

## Overview of World Ginseng Production

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**Abstract**—It is estimated that world ginseng production has increased from 3,200 tonnes in 1983 to 5,132 tonnes in 1987. China produced approximately half of world ginseng production and South Korea's production amounts to 31.9% of world ginseng production. Canadian ginseng production of 114 tonnes in 1987 represents only 2.2% of estimated world production. World ginseng production is projected to increase to 6,856 tonnes by 1992. Canadian production as a proportion of total world production is expected to increase to 3.3%; however, North American production overall is projected to decrease 12.0% of world production by 1992. Assuming that the value of each country's production is equal to average export price, the value of world ginseng production is estimated to be \$443 million. The estimated values of Korean, North American and Canadian ginseng production represent \$198.3million, \$77.1 million, and \$12.5 million, respectively.

The following paragraphs describe the structure of the ginseng industry in each of the major producing nations.

### I. China

#### 1. Structure of the Industry

The ginseng industry in China, as in North America, was initially built upon the harvesting of wild ginseng. However, the wild ginseng root has become very rare and the wild harvest has declined dramatically.

Faced with a declining wild resource, the Chinese introduced the cultivation of the ginseng root over 600 years ago. Today, China is the world's leading producer and consumer of ginseng. The Chinese ginseng industry is dominated by small farming operations. The leading ginseng production areas in China are situated in the northern regions, specifically the Provinces of Heilungkiang, Kirin, Liaoning, and Hopei. According to Dr. Bill Bailey of Simon Fraser University, approximately 5,000 acres

of Oriental ginseng are cultivated in China. In addition, the Chinese ginseng industry has embarked upon a heavy program to cultivate North American ginseng. According to one source, there may now be as much as 200 acres of North American ginseng under cultivation in China.

#### 2. Volume of Production

In terms of volume, China is considered to be the world's leading producer of ginseng. However, there are not published statistics on the production of ginseng in China. To estimate the total volume of ginseng produced in China, we have developed estimates of the volume produced for domestic consumption and the volume produced for export.

##### **Production for Domestic Consumption**

A 1980 study undertaken by the U.S. Department of Agriculture estimated Chinese ginseng production to be approximately 650 tonnes annually of which only 30 to 40 tonnes were exported. According to sources contacted during the study, the production of ginseng in China for domestic consumption is estimated to have doubled over the past seven years. Based upon this information, we have assumed that the production of ginseng in China for domestic consumption has increased to approximately 1,200 tonnes in 1987.

##### **Production for Export**

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**Table 1.** Estimated Chinese ginseng production (tonnes).

Year	Domestic consumption	Exports	Total
1983	880	510	1,390
1984	950	790	1,740
1985	1,030	710	1,740
1986	1,110	1,040	2,150
1987	1,200	1,320	2,520

To meet its need for foreign currency, China has begun to produce increasing volumes of ginseng for export. Based upon import figures of the United States, Hong Kong, Japan, Canada, and other countries, we estimate that the production of ginseng in China for the export market has increased from 510 tonnes in 1983 to 1,320 tonnes in 1987.

Therefore, as indicated in Table 1, we estimate that total Chinese ginseng production has increased from 1,390 tonnes in 1983 to 2,520 tonnes in 1987. This is equivalent to an annual increase in production of 16.0% over the last five years.

China has recently instituted a program of agricultural self-sufficiency. Under this program, the production of Chinese and North American ginseng is projected to continue to increase at rates of 10% to 20% per annum. The intention is to increase the volume of ginseng available for export and to eventually eliminate the import of ginseng into China. The importer/exporters based in Hong Kong that which were contacted during the course of the study, however, expected Chinese ginseng exports to increase over the next 5 to 10 years but did not project a major decline in the volume of ginseng imported into China.

### 3. Leading Markets

As indicated in Table 1, we estimate that Chinese produced ginseng is distributed in relatively equal volumes to the domestic market and the export market. The domestic market has been constrained in the past by low disposable incomes and by the active effort of the Chinese government to limit ginseng usage because of its purported sexual properties and its historical positioning as a luxury product reserved for the ruling classes.

As late as 1980, ginseng exports as a proportion

**Table 2.** Estimated exports of Chinese ginseng 1983~1987

Destination	VOLUME (Tonnes)				
	1983	1984	1985	1986	1987
Hong Kong	322.3	491.0	422.0	630.3	750.0
Japan	108.1	243.6	232.1	271.2	360.8
U.S.A	71.0	48.0	40.0	106.0	165.0
Canada	5.7	0.8	9.8	25.7	41.8
Other	6.6	7.3	0.5	0.7	6.3
	513.7	790.7	704.4	1033.9	1323.9
VALUE (Canadian \$000's)					
Hong Kong	\$24,989	\$38,043	\$34,515	\$44,426	\$44,236
Japan	5,471	16,103	16,799	18,651	21,637
U.S.A	1,262	1,107	1,513	2,152	3,020
Canada	101	19	372	522	765
Other	414	513	38	45	335
	\$32,237	\$55,785	\$53,236	\$65,796	\$69,993
AVERAGE PRICE PER KILOGRAM (\$ Canadian)					
Hong Kong	\$77.53	\$77.48	\$81.79	\$70.48	\$58.98
Japan	50.61	66.10	72.38	68.77	59.97
U.S.A	17.77	23.07	37.82	20.31	18.30
Canada	17.77	23.07	37.82	20.31	18.30
Other	62.73	70.30	75.47	63.91	53.24
	\$62.76	\$70.55	\$75.57	\$63.64	\$52.87

Source: Trade Statistics of Importing Nations

of total ginseng production were relatively insignificant. However, over the past seven years, China has implemented a major program to develop ginseng as a commercial export crop to the extent that China has replaced South Korea as the world's leading exporter of ginseng. As indicated in Table 2, the volume of Chinese ginseng exports has increased from 510 tonnes in 1983 to 1,320 tonnes in 1987. During this same period, the value of exports increased from \$32 million to \$70 million Canadian.

