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SITUATION AND OUTLOOK OF FRUITS SECTOR

LEE YONG-SUN*
KIM YOON-HYUNG**

Key words: situation and outlook, fruit production and consumption, fruit price, apple, pear, grape, mandarin, persimmon

ABSTRACT

Until the early 1990s fruit consumption and production has remarkably grown due to a rapid increase in national income. However, it shows a different feature from the mid of 1990s; the demand for fruits varies a little since it reaches a plateau in 1995, while the production continuously increases during the same period. This causes to a decline of fruit price and income of fruit growers.

This study aims to review the overall trend of a fruit industry of Korea in 1990s and presents forecast about the production of fruit. It examines the trend of fruit production and consumption, including its prices. It also shows the mid-term forecasts by each product - apples, pears, grapes, mandarin oranges, and sweet persimmons.

* Fellow, Korea Rural Economic Institute, Seoul, Korea.
** Researcher, Korea Rural Economic Institute, Seoul, Korea.
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I. Introduction

Fruit industry in Korea has significantly changed during the last two decades. Until the early 1990s fruit consumption and production has sharply grown due to a rapid increase in national income. This situation was reversed, however, from the mid of 1990s; the demand for fruits varies a little since it reaches a plateau in 1995, while the production has continuously increased during the same period. This caused to a decline of fruit price, and fruit growers in Korea are now facing difficult situation, which they have never experienced before.

Apple industry shows typically such a phenomena. The apple acreage in 2000 records 29,063 ha, the almost half of 1992. Unlike the apple the acreage of other fruits such as pears, grapes, peaches, and sweet persimmons shows roughly the opposite trend during the same periods, even they also decline in 2000. The fruit industry is now undergoing changes in the demand and supply condition and is expected to adjust itself at the new era of 21 century.

This study aims to review the overall trend of a fruit industry of Korea in 1990s and presents mid-term forecast about the production of fruit. In the next section the trend of fruit production and consumption, including the prices, is examined. The last section shows the mid-term forecasts by each product-apples, pears, grapes, sweet persimmons, and mandarin oranges.

II. The Overall Trend of Fruit Production and Consumption during 1990s

As indicated in Table 1, fruit production is totally 2,429 thousand tons in 2000, 5.6 percent larger than 1995, 37.5 percent larger than 1990. However, its growth rate declines sharply during the later 1990s, as shown in Figrure 1. The average annual growth rate during the second half of 1990s is 1.5 percent, while the rate

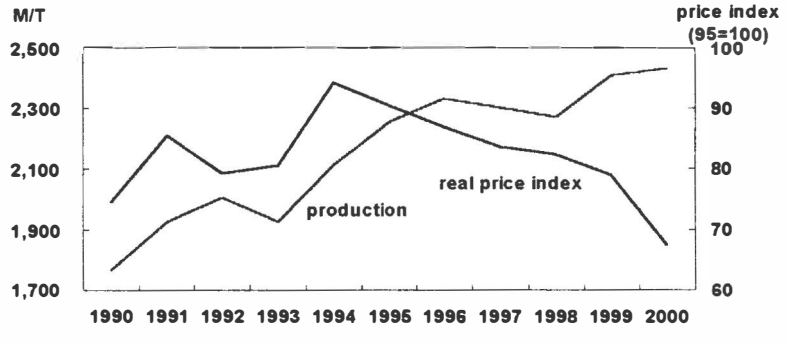
is 6.0 percent during the first half of 1990s.

Despite the rapid rises in production of fruit its price also goes up to 100 from 63.9, an annual average rate of 10.7 percent during former period. Then, the price starts to fall steady by 2000, recording an average annual growth of negative 5.5 percent.

The positive growth rate for the first half of 1990s reflects that demand for fruits is steadily expanding during 1990-1995. In contrast, the negative growth rate for the late of 1990s can be interpreted as the fact that demand for fruit, reaching a peak of the mid of 1990s, is stagnated or is unchanged during the second half of 1990s.

