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COMPETITIVENESS of MAJOR WHEAT EXPORTING COUNTRIES in the KOREAN MARKET

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Key words : Korean wheat market, Competitiveness of wheat exporters, Korean noodle market, ASW wheat

ABSRACT

The market share of U.S. wheat in Korea fell to 53% in 2002, primarily due to the weak competitiveness of U.S. wheat over Australian wheat in quality and price. In addition to upgrading the quality of wheat, maintaining consistent quality is also an important factor for market competitiveness. Australia and Canada offer consistent quality through various segregation systems based on quality specifications of wheat grains to satisfy the buyer's requirements.
The Korean wheat flour milling industry would like to maintain the diversity of its import wheat markets. As consumer demand for better quality products grows, however, a higher and higher proportion of ASW wheat will be used for making noodles. Unless concerns over U.S. wheat quality are resolved in the near future, a decline in the market share of U.S. wheat in Korea seems to be inevitable.

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I. Introduction

Korea is heavily depends on imported wheat for consumption due to both minimal production and the high price of its domestically grown wheat. In 2002 Korea imported a total of 2,369,000 MT (metric tonnes) of wheat grain for milling. U.S is the largest exporter to Korea, while Australia and Canada are major competitors in the Korean market. Korea is the second largest importer of US wheat in Asia after Japan.

Wheat importation policy in Korea changed from a government-controlled import system through the Korea Flour Mills Industrial Association (KOFMIA) to a free market system in 1990, a move that broadened the wheat trade to multiple exporting countries and intensified competition among them. As a result, the market share of U.S. wheat in Korea has decreased considerably from 79% in 1991 to 53% in 2002, while the market share of Australian wheat increased from 18% to 41% during the same period.

Wheat flour consumption per capita in Koreas has fluctuated little (between 33 and 34 kg) since 1990. However, there has been a steady change in consumption patterns of wheat flour-based products in Korea. Demand for instant noodles, especially cup noodles, has increased, due to their convenience. Although the market share of dried noodles has decreased, there has been a large increase in demand for fresh or frozen noodles and precooked noodles in recent years. The popularity of fresh, precooked or frozen noodles may arise from an increased concern for healthy eating and more delicious food. Since the quality of fresh, precooked or frozen noodles is more sensitively affected by wheat flour quality than is the quality of instant fried noodles, wheat flour quality has thus become an increasingly important issue in the wheat flour milling and noodle making industries in Korea.

Flour millers in Korea have expressed concern that U.S. wheat is not competitive in terms of price and end-use quality

with Australian wheat in the noodle wheat market. While the Australian Wheat Board has been successful in precisely adhering to the specifications of wheat buyers in Korea through the development of wheat varieties suitable for making noodles and strict centralized quality control, efforts in improving U.S. wheat quality have fallen behind. It is believed among Korean millers and noodle manufacturers that Australian wheat is lower in ash, is more consistent in protein content and other grain characteristics, as well as having better starch functional properties than U.S. wheat. Accordingly, there is a general preference for Australian wheat for making noodles over U.S. wheat.

To analyze the market behaviors of major wheat exporters such as the U.S., Australia and Canada in the Korean market, it is crucial to meticulously explore the Korean wheat market structure and to clarify millers and noodle manufacturers preferences on imported wheat. In this study, the Korean wheat and flour food market structure will be discussed in detail and the competitiveness of U.S. wheat with Australian and Canadian wheat will be reviewed intensively in terms of marketing and technology. Most analyses are based on information collected through a field survey for flour milling and noodle companies.

II. Korean Wheat and the Flour Food Market

1. Flour Milling Industry

In the early 1960s, a large expansion of flour milling capacity occurred due to an increase in flour consumption. There were 24 flour milling companies in 1971 in Korea. Since the mid-1970s, milling capacity has remained greater than wheat flour demand. Between 1975 and 1982, nine flour milling companies merged with the remaining companies, and two other companies were closed by bankruptcy. Since 1983, although the number of milling facilities fell from 13 to 11, milling capacity remained the same until 1993. These milling capacities have slightly decreased since 1994, concurrent with structural changes in the milling

industry. Four flour milling plants were closed between 1995 and 1999. There are 7 flour milling companies and 11 milling plants across the nation at present. The operation rate of the milling industry increased from 63 percent up to 83 percent between 1991 and 2000. The estimated operation rate of flour milling plants in 2001 was approximately 77% (Table 1).

At present, there are three major milling companies in Korea: Daehan Milling Co., CJ Milling Co., and Korea Milling Co. The market shares of these three companies account for 78% of the total wheat flour consumed in Korea. Market concentration intensified after the merger of Dongah Milling Co. with Korea Milling Co. in 2002 (Table 2).