As indicated in Table 2, the average price per kilogram of Chinese ginseng exports has declined over the past three years from \$75.57 in 1985 to \$52.87 in 1987. The average price of ginseng exported to the United States and Canada is substantially lower than the average price of ginseng exported to Hong Kong and Japan because approximately 90% of the volume exported consists of processed

ginseng rather than crude ginseng roots. As shown below, however, the price of crude ginseng roots exported to the United States is still lower than the price of roots exported to Hong Kong and Japan.

Average import price of Chinese ginseng, crude root form

Country	1985	1986	1987
Hong Kong	\$ 72.26	\$ 69.25	\$ 57.73
Japan	74.43	70.33	62.91
United States	68.92	44.34	42.77

Source: Trade Statistics

Chinese ginseng is sold in three grades: (1) Imperial; (2) Kirin; and (3) Shiu-Chu. Imperial roots are very rare and expensive and are sold by the individual root. Kirin roots are the standard Chinese red ginseng and are currently available from importers in North America at prices between \$ 140 and \$ 155 (Canadian) per kilogram depending upon the size of the root. Shiu-Chu roots are more rare and costly and are available at a wholesale price of approximately \$ 300 per kilogram or roughly twice the price of Kirin roots. In Vancouver, the retail price for Kirin ginseng is currently ranging between \$ 200 per kilogram for small roots to \$ 400 per kilogram for larger roots while the retail price for Shin-Chu roots is approximately \$ 670 per kilogram.

Red ginseng accounts for the majority of ginseng exported from China. For example, red ginseng comprises approximately two-thirds of total ginseng exports to Japan by volume.

In Japan, the average price of white ginseng tends to be 5 to 10% above the average price for red ginseng. A small volume of wild ginseng (2 tonnes in each of 1986 and 1987) is also exported by China to Hong Kong. The average price per kilogram for wild ginseng exports was \$ 373.91 in 1986 and \$ 436.96 in 1987.

Hong Kong and the United States do not differentiate between red and white ginseng in their import statistics. As a result, it is not possible to accurately determine the proportion of red versus white ginseng exported to these countries.

## II. South Korea

### 1. Structure of the Industry

The South Korean government, through the Office of the Monopoly, controls the manufacturing of red ginseng while white ginseng is produced by private enterprises. Red ginseng is produced from the same root (*Panax ginseng*) as white ginseng, but differs in colour as a consequence of the change of starches during the steaming and drying process. White ginseng, in contrast, is not steamed but is washed and then sun-dried or oven-dried. As indicated previously, red ginseng is believed to be more potent and has a longer shelf-life and sweeter taste than white ginseng.

Fig. 1 illustrates the major ginseng growing areas in South Korea. As indicated, the majority of red ginseng is produced from ginseng grown in the northern part of South Korea around the city of Seoul while the majority of white (unsteamed) ginseng is produced from ginseng grown in the southern area around the city of Daejeon. Approximately 65% of the total production area is dedicated to the production of white ginseng while the remaining 35% of the ginseng produced is ultimately steamed to produce red ginseng. Typically, the roots harvested

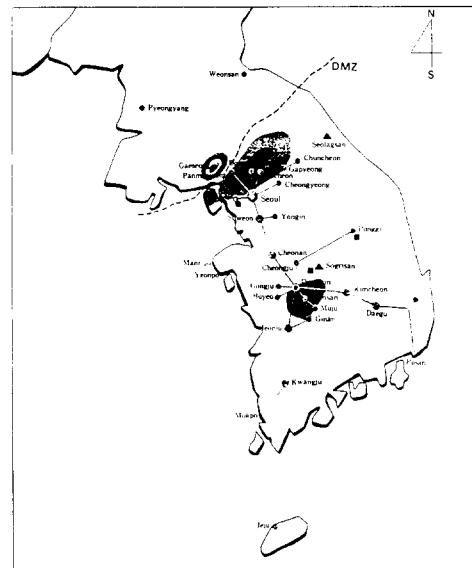


Fig. 1. South Korean ginseng growing areas.

Source: Office of Monopoly, Republic of Korea

to make red ginseng are six years old while the roots harvested for white ginseng are four years old.

As also indicated in Fig. 1, ginseng is also produced in North Korea. The majority of production is focussed in the south around the city of Gaeseong.

The Korean ginseng industry is comprised of many small farms. There are estimated to be in excess of 100,000 ginseng farms cultivating a total area of approximately 5,000 acres. The largest operation in South Korea is owned and operated by the Unification Church. In general, the Korean industry is more labour intensive than the North American industry. The ginseng is usually transplanted at least once, and harvesting is not mechanized. Artificial shade is provided by thatched roofs. The canopy structure must be particularly secure because of the monsoon conditions. The government is very supportive of the industry in terms of promoting technical and market research and providing subsidies to help offset the costs of ginseng seed-bed preparation, land development, cultivation, and machinery use.

#### Volume of Production

During the 1970's, the Government of South Korea placed a heavy emphasis on the development of the ginseng industry. Under this initiative, South Korean production of ginseng for the export market increased from a value of \$23 million in 1973 to \$68 million in 1978.