Such interpretation is also supported by the change in production pattern. From the late 1990s the cultivated acreage for fruits shows a different feature for that of the early 1990s. The total acreage of land used for fruit raising in 1990 is 131 thousand hectare as shown in Table 2. The acreage continues to expand until it reaches the highest level in 1995 ever in Korea. Since 1995 the acreage decreases steadily.

FIGURE 1. Trends of Fruit Production and Price, 1990~2000



Note: Price and production indicate two-year moving average feagures since transactions are occurred over two years, and the former is represented as the index of producer(wholesale) price of fruit in real term which is deflated by total producer price index.

Source: *MAF, Report on Crop Production Statistics,* each year
www.nso.go.kr(Korea National Statistical Office)

TABLE 1. Fruits Production, Price, and National Income, 1990～2000

	1990	1995	2000	Average growth rate(%)	
				'90～'95	'95～'00
Production (ton)	1,766	2,300	2,429	6.0	1.5
Per Capita Income (1000won)	5,516	7,438	8,639	6.2	2.8
Price Index	63.9	100	67.5	10.7	-5.5

Note: Income and price index are in real terms which are deflated by the GDP deflator and total producer price index, respectively.
Source: *MAF, Report on Crop Production Statistics*, each year
www.nso.go.kr(Korea National Statistical Office)

Fruit growers in Korea are now facing the difficult situation, which they have never experienced before.Apple farmer has been undergoing difficulties during the last decade. The apple acreage in 2000 records 29,063 ha, the almost half of 1992.

The cultivation acreage of apple begins to decrease from the year of 1992. Apple producers turn to other fruits due to aging of their apple trees and low income from apple raising for the early 1990s. The apple orchard is abandoned by 23 thousand hectares from 1992 to 2000.

Unlike apples the acreage of other fruits such as pears, grapes, peaches, and sweet persimmons shows roughly the opposite trend during the same periods, though even they also decline around in 2000. The land for pears, peaches, grapes, mandarins, and persimmons grows rapidly in the last decade<Table 2>. The pear land expanded by 15.8 thousand hectare, which is the biggest one among fruits. The lands for grapes and persimmons increased by 13～14 thousand hectare, respectively. The acreage for peach, grape, mandarin, and plums also increased by 2～4 thousand hectares.

The reasons why the apple land decreases and the land for other major fruits increase can be found by comparing theirprices and income among fruits. It is summarized in Table 2. Given the

apple price per 15kg as 100, the level of price of pears, grapes, and persimmons are 129, 153, and 207 in 1992, respectively (calculated as an average of 1991～1993). The share of income to revenue of apple is 65.7% in 1992, which is lower than that of other major fruits. In the case of pear, it is 68.6%, and 68.1% for peach, 76.1% for persimmon, respectively.

Since the level of price and income of apple was lower than those of other fruits, farmers abandoned apple growing and/or instead adopted other fruits or plants whose returns are relatively bigger. As apple production decreases and production of other fruits increases, the differences of price and income among fruits are narrowing in recent years.

TABLE 2. Changes in the Cultivation Acreages of Fruits

Unit: ha

	Total	Apple	Pear	Peach	Grape	Mandarin	Persimmon	Plum	Other fruits
1990	131,517	48,833	9,058	12,333	14,962	19,287	13,581	3,191	10,267
1991	137,352	50,595	9,495	11,529	14,802	20,221	15,076	3,024	12,610
1992(a)	147,702	52,985	10,339	10,635	14,957	22,413	17,584	2,933	15,856
1993	155,092	52,297	11,009	10,548	16,691	23,303	19,719	2,877	18,348
1994	162,894	52,098	12,649	10,166	19,773	23,282	22,440	2,670	19,816
1995	174,130	50,103	15,752	10,241	26,030	24,348	25,009	2,693	19,954
1996	173,304	43,857	18,243	10,002	27,196	25,423	27,201	3,053	18,329
1997	173,806	39,995	21,983	10,892	28,290	25,731	28,812	3,126	17,273
1998	173,234	34,692	24,612	12,012	29,044	24,667	30,031	3,615	6,759
1999	171,327	31,079	25,677	12,942	29,462	24,959	30,821	4,098	5,680
2000(b)	169,388	29,063	26,142	13,876	28,085	25,198	31,193	4,731	5,324
b/a	1.16	0.55	2.53	1.30	1.88	1.17	1.77	1.61	0.35
b-a	23,144	-23,922	15,803	3,241	13,128	3,716	13,609	1,798	-10,005