In general, Korean milling companies produce three different types of flour, all-purpose flour, bread flour and cake flour, to meet the demands of various food manufacturers and consumers. In 2002, all-purpose flour constituted 65% of Koreas total wheat flour production, while bread flour and cake flour accounted for 18% and 17%, respectively (Figure 1). These ratios

Table 1. Flour Milling Capacity and Operation Ratio

Unit: Thousand tons

Year	Number of Flour Milling Co.	Milling Capacity	Quantity Milled	Operation Ratio (%)
1991	13	3,141	1985	63.2
1992	13	3,141	2005	63.8
1993	13	3,141	2093	66.6
1994	14	3,276	5050	62.6
1995	12	3,102	2154	69.4
1996	12	3,102	2178	70.2
1997	12	3,148	2251	71.5
1998	11	3,055.5	2190	71.7
1999	10	2,896.5	2342	80.8
2000	10	2,896.5	2403	83.0
2001	11	3,055.5	2360	77.2

Source: Korea Flour Milling Industrial Association (KOFMIA).

FIGURE 1. Production Share by Wheat Flour Type

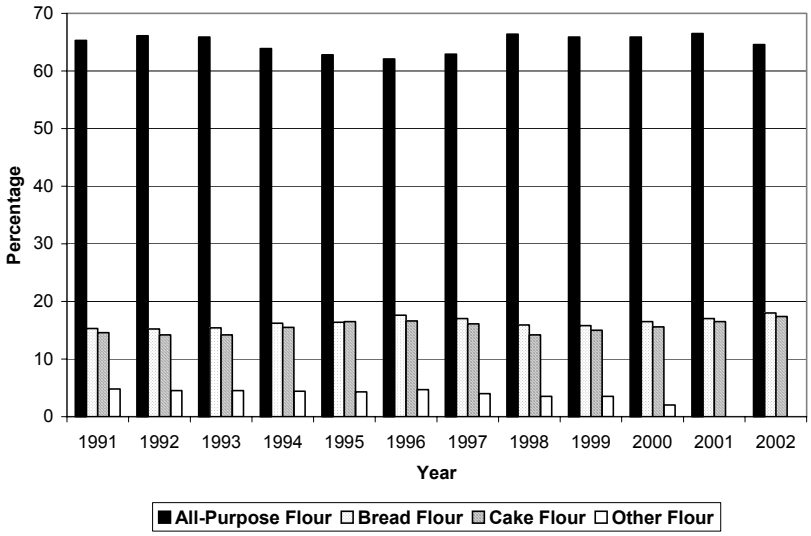


Table 2. Market Share by Milling Company, 2002

Unit: %

Flour Milling Company	Market Share*
Daehan	29.4
CJ	23.9
Korea	24.4
Daesun	6.4
Shinhan	7.9
Samhwa	3.7
Youngnam	4.3
Total	100.0

* Market shares are calculated based on milling capacity.

have been consistent since 1991. Flour milling companies currently produce even more diversified and specialized flours aimed at specific products such as bread, noodles and cakes to meet the demand of food manufacturers.

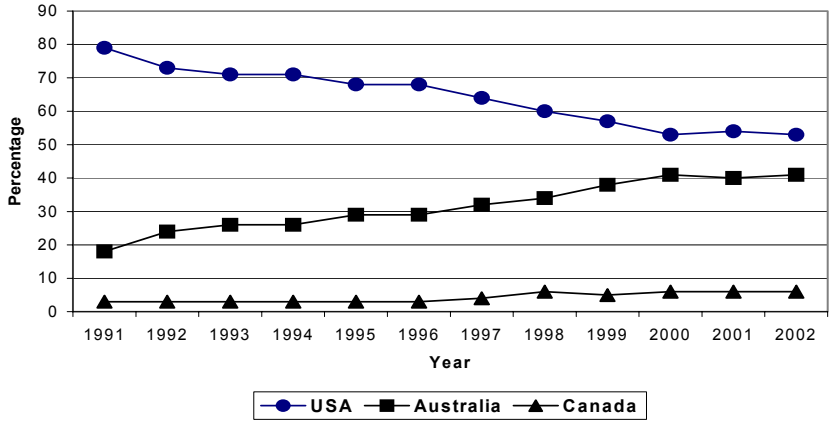
2. Wheat Production

Domestic wheat production has sharply decreased in Korea since 1980 because growing wheat is no longer profitable. At present, not only is the retail price of domestically grown wheat three times higher than that of imported wheat, but the quality of wheat is also considered unfavorable compared to imported wheat, further decreasing the demand for domestically grown wheat. In 2001, total planting area of domestic wheat was 915 hectares and production as 2,841 MT. Domestically grown wheat constituted less than 0.1% of total wheat use in 2001 (Table 3).

