

Survey on Wheat Flour Utilization in Korea

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우리나라의 밀가루 이용실태 조사

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Abstract

The use of wheat flour in Korea in 1986 and 1987 was surveyed. A brief outline of wheat flour milling industry was also included. Since the overall trend in flour usage in 1986 and 1987 was similar, the data in 1986 were presented. Total sales volume of wheat flour was 1,556,891M/T, of which 51.1% was sold to wholesale agents and the remainder to commercial users. The main usages of flour were noodle-making, baking, brewing and common use including home use, retailer and supermarket. The first and second class of all-purpose flour were used for noodle-making and brewing. Bread was produced with the first class of strong flour. For confectionery the first class of all-purpose flour was mainly used.

Introduction

The overall objective of this study was to conduct a survey on the use of each type and class of wheat flour in Korea. To achieve the objective the following were surveyed and analyzed.

1. Sales volume of flour by eleven flour mills was surveyed based on type and class of flour and usage.
2. Sales of flour by wholesale agents was surveyed by questionnaire or by visit. The data were analyzed by amount, class and type of flour based on end-use.
3. The use of flour by secondary processing companies was also surveyed by questionnaire or by visit.

This paper covers the survey results in 1986 and

1987. Brief outline of wheat flour milling industry in Korea is also included.

Outline of Wheat Flour Milling Industry in Korea

1. Milling capacity

There are thirteen flour mills in Korea. They are located in Seoul, Incheon, Pusan and Mokpo.

Wheat milling capacity of the mills as of December 1987¹⁾ is given in Table 1. Based on the total milling capacity, the five mills located in Kyung-In area (Seoul and Incheon) comprised 47.2%, the seven mills in Pusan area 44.9% and one mill in Mokpo 7.9%.

Among thirteen flour mills, Dae Han Flour Milling Co. has the highest milling capacity, followed by Che Il Sugar & Co. and Dongah Flour Milling Co. These three mills comprise 60.6% of the total milling capacity.

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Table 1. Milling capacity of flour mills

Area	Name of flour mills	Milling capacity (1000M/T per year)	Ratio (%)
Seoul	Dae Sun Flour Milling Co.	147	5.2
	Che Il Sugar & Co.	229	8.1
	(Sub total)	376	13.3
Incheon	Dae Han Flour Milling Co.	619	21.9
	Dongah Flour Milling Co.	214	7.5
	Sam Hwa Flour Milling Co.	127	4.5
	(Sub total)	1,336	47.2
	Pusan	Dongah Flour Milling Co.	291
Che Il Sugar & Co.		362	12.8
Shin Han Flour Milling Co.		169	6.0
Shin Kuk Dong Flour Milling Co.		137	4.8
Young Nam Flour Milling Co.		114	4.0
Keum Sung Flour Milling Co.		107	3.8
Dae Sung Flour Milling Co.		90	3.2
(Sub total)		1,270	44.9
Mokpo		Ho Nam Flour Milling Co.	223
Total	2,829	100.0	

2. Amounts of wheat imports and flour milling

The amounts of wheat imports and flour milling during last eight years²⁾ are shown in Fig. 1. The amounts of wheat imports varied year by year; the average being 1.96 million metric tons(M/T).

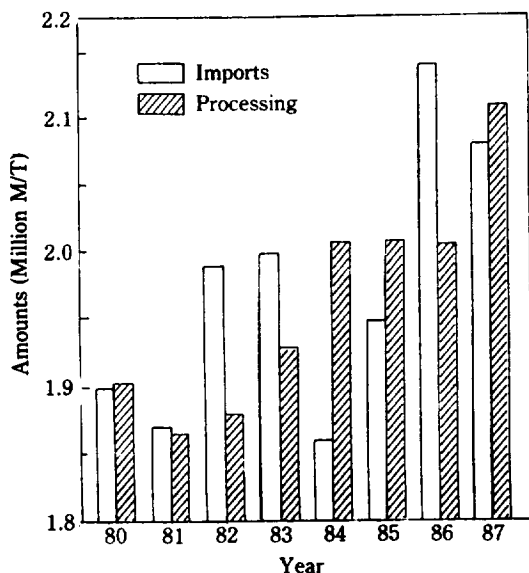


Fig. 1. Amounts of imports and processing of wheat

Table 2. Imports of wheat in 1986 and 1987

Country	Class ¹	Amounts of imports (M/T)			
		1986	Ratio(%)	1987	Ratio(%)
U.S.A.	White	1,111,665	51.8	943,133	45.4
	Red	573,127	26.7	632,352	30.4
	DNS	267,675	12.5	257,479	12.4
	Sub total	1,952,467	91.0	1,832,964	88.2
Australia	ASW	24,413	1.1	119,596	5.7
	AS	97,689	4.6	40,749	2.0
	AH	5,350	0.3	6,310	0.3
	Sub total	127,452	6.0	166,655	8.0
Canada	CWRS	193	—	14,861 ²	0.7
Argentina	AG	64,332	3.0	63,778	3.1
Total		2,144,444	100	2,078,258	100

