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Fruit and Tree Nuts Outlook: Economic Insight

U.S. Fresh-Market Apples

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The United States is among the leading global producers, suppliers, and importers of fresh apples. While the domestic market continues to serve as the main outlet for U.S. fresh apples, export markets have grown in importance as domestic demand has remained almost flat since the 1980's. U.S. production has had some setbacks but recent production increases, and the potential for continued growth in the coming years, particularly in Washington, is fueling the need for more global integration of U.S. apples.

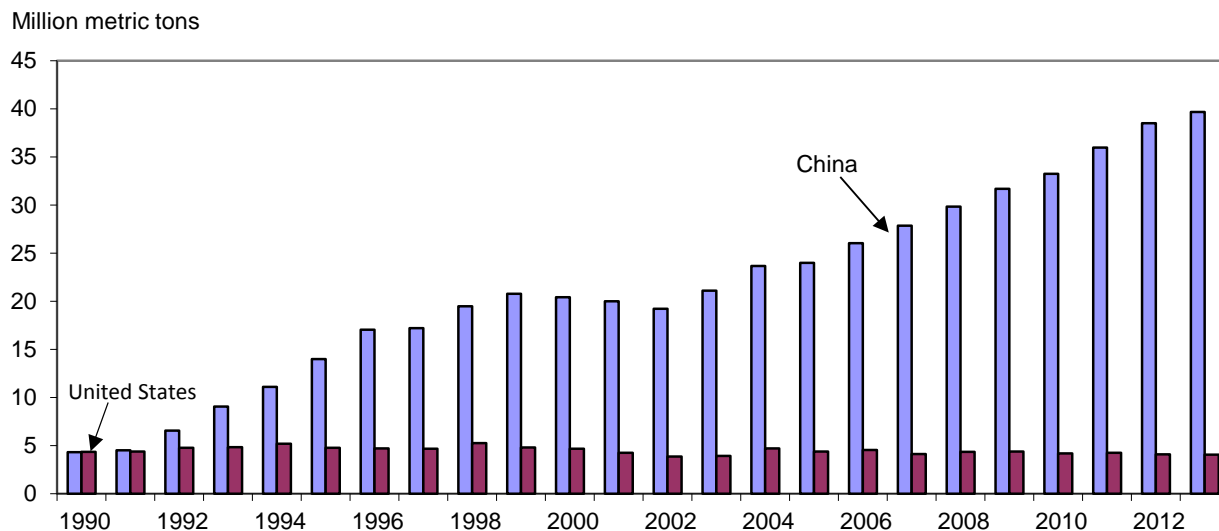
China Leads in Global Apple Production, the United States is a Distant Second

Over 90 countries around the world grow apples commercially and together produce around 80 million metric tons each year (United Nations, Food and Agriculture Organization (UN/FAO), 2016). However, nearly half of global output is produced in China, which leads the world in apple production mostly because of the country's vast production area. Second in rank is the United States where average yields are almost double the levels achieved in China but production capacity is dwarfed by a much smaller production area (fig. 1). China accounts for almost half of the world's apple production area, while the United States makes up about 3 percent. Area expansion in China has slowed over the past decade but per hectare yields have improved, aiding the country's production to continue to climb.

Apple yields in China have increased from significantly deficient levels relative to the rest of the world (ROW) average to levels averaging 6 percent higher during 2009 through 2013 (the most recent period with available data). The Chinese Government's focus on China's fruit industry has shifted from expansion in planted area toward quality improvement in an effort to enhance the country's competitiveness in global fruit markets and address rising production costs. Agricultural labor in China has become increasingly costly and sparse and as such, government incentives are underway to encourage replacing mature orchards with new higher density plantings and adopt other cost-reducing production practices (USDA, Foreign Agricultural Service, November 2015). China's apple production climbed from 20 million metric tons in 2000 to almost 40 million metric tons in 2013, approximately 10

Figure 1

Apple production in China and the United States



Source: United Nations, Food and Agriculture Organization, FAOSTAT.