3. Wheat Import

Since the wheat market liberalization in 1990, wheat import has increased by more than 20%, to 2,505 thousand MT in 2000. U.S. wheat accounted for 100% of the total milling wheat imported by Korea in 1983. The market share of U.S. wheat, however, fell to 53% in 2002, due to increased competition among wheat exporting countries. In 2002, Australian and Canadian wheat accounted for 41% and 6% of the total wheat imported by Korea, respectively (Figure 2).

FIGURE 2. Import of Milling Wheat by Origin



Source: KOFMIA.

TABLE 3. Wheat Production in Korea

Year	Planting Area (ha)	Production (tons)
1980	28,000	92,000
1985	3,000	10,517
1990	300	889
1995	2,787	10,262
1996	1,838	10,923
1997	1,372	7,433
1998	1,533	4,781
1999	919	5,626
2000	915	2,339
2001	1,000	2,841

Source: Ministry of Agriculture and Forestry (MAF).

Imported wheat classified by wheat origin and class is shown in Table 4. U.S. wheat classes imported by Korea are Dark Northern Spring (DNS), Hard Red Winter (HRW) and Western White (WW)/Soft White (SW) wheat. DNS wheat is used for making white bread or blended with WW/SW wheat for making instant fried noodles. HRW wheat is blended with WW/SW wheat of 11.5% protein to produce all-purpose flour, which has decreased in demand. WW/SW wheat is also blended with HRW to produce all-purpose flour. There is a demand for 8.5% protein WW wheat for making snack food products.

Australian wheat imported to Korea includes Australian Standard White (ASW), Australian Hard (AH) and Australian Soft (AS). ASW is mainly used for making noodles (instant, dried and fresh noodles); AH is also used for making noodles. AS with 8.2% protein has been purchased for making snack food products.

Only one class of Canadian wheat, Canadian Western Red Spring (CWRS), is imported into Korea. CWRS wheat is mainly used for making bread. There is a growing preference for CWRS wheat over DNS for making bread.

In 2002, ASW wheat was the dominant class, accounting for 36% of total imported wheat, when import shares of WW/SW and DNS wheat were 26.9% and 15.4%, respectively. ASW wheat is strongly preferred by Korean millers and noodle manufacturers because of its consistent quality and better attributes for making noodle flour compared to U.S. wheat.

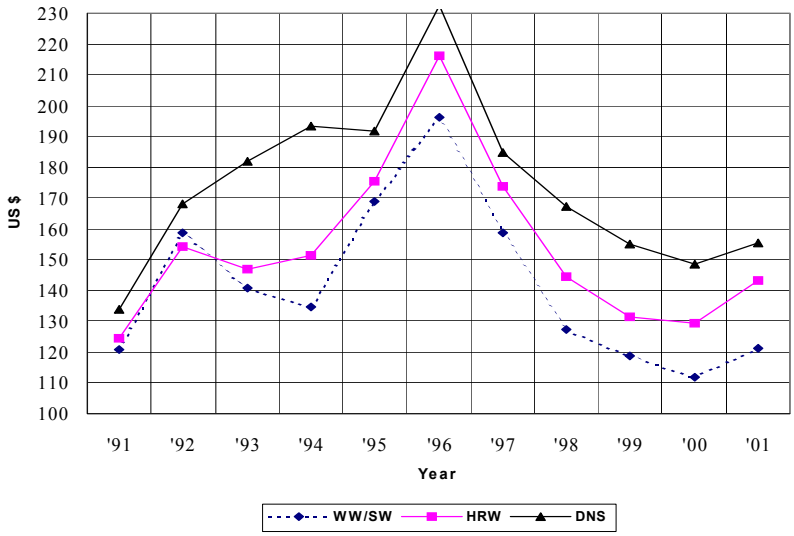
Until 1983, the Korean government controlled wheat import policy and authorized wheat importers. The government transferred its role of issuing import authorization to KOFMIA in 1983, when KOFMIA members were allowed to import wheat. In 1990, wheat import was completely liberalized. Korean millers can now directly negotiate with exporters. Most millers jointly purchase on the basis of lowest price at bidding. CJ Co. is the only buyer that

TABLE 4. Wheat Import by Class and Origin, 2002

Class	Protein (%)		Import	
	Min.	Max	Quantity (MT)	Ratio (%)
No. 1 WW/SW			154,802	6.5
No. 1 WW/SW		8.5	61,399	2.6
No. 1 WW/SW		9.0	14,272	0.6
No. 1 WW/SW		9.5	77,874	3.3
No. 1 WW/SW		10.5	326,100	13.8
No. 1 WC (White Club)			3,500	0.1
No. 1 HRW	11.5		256,074	10.8
No. 1 DNS	14.0		364,724	15.4
U.S subtotal			1,258,745	53.1
AS			9,710	0.4
ASW			860,500	36.3
AH			97,210	4.1
Australia subtotal			967,420	40.8
1CWRS	13.5		1,870	
2CWRS	13.5		141,001	6.0
Canadian subtotal			142,871	6.0
Total			2,369,036	

Source: KOFIMA.

