

USDA Foreign Agricultural Service

# GAIN Report

Global Agricultural Information Network

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## **Korea - Republic of**

**Post:** Seoul

### **2017 Apple Report**

**Report Categories:**

Fresh Deciduous Fruit

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#### **Report Highlights:**

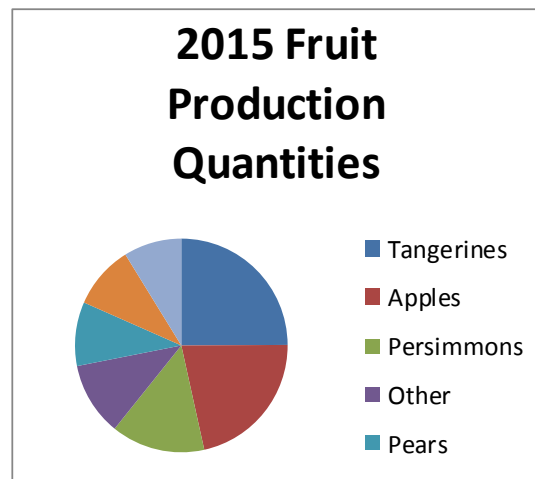
This first Korean apple report highlights the production of apples in Korea, with total apple production in Marketing Year (MY) 2017/18 expected to be around 565,000 metric tons (MT). Korea predominantly grows Fuji apples, which are favored by consumers for their juicy flavor and crisp texture. Production area has been growing over recent years, with the growing area moving northward due to global warming. Consumption has followed production, and is expected to decrease to 10.9 Kg in MY 2017/18. Korean international trade in apples is very small, with only one-percent of production exported each year. There are currently no approved countries for importing apples into Korea.

## Production

In Marketing Year (MY) 2017/18 (July-June), Korea's fresh apple production is expected to decrease by 2.8 percent to 560,000 metric tons (MT) from 576,369 MT in MY 2016/2017, mainly due to the effect of hail damage in the main apple production area in north Gyeongsang province during the fruit growing period in early June. Despite a slight increase (0.9 percent) in farming area in MY 2017/18 from the previous season, the yield (production per 0.1 Hectare) is expected to decrease slightly due to hail damage and a reduced number of fruits per tree expected this season.

North Gyeongsang province, the main apple producing area, was largely affected by hail in early June. The Korean apple industry estimates that apple production in that area will decrease by about 11,000 MT in 2017. Industry also estimates about 10 percent of total farming area (3,000 Hectares) was damaged by the hail.

Korea produces about 2.7 million metric tons (MT) of fresh fruit annually. Among these fruits, citrus fruits (i.e. tangerines) make up the largest share (averaging an annual 692,000 MT over the last three years (2014 – 2016)). Apples compose the second largest portion, averaging an annual 540,000 MT over the past three years. Apples accounted for 21.6 percent of total fruit production (582,000 MT) in calendar year 2015.