1 White includes WW/SW and Red includes HRW/ORD.

2 Total of CWRS (No. 1-3)/CWRW (No. 1)/CWSW (No. 1)/CWSWS (No. 1)/CPS (No. 1).

The classes of wheats imported in Korea are mostly from U.S.A.(Table 2).²⁾ The import of wheats from Australia considerably increased in 1987. About 3% of wheats imported was from Argentina. Canadian wheats were only small portion.

The wheats imported from U.S.A. were white wheats(WW and SW), red wheats(HRW and ORD) and DNS. The wheats from Australia were ASW, AS and AH. Various wheats were imported from Canada including CWRS, CWRW, CWSW, CWSWS and CPS.

3. Production of wheat flour

The trend of wheat flour production by type and class in the years 1980-1987²⁾ is tabulated in Table 3. The composite and whole wheat flours have been produced since 1986. The composite flour is in general an equal mixture of the first and second class all-purpose flour, of which the major use is noodle-making, especially Ramyon(fried instant noodle).

As shown in Table 3, the production of the first class flour increased, whereas the second class flour showed an opposite trend, regardless the types of flour.

In 1983, Korean Government decided to abolish most of the main regulations which were major obstacles for millers to achieve a rapid progress since 1963.¹⁾ This epochal change of the policy has aimed at: 1) diversifica-

Table 3. Production of wheat flour by type

(Unit: M/T(%))

Year	Class	All-purpose flour	Strong flour	Weak flour	Composite flour	Whole wheat flour	Total
1980	1	799,636 (60)	63,516 (72)	38,114 (77)			
	2	486,173 (37)	24,449 (28)	11,678 (23)			
	3	44,986 (3)	272 (0)				
	Total	1,330,795(100)	88,237(100)	49,792(100)			1,468,824
1981	1	770,597 (61)	74,157 (75)	49,545 (75)			
	2	460,267 (36)	23,307 (24)	16,580 (25)			
	3	42,063 (3)	835 (1)	11 (0)			
	Total	1,272,927(100)	98,299(100)	66,136(100)			1,437,362
1982	1	761,412 (62)	88,397 (78)	65,226 (69)			
	2	423,404 (35)	21,631 (19)	29,072 (31)			
	3	36,893 (3)	3,167 (3)	62 (0)			
	Total	1,221,709(100)	113,195(100)	94,360(100)			1,429,264
1983	1	821,978 (67)	121,291 (82)	91,510 (82)			
	2	343,397 (28)	20,179 (14)	15,684 (14)			
	3	55,618 (5)	6,179 (4)	4,393 (4)			
	Total	1,220,993(100)	147,649(100)	111,587(100)			1,480,229
1984	1	829,610 (66)	135,447 (82)	101,779 (87)			
	2	341,945 (27)	21,607 (13)	13,942 (12)			
	3	82,285 (7)	8,208 (5)	1,096 (1)			
	Total	1,253,840(100)	165,262(100)	116,817(100)			1,535,919
1985	1	887,610 (68)	152,827 (86)	122,302 (89)			
	2	326,407 (25)	19,567 (11)	14,058 (10)			
	3	84,801 (7)	5,521 (3)	994 (1)			
	Total	1,298,818(100)	177,915(100)	137,354(100)			1,614,087
1986	1	814,377 (69)	161,299 (88)	152,842 (93)	55,584(100)	4,716(100)	
	2	280,139 (23)	15,678 (8)	11,532 (7)			
	3	91,473 (8)	7,274 (4)	373 (0)			
	Total	1,185,989(100)	184,251(100)	164,747(100)	55,584(100)	4,716(100)	1,595,287
1987	1	831,450 (72)	164,709 (87)	167,539 (94)	105,281(100)	2,385(100)	
	2	227,030 (19)	16,068 (8)	10,055 (6)			
	3	100,428 (9)	8,573 (5)	434 (0)			
	Total	1,158,908(100)	189,350(100)	178,028(100)	105,281(100)	2,385(100)	1,633,952

tion of flour qualities to meet with the prevailing trends of improved food qualities by better standard of living and 2) acceleration of technical development and management rationalization of flour mills through free competitions. In accordance with the liberalization policy of the government, flour mills had taken active renovations of milling facilities to yield high quality products and

adaptations of various advanced milling technology to cope with the rapid transition and requirement of secondary processing industries.