FIGURE 3. Trends of Imported U.S. Wheat Price



purchases wheat by trading in futures. With UR negotiation in 1993, the import tariff on wheat was scheduled to be reduced from 3% in 1995 to 1.8% in 2004. The current tariff on wheat imports is 1.92%.

With a supply surplus, wheat prices in international markets generally declined between April 1996 and the beginning of 2000. In 2001, the average price (FOB) of DNS and HRW imported from the U.S. was $155 and $143 per metric ton, respectively (Figure 3). The import price of ASW is generally cheaper by $4~$5 per metric ton than HRW. Currently, the average price of HRW is on the rise, reaching $161 per metric ton.

4. Consumption of Wheat Flour

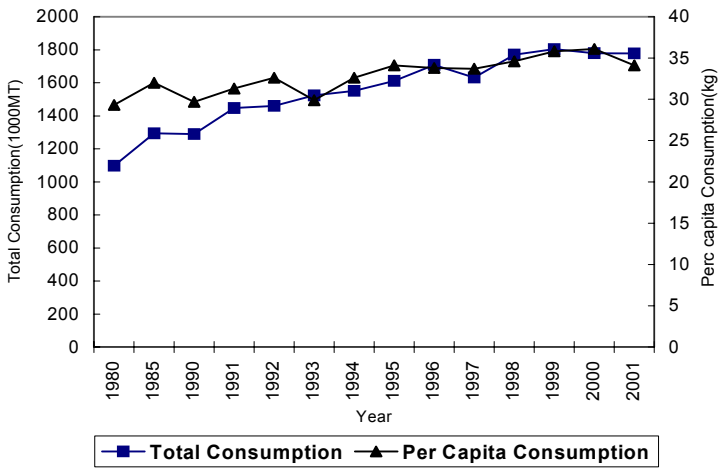
Traditionally, wheat along with rice has been an important part of the Korean diet. Rice and wheat flour represented about 60% and 25% of total grain consumption in 2001, respectively. While per capita consumption of rice has dramatically decreased since 1980,

per capita wheat flour consumption has continued its increasing trend as the result of an increased demand for instant noodles, variety bread and other instant foods. Total wheat flour consumption grew by 38% between 1990 and 2001, mainly due to population growth and an increase in wheat-based food products.

Even during the economic crisis in Korea between 1998 and 1999, per capita wheat flour consumption increased because of increased consumption of instant fried noodles. Wheat flour consumption peaked in 2000, reaching 36.1 kg per person per year, then dropped to 35.1 kg per person per year in 2001 (Figure 4).

Wheat flour is mostly used for making noodles, breads and cakes. Since 1991 the noodle share of total wheat flour consumption has declined. In contrast, the breads and confectionary share has remained stable. Approximately 49% of the wheat flour produced in Korea is used for manufacturing noodles, 13% for breads and 9% for confectionaries in 2001 (Table 5).

FIGURE 4. Wheat Flour Consumption in Korea



Source: KREI, Food Balance Sheet, 2002

TABLE 5. Proportion of Wheat Flour Use in Various Wheat-Based Products[1)]

Unit: %

	Noodles	Breads	Confectionary	Soy Sauce	Soft Beverage	Others[2)]	Total
1991	53.8	12.7	9.6	3.7	4.8	15.4	100.0
1992	59.1	12.2	7.9	3.7	3.4	13.7	100.0
1993	59.1	11.7	8.9	3.8	3.5	13.0	100.0
1994	60.9	12.1	9.1	3.0	2.7	12.2	100.0
1995	57.3	12.1	9.7	3.2	2.1	15.6	100.0
1996	51.7	11.5	9.6	3.0	2.0	22.2	100.0
1997	48.6	11.9	9.1	2.8	2.7	24.9	100.0
1998	51.3	12.4	8.3	3.1	2.1	22.8	100.0
1999	52.5	11.4	9.9	3.1	1.4	21.7	100.0
2000	50.7	11.7	9.6	2.9	1.4	23.7	100.0
2001	48.9	12.6	9.3	3.3	1.5	25.4	100.0

1) Shares were recalculated based on information provided by KOFIMA.
2) Restaurant use, rice cakes, rolls, industrial use and other flour products are included.