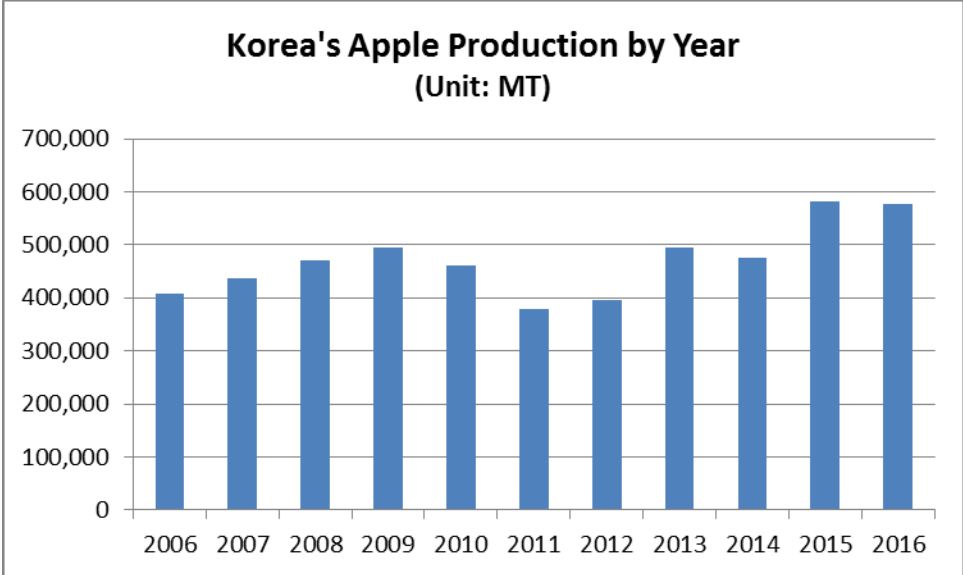


June.  
11,000  
percent  
by the  
of fresh  
annual  
Apples  
annual

Korea's Total Fruit Production (Unit: MT) in 2014 & 2015								
Year	Total	Apple	Pear	Grape	Tangerine	Persimmon	Peach	Other
2010	2,489,134	460,285	307,820	305,543	614,786	390,630	138,576	271,494
2011	2,458,489	379,541	290,494	269,150	680,507	390,820	185,078	262,899
2012	2,374,247	394,596	172,599	277,917	692,186	401,049	201,863	234,037
2013	2,522,616	493,701	282,212	260,280	682,801	351,990	193,243	258,389
2014	2,696,676	474,712	302,731	268,556	722,325	428,363	210,335	289,654
2015	2,696,862	582,845	260,975	258,950	672,045	384,525	237,711	299,811
2016 a/	N/A	576,369	238,014	218,000	N/A	126,000	260,000	N/A

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA) a/ KREI's assumption

MYs 2011/12 and 2012/13 were years of notably low production, due to typhoon damage leading to many fallen fruits during the fruit growing period. However, in MYs 2015/16 and 2016/17 production was strong, reaching numbers significantly over 500,000 MT, thanks to increased farming area and increased yield due to favorable weather.



Among other apple varieties, Korea primarily produces the “Fuji” apple, a late maturing cultivar, which is grown on almost 70 percent of total apple production area. “Fuji” apples have many beneficial characteristics, including a crispy and juicy eating experience, and the longest storing period among apple varieties (up to 180 days). The “Fuji” cultivar, one of the most popular cultivars among Korean consumers, is mainly harvested in November, but due to its long storing period does not need to be distributed until July of the following year. The “Hongro” and “Tsugaru” are the second and third most produced cultivars in Korea, composing of 15.7 percent and 4.5 percent (respectively) of the total apple production area in MY 2016/17.

Year	Tsugaru	Hongro	Yangkwang	Gamhong	Fuji	Other	Total
2012	1,613	4,285	733	521	21,654	1,927	30,734
Share (%)	5.2	13.9	2.4	1.7	70.5	6.3	
2013	1,534	4,414	709	535	21,330	1,928	30,449
Share (%)	5.0	14.5	2.3	1.8	70	6.3	
2014	1,501	4,558	687	539	21,442	1,977	30,702
Share (%)	4.9	14.8	2.2	1.8	69.8	6.4	
2015	1,486	4,820	680	572	21,988	2,064	31,620
Share (%)	4.7	15.2	2.2	1.8	69.6	6.5	
2016	1,496	5,239	678	635	22,985	2,266	33,330
Share (%)	4.5	15.7	2	1.9	69	6.8	

Source: Korea Rural Economic Institute (KREI)

Many apple cultivars are produced in different seasons in Korea. The early variety of “Tsugaru” is produced during July and August, while the mid-season varieties of “Hongro” and “Yangwang” are produced in September

and October. Recently, the production of the “Hongro” has steadily increased for use in gift sets, since it is harvested right before the “Chuseok” holiday season in autumn.

Korea’s Apple Production Pattern and Distribution Season (Fuji Variety)	
Month	Season/ Activity
Early May	Flowering and Pollination
June Through Mid-October	Fruit Growing Period
Mid-October Through Early November	Harvest
November Through Following June or July	Distribution and Storage Period

Source: Korea Rural Economic Institute (KREI)