One of the important changes of the liberalization policy was the removal of flour yield limit of 77%. Despite this change, flour mills have produced more first class flour maintaining flour yield well above 77%

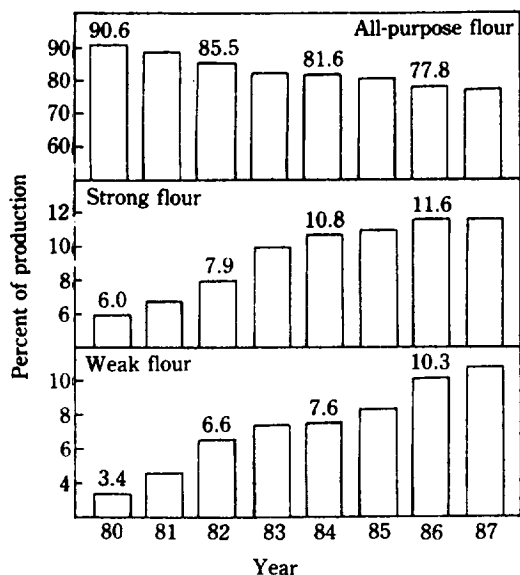


Fig. 2. Percent production of flour by type

since 1983. This may be due in part to the active efforts of millers to adapt the new milling equipments and technology.

The ratio of flour production by type is shown in Fig. 2. Production of strong and weak flours consistently increased, whereas all-purpose flour consistently decreased. In this figure, the composite flour was included to all-purpose flour. The production of whole wheat flour was only 0.3% in 1986 and 0.2% in 1987.

Sales of Wheat Flour by Flour Mills

Sales of wheat flour by flour mills are either direct sale to the secondary processors or sale through wholesale agents. Certain flour mill utilizes supermarket as a wholesale agent. The secondary processors include commercial scale bakery, noodle (Ramyon and dry noodle) manufacturers and brewery. Flours may be sold through wholesale agents to retailers, to other small secondary processors and to the consumers. Fig. 3 shows a distribution channel of flours in Korea.³⁾

Of the total sales volumes of flour by flour mills, the direct sales to the secondary processors and wholesale agents were 48.9% and 51.1%, respectively in 1986 (Table 4).²⁾ However, the direct sales to the secondary processors considerably increased in 1987.

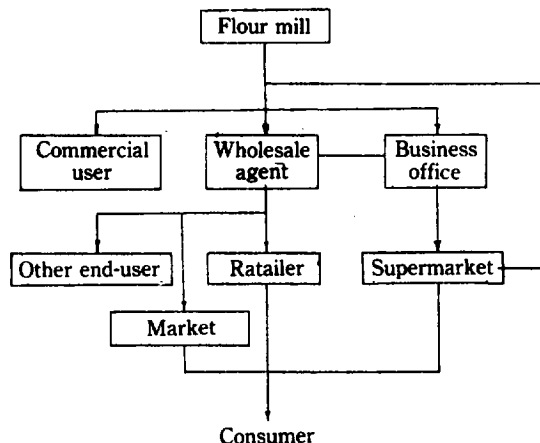


Fig. 3. Distribution channel of wheat flours

Table 4. Sales volume of flour to commercial users and wholesale agents by flour mills

	Year	Sales volume (M/T)	Ratio (%)
Flour mills	1986	1,556,891	100
	1987	1,617,009	100
Commercial users	1986	761,143	48.9
	1987	910,814	56.3
Wholesale agents	1986	795,748	51.1
	1987	706,195	43.7

1. Total sales volume

Total sales volume of flour by type and class is given in Table 5. The total sales volume of flour in 1987 was increased by 3.9% compared with that in 1986.

The sales volume by type based on the total sales in 1986 was 66.5% for all-purpose flour, 11.3% for strong flour, 10.6% for weak flour and 11.2% for composite flour. The percentage of sales of the first class flour was 70.0% for all-purpose flour, 86.4% for strong flour and 89.4% for weak flour. Based on the percentage of the total sales volume, all flours, except all-purpose flour, increased by 0.4% in 1987. The data in Table 5 also indicated that the sales of the first class flour were increased in all flours in 1987 than in 1986.

Che Il Sugar & Co. occupied 22.8% of total sales, followed by Dae Han Flour Milling Co.(22.6%) and Dongah Flour Milling Co.(16.2%). These three companies comprised 61.6% of the total sales volume.