Ⅲ. The Korean Noodle Industry

1. Classification of Noodles

Koreans consume various types of noodles, including instant fried noodles, Chinese noodles, dried noodles, and fresh (wet) noodles. Korean noodles can generally be classified as instant fried noodles, dried noodles, fresh noodles, precooked noodles, frozen noodles and pasta. Fried noodles called ramen, are prepared by steaming and deep-fat frying and then packaged in a plastic bag or disposable cup.

Dried noodles include white salted dried noodles, starch noodles and buckwheat noodles. Fresh noodles are prepared without drying or cooking and can be kept in the refrigerator for a limited time before consumption. Precooked noodles are steamed or boiled and usually vacuum-packed after preparation. Precooked noodles can be served immediately after pouring hot water over them or heating in a microwave oven. Frozen noodles are produced by steaming and freezing processes after preparation.

2. Market Structure

In 2001, the estimated total sales of noodles was 1,330 billion won (not including the value of exported noodles), which is equivalent to one billion US dollars, and represents an 18% increase from 1997 (Table 6). Fried noodles (ramen) were the dominant type of noodles, accounting for 82% of total sales. Dried noodles, precooked noodles and frozen noodles accounted for 7%, 5% and 2% of total noodles sales, respectively, in 2001.

Between 1997 and 2001, sales of ramen increased by 22%. This increase in ramen consumption may be attributed to an increase in outdoor activities and the proliferation of convenience

TABLE 6. Sales and Market Share by Noodle Type

Unit: billion won, %

	1997	1998	1999	2000	2001
Fried Noodles[1)]	897.9	875.5	915.1	1,098.1	1096.2
	(79.4)	(78.7)	(77.9)	(81.6)	(82.4)
Dried Noodles[2)]	135.4	114.7	105.9	122.4	94.3
	(12.0)	(10.3)	(9.0)	(9.1)	(7.1)
Fresh Noodles	20.4	28.0	29.9	24.3	28.9
	(1.8)	(2.5)	(2.5)	(1.8)	(2.2)
Precooked Noodles[3)]	45.8	66.3	99.6	69.5	70.8
	(4.0)	(6.0)	(8.5)	(5.2)	(5.3)
Frozen Noodles	19.0	11.5	11.1	22.7	30.0
	(1.7)	(1.0)	(1.0)	(1.7)	(2.3)
Pasta	-	-	1.4	1.9	1.8
			(0.1)	(0.1)	(0.1)
Others	12.5	16.8	11.0	6.7	8.0
	(1.1)	(1.5)	(1.0)	(0.5)	(0.6)
Total	1,131.0	1,112.8	1,174.0	1,345.6	1,330.0
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

1) including cup noodles.
2) mainly white salted noodles including starch noodles.
3) previously steamed or boiled.
Note: The value of exported noodles was not included. Parentheses are market share.
Source: Korea Food Industry Association (KFIA).

stores. Increased demand for instant noodles, especially cup or bowl types, may be due to the tendency to purchase foods that require easy preparation. Cup or bowl type noodles, well known for their ease of preparation, accounted for 35% of total ramen sales during 1997-2001.

Dried noodles were formerly the most popular type of noodles in Korea, representing 30~40% of total noodle consumption until the 1980s. However, as instant noodles have gained in popularity, there has been consistent decrease in the consumption of dried noodles. Dried noodles have experienced a 30% drop in sales since 1997, constituting a mere 7% of the noodle market share in 2001.

Sales of fresh noodles grew by 42% between 1997 and 2001. Precooked noodles and frozen noodles exhibited 50% and 58% growth, respectively, in that period. Fresh, precooked or frozen noodles are relatively expensive and must meet high quality standards. The large growth in the consumption of these types of noodles is probably due to an increasing tendency to avoid deep-fat fried noodles, as well as the improved taste and freshness they provide, along with easy preparation for consumption.

An estimated 799 noodle manufacturing companies are currently in operation in Korea. The 10 top noodle making companies mainly produce ramen, precooked noodles and frozen noodles. The remainder of small and medium-size companies produce mainly dried noodles. The estimated operation rate of dried noodle making companies was 54% in 2002.

3. Recent Developments in the Noodle Market

Ramen manufacturing companies have rapidly grown in the Korean noodle market since the 1980s. These companies have put large efforts into the development of new products to meet changing consumer demand and to expand consumption of instant fried noodles. Through these efforts, new types of instant fried noodles have become available, with significantly improved

quality in terms of texture and flavor.

Hosting the 2002 World Cup soccer series and introducing a five day work week policy also positively influenced the consumption of cup or bowl type of instant noodles. Korean noodle export in 2001 increased 8.4% over the previous year, reaching 97 million US dollars (Table 7). Ramen accounted for 85% of total noodle exports in 2001. Export of precooked noodlesis on the rise, with an increased demand for high quality noodles with convenience of preparation.