Source: MAF, *Statistical Yearbook of Agriculture and Forestry, 1998.*

TABLE 3. Comparison of Price, Income and Income Ratio among Fruits

Units: won/15kg, 1,000won/10a, %

	Apple			Pear			Grapes		
	Price	Income	Income Ratio	Price	Income	Income Ratio	Price	Income	Income Ratio
'91～'93	23,730	1,425	65.7	29,256	1,734	68.6	36,860	1,888	76.2
average	(100.0)	(100.0)		(129.0)	(124.0)	(2.8)	(153.0)	(132.5)	(10.5)
'94～'96	23,450	1,645	64.8	35,383	2,873	72.5	35,530	3,005	79.8
average	(100.0)	(100.0)		(153.0)	(179.0)	(11.0)	(154.0)	(208.0)	(16.8)
'98～'00	27,790	1,644	58.5	35,490	2,285	60.9	36,840	2,090	68.9
average	(100.0)	(100.0)		(126.0)	(138.0)	(2.4)	(135.0)	(139.0)	(10.4)
	Peach			Sweet Persimmon			Mandarin		
	Price	Income	Income Ratio	Price	Income	Income Ratio	Price	Income	Income Ratio
'91～'93	23,510	1,082	68.1	45,690	1,139	76.1	14,450	1,217	65.6
average	(103.0)	(78.0)	(2.4)	(207.0)	(81.0)	(10.3)	(61.3)	(85.4)	(△0.1)
'94～'96	29,380	1,808	74.0	37,740	1,393	73.9	20,952	2,094	78.6
average	(128.0)	(113.0)	(12.5)	(161.0)	(88.0)	(12.4)	(89.4)	(127.3)	(13.8)
'98～'00	31,410	2,056	71.2	25,310	988	62.6	18,850	1,239	62.5
average	(108.0)	(121.0)	(12.7)	(93.0)	(55.0)	(4.1)	(67.8)	(75.4)	(4.0)

Notes: 1) The figures in the parentheses below price and income indicate the ratio of each fruit with respect to that of apple(100).
2) The figures in the parentheses below income ratio mean differences between the income ratio of each fruit and that of apple(100).

Source: Seoul Agricultural & Marine Products Corporation, *The Annual Report on the Transaction of Agricultural, Marine and Livestock Products*, each year
Rural Development Agency, *The Report on the Income of Agricultural and Livestock Products*, each year

III. Situation and Outlook of Each Major Fruits

1. Apples

Apple was the most popular fruit among others until the early 1990s. As indicated in Table 4, it is losing the role as the leading fruit, since the land for apple raising in 2000 is badly reduced to the level of almost half of that of early 1990s. Bearing acreage of apple shrinks annually at an 6.4 percent rate on average from 1995 to 2000 while the production per unit acreage grows at an 1.4 percent rate for the same period. Hence apple production decreases annually at an 6.4 percent rate on average in the late 1990s.

TABLE 4. Trends of Apple Production

	Units	1990	1995	1997	1998	1999	2000	'95～'00 Growth rate(%)
Total Acreage(A)	1,000ha	48.8	50.1	40.0	34.7	31.2	29.1	-10.3
Bearing Acreage(B)	1,000ha	26.0	32.2	29.6	25.3	23.1	21.3	-7.9
Bearing Ratio(B/A)	%	(53.3)	(64.3)	(74.0)	(72.9)	(74.0)	(73.2)	(2.7)
Productivity(C/B)	kg/10a	2,419	2,224	2,202	1,814	2,215	2,300	1.4
Production(C)	1,000ton	628.9	716.0	651.8	459.0	490.2	489.0	-6.4