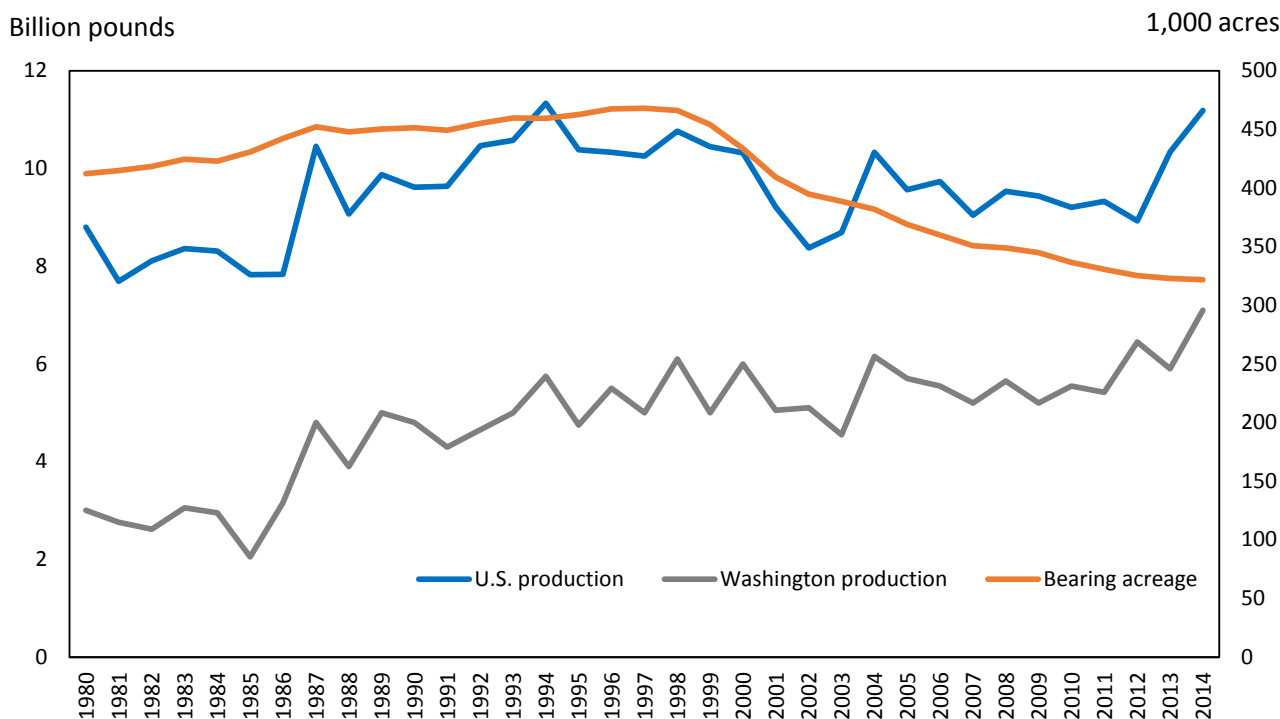
times the United States' 2013 production of about 4 million metric tons, or 6 percent of total world output. Rounding out the top five apple-producing countries are Turkey, Poland, and Italy, each producing between 3-4 percent of the world total.

Washington State Leads in U.S. Apple Production

Commercial apple production is widespread in the United States, but Washington State produces close to 65 percent of the Nation's annual output. There were 148,000 apple-bearing acres in Washington in 2014, or 46 percent of the U.S. total. As the largest apple-producing State, Washington supplies about three-quarters of all U.S. apples sold in the fresh market. Although the majority of Washington's production is for fresh use, it also supplies the largest quantity to the processing sector since State volume is so large. New York, Michigan, Pennsylvania, California, and Virginia are also major apple-producing States, but a larger share of each of these States' crop is typically sold to processors. Together, these five States supplied nearly 30 percent of U.S. apple production, almost 20 percent of the fresh-market crop, and more than half of production for the processing sector, on average, during the years 2010-14.