However, the phenomenal growth experienced during the 1970's has not been maintained in recent years. This is primarily attributable to the shortage of suitable growing areas. As indicated earlier, for reasons that are not well understood as yet, ginseng cannot be immediately be replanted in the same soil. In humid areas, the Koreans typically wait five to ten years before replanting and in drier areas the wait is normally 10 to 15 years. The Korean government has undertaken an extensive research program to overcome this constraint and has developed a soil treatment program. However, there is little information available on the nature or effectiveness of this treatment program.

South Korea maintains detailed statistics on the production of red ginseng which is controlled by the government but not on white ginseng which

can be freely grown by any farmer. According to the South Korean Office of the Monopoly, the production of red ginseng has increased from 238 tonnes in 1982 to 424 tonnes in 1986 as shown below:

South Korean red ginseng production, 1982~1986 (tonnes)

Year	Roots	Processed Products	Total
1982	124	114	238
1982	141	157	298
1983	172	174	346
1984	189	182	371
1985	207	217	424

Source: South Korean Office of the Monopoly

The Office of the Monopoly estimated the production of white ginseng roots to range between 1,000 and 1,600 tonnes annually. Therefore, total ginseng production is estimated to range between 1,300 and 2,000 tonnes per year.

To develop an alternative estimate of South Korean ginseng production over the past five years, we determined the volume of ginseng produced each year for the domestic and export markets as described below:

#### Domestic Market

The U.S. Department of Agriculture, in a 1981 study, reported the size of the Korean domestic market to be 582 tonnes in 1979, 615 tonnes in 1980, and 670 tonnes in 1981. We have assumed that the domestic market has increased at a similar rate of 5% per annum since 1981. Under this assumption, the volume of ginseng production for domestic consumption has increased from 740 tonnes in 1983 to 900 tonnes in 1987.

As indicated in Table 3, South Korean ginseng production is estimated to have increased from a total of 1,172 tonnes in 1983 to 1,639 tonnes in 1987. This is equivalent to an annual increase in production of 8.7%.

#### Export Market

A number of sources contacted during the study indicated concern about the reliability of South Korean export statistics, particularly with respect to white ginseng which is not controlled by the Office of the Monopoly. For this reason, in determining

the volume of South Korean production destined for the export market, we have relied where possible on the statistics of the importing nations rather than on the South Korean export figures. Using this methodology, the volume of South Korean ginseng destined for the export market has increased from 432 tonnes in 1983 to 739 tonnes in 1987. As indicated in Table 3, South Korean ginseng production is estimated to have increased from a total of 1,172 tonnes 1983 to 1,639 tonnes in 1987. This is equivalent to an annual increase in production of 8.7%.

**Table 3.** Estimated South Korean ginseng production (tonnes).

Year	Domestic consumption	Exports	Total
1983	740	432	1,172
1984	775	536	1,311
1985	815	484	1,299
1986	855	673	1,528
1987	900	739	1,639

### 3. Leading Markets

Much of the South Korean ginseng production, including all of the red ginseng roots, is targeted for the export market. The emphasis on the export market is due to the fact that production exceeds domestic consumption but also that much of the South Korean population cannot afford to regularly purchase ginseng, particularly red ginseng.

The following table, based on information supplied by the South Korean Office of the Monopoly, compares the volume of red ginseng root exported to the volume produced for the years 1983 to 1986:

South Korean red ginseng root exports and production, 1983~1987

Year	Exports	Production	Exports as % of Total Production
1983	176	141	124.8%
1984	99	171	57.9
1985	170	189	89.9
1986	207	207	100.0

Source: South Korean Office of the Monopoly

As indicated the percentage of production exported in any given year varies substantially. This occurs because the Office of the Monopoly uses inventory as a mean to maintain a strong market price for the product. When the price is weak, the inventory level increases, and when the price is strong, the level of inventory declines.

Promotion of the product on the export market is conducted by the Office of Monopoly of the Republic of Korea. The Monopoly has been very successful in developing the image in other countries that Korean red ginseng is superior to all others because of the country's climate (mild and relatively dry with four distinct seasons), the fertile and well drained soil, the steaming process, and its knowledgeable and experienced growers.

The major markets for South Korean ginseng are Japan, Hong Kong, the United States, Taiwan, and China as indicated below:

Estimated South Korean exports, 1986

Country	Volume(tonnes)	% of Exports
Japan	267	39.7
Hong Kong	113	16.9
United States	102	15.3
Taiwan	77	11.5
EEC	35	5.2
Malaysia	29	4.3
Singapore	28	4.2
Canada	15	2.2
Other	5	0.7
Total	673	100.0%

Source: South Korean Export Statistics, and Japan, Hong Kong, U.S., Taiwan, EEC, Malaysia, and Canada Import Statistics

The leading European countries in terms of volume imported are Spain, West Germany, and Switzerland.

Table 4 provides a breakdown of the volume, value, and average price of South Korean ginseng exports over the past five years. As indicated in Table 4, the value of South Korean ginseng exports has increased from \$66.5 million in 1983 to \$89.4 million in 1987.