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Productivity indicates production per unit bearing acreage.
Source: *MAF, Report on Crop Production Statistics*, each year

TABLE 5. Growth Rates of Apple Suppy, Apple Price, and Income by Period

(Unit: %)

	Apple Supply	National Income	Apple Price
1984～'90	1.7	8.1	10.4
1990～'95	0.4	6.2	8.6
1995～'00	-8.4	3.9	2.3

Notes: Supply, income, and price refer to the volume of per capita supply, per capita disposable income in real term, and producer(wholesale) price.
Source: MAF, *Report on Crop Production Statistics*, each year.
www.nso.go.kr(Korea National Statistical Office)

Per capita apple supply increases slowly until 1995 due to the rapid growth of national income <Table 5>. Apple price rises at an 9 or 10 percent rate annually in the period. From 1995 to 2000, price rises only at 2.3 percent rate while supply reduces at an 8.4 percent rate. Demand for apple is decreasing in recent years.

The consumption expenditure for fruits by households grows to 32.4 thousand wons per month in 2000, which is 11.7% much more than that of 1995, as shown in Table 6. Decreasing demand for apple is reconfirmed by examining the change in the composition of fruits consumption expenditure. The share of apple decreased while those of pear, grapes, and persimmons increased. The demand for apple has been substituted by that for other fruits.

Income elasticities of an apple demand are 0.024 in spring and 0.911 in summer, which are smaller than those of fruity vegetables such as melons in spring and watermelons in summer <Table 7>. Income elasticities of an apple are 0.661 in autumn and 0.831 in winter, which are also smaller than those of pears and persimmons. Hence, as an income increases, the demand for

TABLE 6. Changes of Monthly Consumption Expenditures on Fruits

Units: 1,000 won, (%)

	All Fruits	Apple	Mandarin	Pear	Peach	Grapes	Persimmon	Fruit Vegetable
1990	27.9	7.4	6.3	1.5	1.5	1.9	0.8	6.2
1995	29.0	5.4	4.1	1.8	0.9	2.9	1.5	10.8
2000	32.4	3.6	8.0	2.7	0.7	3.7	2.6	9.1
'00/'95 change rate	11.7	-33.3	95.1	50.0	-22.2	27.6	73.3	-15.7

Note: Figures in the table are deflated by each corresponding consumer price index (1995=100).

Source: Korea National Statistical Office, *Yearbook of Urban Households*, each year.

apple does not grow as much. Due to the low income elasticity and the substitution for other fruits, apple demand is decreasing.

It is predicted that, due to decrease of acreage, the apple production in 2001 reduces to 436 thousand ton, which is 10.8% less than that of 2000. Though the land for apple raising has sharply reduced, it is estimated that the annual decreasing rate will be less than 3% from 2000 to 2005. Since the difference of price and income between apple and other fruits are reduced, changes in production pattern are limited to be small in the following five years. As an acreage and a production per unit

TABLE 7. Comparison of Seasonal Income Elasticities between Fruits

Grouping	Spring	Summer	Autumn	Winter
Apple	0.024	0.911	0.661	0.831
Melon	1.681	-	-	-
Water Melon	2.158	1.581	-	-
Pear	-	-	1.050	1.716
Persimmon	-	-	1.650	1.389

Source: Lee et. al., *An Analysis of Consumer Behavior on Selected Fruit in Korea*, Korea Rural Economic Institute, 1998.

TABLE 8. Mid-term Perspective of Production, 2001~05

	Units	2000	Perspective		
			2001	2005	2000~05 Growth rate(%)
Total Acreage(A)	1,000ha	29.1	26.3	25.6	-2.5
Bearing Acreage(B)	1,000ha	21.3	19.2	18.4	-2.8
Bearing Ratio(B/A)	%	(73.2)	(72.7)	(71.9)	(2.7)
Productivity(C/B)	kg/10a	2,300	2,270	2,310	0.1
Production(C)	1,000ton	489.0	436.0	425.0	-2.7

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Productivity indicates production per unit bearing acreage.

acreage fo apple are stable, total production of an apple is forecast to be the level of 430 thousand tons.