The number of farms and planted acreage for apples in the United States has declined. There were 25,129 U.S. farms growing apples on a total of 384,287 acres in 2012, both figures down from the 2007 census by 2 percent and 4 percent, respectively (USDA, National Agricultural Statistics Service, 2012 Census of Agriculture). More than one-tenth of U.S. farms growing apples in 2012 were in Washington, accounting for nearly half of the total apple acreage. New York, Michigan, Pennsylvania, California, and Virginia, combined, made up 31 percent of the apple farms and 37 percent of the total apple acreage that year. In Washington, the total number of apple orchards has declined each census year since 1997 (when 4,207 farms were reported). Correspondingly, the State's total production area (bearing and nonbearing) fell from 204,674 acres in 1997 to 165,215 acres in 2007, but increased 5 percent to 174,152 acres in 2012. Despite declines in production area, trees per acre increased by planting smaller trees for easier harvest and to improve yields. On average across all varieties, plantings in Washington State increased from 262 trees per acres in 1993 to 434 trees per acre in 2006 and 562 trees per acre in 2011 (USDA-NASS, Washington Field Office, 2006 and 2011). Except for some annual fluctuations due to natural forces, annual production volumes in Washington has trended upwards in recent years, increasing to a record 7.3 billion pounds in 2014, driving the national-level production trend (fig. 2).

Figure 2
Apple utilized production and bearing acreage in the United States



Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues.

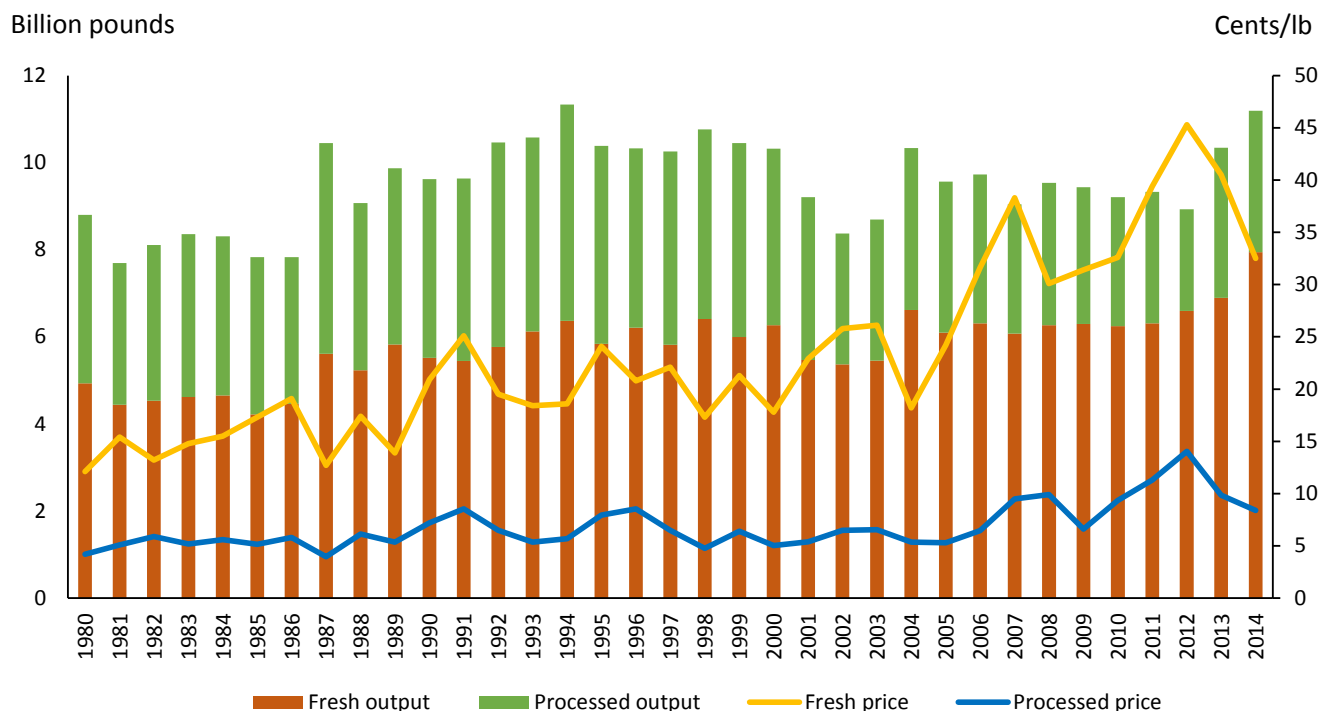
Fresh-Market Apples: A Larger Piece of the Pie

Apples are traditionally eaten as a fresh fruit, although uses extend over many processed forms, such as juice and cider, applesauce, frozen, dried, fresh slices (USDA/NASS began reporting production for this category in 2004), and other (includes vinegar, wine, and slices for pie-making). The gap between fresh-market production and processing production has widened. The share of fresh-market production to total utilized production averaged 69 percent during 2010-2014, up from around 57 percent during the 1980s and 1990s (fig. 3). Many growers are finding better profit opportunities in the fresh market, particularly since the late 1990s when increased competition from lower priced imports of Chinese apple juice concentrate led to economic difficulties in the U.S. industry. As juice imports grew, grower prices for juice apples declined which had ripple effects on the other apple processing sectors. In the United States, in recent years, over 40 percent of all the apples produced domestically for processing went to the juice sector, down slightly from a share of over 50 percent during the 1980s and 1990s.