Ho Nam Flour Milling Co.(8.4%) and Dae Sun Flour

Table 5. Sales volume of flour by type

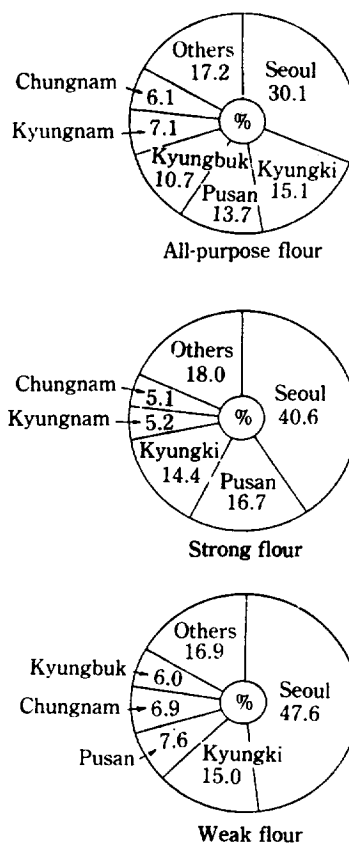
	Sales volume (M/T)		Ratio (%)		Ratio by type (%)		
	1986	1987	1986	1987	1986	1987	
All-purpose flour	1st class	752,042	775,159	46.6	47.9	70.0	73.3
	2nd class	225,816	192,968	14.5	11.9	21.8	18.3
	3rd class	84,902	88,855	5.4	5.5	8.2	8.4
Subtotal	1,035,760	1,056,982	66.5	65.3	100	100	
Strong flour	1st class	151,745	164,523	9.7	10.2	86.4	86.9
	2nd class	15,270	16,521	1.0	1.0	8.7	8.7
	3rd class	8,630	8,264	0.6	0.5	4.9	4.4
Subtotal	175,645	189,308	11.3	11.7	100	100	
Weak flour	1st class	146,987	161,751	9.4	10.0	89.4	90.3
	2nd class	11,592	9,402	0.8	0.6	7.0	5.3
	3rd class	5,918	7,938	0.4	0.5	3.6	4.4
Subtotal	164,497	179,091	10.6	11.1	100	100	
Composite Flour	174,914	188,646	11.2	11.7	--	--	
Whole wheat flour	6,075	2,982	0.4	0.2	--	--	
Total	1,556,891	1,617,009	100	100	--	--	

Milling Co.(6.6%) comprised 15.0% of the total sales volume. The percentage of other six flour milling companies was averaged about 4% of the total sales. Since the share of the sales of each milling company was essentially the same between 1986 and 1987, the average value was taken.

The share of flour milling company by type of flour indicated that Che Il Sugar & Co., Dae Han Flour Milling Co. and Dongah Flour Milling Co. occupied 56.5% of all-purpose flour, 80.4% of strong flour and 78.1% of weak flour.

2. Sales volume by region

Based on the average sales volume of flour by region in 1986 and 1987, Seoul occupied 33.3% of the total

**Fig. 4.** Average sales ratio of flour by region

sales volume, followed by Kyungki-do(14.9%). These facts indicated that 48.2% of the total flour sold by flour mills is consumed in Kyungki-do including Seoul.

Kyungsangnam-do including Pusan occupied 19.9% and Kyungsangbuk-do including Taegu 9.5% of the total sales volume. The major regions of flour consumption are Kyungki-do and Kyungsang-do, amounting 77.6% of the total flour sales.

The average sales percentage of flour by type is shown in Fig. 4. The major regions for flour sales were Seoul, Pusan and Kyungki-do. These three regions occupied 58.9% of total sales of all-purpose flour, 71.7% of strong flour and 70.2% of weak flour.

Seoul and Kyungki-do(including Incheon) occupied 45.2% of the total sales of all-purpose flours, 57.3% of the strong flour and 62.6% of weak flour(Fig. 4).

3. Sales volume by end-use

The amounts of flour sold by flour mills to the secon-

Table 8. Use of wheat flour for Ramyon

(Unit: M/T)