Prices are different between varieties of apples. While the average price of Fuji variety in 1998～2000 is 27,790 wons per 15 kilogram, that of Ssugaro is 20,650 wons and 38,850 wons for Hongro <Table 9>. Compared to Fuji, Ssugaro is 26 percent cheaper while Hongro is 40 percent more precious. The price differences are not due to the differences of production cost between varieties, but should be considered to be the differences between the demand and the supply for each variety.

New varieties such as Hongro and Hongwol are developed and raised to meet the demand for Chusok(Lunar-Moon Day), the traditional holiday of Korea, since the early-ripening varietal Ssugaro is green-coloured(not red-coloured) and it is not good-tasted for Korean while Fuji, the major variety in Korea, is harvested too lately to meet Chusok demand.

The acreage of Fuji and Ssugaro which are the first and second major varieties has been greatly decreasing since the early 1990s, while that of Hongro and Hongwol has increased rapidly. Notwithstanding the rapid growth of new varietal acreage, the adjustment processes are anticipated to continue in order to curtail the disparity between the new varieties and the old varieties until 2005.

TABLE 9. Comparison of Wholesale Prices between Varieties of Apple

Unit: won/15kg

	Fuji	Ssugaru	Hongro
1994～1996	23,450	24,376	-
average	(100.0)	(104.0)	
1998～2000	27,790	20,650	38,850
average	(100.0)	(74.0)	(140.0)

Source: Seoul Agricultural & Marine Products Corporation, *Annual Report on the Transaction of Agricultural, Marine and Livestock Products,* each year

TABLE 10. Cultivation Acreage of Apple by Varieties, 1992-2001

Units: ha, %

Varietal group		Early-ripening	Mid-ripening		Late-ripening	Others	Total
		Ssugaru	Hongro	Hongwol	Fuji		
Cultivation Acreage	1992	6,305 (11.9)	85 (0.2)	-	40,745 (76.9)	5,850 (11.0)	52,985 (100.0)
	1997	4,759 (11.9)	520 (1.3)	760 (1.9)	31,036 (77.6)	3,680 (9.2)	39,995 (100.0)
	2001	1,788 (6.8)	1,867 (7.1)	1,368 (5.2)	16,595 (63.1)	4,681 (17.8)	26,300 (100.0)
Change Rate	'97/'92	-24.5	513.3	-	-23.8	-37.1	-24.5
	'01/'97	-62.4	259.1	80.1	-46.5	60.3	-34.2

Notes: 1) Figures in parentheses refer to the ratios of acreage of each varieties to total acreage.
2) The figures of 2001 are estimates.
Source: MAF, *Survey on Fruits Production*, 1992, 1997.

2. Pears

Pear production grows significantly with an 11 percent annual rate during the late 1990s, which is accompanied by the rapid growth of cultivation acreage <Table 11>. Bearing acreage are limited to 7.6 thousand hectare in 1995 which is similar level to that of 1990. It is due to replanting new varieties such as Shingo and/or Golden Pear(so called Hwanggeum-bae) in behalf of old varieties in the early 1990s. It increases, however, fast with an 12 percent growth rate in the late 1990s.

As indicated in Table 12, per capita supply of pears expands fast in the 1980s and decreases in the early 1990s due to low production. Pear supply is again on the rise in the late 1990s with an 8.8 percent annual rate. Price of pears rises at an 16 ~ 17 percent growth rate in line with increase of national income and expansion of demand. As the supply of pear expands rapidly, pear price starts to decline from 1995 in spite that income continues to grow. Demand for pears, hence, is seen to be stagnant in recent years.