### Major Varieties of Apple Grown in Korea

**Tsugaru (Aori) Apple: Harvest Season (August)**



**Hongro Apple: Harvest Season (September)**



**Fuji Apple: Harvest Season (October-November)**



**Yang Kwang (originated from Golden Delicious): Harvest Season (September-October)**

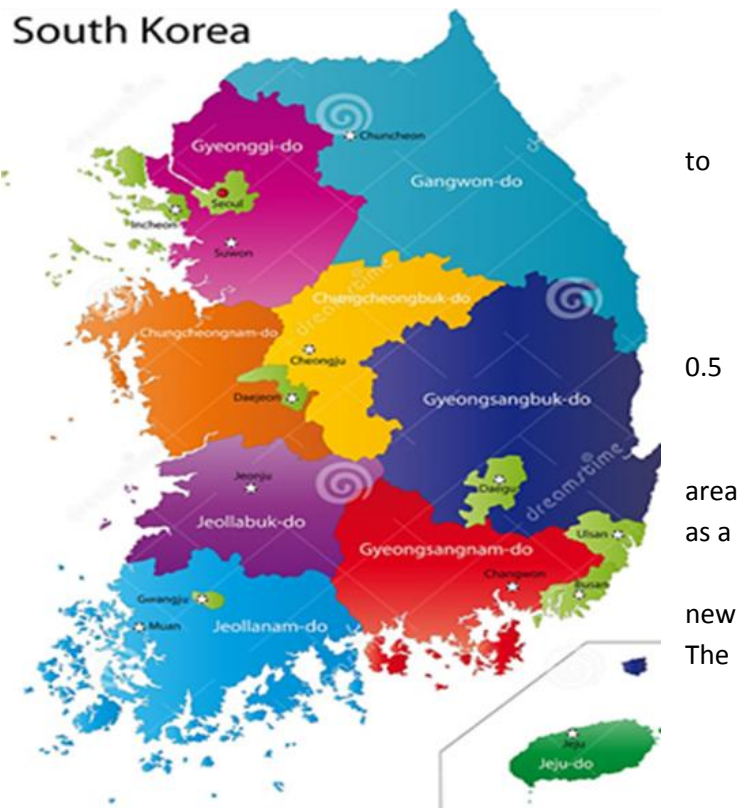


**Kam Hong Apple: Harvest Season (October)**



## Apple Farming Area

In MY 2017/18, apple farming area is expected increase slightly to 33,600 HA, a 0.9 percent increase from the previous marketing year. Gyeongsangbuk-do and Choongcheonbuk-do provinces, the main apple production areas, are expected to decrease apple production area by percent and 1.5 percent, respectively. Meanwhile, Gangwon-do and Jeollabuk-do provinces are expected to increase production by 11.9 percent and seven percent respectively, result of provincial farming strategies to move apple production areas north to respond to weather patterns caused by global warming. Korean apple industry estimates that the primary apple production area is expected to continue moving upward to Gangwon-do in the coming years.



Among apple growing areas, Gyeongsangbuk-do produces the most apples, using 60 percent of the farming area (20,178 HA) for apples. Chungcheongbuk-do and Gyeonsangnam-do dedicate the second and third largest percentage of land to apple production with 12 percent (4,024 HA) and 10 percent (3,387 HA) in MY 2017/18.

Total apple production area, which maintained around 31,000 HA since MY 2009/10, increased to 33,300 HA in MY 2016/17, due to new planting and an increased number of farms replacing old apple trees with new apple trees (renewed apple farms). Additionally, as table grape imports increased during the past few years under Free Trade Agreements (FTAs) with Chile and the United States, more local grape farms shifted to apple farms during the same period.

**Table 1. Korea's Apple Area by Province (Unit: Hectare)**

Province	MY 2015/16	MY 2016/17	MY 2017/18	Change (%)
	Cultivated Area (Ha)	Cultivated Area (Ha)	Cultivated Area (Ha)	
Gangwon-do	721	831	930	11.9

Chungcheongbuk-do	3,984	4,087	4,024	-1.5
Chungcheongnam-do	1,283	1,600	1,574	-1.6
Gyeongsangbuk-do	19,247	20,083	20,178	0.5
Gyeongsangnam-do	3,444	3,339	3,387	1.4
Jeollabuk-do	2,223	2,360	2,525	7
Other Provinces-do	718	1,000	982	-17
<b>Total</b>	<b>31,620</b>	<b>33,300</b>	<b>33,600</b>	<b>0.9</b>