		All purpose flour			Strong flour			Composite flour	Total
		1st class	2nd class	Total	1st class	2nd class	Total		
Common	1986	18,777	18,033	36,810	211	79	290	135,827	172,927
	1987	11,139	13,179	24,318	20	—	20	161,757	186,095
High quality	1986	24,652	1,443	26,095	2,387	699	3,086	14,944	44,125
	1987	14,955	95	15,050	3,550	309	3,859	44,302	63,211
Cup	1986	5,238	—	5,238	6,353	—	6,353	—	11,591
	1987	3,379	—	3,379	4,129	—	4,129	5,196	12,704
Total	1986	48,667	19,476	68,143	8,951	778	9,729	150,771	228,643
	1987	29,473	13,274	42,747	7,699	309	8,008	211,255	262,010
Sales volume by flour mills	1986	53,240	37,999	91,239	11,063	664	11,727	155,812	258,773
	1987	147,183	24,692	171,875	17,412	509	17,921	143,488	333,284

was 6.2kg in 1981, 8.2kg in 1983, 9.3kg in 1986 and 9.9kg in 1987.⁴⁾

There are five Ramyon manufacturers. Among these, Sam Yang Foods Co., and Nong Shim Co., occupied 77.3% of the market share of Ramyon in 1986.⁴⁾

Of the five manufacturers, three were surveyed including Sam Yang Foods Co., and Nong Shim Co. The amounts of flour used in 1986 and 1987 were 256,654 M/T and 291,969 M/T, respectively, which corresponded to 96.3% and 87.4% of the total sales for Ramyon by flour mills.

Since some Ramyon manufacturers produce dry noodle and snacks beside Ramyon, the data were rearranged to represent the amounts of flour used for Ramyon only (Table 8). For reference, the total amounts of flour sold for Ramyon by flour mills were included in the table. It is evident that the data by flour mills and by Ramyon manufacturers do not agree.

Ramyons in Korea can be classified into common Ra-

myon(100 Won), high quality Ramyon(200 Won) and cup Ramyon. For common Ramyon all-purpose flour was widely used, but for high quality Ramyon all-purpose flour and strong flour were utilized. Only first class of all-purpose flour and strong flour were used for cup Ramyon.

2. Use of wheat flour by snack manufacturers

Snacks in Korea are mainly produced by Ramyon manufacturers and confectioneries. Based on the total sales volume, expressed as cash basis, Nong Shim Co., Sam Yang Foods Co., Hai Tai Confectionery Co. and Lotte Confectionery Co., shared 84.6% of the market in 1986.⁴⁾ However, most of the snacks are produced by Ramyon manufacturers, occupying 60% of the total market.

The use of flour by kind and class by snack manufacturers is given in Table 9. Since it was not possible to distinguish the amounts of flour used in snacks from the

Table 9. Amounts of flour used by snack manufacturers

(Unit: M/T)

	All-purpose flour				Weak flour			Composite flour	Total
	1st class	2nd class	3rd class	Total	1st class	2nd class	Total		
Sales volume by flour mills									
1986	8,143	1,760	—	9,903	23,862	585	24,447	42	34,392
1987	2,295	2,323	—	4,618	53,280	867	54,147	202	58,967
Amounts of use									
1986	145	—	—	145	26,145	194	26,339	—	26,484
1987	440	11	801	1,252	27,266	191	27,457	9	28,718

data of confectionery, the data in Table 9 are essentially that from Ramyon manufacturers.

The first class of weak flour was extensively used for snacks and some all-purpose flour and composite flour were also used.

3. Use of wheat flour by baking industries

Baking industry in Korea is classified into commercial scale bakeries and confectionery and window bakeries. There are five commercial bakeries; namely Sam Lip Foods Co., Kirin Co., Seoul Foods Co., Shaney Co., and Korea Continental Co. The Korea Continental Co. was closed recently. For confectionery, Hai Tai confectionery Co., Orion Confectionery Co., Lotte Confectionery Co. and Crown Confectionery Co., have occupied 80% of the total market share in 1986.⁴⁾

The number of window bakeries is not exactly known. The members of Korean Baking Association in 1987 were 3,721. It is estimated that the total number would be exceed 6,000.

The market share of commercial bakeries in 1986 was: Sam Lip Foods Co., 37.0%; Shaney Co., 25.0%; and Kirin Co., 19.0%. The market share between commercial bakeries and window bakeries are almost the same.⁴⁾

A. Commercial bakeries and confectionery

Total amounts of flours used by commercial bakeries and confectionery were 109,786 M/T and 115,897 M/T in 1986 and 1987, respectively, which corresponded to 58.0% and 55.7% of the direct sales of flour mills.