The price difference between fresh-market apples and processing apples has grown wider since the 1980s. On average, growers were paid 10 cents per pound to 20 cents per pound more for their fresh-market apples than for processing-use apples over the three decades leading up to the years 2010-2014, when the price gap ranged from 32 to 45 cents per pound. The annual farm value of the fresh-market apple crop averaged \$2.6 billion during 2010-2014, or almost 90 percent of the total crop value.

Figure 3

Fresh and processing-use apple production and all-apple season-average grower price in the United States



Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues.

Domestic Fresh-Apple Demand Almost Flat, Exports Remain Crucial

While overall fresh-fruit demand in the United States has been increasing steadily over the past three decades, fresh-apple demand has remained almost stagnant, with consumption averaging between 16 and 19 pounds per person annually since the 1980s (table 1). The variety of fruit available for fresh consumption in the United States has escalated rapidly, especially during the 1990s, limiting the growth in demand for U.S. apples. Expansion of fruit production in Southern Hemisphere countries, particularly in Chile, enhanced the region’s export capability, bringing more choices to U.S. consumers during the winter season when most domestically grown fruit, except citrus, apples, and pears, are not in season. In addition, some once “exotic” or nontraditional fruit in U.S. markets are now more mainstream produce items (e.g., avocados and other tropical fruit) with year-round availability. The U.S. apple industry has continued to be proactive in its efforts to help boost demand, including shifts in varietal mix (e.g., from the traditional Red and Golden Delicious to Gala and Fuji), introduction of new products to target specific consumer preference attributes (e.g., fresh-cut apples for convenience), international market development events, promotional activities building on consumer awareness of the health benefits associated with eating apples, and more recently, a combination of varietal diversification and new strategies in supply management in the form of club varieties.

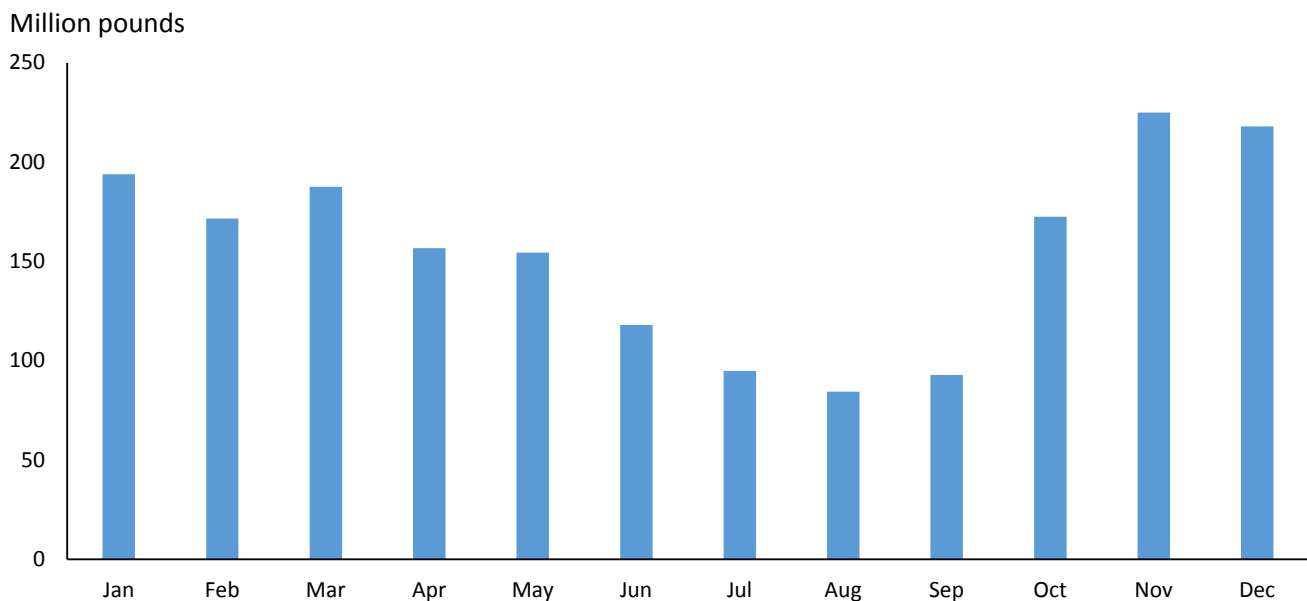
With almost flat domestic demand and increasing production, particularly in Washington, export markets have grown in importance to the U.S. apple industry (table 1). As exports steadily climbed to a record 2.3 billion pounds during the marketing year 2014/15 (August-July) (or average 1.96 billion pounds from 2010/11-2014/15), the export share of the fresh-market crop has more than doubled since the 1980s, averaging 29 percent during the marketing years 2010/11-2014/15. Next to Poland and China, the United States ranks as the world’s third largest exporter of apples, supplying about one-tenth of global export volume in 2013 (UN/FAO, 2016). In value terms, however, U.S. apple exports exceed those for China and Poland, leading the global ranking with over \$1.0 billion in recent years.