Source: Korea Statistics

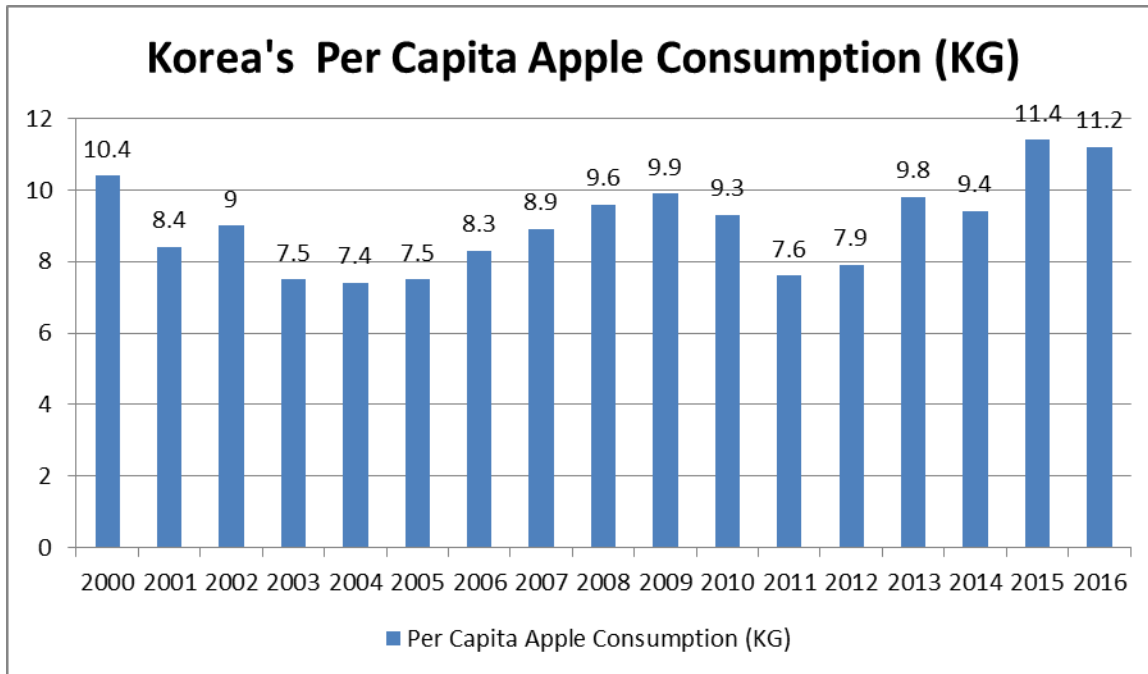
Despite no big changes in apple farming area for the past several years, the yield changed depending on the weather conditions. In MY 2011/12, there were low yields caused by a severe pest outbreak (Marssonina blotch, which is caused by frequent rain and typhoons), and in MY 2012/13, typhoon damage caused poor yields of less than 1,900 Kg per 0.1 HA. There were favorable weather conditions for MY 2013/14 and MY 2014/15 without any typhoon and pest damage. The number of fruit-bearing trees (from non-fruit-bearing trees (young trees)) also increased over these years. In MY 2015/16, there was a higher yield (2,600 Kg per 0.1 HA) due to higher fruit numbers per apple tree (caused by good weather in the flowering season and a biennial fruit bearing schedule). In MY 2016/17, the yield decreased by nine percent to 2,414 KG per 0.1 HA due to heat damage and a reduced number of fruits per apple tree.

	MY 2012/13	MY 2013/14	MY 2014/15	My 2015/16	MY 2016/17
Area for Bearing Trees (HA)	21,600	21,600	21,400	22,000	23,900
Area for Non Bearing Trees (HA)	9,100	8,800	9,300	9,700	9,400
Total Area (HA)	30,700	30,400	30,700	31,600	33,300
Yield (Kg/0.1HA)	1,824	2,285	2,218	2,654	2414
Production (MT)	395,000	494,000	475,000	583,000	576,000

Source: Korea Statistics

## Consumption

Korea's per capita apple consumption is in-step with annual apple production and has increased since MY 2011/12. In MY 2015/16, apples were the second most consumed fruit in Korea, at 11.4 kilograms, after citrus fruits (ie. tangerines (13.2 kg)). In MY 2017/18, the per capita consumption of apples is expected to decrease to 10.9 percent due to slightly decreased apple production.



Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Note: Data is listed by Marketing Year (MY)

The Korean apple industry considers the size of fruit very important, since fresh apples and pears are mainly used as gifts during the two big Korean holiday seasons (Lunar New Year's Day in February and Chusoek (Korean Thanksgiving) in September or October). Fresh apples are classified in three different sizes, big, medium and small fruits. If a fresh apple weighs between 251 and 350 grams, it is classified as big; the medium-size apple weighs between 151 and 250 grams; and the small-size apple weighs between 51 and 150 grams. According to a recent survey by the Korea Rural Economic Institute (KREI), most Korean consumers prefer to eat medium and small apples at home, while they prefer to buy big apples during the Korean holiday seasons as a gift set. As a result of a rapidly increasing number of one member households over the past several years, the demand for medium- and small-size apples increased. This trend is expected to continue in coming years. Local grocery distributors also contend that big-size apples will continue to be distributed mainly during the holiday seasons as a gift set, while the demand for medium- and small- size apples will increase for day-to-day consumption at home.

