19.9	19.7	20.4	21.0	21.7	22.4
Fresh market 3/	14.2	12.3	12.6	13.0	13.4	13.8	14.1
Processing 3/	1.9	1.9	2.0	2.1	2.1	2.2	2.2
Potatoes	3.2	3.6	3.6	3.7	3.8	4.0	4.1
Pulses 1/	1.2	2.1	1.4	1.6	1.7	1.8	1.9
Exports	5.3	6.1	6.5	6.9	7.3	7.7	8.2
Imports	8.8	10.0	11.3	12.3	13.3	14.5	15.8

p = Preliminary. Years 2014 to 2022 are projections.
1/ Includes dry beans, dry edible peas, and lentils.
2/ Measured by farm or fresh weight. 3/ Estimated from production value or farm cash receipts.
Sources: USDA, National Agricultural Statistics Service; projections by USDA, Economic Research Service.

production between 2002 and 2011 was 6.6 million acres. This area expands slightly to 6.74 million acres on average from 2012 to 2022. The national vegetable crop is anticipated to rise in the next decade as average yield grows from 18,500 pounds per acre in 2012 to 19,000 pounds by 2022. Most acreage used for production of processing vegetables, potatoes, and pulses are field or outdoor areas.

Projections of production and farm value of vegetables are based on average growth rates of the past decade. An assumption of stable per capita consumption of aggregate vegetables and population growth are used as guides for the long-run projections of production and farm values.

Per Capita Consumption Averages 406 Pounds in Coming Decade

The domestic supply of vegetables is projected to grow at an annual rate of 1 percent through 2022, slightly higher than U.S. population growth. This pace is expected to keep per capita consumption of vegetables at an average 406 pounds from 2013 to 2022.

The volume of imports and exports of fresh vegetables and processed vegetable products (measured by farm weight) are forecast to both expand by about 3 percent annually through 2022. The import share of U.S. vegetable consumption is estimated at 18.5 percent in 2012 and 24 percent by 2022. The export share of U.S. vegetable production grows somewhat slower from 16 percent to 21 percent. Estimated domestic consumption of vegetables amounts to 128.5 billion pounds in 2012 and 137 billion pounds by 2022, an annual increase of 0.6 percent.

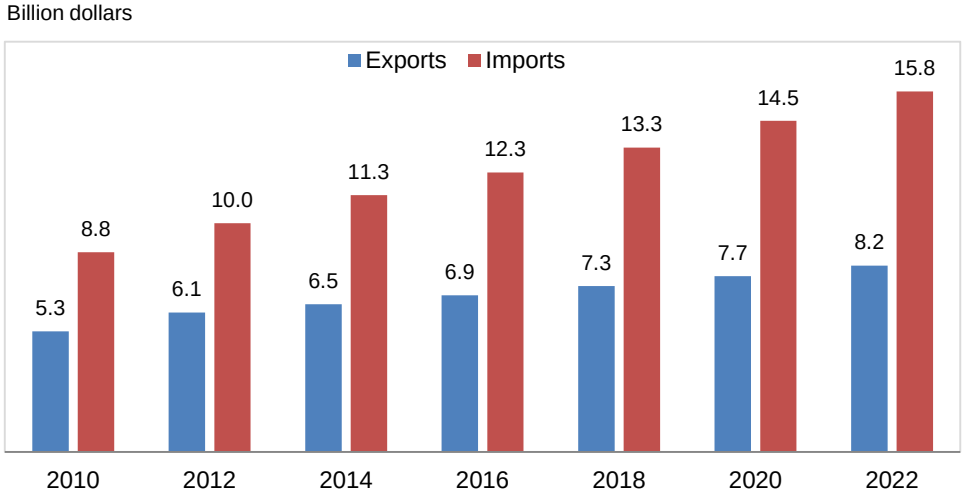
Vegetable Imports Continue To Outpace Exports

The U.S. trade deficit with respect to vegetables and pulses is expected to grow from $4.5 billion in 2012 to $7.6 billion in 2022 (based on fiscal October-September years). This trend stems from an average import value growth of 4.6 percent per year versus 2.9 percent on average for vegetable exports. Fresh-market and processed vegetables are

forecast to be imported at about equal paces, whereas U.S. exports of processed vegetables are expected to outpace fresh vegetable exports. Among the leading imports are processed potato products and fresh greenhouse tomatoes. Among the leading exports are processed tomato (sauce, paste) and potato products such as frozen fries.

The stronger 3.2-percent average export growth for processed vegetables relative to the 2.5-percent export pace for fresh vegetables is in part driven by more stable energy costs benefitting U.S.-based vegetable processors and manufacturers during the coming decade (in contrast to higher fuel prices in the previous decade). Nevertheless, since these relatively higher export growth rates subtract from the average 1-percent pace of domestic vegetable production, imported vegetable crops and products are expected to continue at a brisk pace over the long run.

Figure 1
Vegetables and pulses: Projections 2014-22



Source: USDA, Economic Research Service.

For More Information

Vegetable supply and use projections and additional information about the long-term outlook for agricultural commodities and trade are reported in:

USDA Agricultural Projections to 2022, OCE-131, February 2013 http://www.ers.usda.gov/publications/oce-usda-agricultural-projections/oce131.aspx