The average price per kilogram of South Korean

**Table 4.** South Korean ginseng export statistics 1983~1987

VOLUME (Tonnes)					
Destination	1983	1984	1985	1986	1987
Japan	124.6	249.1	174.4	270.3	289.4
Hong Kong	98.9	69.5	44.9	113.0	156.4
U.S.A	53.0	51.0	84.0	102.0	118.0
Taiwan	83.0	95.7	83.6	76.6	75.0
Malaysia	25.3	30.7	36.9	29.0	30.0
Canada	12.3	5.3	10.4	15.0	5.1
Other	35.0	35.0	50.0	68.0	65.0
Total	432.1	536.3	484.2	673.9	738.9
VALUE (Canadian \$000's)					
Japan	7,866	\$18,063	\$12,532	\$20,328	\$23,666
Hong Kong	24,859	13,723	10,327	27,472	35,373
U.S.A	3,089	3,886	4,453	4,529	4,485
Taiwan	20,219	21,258	17,745	13,308	12,750
Malaysia	4,389	6,056	5,361	5,111	5,100
Canada	718	402	549	667	195
Other	5,389	4,426	5,870	8,014	7,868
Total	\$66,528	\$67,814	\$56,838	\$79,430	\$89,438
AVERAGE PRICE (\$ Canadian)					
Japan	\$63.13	\$72.51	\$71.86	\$75.21	\$81.78
Hong Kong	251.35	197.46	230.01	243.12	226.17
U.S.A	58.28	76.20	53.01	44.40	38.01
Taiwan	243.60	222.13	212.26	173.74	170.00
Malaysia	173.47	197.25	145.29	176.25	170.00
Canada	58.28	76.20	53.01	44.40	38.01
Other	153.96	126.45	117.39	117.86	121.04
Total	\$153.96	\$126.45	\$117.39	\$117.86	\$121.04

Source: Trade Statistics of Importing Nations

ginseng exports has declined over the past five years from \$ 153.96 in 1983 to \$ 121.04 in 1987. As indicated in Table 4, the average price of South Korean ginseng exports to the Japan and the United States are substantially lower than the average price of ginseng exported to Hong Kong. This is because the majority of Hong Kong purchases are of red ginseng, while Japan purchases very little red ginseng in major root form preferring white ginseng roots, advanced forms, or minor roots. Similarly, approximately 90% of the ginseng purchased by the United States from South Korea are in advanced form. Advanced forms tend to be less

expensive because lower grade roots can be used and because the ginseng is usually mixed with other less expensive materials. The decline in the average price of Taiwanese imports from South Korea in recent years is due to a decline in the proportion of red ginseng in root form purchased.

Japan also imports from South Korea a non-alcoholic, non-sweetened beverage which contains ginseng. The beverage has not been classified as ginseng by the Japanese Trade Office and consequently is not included in the statistics contained in Tables 3 and 4. As indicated below, Japanese imports of the beverage have increased from 43.7 tonnes in 1983 to 94.4 tonnes in 1987:

## Japanese imports of South Korean ginseng beverage

Year	Volume (tonnes)	Average Price (\$ Canadian/kg)
1983	43.7	\$ 70.56
1984	38.5	70.67
1985	60.4	62.49
1986	74.9	64.15
1987	94.4	64.03

Source: Japanese Trade Office

In addition, Japan imports from South Korea a ginseng based medical product which has also not been classified as ginseng by the Japanese Trade Office and consequently is not included in the statistics contained in Tables 3 and 4. As indicated below, Japanese imports of the medical product have fluctuated since 1983:

## Japanese imports of South Korean medical product

Year	Volume (tonnes)	Average Price (\$ Canadian/kg)
1983	87.7	\$ 75.22
1984	102.2	78.40
1985	94.7	116.58
1986	127.8	95.69
1987	82.0	89.14

Source: Japanese Trade Office

**4. Product Forms and Pricing**

South Korean ginseng is marketed in a variety of forms including crude roots, red ginseng extra-

cts, teas, powders, capsules, tablets, and pills. The price of crude roots is a function of grade, size, and colour (red or white). Red ginseng roots are sold in five grades including Heaven, Earth, Good, Cut, and Tail. Heaven, Earth, and Good are considered to be Number 1 or top grade, while Cut is considered to be Number 2 grade and Tail is considered to be Number 3 grade. In grading the products, the South Koreans consider the growing area, age, shape, taste, and appearance (for example, wrinkles) of the root. Only Number 1 grade roots are normally distributed in root form; Number 2 and Number 3 grade roots are typically processed into advanced forms. Within each grade, prices will vary depending upon the size of the root. A variety of sizes are available, with the majority of roots ranging in size from 15 to 60 where size is defined as the number of roots required to equal a catty (21.16 ounces). The following table provides a good indication of the relationship between grade and size in the determination of prices for red ginseng roots:

Korean red ginseng North American wholesale price per kilogram, May, 1988

Size	Grade		
	Heaven	Earth	Good
15	\$ 1,271.64	\$ 764.54	\$ 506.53
20	910.92	631.83	449.19
30	705.12	525.90	407.43
40	572.03	436.47	373.82
50	463.62	363.38	-
60	379.33	300.92	-

As indicated, the Heaven grade commands a substantial premium over Earth and Good grades. For size 15 roots, Earth and Good graded roots cost approximately 60% and 40% respectively of the price of Heaven graded roots. There is also a substantial discount for smaller sized roots. In comparison to the cost of size 15 root, a size 20 root costs approximately 70% as much, a size 40 root only costs approximately 45% as much, and a size 60 root costs approximately 30% as much.

The average export price of South Korean Red ginseng root has increased over the past two years as indicated below:

South Korean average red ginseng export prices, 1982~1987

Year	Price/Kilogram
1982	\$ 272.53
1983	272.76
1984	248.59
1985	275.98
1986	310.71
1987	303.65

Source: South Korean Office of the Monopoly

It is interesting to note that when the price declined in 1984, the Office of the Monopoly limited red ginseng root exports to 90 tonnes in order to keep the price from declining further. In 1985, when prices rebounded, exports increased to 170 tonnes.