Table 1--Fresh apples: Supply and utilization

Period ¹	Supply			Utilization		Per capita use Pounds	Trade shares of	
	Production ²	Imports ³	Total	Exports ³	Domestic		Use imported	Production exported
----- Million pounds -----								
Decade average:								
1980S	4,853.6	237.2	5,090.8	607.5	4,473.3	18.72	5	13
1990S	5,949.2	315.3	6,264.5	1,255.7	5,008.8	18.81	6	21
2000S	6,021.6	379.2	6,400.8	1,433.4	4,967.4	16.76	8	24
Recent seasons:								
2010/11	6,248.8	328.7	6,577.5	1,823.1	4,754.3	15.29	7	29
2011/12	6,312.9	381.1	6,694.0	1,854.9	4,839.0	15.44	8	29
2012/13	6,594.9	430.2	7,025.1	1,969.2	5,055.9	16.01	9	30
2013/14	6,895.3	470.0	7,365.3	1,858.5	5,506.8	17.32	9	27
2014/15	7,946.6	360.1	8,306.7	2,284.7	6,021.9	18.80	6	29

¹Season beginning August. ²Source: National Agricultural Statistics Service, USDA. ³Source: U.S. Department of Commerce, U.S. Census Bureau. Source: USDA, Economic Research Service.

Figure 4
U.S. average monthly volume of fresh apple exports, 2010-14



Source: Trade data from U.S. Department of Commerce, U.S. Census Bureau.

More than half of U.S. apple exports go to five countries—Mexico, Canada, India, Taiwan, and the United Arab Emirates. Mexico alone takes more than 25 percent of the total volume. U.S. apples move through international markets every month but more than 60 percent of total export volume for the marketing year occurs between October and the following March, partly coinciding with the fall harvest (fig. 4).

In marketing year 2015/16, projections show reduced U.S. production, resulting in higher domestic apple prices. Combined with the strong U.S. dollar that makes U.S. goods in general less attractive in the international market, results point to a potential slowdown in U.S. apple exports this season. In addition, preliminary anti-dumping duties on imports of U.S. apples in Mexico took effect in January 2016 and will remain enforced until a final determination is made (USDA/FAS, January 2016). These provisional duty payments could potentially deter future exports of U.S. apples to Mexico. However, export growth in other markets, including China, may help compensate for any losses to this major market.

A bright spot in U.S. apple exports is future sales prospects to China. China lifted its suspension on imports of Washington Red and Golden Delicious apples in October 2014 and in January 2015 the two countries signed an agreement allowing all U.S. grown apples to gain access to the Chinese market (USDA, FAS, October 2014 and January 2015). In 2010/11, a full marketing year prior to the suspension, U.S. fresh-apple exports to China totaled 18.9 million pounds valued at \$8.7 million. Upon resuming shipments in 2014/15, only a partial season but with expanded market access, U.S. exports to China totaled 32.3 million pounds, valued at \$16.9 million. This 2015/16 season will be the first full marketing year with expanded market to China and already, export volume this season through January is 98 percent higher than the same time in 2014/15. The U.S. apple industry estimates that within two years, exports to China will reach a value of nearly \$100 million per year.