TABLE 11. Trends of Pear Production

	Units	1990	1995	1997	1998	1999	2000	'95～'00 Growth rate(%)
Total Acreage(A)	1,000ha	9.1	15.8	22.0	24.6	25.7	26.2	10.9
Bearing Acreage(B)	1,000ha	7.1	7.6	9.5	10.2	11.7	13.3	11.9
Bearing Ratio(B/A)	%	(78.0)	(48.1)	(43.2)	(41.5)	(45.5)	(50.8)	(1.4)
Productivity(C/B)	kg/10a	2,276	2,346	2,739	2,547	2,215	2,430	1.2
Production(C)	1,000ton	159.3	178.3	260.2	259.8	259.1	323.6	10.8

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Productivity indicates production per unit bearing acreage.
Source: MAF, *Report on Crop Production Statistics*, each year.

TABLE 12. Growth Rates of Pear Supply, Pear Price, and Income by Period

Unit: %

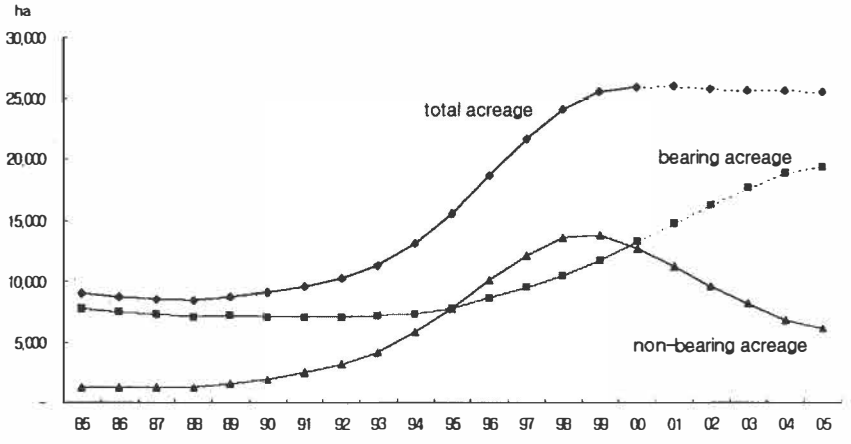
	Pear Supply	National Income	Pear Price
1984～'90	11.2	7.9	15.5
1990～'95	-2.5	6.2	16.8
1995～'00	8.8	3.9	-2.9

Notes: Supply, income, and price refer to the volume of per capita supply, per capita disposable income in real term, and producer(wholesale) price.
Source: MAF, *Report on Crop Production Statistics*, each year.
www.nso.go.kr(Korea National Statistical Office)

The acreage of pear is estimated to decrease first ever in 2001. Though the total acreage shrinks, bearing acreage shall expand at an 11 percent rate and thus production increase to 362 thousand metric tons which is 12 percent larger than that of 2000.

From 2000 to 2005, the total acreage of pear is forecast to show a steady decrease, while bearing acreage is to increase fast at an 8.5 percent annual rate. Although production per acreage is forecast to show a steady decrease, production shall keep high growth rate due to rapid increase of bearing area.

FIGURE 2. Trends of Acreage of Pear



Source: MAF, *Report on Crop Production Statistics*, each year

TABLE 13. Mid-term Perspective of Production, 2001~05

	Units	2000	Perspective		
			2001	2005	2000~05 Growth rate(%)
Total Acreage(A)	1,000ha	26.2	25.5	25.4	-0.5
Bearing Acreage(B)	1,000ha	13.3	14.8	19.9	8.5
Bearing Ratio(B/A)	%	(50.8)	(58.0)	(78.0)	(9.0)
Productivity(C/B)	kg/10a	2,430	2,446	2,348	-0.7
Production(C)	1,000ton	323.6	362.0	469.2	7.7

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Productivity indicates production per unit bearing acreage.

Even though pears are oversupplied on average, it becomes other story for Chusok. It is examined by comparing the price in September to that of annual average. The price in September in which Chusok includes is about one and half time high of that of annual average in 2000. Hence, it is expected that price difference between two periods keeps the increase of production continuing to meet the demand for Chusok. It means

that the cultivation acreage of Wonhwang and Golden Pear(so called Hwanggeum-bae), the early and mid-ripening variety, would increase while the other varieties such as Shingo, Changshiprang keeps a steady decrease in the following several years.