White ginseng is also graded into five classes; namely, heaven, medium rootlets, pine, bamboo, and plum. South Korean white ginseng sells at a substantial discount to red ginseng. The following table compares the average export price of red ginseng to the average price of white ginseng over the past two years according to South Korean trade statistics:

South Korean average export prices major red and white ginseng roots

Major Root	1986	1987
Red Ginseng	\$ 310.71	\$ 303.65
White Ginseng	107.94	118.28

Source: South Korean Trade Statistics

As indicated, number one grade red ginseng sells for as much as three times the price for number one white ginseng. At the wholesale level in North America, red heaven roots are priced at approximately five times the price of white heaven roots. This is indicative of not only the perceived superiority of the steaming process, but also the fact that only the best roots are selected to be processed into red ginseng.

Even when processed into advanced forms, red ginseng commands a premium over white ginseng. However, as indicated below, the premium is much smaller:

Comparison of South Korean red and white ginseng prices by product form, 1987

Product Form	Red Ginseng	White Ginseng	price Premium
Powder	\$ 121.51	\$ 77.92	59.9%
Tablets	141.48	136.53	3.6
Capsules	136.23	45.75	197.8

Source: South Korean Trade Statistics

In addition to these products, the Office of the Monopoly is working to develop new product forms in order to tap additional markets. Alternative product forms being explored include candy, gum, lotion, hair tonic, shampoo, soap, jam and marmalade, liqueur, brandy, and whiskey.

### III. United States

#### 1. History of the U.S. Ginseng Industry

Ginseng, an indigenous plant to the North American continent, has been harvested from the wild for over 250 years. Wild ginseng flourishes in the deciduous hardwood forests of the northeastern United States ranging from Maine to Minnesota and into the Appalachian Mountains. Wild ginseng roots were first collected for export via France and England to China in 1717. The first direct shipment to China is said to have been made by John Jacob Astor from New York in 1782.

Table 5. outlines the average annual exports of ginseng from the United States during each decade since 1821. As indicated, average annual exports of ginseng peaked at 307 tonnes in the 1880's. Over-harvesting during this decade created a dramatic decline in the wild resource. The initial ginseng cultivation operations in North America, established during the 1870's, were unsuccessful because of the availability of the wild product and because the initial sites selected in the south were not conducive to ginseng cultivation. However, a declining wild resource and higher ginseng prices led to the development of a number of successful cultivation operations in 1890's. By 1902, there were over 1,000 growers involved in the cultivation of ginseng. However, many of these growers found the production of ginseng to be uneconomical often

**Table 5.** U.S. ginseng exports by decade 1821~1987

Decade	Average Annual Volume (tonnes)	Average Price (\$ U.S./kg)
1821~29	195	0.81
1830~39	145	0.77
1840~49	178	0.92
1850~59	91	1.08
1860~69	188	2.07
1870~79	183	2.46
1880~89	307	1.12
1890~99	98	7.87
1900~09	69	13.92
1910~19	94	17.13
1920~29	80	27.80
1930~39	92	11.99
1940~49	41	21.67
1950~59	49	37.21
1960~69	65	53.95
1970~79	123	118.72
1980~87	387	108.03

Source: U.S. Department of Commerce

because of the high incidence of fungal blight.

During the 1930's, the world depression resulted in a major decline in ginseng prices which in turn led to a decline in the number of growers from 303 in 1929 to 112 in 1939. Despite the decline in prices, however, the volume of ginseng exported remained relatively constant until the second world war. During the war, trade was cut off with China. While trade was restored after the war, it was not until well after the Korean War that the market approached pre-depression levels.

In the 1960's, the State of Wisconsin emerged as the leading ginseng producer in the United States. From a total of 35 growers in 1960, the number of growers in Wisconsin increased to 65 growers in 1970 and to over 500 in 1984. As indicated in Table 5, this has resulted in a six fold increase in U.S. annual production from an average of 65 tonnes in the 1960's to an average of 387 tonnes in the 1980's.

#### 2. Volume of Production

U.S. ginseng production is comprised of cultivated ginseng produced in Wisconsin and wild ginseng harvested throughout the northeastern states. The estimate annual U.S. ginseng production, we



**Table 6.** Estimated U.S. ginseng production, 1983 to 1987 (tonnes)

Year	Cultivated ginseng	Wild ginseng	Total
1983	235	84	319
1984	377	152	529
1985	518	71	589
1986	685	82	767
1987	535	54	589

Source: Wisconsin Department of Trade; U.S. Department of Commerce.

have utilized cultivated ginseng production statistics collected by the Wisconsin Board of Trade and have assumed wild ginseng production to be equal to 90% of wild ginseng exports.

Based upon these sources, we estimate that U.S. ginseng production has increased from 319 tonnes in 1983 to 589 tonnes in 1987 as indicated in Table 6. Cultivated ginseng production declined in 1987 in part because of a major disease problem in Wisconsin which decreased yields and caused a portion of the projected 1987 crop to be harvested a year early in 1986.

The future of the Wisconsin industry is in question, because a relatively dramatic increase in the incidence of disease and a shortage of suitable land. Some growers are planning to replace ginseng with other crops, some have suggested that they may change locale perhaps to British Columbia such that they will be able to continue on in the ginseng industry, while others are planning to stay and even increase production in Wisconsin. Overall, the opinion of industry experts contacted in Wisconsin is that the volume of cultivated ginseng production will be static or may even decline in coming years.