Imports Growing but Still Capture Less Than 10 Percent of the Domestic Market

The United States is also a leading importer of fresh apples. Although still small relative to domestic production, imports are a growing presence in the U.S. market. The quantity of globally sourced fresh apples in the United States has increased significantly since the 1980s, from an average 237 million pounds in the 1980s to almost 400 million pounds over the last 5 years. Record imports were reported in 2003/04 at 472.7 million pounds. Import share of domestic fresh apple use has risen from a 5 percent average in the 1980s to around 8 percent over the last 5 years (table 1).

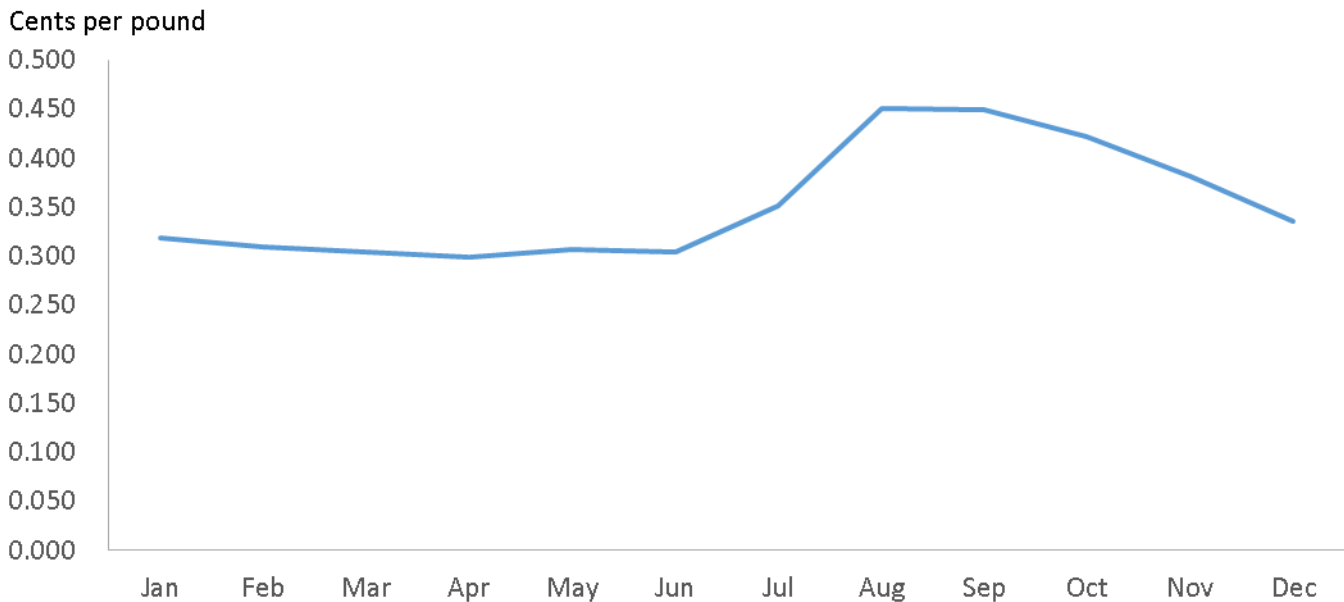
Chile has emerged as a strong supplier of fresh apples to the United States over the past decade as they successfully developed a more export-oriented apple industry and benefited from the growing demand in the Northern Hemisphere for off-season fruit. With counter seasonal production, Chile is by far the largest foreign source of fresh apples for the United States, accounting for over 60 percent of total import volume. Most of the remaining imports come from New Zealand, Canada, and Argentina.

The marketing season for U.S. apples runs from August through July. Harvesting occurs between August and November, but the ability to store apples for a long period and counterseasonal import availability permit more even distribution of supplies throughout the year, which mitigates seasonal price variability (fig. 5). Even as imports are concentrated in summer months, the combination of new varieties with later harvest dates and the increased use of more sophisticated storage technology have enabled the industry to move domestic apples more evenly across the marketing season (Plattner, et. al., 2014). Nonetheless, even in summer months when import volumes are increased, domestic production dominates fresh apples shipped throughout the year (fig. 6).