The Korean noodle industry has been faced with stagnant consumption of noodles, although sales have increased with value added products. With increasing consumer concerns about diet-related health problems, it is expected that demand for noodles that are low in cholesterol, fat, sodium and calories, and without additives, will increase. Fresh, precooked and frozen noodles represent the growing noodle sector, as the cold chain system has developed through the entire marketing channel.

The demand for noodles that are easy to prepare and eat will increase, as shift workers demand quick meals and the number of discount stores and convenience stores increases. This change implies that demand for fried instant noodles (ramen) will decrease, while demand for fresh and precooked noodles will increase in the future.

TABLE 7. Export of Korean Noodles by Type

Unit: thousand US$

Type of Noodles	2000	2001
ramen	77,462 (100.0)	82,041 (105.9)
dried noodles	5,381 (100.0)	3,048 (56.6)
precooked noodles	6,057 (100.0)	11,339 (187.2)
frozen noodles	346 (100.0)	321 (92.8)
others	84 (100.0)	45 (53.6)
Total	89,330 (100.0)	96,794 (108.4)

Source: KFIA.

Ⅳ. Competitiveness of Wheat Exporters in Korea

1. Quality Competitiveness

Australia and Canada are the principal competitors with the U.S. in the Korean wheat market. ASW wheat accounts for 89% of total imported Australian wheat. Korea imports CWRS wheat from Canada. The quality of wheat grains has a direct influence on the competitiveness of wheat in trade. While the preferred quality attributes of wheat largely depend on the end products, the intrinsic quality factors of wheat, including protein, ash, moisture and dockage content and falling number of grains, are receiving attention. These quality attributes are crucial for millers and manufacturers because they affect profit as well as the quality of the end products.

Korean millers and manufacturers have pointed out the following quality problems of U.S. wheat compared to Australian and Canadian wheat (Table 8).

TABLE 8. Quality Characteristics between U.S. Wheat and Other Classes

Class of Wheat	Ash (%)	Protein (%)	1,000 Kernel Wheat	Falling Number
SW 8.5 SW 10.5	1.28 1.36	8.3 10.0	36.6 37.1	355 384
HRW	1.52	11.8	29.7	409
DNS	1.64	13.8	31.3	356
AS	1.22	8.3	34.3	332
ASW AH	1.17 1.21	10.1 11.7	38.2 36.5	405 429
CWRS	1.59	13.9	33.5	367

Source: unpublished data from Korean Milling Co.

1) It is critical for manufacturers to have consistent quality of flour to produce the desired quality of food products with minimum variation. U.S. wheat is inconsistent in terms of seed size and protein content, while Australian wheat and Canadian wheat generally retain consistent quality.
2) Wheat grains imported from the U.S. have a higher moisture content than those from Australia (moisture content of 10.5% in U.S. wheat; 9.0% in Australian wheat; 10.5% in Canadian wheat).
3) There is higher ash content in U.S. wheat compared to Australian wheat. This might result in lower flour yield, and negatively affects the functional properties of wheat flour.
4) U.S. wheat flour has inferior quality characteristics, including low viscosity of flour and darker noodle color.

Over 85% of wheat flour used for making noodles in Korea is milled from ASW wheat. An even higher proportion of ASW wheat flour is used for making high quality/valued noodles, including fresh, precooked and frozen noodles. On the other hand, U.S. wheat is mainly used for making one of the most popularly consumed instant fried noodles, Shin Ramen. A blend of 60% WW and 40% DNS wheat with protein content of 8.8-9.5% is used for making Shin Ramen, not because of superior quality of U.S. wheat over Australian wheat, but because the manufacturer is reluctant to change the formula (which has been used for more than 10 years), with the concern of losing its products dominant market share.

Instant noodle manufacturers prefer Australian wheat over U.S. wheat for making instant fried noodles because of the higher pasting viscosity of Australian wheat flour compared to U.S. wheat flour. High viscosity of flour allows noodle manufacturers to cut down the amount of potato starch or modified potato starch used for making instant fried noodles, which can lower production cost. Potato/modified potato starch improves the smooth and viscoelastic texture of noodles. Up to 30% of the

ramen ingredient, potato/modified potato starch is used for making cup or bowl type fried noodles, and 15-20% for bag type fried noodles.

For the production of fresh, precooked and frozen noodles, Australian wheat is used almost exclusively because of its superior quality to U.S. wheat. Wheat flour milled from Australian wheat produces brighter color, smoother surface and more viscoelastic cooked noodles than wheat flour milled from U.S. wheat.