3. Grapes

Production of grapes increases annually in an 8.8 percent rate during 1995-2000, as shown in Table 14. It is due to the fast growth of bearing acreage for this period, which is accompanied by the fast increase in cultivation acreage during the first half of 1990s.

Per capita supply of grapes continues to expand rapidly during the 1990s though the growth rate falls from 14.5 percent in the early 1990s to 9.1 percent in the late 1990s. Price rises sharply until it turned to fall in the late 1990s. Demand for grapes seemed to be easing off in recent years.

TABLE 14. Trends of Production of Grapes

	Units	1990	1995	1998	1999	2000	'95～'00 Growth rate(%)
Total Acreage	1,000ha	15.0	26.0	29.0	30.5	29.2	2.4
Bearing Acreage	1,000ha	(12.8)	(14.3)	(22.8)	(23.9)	(23.2)	10.7
Facility Acreage	ha	878	1,216	1,332	1,540	1,629	6.2
Yield(C/B)	kg/10a	(1,022)	(2,268)	(1,796)	(1,967)	(2,052)	-2.3
Production(C)	1,000ton	131	316	390	470	476	8.7

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Yield indicates production per unit bearing acreage.
Source: MAF, *Report on Crop Production Statistics*, each year

TABLE 15. Growth Rates of Grape Supply, Grape Price, and Income by Period

Unit: %

	Grape Supply	National Income	Grape Price
1984～'90	2.1	8.1	11.7
1990～'95	14.5	6.2	13.6
1995～'00	9.1	3.9	-3.1

Note: Supply, income, and price refer to the volume of per capita supply, per capita disposable income in real term, and producer(wholesale) price.
Source: MAF, *Report on Crop Production Statistics*, each year
www.nso.go.kr(Korea National Statistical Office)

TABLE 16. Mid-term Perspective of Production, 2001～05

	Unit	2000	Perspective		
			2001	2005	2000～05 Growth rate(%)
Total Acreage(A)	1,000ha	29.2	26.8	23.9	-3.8
Bearing Acreage(B)	1,000ha	23.2	22.2	19.6	-2.0
Yield(C/B)	kg/10a	2,052	2113	2,131	1.0
Production(C)	1,000ton	476.0	464.3	417.6	-2.5

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Yield indicates production per unit bearing acreage.

As demand is stagnant and price falls, the planted area for grapes shrinks from 1999. From 2000 to 2005, the acreage of grapes is expected to continue to decrease and thus production is reduced annually at an 2.5 percent rate. It is summarized in Table 16.

4. Mandarin Oranges

Mandarin orange is the most popular fruit in Korea in the sense of production and consumption volumes. Since bearing acreage of Mandarin increases, its production has been on the rise, though its yield fluctuate every other year because of its varietal characteristic.

Demand for mandarin shows dramatic changes before and after 1995, as found in Table 18. Despite of rapid increase in supply, Mandarin price rises at an 11.9 percent rate until 1995. It changes the direction to the opposite since 1995, partly because supply of all fruits such as pears and persimmons as well as supply of itself increases rapidly and imports for Navel oranges expand in this period.

It is expected that mandarin production keeps a steady growth during the next 4 or 5 years, which will reach 700 thousand tons <Table 19>. Then it will suppress supply of other fruits.

TABLE 17. Trends of Mandarin Production

	Units	1990	1995	1997	1998	1999	2000
Total Acreage(A)	1,000ha	19.3	24.3	25.7	25.8	26.3	26.8
BearingAcreage(B)	1,000ha	17.0	20.1	23.0	23.7	24.4	25.1
Bearing Ratio(B/A)	%	(88.1)	(82.6)	(89.5)	(91.9)	(92.8)	(93.6)
Yield(C/B)	kg/10a	2,898	3,058	2,822	2,160	2,462	2,245
Production(C)	1,000ton	493	615	649	512	624	564