Summary

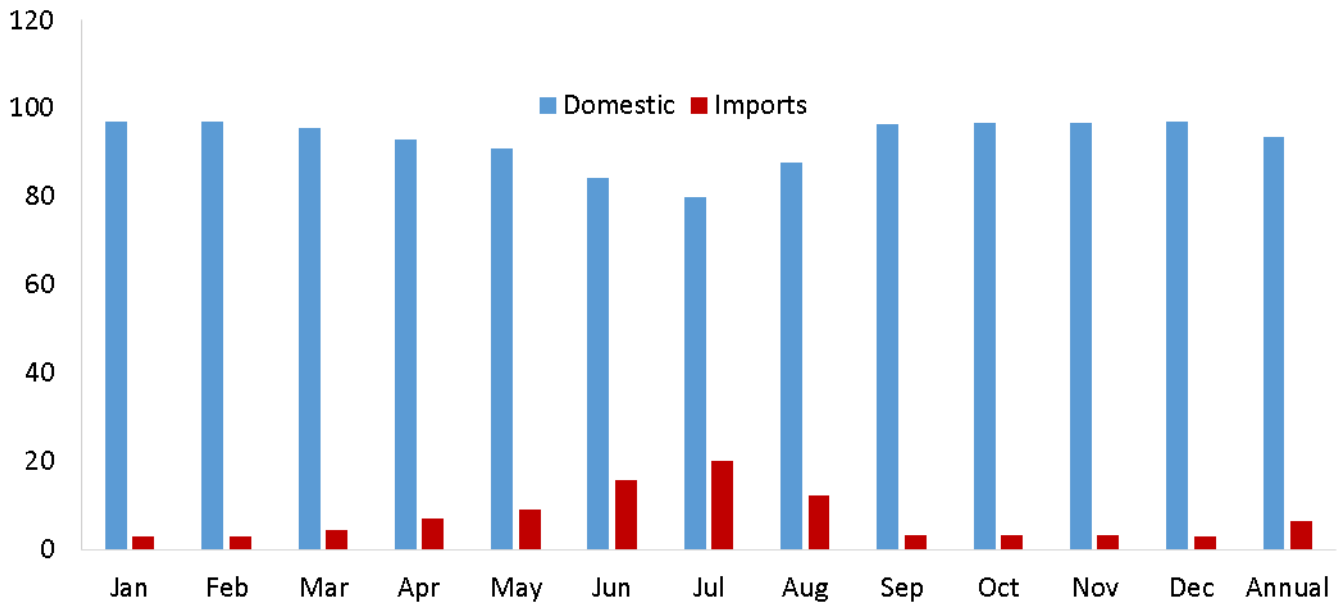
Apples are a versatile fruit—traditionally consumed as a fresh fruit but also consumed in many processed forms. Commercial apple production is widespread in the United States, but Washington produces well more than half of the Nation’s annual output and supplies about three-quarters of the fresh-market crop. The gap between domestic fresh-market production and processing production has widened since the 1980s in favor of the fresh-market crop, which had offered better profit opportunities to growers in terms of higher prices. However, amid rising overall fresh-fruit demand in the United States, an increasing selection of fruit available for consumption has limited the growth in demand for U.S. fresh apples, keeping domestic fresh apple per capita use almost flat for the past several years. Combined with increasing production, particularly in Washington, the U.S. apple industry has increasingly looked to export markets to remain profitable. Shifts in varietal mix were undertaken by the industry initially to target export market interests, along with market access and market development efforts. More recently, varietal diversification efforts are being integrated with new strategies in supply management in the form of club varieties. Future production is likely to continue to increase, particularly in Washington where high-density plantings have combined with increased planted acreage, and so the greater need to maintain and further enhance the global competitiveness of U.S. apples.

Figure 5
Average monthly prices growers receive for fresh-market apples in the United States, 2010-14



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

Figure 6
Average domestic and import share of total fresh-apple shipment volume in the United States, by month



¹Share with respect to each month and annual total.

Source: USDA, Agricultural Marketing Service, *Fresh Fruit and Vegetable Shipments, by Commodities, States*

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