The percentage of flour by type used in commercial bakery and confectionery is shown in Fig. 5. The use of strong flour was increased by 4.3%, but that of all-purpose flour was decreased by 5.2%. The strong flour

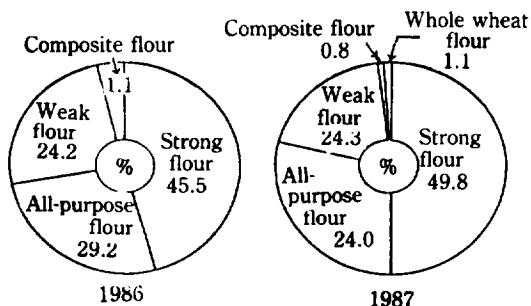


Fig. 5. Use of flour by type by commercial baking industry

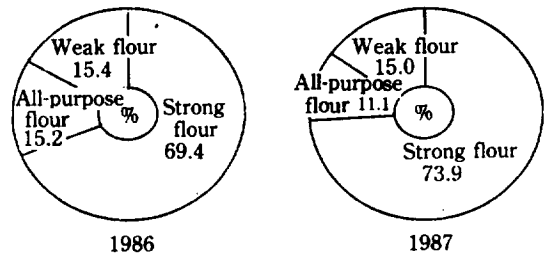


Fig. 6. Use of wheat flour by type by commercial bakeries

was the major flour used, amounting almost 50%, and the remainder was all-purpose flour and weak flour, which occupied an equal portion.

The major product was sweet rolls (57.1%) followed by bread(19.6%) and cakes(7.9%).

B. Commercial bakeries

The survey results on the total amounts of flours used in commercial bakeries were 68,615 M/T and 71,603M/T in 1986 and 1987, respectively.

The first class of flours was extensively used and composite flour and whole wheat flour were not utilized.

The use of strong flour was considerably increased in 1987 than in 1986, while that of all-purpose flour was decreased(Fig. 6). The percentages of the first and second classes of strong flour in 1986 were 61.8% and 7.6%, respectively. However, the first class of strong flour in 1987 was increased to 73.6%.

The major products of commercial bakeries were sweet rolls, bread, cakes and steam bread, of which the former two products occupied 64.9% of total flour used. Cakes and steam bread occupied 11.9 and 10.8%, respectively.

C. Confectionery

Total amounts of flours used were 41,171 M/T in

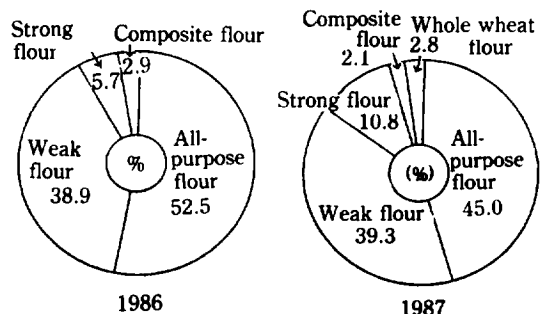


Fig. 7. Use of wheat flour by type by commercial confectionery

1986 and 44,276 M/T in 1987. As shown in Fig. 7, the confectionery mainly utilized all-purpose flour and weak flour. The percentage of all-purpose flour was considerably decreased in 1987 than in 1986, while that of strong flour was significantly increased.

The major product from confectionery was sweet rolls (94.1%) followed by bread (2.1%) and cakes (1.5%).

Sales of Wheat Flour by Wholesale Agents

It is estimated that there were about 417 wholesale agents in 1986. In general, wholesale agents deal with flours from specific flour mills, but some deal with various flour mills. As indicated earlier, supermarket may act as a wholesale agent(Fig. 3.).

Since the data on sales of flour to wholesale agents by flour mills do not reveal regional sales, all data in this paper were based on the survey results.

1. Sales of wheat flour to end-users

The sales of wheat flour to the end-users by wholesale agents in 1986 are given in Table 10. The amounts of sales were 291, 827 M/T, which was corresponded to 36.7% of the total sales of flour mills to the wholesale agents(Table 4). The recovery for 1987 was only 15.4% and therefore not presented here.

However, it was found that the percentages of sales to the end-user in 1986 and 1987 were not significantly

different, which permits to analyze the overall picture for the use of flours by end-users.

Based on 1986 data, the main use of flour was for noodle-making, which was 30.2%. In this figure, the data on Chinese restaurant were included. The next was for retailer(18.7%), brewery(18.6%) and window bakeries (11.6%)

Most of the flours sold to end-users by wholesale agents were all-purpose flour which amounted 88.6% of the total.

2. Sales of wheat flour by class

The major user of the first class of all-purpose flour was noodle-maker(38.9%), followed by retailer(23.6%) and supermarket(12.9%). The second class of all-purpose flour was mainly used for brewery(48.9%), noodle-making(14.9%) and window bakery(16.5%). The major users of the first class of strong flour were window bakery(70.1%) and retailer(15.5%). The second class of strong flour was used for window bakery (56.2%), noodle-maker(22.3%) and retailer(18.6%).