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### Markets

In any given year, approximately 90% to 95% of U.S. ginseng production is destined for the export markets. U.S. ginseng exports have increased from 357 tonnes in 1983 to 598 tonnes in 1987 as indicated below:

U.S. annual ginseng exports, 1983~1987

Year	Volume Exported (tonnes)	Average Price (\$ U.S./kg)
1983	357	\$ 125.93
1984	318	132.68
1985	481	86.78
1986	502	73.84
1987	598	81.27

Source: U.S. Department of Agriculture

During this same period, the average export price has declined from \$ 125.93 per kilogram to \$ 81.27.

Table 7 provides a breakdown of the export volume and average price by source and form. As indicated, there was a four fold increase in cultivated ginseng exports in 1985. This increase led to a price decrease of almost fifty percent from \$ 192.50 per kilogram in 1984 to \$ 100.80 per kilogram in 1985. The average price of cultivated ginseng further declined in 1986 before appearing to stabilize in 1987. According to sources contacted during the study, at the close of 1987 Wisconsin prices

**Table 7.** U.S. ginseng exports by source and form

Year	Cultivated Ginseng			Wild Ginseng			Advanced Form			Total		
	Tonnes	%	Price/kg (\$Can)	Tonnes	%	Price/kg (\$Scan)	Tonnes	%	Price/kg (\$Can)	Tonnes	%	Price/kg (\$Can)
1983	109	30.5%	\$144.07	76	21.3%	266.00	172	48.2%	\$117.16	357	100.0%	\$156.71
1984	96	30.2	192.50	137	43.1	238.82	85	26.7	72.10	318	100.0	171.83
1985	401	83.4	100.80	64	13.3	270.49	16	3.3	96.86	481	100.0	118.50
1986	361	71.9	87.86	74	14.7	266.54	67	13.3	53.71	502	100.0	102.60
1987	531	88.8	92.08	49	8.2	315.55	18	3.0	69.20	598	100.0	109.72

Source: U.S. Department of Agriculture

had risen to about \$45 U.S. per pound which is equivalent to \$129 Canadian per kilogram. The price projected for the fall of 1988 is \$35 to \$40 per pound U.S. which is equivalent to \$105 Canadian per kilogram.

As also indicated in Table 7, almost all of (88.8%) U.S. ginseng was exported in root form in 1987. Only 18 tonnes or 3.0% of total exports were exported in advanced form.

The major market for U.S. ginseng exports is Hong Kong as indicated below:

## U.S. ginseng exports by country, 1987

Country	Volume (tonnes)	% of Exports
Hong Kong	491	82.1%
Taiwan	30	5.0
China	26	4.3
Japan	16	2.7
Singapore	13	2.2
Other	22	3.7
Total	598	100.0%

Source: U.S. Department of Agriculture

**Table 8.** Exports of U.S. ginseng by customs district, 1986  
CULTIVATED ROOT

District	Destination						Total	%
	Canada	H.Kong	China	Taiwan	Japan	Other		
Chicago	1.3	213.0	2.2	39.9	0.0	4.5	260.9	74.2%
Los Angeles	0.1	23.2	11.1	3.3	0.0	0.7	38.5	11.0
New York	0.1	25.5	0.9	0.0	0.0	0.6	27.1	7.7
San Francisco	0.1	9.9	0.5	1.8	0.0	0.4	12.8	3.6
Detroit	5.1	0.0	0.0	0.0	0.0	0.0	5.1	1.4
Seattle	3.0	0.0	0.0	0.0	0.0	1.0	4.0	1.2
Anchorage	0.0	2.4	0.0	0.0	0.0	0.0	2.4	0.7
Cleveland	0.0	0.0	0.0	0.6	0.0	0.0	0.6	0.2
	9.7	274.1	14.8	45.6	0.0	7.3	351.4	100.0%
WILD ROOT								
New York	0.0	27.2	0.0	0.0	0.0	0.3	27.4	43.8%
Chicago	0.0	18.9	0.0	1.0	0.0	1.6	21.5	34.3
Los Angeles	0.0	9.3	0.0	0.0	0.0	0.0	9.3	14.8
San Francisco	0.1	2.7	0.0	0.4	0.0	0.0	3.3	5.3
Seattle	0.0	0.0	0.0	0.0	0.0	0.8	0.8	1.2
Cleveland	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5
	0.1	58.1	0.0	1.4	0.0	2.9	62.6	100.0%
ADVANCED FORM								
Chicago	0.0	28.5	0.0	0.9	0.0	0.1	29.5	47.9%
Los Angeles	0.0	18.8	0.0	0.0	6.0	0.4	25.2	41.0
New York	0.0	4.0	0.0	0.0	0.0	0.0	4.0	6.4
Seattle	1.1	0.0	0.0	0.0	0.0	0.2	1.4	2.2
San Francisco	0.0	0.5	0.0	0.0	0.0	0.4	1.0	1.6
Miami	0.0	0.0	0.0	0.0	0.0	0.6	0.6	1.0
	1.2	51.7	0.0	0.9	6.0	1.8	61.6	100.0%