U.S. wheat is still dominant in the bread flour market. Korean consumers are fond of a soft but resilient crumb texture in bread and rolls. Some flour millers and bakers believe that CWRS wheat has better gluten characteristics for making resilient texture bread crumbs than does DNS wheat. There seems to be a general preference for CWRS wheat for making bread over DNS wheat. The amount of imported CWRS wheat has slightly increased since 1998. For the manufacture of confectionaries, pastry and snacks, U.S. SW wheat is dominantly used.

2. Price Competitiveness

U.S. wheat does not present a competitive price over Australian wheat. Korean millers buy U.S. wheat through competitive bids or in futures markets, while Australian or Canadian wheat is purchased through direct negotiations between millers and the Australian Wheat Board (AWB) or the Canadian Wheat Board (CWB), using the export price of U.S. wheat as a reference. Generally, the AWB offers a lower price for ASW by two or three dollars per metric ton. In early 2003, the import price of wheat per metric ton (FOB) was US$163 for HRW, but US$161 for ASW (Table 9).

Another disadvantage of importing U.S. wheat is the transportation cost; it costs US$2.5 more per metric ton to transport U.S. wheat than Australian wheat. It has been indicated that U.S. wheat costs more compared to ASW wheat when it used for instant noodle making. By using ASW wheat flour for making one ton of ramen, US$32.3 can be saved (Table 10).

TABLE 9. Comparison of Import Price Between U.S. and Australian Wheat

Unit: US$/ton

	U.S. HRW	ASW
Import Price (FOB)	163.0	161.0
Freight	27.0	24.5
Total	190.0	185.5

Note: Prices are based on import price of Korean Milling Co. in early 2003.

TABLE 10. Comparative Cost for Ramen Flour Between U.S and Australia Wheat

Unit: US$

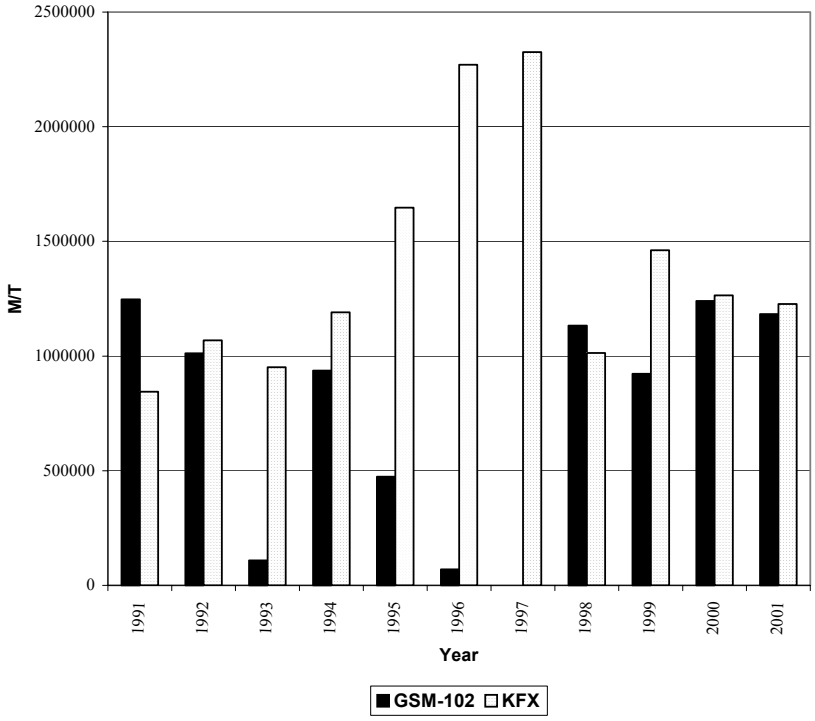
Cost	Price/kg	Quantity	U.S. Wheat[1)] (Idaho 377S)	Australian Wheat[2)] (ASW)
Noodle Flour	0.385	1,000kg	385.0	385.0
Modified Potato Starch	0.964	150kg	144.6	-
		80kg	-	77.12
Comparative Cost		1,000kg	460.52	427.89

1) wheat flour viscosity 850 BU.
2) wheat flour viscosity 930 BU.
Source: U.S Wheat Marketing Center.

3. Export Programs and Policies

The U.S. export credit guarantee program (GSM-102) has been initiated to release overseas U.S. wheat buyers from foreign exchange constraints and to provide credit to purchase agricultural commodities. The GSM-102 program has been critical in securing the U.S. wheat market share in Korea, especially during the recent economic crisis. In 2001, 1,183,000 MT of wheat were imported using the GSM-102 program, accounting for 49% of the total import credit. In 2002, $180 million US credit was allocated for purchasing wheat, and this 3 year repayment credit has been reallocated by KOFMIA to its eight member milling companies, with shares ranging from 3% to 23%. Korea Foreign Exchange (KFX) has also been provided for millers to purchase wheat.