The major users for all-purpose flour were noodle-maker(33.3%), brewery(17.4%), retailer(19.8%), supermarket(10.9%) and window bakery(6.9%). For strong flour, window bakery(66.3%), retailer(15.6%), noodle-maker(5.9%) and supermarket(4.6%) were the main users. Weak flour was mostly consumed by brewery (59.9%) and window bakery(27.6%).

Table 10. Sales volume of wheat flour to end-users by wholesale agents (1986)

(Unit: M/T)

	All purpose flour			Strong flour			Weak flour			Composite flour	Whole wheat flour	Total
	1st class	2nd class	3rd class	1st class	2nd class	3rd class	1st class	2nd class	3rd class			
Window bakery	9,329	8,387	124	10,933	1,422		3,362	384				34,004
Restaurant	6,462	230	13	116			8					6,829
Chinese restaurant	23,940	664	44	222			429	158				25,457
Noodle-maker	54,614	6,887	5	313	565		93	66		132		62,675
Brewery	20,056	24,768	44	323	5		6,651	1,455		840		54,142
Soy-sauce	2,752	2,813	2,198					13				7,776
Retailer	47,603	3,591	6	2,420	470	11	285	14		120		54,520
Super-market	26,046	353	1,764	837	5	8	31					29,044
Others	11,086	2,987	1,716	436	63	482	505	70		33	2	17,380
Total	201,951	50,680	5,914	15,600	2,530	501	11,364	2,160		1,125	2	291,827

3. Sales of wheat flour by region

Based on the sales by wholesale agents to region, the predominant flour was all-purpose flour.

The major regions for the sales of the first class of all-purpose flour were Kyungki-do, Seoul and Kyung-sangbuk-do, which occupied 55.1% of total sales.

Strong flour was mainly sold to Seoul, Kyungsangbuk-do and Chonlanam-do. The first class of weak flour was consumed at Chungchongbuk-do(27.4%), Chungchangnam-do(16.9%) and Seoul(17.6%).

Use of Wheat Flour by Window Bakeries and Noodle-makers

The survey results on the use of flour by window bakeries and noodle-makers are summarized. Since the uses of flour in 1986 and 1987 by window bakeries were similar, the data in 1986 were presented.

1. Window bakeries

The usage of wheat flours by window bakeries was surveyed in large cities. The major flour used was strong flour followed by all-purpose flour, which comprised 93.3% of total use.

The major products of window bakeries by region were bread, sweet rolls, cakes and variety bread. On the average bread occupied 33.5%; variety bread, 16.7%;

Table 11. Use of wheat flour by noodle-makers

(Unit: M/T)

	Year	All-purpose flour		Strong flour		Weak flour	Composite flour
		1st class	2nd class	1st class	2nd class	1st class	
Dry noodle	1986	17,069	346	90.2	44.0	—	880
	1987	18,049	381	145	11.0	171	66.0
Neng-myun	1986	800	—				
	1987	487	2.2				
Snack	1986			—			
	1987			220			
Others	1986	1,289	33.0	1,104			
	1987	1,851	17.6	2,420			
Total	1986	19,158	379	1,194.2	44.0	—	880
	1987	20,387	400.8	2,758	11.0	171	66.0

sweet rolls, 15.0%; and cakes, 13.5% amounting 78.7% of the total.

2. Noodle-makers

The use of wheat flour by noodle-makers is given in Table 11. The noodle-makers produced dry noodle and others, too. In Table 11, other uses are not known. As evident in Table 11, all-purpose flour was the major flour used for dry noodle-making.

Summary of Wheat Flour Usage

Table 12. Flour consumption per capita per year

Region	1986			1987		
	Total sales volume (M/T)	Population (×1,000)	Consumption per capita (kg)	Total sales volume (M/T)	Population (×1,000)	Consumption per capita (kg)
Seoul	507,844	9,907	51.26	548,591	10,029	54.70
Kyungki	228,814	6,354	36.02	246,277	6,431	38.30
Kangwon	40,755	1,770	23.03	41,845	1,793	23.34
Chungbuk	41,380	1,430	28.94	32,115	1,448	22.18
Chungnam	102,176	3,085	33.12	92,918	3,123	29.75
Chonbuk	78,892	2,261	34.89	86,002	2,289	37.57
Chonnam	86,072	3,854	22.33	84,864	3,901	21.75
Kyungbuk	144,034	5,181	27.80	158,848	5,244	30.29
Kyungnam	98,172	3,612	27.18	111,813	3,657	30.58
Pusan	218,012	3,613	60.36	204,895	3,658	56.01
Cheju	10,740	503	21.35	8,841	509	17.37
Average	1,556,891	41,569	37.45	1,617,009	42,082	38.43

The status of flour usage is summarized as follows. Since the overall trend in 1986 and 1987 was similar, the data in 1986 were cited here.