Source: U.S. Department of Commerce

**Table 9.** Estimated exports of Japanese ginseng, 1983~1987  
VOLUME (Tonnes)

Destination	1983	1984	1985	1986	1987
Hong Kong	148.0	136.3	130.3	137.9	108.5
South Korea	10.6	1.2	3.5	6.9	2.5
West Germany	1.0	1.2	0.3	0.5	0.2
Other	5.8	2.5	2.2	3.8	2.9
	164.4	141.2	136.3	149.1	114.1
VALUE (Canadian \$000's)					
Hong Kong	\$21,746	\$22,936	\$20,111	\$21,760	\$19,689
South Korea	672	69	233	479	197
West Germany	62	64	20	30	260
Other	277	119	94	175	236
	\$22,755	\$23,188	\$20,458	\$22,145	\$20,148
AVERAGE PRICE PER KILOGRAM (\$ Canadian)					
Hong Kong	\$146.91	\$168.28	\$154.37	\$157.82	\$181.47
South Korea	63.53	57.53	66.19	68.93	78.41
West Germany	58.63	51.59	58.49	60.14	108.30
Others	48.41	47.66	44.29	46.58	82.41
	137.61	\$164.18	\$150.13	\$150.53	\$176.56

Source: Japanese Trade Statistics

Table 8 provides a breakdown of U.S. ginseng exports by customs district for cultivated, wild, and advanced ginseng. As indicated, the majority of cultivated ginseng is exported through Chicago (74.2%) which is situated close to the growing area in Wisconsin. It is interesting to note that the majority of ginseng sent to China is exported through wholesalers in Los Angeles. Wild ginseng, which is harvested throughout the U.S. northeast is primarily exported through New York (43.8%) or Chicago (34.3%). Advanced ginseng is typically exported from Chicago (47.9%) or Los Angeles (41.0%)

#### 4. The Ginseng Research Institute

The Ginseng Research Institute was established in 1982 with the objective of bringing together those working on ginseng research in North America and throughout the world in a manner that would promote the use and understanding of ginseng by western consumers. Major activities of the Ginseng Research Institute to date have included

establishing testing facilities in Philadelphia, preparing a bibliography of published information, creating a set of standards related to labelling and content of ginseng products including the placing of a seal on products meeting the standard, developing an industry membership, and creating a world-wide network between those involved in studying ginseng.

#### IV. Japan

Japan is a relatively minor producer of ginseng producing between 100 and 150 tonnes per year. According to statistics provided by the Canadian Trade Commission in Japan, Japanese ginseng production in 1987 was 120 tonnes.

In most years, Japan exports more ginseng than it produces which is possible because the country re-exports some of the ginseng that it imports from North and South Korea and China. Table 9 provides a breakdown of the volume, value, and average prices of Japanese ginseng exports over the past five years. As indicated in Table 9, Hong Kong is the leading market for Japanese export comprising over 90% of sales items of both volume and value. The volume of Japanese ginseng exports has been declining in recent years from 165.4 tonnes in 1983 to 114.1 tonnes in 1987. During this period, the average price of Japanese ginseng exports, as expressed in Canadian dollars, has increased from \$137.61 to \$176.56 per kilogram. Consequently, despite the decline in volume, the value of Japanese exports has remained between \$20 million and \$23 million annually. The price increase does not reflect real changes in price but rather reflects changes in the exchange rate. As indicated below, the price of ginseng exports as expressed in Japanese yen has actually declined over the past five years:

Average price per kilogram of Japanese ginseng exports as expressed in Japanese yen

Year	Average Price
1983	19,342
1984	31,201
1985	27,433
1986	19,743

**Table 10.** Japanes ginseng exports by color or form

Year	Red Ginseng			White Ginseng			Advanced Form			Total		
	Tonnes	%	Price/kg (\$Can)	Tonnes	%	Price/kg (\$Scan)	Tonnes	%	Price/kg (\$Can)	Tonnes	%	Price/kg (\$Can)
1983	142	86.6%	\$147.38	10	6.1%	103.80	12	7.3%	\$59.03	164	100.0%	\$137.61
1984	131	92.6	169.67	7	5.0	113.68	3	2.1	64.40	141	100.0	164.18
1985	115	84.6	158.46	11	8.1	122.29	10	7.4	82.05	136	100.0	150.13
1986	122	81.9	164.00	15	11.0	97.79	12	8.8	82.67	149	100.0	150.53
1987	99	86.8	184.83	10	8.8	148.57	5	4.4	73.11	114	100.0	176.56

Source: U.S. Department of Agriculture

1987	19,945
Source: Japanes Trade Statistics	

The change in the exchange rates has damaged the price competitiveness of Japan in the ginseng market and at the same time has lowered the cost of ginseng thereby increasing imports of ginseng in the home market.

As indicated in Table 9, the average price of Japanese ginseng exports to South Korea and West Germany are substantially lower than the average price to Hong Kong. This is because the majority of Hong Kong purchases are of red ginseng, while the majority of South Korean and West German purchases are in advanced forms.

Table 10 on the following page, provides a breakdown of the volume and average price of red, white, and advanced ginseng exports by Japan. As indicated, red ginseng comprises the vast majority of ginseng exports. As also indicated, Japanese red ginseng on average is priced at a \$40 to \$60 per kilogram premium over white ginseng.

## V. Canada

### 1. The Canadian Industry

Ginseng was first discovered in Canada in 1704 by Michael Sarrasin, the King's Physician to Canada. During the 1700's, Canada developed a strong trade in ginseng with China. However, a combination of poor harvesting, drying, and storage techniques led to the development of a reputation for inferior quality which all but ended trading activities before the end of that century.

The cultivation of ginseng in Canada started in 1892-93, when Clarence Hellyer formed a partnership with his brother Alber Hellyer to grow ginseng. Two sons of Albert Hellyer formed the company, Hellyer Brothers in 1917, which held a virtual monopoly in ginseng in Canada until recent years. Hellyer Brothers maintained its monopoly through the control of ginseng seed in Canada.