FIGURE 5. Wheat Import Credit By Fund



Australia and Canada have also implemented export assistance programs through the Australian Wheat Board (AWB) and the Canadian Wheat Board (CWB), respectively. The AWB and CWB are single channel exporters with monopoly power, with full control of the export of wheat in each country. Therefore, the price and quality of wheat exported can be consistently and uniformly controlled through those organizations. Australia and Canada can implement tight quality control with monopoly power of these state trading enterprises (STEs).

In order to enhance export, the AWB and CWB sign long term supply contracts with importing nations. The Canadian government guarantees some portion of CWB loans to selected

importers. The Australian Export Finance Corporation (EFIC), a semi-private agency, also covers some portion of loans to selected importing countries. EFIC provides a similar service to private exporting firms. The repayment conditions of the AWB loan are reportedly not much different from GS M-102 loans in terms of interest rate.

Australian wheat producers are paid via a pooled price mechanism, receiving an initial advance followed by additional payments corresponding to the average value of all sales made by the AWB for each pool. Canadian wheat producers receive the initial, adjusted and final payments under the current CWB pooling system. The initial payment is subject to deductions for freight and elevation.

Ⅴ. Market Implications

The U.S. enjoyed 100% of the Korean wheat import market until 1983. The market share of U.S. wheat in Korea fell to 53% in 2002, primarily due to the weak competitiveness of U.S. wheat over Australian wheat in quality and price. While the quality of U.S. wheat has been moderately satisfactory to flour millers and noodle manufacturers in Korea, ASW wheat has pleased Korean noodle manufacturers and obtained fame as the best quality wheat for making noodles by maintaining high quality standards, including consistent grain quality, low ash content and high yield of flour, as well as bright color and attractive texture.

Accordingly, to be able to compete efficiently with Australian wheat and recapture the noodle wheat market in Korea, it is imperative to improve the quality of U.S. wheat for making noodles to be at least equal to or above the quality of Australian wheat. Through intensive breeding efforts, the U.S. has developed some promising hard white wheat varieties, which could be suitable for making noodles. However, a preliminary Korean millers evaluation of U.S. hard white wheat for making

noodles has indicated that more improvement of wheat quality is needed to effectively compete with ASW wheat.

In addition to upgrading the quality of wheat, maintaining consistent quality is also an important factor for market competitiveness. Korean millers expect improved consistency in U.S. wheat quality, since consistent quality of wheat grains increases milling efficiency and provides consistent quality of wheat flour for end users. AWB and CWB offer consistent quality through various segregation systems based on quality specifications of wheat grains to satisfy the buyers requirements.

For example, in Australia, quality control in the marketing chain starts when farmers deliver grain to the elevator. Growers declare the variety delivered. The wheat is immediately classified by variety, tested for quality and segregated by protein level and end-use suitability. Different classes of wheat are never blended before shipment without the direction of AWB.

For uniformity and continuity of U.S. wheat quality, segregation should be conducted at the farm level, as in Australia. For this to occur, the related grading standards must be identified in order to meet market needs. Storage and transportation systems should also be improved to accommodate the segregation of wheat based on quality.[1]

Both the AWB and the CWB have made a large effort in terms of market development in Korea. They frequently invite Korean millers and end-users to their countries to showcase their wheat industries and to provide technical research or training, using ample funds. AWB provides technical support before and after sale, teamed with cereal chemists and end-use experts. On the other hand, the U.S. marketing activities have been somewhat inefficient, mostly due to limited budget and an inability to

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[1] In Australia, wheat lots are segregated by 0.1 percent protein classifications within each wheat class. The centralized and coordinated storage system allow for segregation of up to 40 different quality classifications depending on market needs.

centralize quality control, segregation and marketing of wheat.

Consumers in Korea express growing concerns over food safety, genetically modified organisms (GMO) and chemical residues in foods, and are showing increased interest in organic farming and product issues. They are not willing to accept genetically modified wheat, and the inclusion of GM wheat in Korea will have a tremendously negative effect on the wheat export market. Pesticide residues detected in wheat, even at a level below the allowed limit, will also severely damage the export market. AWB does not allow farmers to apply any pesticides during post-harvest storage.

The Korean wheat flour milling industry would like to maintain the diversity of its import wheat markets. However, as consumer demand for better quality products grows, a higher and higher proportion of ASW wheat will be used for making noodles. Unless concerns over U.S. wheat quality are resolved in the near future, a decline in the market share of U.S. wheat in Korea seems to be inevitable.

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