As a result of the Korean Anti-Corruption and Bribery Prohibition Act, which came into effect on September 28, 2016, demand was severely reduced for fruit gift sets that contain mainly apples and pears and cost above 50,000 Korean won (about USD 44). Thus the demand for gifts that mainly consist of big-size apples is expected to continue to decrease in the coming years. It is therefore expected that production will focus more on medium- and small-size apples in coming years to meet the changed consumer demand.

**Korea: Per Capita Fruits Consumption (Unit: Kg)**

Year	Total Fruits	Pears	Apple	Grape	Citrus 1/	Persimmon	Peach	Other
2005	62.7	8.7	7.5	8.2	13.1	4.8	4.6	13.2
2011	62.4	5.5	7.6	6.3	13.6	3.3	3.7	22.4
2012	61.8	3.1	7.9	6.6	13.8	3.3	4	23.1
2013	63.2	5.2	9.8	6.3	13.5	3	3.8	21.4
2014	66.5	5.5	9.4	6.5	14.3	3.7	4.2	22.9
2015	66.7	4.7	11.4	6.4	13.2	3.3	4.7	23

1/Including imported oranges

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA)

### *Processed apples*

In MY 2017/18, it is expected that the number of fresh apples used for processing will increase by 65,000 MT, due to increased stock levels caused by the Korean Anti-Corruption and Bribery Act and the increase of non-marketable apple production caused by hail damage in early June 2017. Generally, the Korean apple industry uses the non-marketable apples to make apple juice and drinks. In MY 2015/16, about 57,000 MT of apples were used for processing, the highest processing level since 2000.

Korea's Apple Volume for Processing (MT, %)									
Year	2000	2005	2010	2011	2012	2013	2014	2015	2016
Volume (MT)	37,971	29,368	28,087	36,594	38,566	35,559	40,151	57,439	-
Production to Processing Ratio (%)	7.8	8.0	6.1	9.6	9.8	7.2	8.5	9.9	-

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA)

## **Trade**

### *Exports*

As apples can be sold in the local market at a more profitable price than when they are exported, not many apple farmers are interested in the export market. Annual fresh apple exports account for about one percent of total production. In calendar year 2016, Korea exported about 4,000 MT of fresh apples. Taiwan is the biggest export market for Korean fresh apples with a 60 percent share (2,389 MT); followed by Singapore and Hong Kong with ten percent and 11.6 percent shares, respectively.

Korean apple exports to Taiwan peaked in 2010 around 7,300 MT, but dropped to 2,000 MT in 2011 due to the detection of higher level of chemical residue levels during import inspections. As a result of high residue level findings, the Taiwanese quarantine authority temporarily increased its spot inspection rate by 20 percent beginning in 2011, but returned to the normal rate in 2015.



Year	2000	2005	2010	2011	2012	2013	2014	2015	2016
Total Exports (MT)	2,320	3,167	8,437	3,132	1,694	2,788	2,217	3,502	3,947
Export to Taiwan (MT)	-	3,040	7,296	2,082	1,001	1,662	892	2,071	2,389
Share (%)	-	96	86.5	66.5	59.1	59.6	40.2	59.1	60.5

Source: Korea Trade Information Service (KOTIS)

Korean fresh apples were not eligible for export to the United States until MY 2009/10, when Korea and the United States agreed on a quarantine agreement. However, even once the market opened, Korea exported very few fresh apples to the United States (about 65 MT in MY 2010/11 and 31 MT for 2011/12) due to low farmer interest. Low farmer interest was a result of a strict import protocol including the APHIS preclearance program that necessitates a low temperature (1.1 degrees Celsius) treatment for 40 days after harvest, Methyl Bromide fumigation process, and other requirements.

	CY 2014	CY 2015	CY 2016	3-Year-Average
Annual Wholesale Price (KRW / KG)	5,400	4,100	3,800	4,433
Annual Export Price to the United States (USD / KG)	2.0	2.4	2.4	2.27
Annual Exchange rate (KRW / USD)	1104.33	1172.24	1182.28	1114.85

Source: Global Trade Atlas & Korea Agro-Fisheries & Food Trade Corporation (aT)

### *Imports*

Korea annually imports about 10,000 MT of processed apple products such as apple juice and dried apples. However, no fresh apples are allowed to be imported into Korea due to an existing quarantine. To import fresh fruits into Korea, a product must first pass through the eight stages of the Import Risk Analysis (IRA) process as defined by Korean quarantine authorities. For fresh apple imports, the United States and Japan are on the fifth stage of the IRA; New Zealand is on stage three, and China and Italy are on stage one.