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Yield indicates production per unit bearing acreage.
Source: MAF, *Report on Crop Production Statistics*, each year

TABLE 18. Growth Rates of Mandarin Supply, Mandarin Price, and Income by Period

Unit: %

	Mandarin Supply	National Income	Mandarin Price
1985～'95	5.6	7.0	11.9
1995～'00	-2.6	3.9	-11.0

Notes: Supply, income, and price refer to the volume of per capita supply, per capita disposable income in real term, and producer(wholesale) price.
Source: MAF, *Report on Crop Production Statistics*, each year
www.nso.go.kr(Korea National Statistical Office)

TABLE 19. Mid-term Perspective of open-field Mandarin Production, 2001~05

	Unit	2000	Perspective		
			2001	2005	2001~05 Growth rate(%)
Total Acreage	1,000ha	25.2	24.8	24.1	-0.7
Bearing Acreage(A)	1,000ha	23.7	23.4	22.7	-0.7
(Harvest Acreage)	1,000ha	(23.7)	(20.7)	(22.7)	(3.1)
Yield(B/A)	kg/10a	2,244	3,200	3,086	4.5
Production(B)	1,000ton	521	662	700	5.1

Per capita supply of persimmons shows significant growth in her short story in Korea, as found in Table 21. Due to the rapid growth of income and demand, price rises until it turned to show a big fall in the late 1990s. Demand for persimmons seems to be easing in recent years.

5. Sweet Persimmons

As shown in Table, persimmon production increases annually at an 8.0 percent rate during 1995-2000. It owes to the fast growth of bearing acreage for this period, which is accompanied by the fast increase in planting area during the early 1990s. Actually the total acreage is more than doubled from 9.9 ha to 2.2 thousand ha for 1990-1995.

TABLE 20. Trends of Persimmon Production

	Units	1990	1995	1997	1998	1999	2000	'95~'00 Growth rate(%)
Total Acreage(A)	1,000ha	9.9	20.2	22.6	23.5	23.9	23.8	3.4
Bearing Acreage(B)	1,000ha	5.0	8.4	12.5	14.2	15.4	16.5	14.8
Bearing Ratio(B/A)	%	(64.7)	(41.5)	(55.2)	(60.3)	(64.4)	(69.2)	(5.5)
Yield(C/B)	kg/10a	1,324	1,845	1,484	1,483	1,390	1,379	-5.4
Production(C)	1,000ton	65.7	154.7	185.1	210.1	213.8	227	8.0

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Yield indicates production per unit bearing acreage.
Source: MAF, *Report on Crop Production Statistics*, each year

As demand is stagnated and price falls, farmers begin to abandon the presimmon raising from 1999. From 2000 to 2005, the total acreage is expected to decrease continually. However, owing to the continuing growth of bearing acreage, production will expand steadily at an 1.2 percent annual rate.

TABLE 21. Growth Rates of Persimmon Consumption, Persimmon Price, and Income by Period

Unit: %

	Persimmon Supply	National Income	Persimmon Price
1990～'95	11.4	6.2	4.3
1995～'00	7.6	3.9	-9.9

Notes: Supply, income, and price refer to the volume of per capita supply, per capita disposable income in real term, and producer(wholesale) price.
Source: MAF, *Report on Crop Production Statistics*, each year
www.nso.go.kr(Korea National Statistical Office)

TABLE 22. Mid-term Perspective of Production, 2001～05

	Units	2000	Perspective		
			2001	2005	2000～05 Growth rate(%)
Total Acreage(A)	1,000ha	23.8	22.8	22.1	-1.5
Bearing Acreage(B)	1,000ha	16.5	16.8	17.6	1.3
Bearing Ratio(B/A)	%	(69.2)	(73.7)	(79.5)	(2.1)
Yield(C/B)	kg/10a	1,379	1,262	1,360	-0.1
Production(C)	1,000ton	227	211	239	1.2

Note: 1) Bearing ratio refers to the ratio of bearing acreage to total acreage.
2) Yield indicates production per unit bearing acreage.

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