1. Flour consumption per capita per year

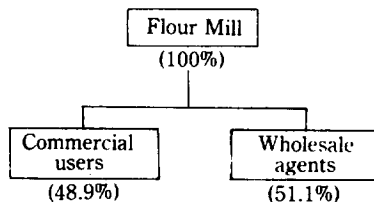
Flour consumption per capita per year by region in 1986 and 1987 is given in Table 12. The population census is reported every five years. The population data in Table 12 were estimated from the population census report as of November 1, 1985 on the assumption that the population ratio of each region is being persisted.

Average consumptions of flour in 1986 and 1987 were 37.45kg and 38.43kg, respectively.

2. Main usages of wheat flour

The flour produced was sold to either wholesale agents(51.1%) or commercial users(48.9%) (Fig. 8). Among commercial users, noodle-makers occupied 40.5% of the total sales of flour to the commercial users by flour mills. Of the total sales of flour sold to wholesale agents, noodle-makers utilized 30.2%. The next was for common use including home use, retailer and super-market.

From Fig. 8, it can be concluded that the main usages of flour were noodle-making, baking, brewing and common use.



- Noodle-manufacturer (40.5%)
- Baking industry (24.9%)
- Brewery (18.1%)
- Others (16.5%)
- Noodle-maker (30.2%)
- Window bakery (11.6%)
- Brewery (18.6%)
- Common uses (28.6%)
- Others (11.0%)

Fig. 8. Distribution of wheat flour for end-uses

3. Use of wheat flour by end-users

A summary of flour use by end-users is given in Table 13. The main usage of all-purpose flour was for noodles(48.3%) Makolli(26.6%) and common use (17.7%). Strong flour was mainly used for bread(66.4%), Ramyon(12.5%) and confectionery(11.2%). Main use of weak flour was for brewing(50.9%).

Noodles were made of the first and second class of all-purpose flour. Bread was produced with the first class of strong flour. For confectionery the first class of all-purpose flour was mainly used, but the first class of strong and weak flours was also considerably utilized.

Table 13. Use of wheat flour by commercial users and by end-users

(Unit: M/T)

		All-purpose flour		Strong flour		Weak flour		Total
		1st class	2st class	1st class	2nd class	1st class	2nd class	
Noodles	Ramyon	124,054	94,861	8,951	778	—	—	228,644
	Dry noodle	19,131	821	559	44	—	—	20,555
	(Sub total)	(143,185)	(95,682)	(9,510)	(822)	—	—	(249,199)
Bakery		8,322	2,107	42,409	5,200	10,577	—	68,615
Confectionery		22,080	2,618	8,003	396	15,942	760	49,799
	(Sub total)	(30,402)	(4,725)	(50,412)	(5,596)	(26,519)	(760)	(118,414)
Brewery		74,136	57,691	331	5	49,266	6,850	188,279
Common use		82,829	4,783	3,443	478	594	14	92,111
Snacks		415	—	—	—	26,145	194	26,484
Others		1,289	33	1,104	—	—	—	2,426
Total		331,986	162,904	64,800	6,901	105,524	7,818	676,941
Total sales volume by flour mills		812,499	343,273	151,745	15,270	146,987	11,592	1,481,366

요 약

우리나라의 밀가루 소비 실태를 1986년과 1987년도를 대상으로 조사하였다. 아울러 제분공업의 현황도 간단히 서술하였다. 밀가루 소비 실태는 연도간에 큰 차이를 보이지 않았으므로 1986년도를 중심으로 분석하였다. 제분회사에서의 밀가루 총판매량은 1,556,891톤이었고 이 중 51.1%는 대리점으로, 나머지는 대량생산업체로 판매되었다. 밀가루의 주용도는 제면, 제과, 제빵, 막걸리, 일반(가정용, 슈퍼마켓, 소매점)이었다. 다목적 밀가루의 1등급과 2등급은 제면과 막걸리용으로 이용되었고, 제빵에는 강력밀가루 1등급이 주로 사용되었다. 제과용 밀가루로는 다목적 밀가루 1등급이

주로 사용되었다.

References

1. Korea Flour Mills Industrial Association: Status of Flour Milling Industry (1987)
2. Korea Flour Mills Industrial Association: Annual Report (1980-1987)
3. Kim, H.K. and Kim, S.K.: Wheat and Flour Milling Industry. Korea Flour Mills Industrial Association, p. 295 (1985)
4. Health Newspaper Co.: Yearbook of Health (1987)