While Hellyer Brothers continues to be the leading grower in Ontrario, there are now over 60 other growers around Brantford, Ontario. Only 10 of the growers have more than 10 acres under cultivation. The total seeded area is estimated to be approximately 300 to 400 acres. Most of the growers cultivated other crops such as tobacco and corn in addition to ginseng. The major motivation for the increase in ginseng production in Ontario has been a decline in tobacco prices which has forced growers to look for alternative crops. Ontario growers claim that Ontario ginseng is of a higher quality than Wisconsin ginseng and in fact Ontario ginseng has often sold in the past at a \$5 to \$10 per pound premium over Wisconsin grown ginseng. However, given that the products are from the same seed stock, the price premium was more related to the degree of cleaning than to the inherent quality of the product. Presently, Ontario and Wisconsin ginseng are being sold at about the same price. Many distributors no longer differentiate between the two sources.

The ginseng industry has only recently been established in British Columbia. The ginseng plant is not native to British Columbia and the cultivation of ginseng in the province was not started until

**Table 11.** Estimated Canadian ginseng production, 1982 to 1987 (tonnes)

Year	Ontario	B.C.	Total
1982	26	0	26
1983	49	0	49
1984	49	0	49
1985	102	0	102
1986	76	7	83
1987	100	14	114

Chai-Na-Ta Ginseng Products Ltd. seeded five acres in the Lytton area in the fall of 1982. By 1987, there were 15 growers in the province of which only one, Chai-Na-Ta Ginseng Products Ltd., was cultivating over an acre. With over 100 acres under cultivation, Chai-Na-Ta was the largest grower of ginseng in terms of cultivation area in North America in 1987. The company is planning to seed an additional 40 acres in each of the next five years. Seed for the B.C. industry has been purchased from Wisconsin producers. The cost of production including seed, planting, constructing shade, maintaining plants, and harvesting the roots is estimated to be approximately \$30,000 per acre.

At present, only North American ginseng is being produced in Canada. However, recently a new company has announced its intentions to produce *Panax ginseng* in Ontario in association with a South Korean company which is to provide seed and growing expertise. Whether or not the company will be successful is uncertain at this time.

## 2. Volume of Production

The estimated Canadian Production of ginseng for the past five years is provided in Table 11. In preparing the estimate, we have assumed that 90% of Ontario production has been exported. B.C. production is based upon the sales of Chai-Na-Ta Ginseng Products Ltd. which is the only producer in the province with commercial sales to date. Based on these assumptions, we estimate that Canadian ginseng production has increased from 26 tonnes in 1982 to 114 tonnes in 1987.

According to the industry representatives contacted both Ontario and British Columbia are projected to experience substantial increases in produc-

**Table 12.** Canadian ginseng exports, 1982 to 1986 (tonnes)

	1982	1983	1984	1985	1986	Average % of exports
Hong Kong	21.8	36.1	35.1	79.8	60.3	83.8%
United States	0.3	3.2	3.6	6.0	7.1	7.3%
Singapore	0.4	3.7	4.3	2.0	5.8	5.8%
Taiwan	0.0	1.0	0.7	3.3	0.7	2.0%
Malaysia	0.9	0.3	0.5	0.7	0.6	1.1%
United Kingdom	0.0	0.0	0.0	0.0	0.1	0.0%
Total	23.4	44.3	44.2	91.8	74.6	100.0%

Source: Environment Canada

tion over the next five years. Ontario production, motivated in part by declining prices for tobacco, is projected to increase by 10% to 20% per year. This increase, coupled with a rapid expansion in the B.C. industry, is projected to increase Canadian production to 226 tonnes in 1992 as indicated below:

Projected Canadian ginseng production, 1988 to 1992 (tonnes)

Year	Ontario	B.C.	Total
1988	100	30	130
1989	110	50	160
1990	121	65	186
1991	133	80	213
1992	146	80	226

## 3. Leading Markets

Over 90% of Canadian ginseng production is destined for the export market. As indicated in Table 12, Canadian exports have increased from 23.4 tonnes in 1982 to 74.6 tonnes in 1986. Over this five year period, Hong Kong has been the destination of almost 84% of Canadian ginseng exports.

## VI. Other Producers

In addition to China, South Korea, the United States, Japan, and Canada, there are a number of other countries that produce limited quantities of ginseng including the U.S.S.R. and North Korea. As mentioned earlier, the U.S.S.R. has incorporated ginseng into its medical system. The U.S.S.R. pro-

duces an estimated 5 to 10 tonnes for its own consumption, with the majority of production occurring in the southeastern states. Very limited quantities are available for export. In addition to cultivating ginseng, the Soviet Union has for the last twenty years been experimenting with tissue culture of *Panax ginseng* with the intention of accelerating seed germinations, genetically engineering a superior product, and even directly producing saponin in the laboratory. However, progress in these endeavors has been limited to date.

North Korean production, estimated to be approximately 50 to 75 tonnes per year, is focussed in the south around the city of Gaeseong. Based upon statistics published by importing nations, we esti-

mate that North Korea exported approximately 9 tonnes in 1987 as outlined below:

North Korean ginseng export, 1986

Country	Volume (tonnes)	% of Exports
Hong Kong	7.2	80.9%
Japan	1.5	16.9
Canada	0.2	2.2
Total	8.9	100.0%

The leading market for North Korean exports is Hong Kong.