



USDA Foreign Agricultural Service

GAIN Report

Global Agriculture Information Network

Template Version 2.09

Required Report - public distribution

Date: 10/16/2006

GAIN Report Number: KS6108

Korea, Republic of

Planting Seeds

Annual

2006

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Report Highlights:

In MY 2006/07, total imports of planting seeds are expected to increase to meet the greater demand under the government's green manure project; however U.S. exports to Korea are forecast to decrease due to the lack of new contracts with U.S. rye suppliers who have recently suffered from severe drought.

Korea plans to complete the extension of protection to all plant genera and species by 2009. Korea joined the International Union for the Protection of New Varieties of Plants (UPOV) in January 7, 2002.

Includes PSD Changes: No
Includes Trade Matrix: No
Annual Report
Seoul [KS1]
[KS]

Table of Contents

SECTION I. SITUATION AND OUTLOOK..... 3

 Production..... 3

 Trade 3

 Intellectual Property Rights (Plant Variety Protection/Plant patents) 4

 Seed Certification 4

 Plant Health Regulations 4

 Variety Approval..... 5

 Development of Biotechnology Crops 6

SECTION II: STATISTICAL TABLES 7

SECTION I. SITUATION AND OUTLOOK

Local production of grass and forage seeds remains negligible. Breeding and seed supply of traditional crops such as rice, barley, wheat and soybeans generally are conducted by the public sector. However, private breeders play a major role in the breeding of vegetable seeds. Chinese cabbage, onions, melon, peppers, radish and watermelon are the most important seed-propagated vegetable species and breeding efforts are concentrated on those crops. Some of the larger domestic seed companies have been merged into foreign seed companies. Because of the higher local production costs and the climate, a considerable amount of seed production is produced abroad and shipped to Korea.

Production

The Korean government seed production policy still targets five types of seed: rice, barley, soybean, corn and potato. In 2006, The National Seed Management Office (NSMO) distributed the following types and quantities of certified seeds: rice – 16,799 mt, barley 1,520 mt, soybean – 1,197 mt, corn – 57 mt, and potato – 8,693 mt. Local corn seed distribution for forage declined to 35 mt while the remainder was for snack foods. Local production of grass and forage seeds remains negligible.

In 2005, production of vegetable seeds from both local and overseas fields increased by 20 percent and 29 percent from the previous year, respectively. Private Korean seed companies produced 74 percent of their total seed output on foreign farms, slightly higher than the previous year. All seed from foreign production brought back by Korean producers are considered as imports (Please see Tables 11 and 12 for statistical information).

Trade

Total imports of planting seeds increased in MY 2005/06 to 18,095 mt, up 23 percent from the previous year reflecting an increase in rye seed and Chinese milk Vetch imports to meet the greater demand under the government's green manure projects. The Korean government has encouraged farmers to cultivate forage for feed or fertilizer in rice fields to reduce rice production and encourage environmentally friendly rice farming under the "Green Manure Plan" campaign since 1998. Farmers have received a 100 percent subsidy for the cost of planting seeds under the government campaign. Planting seed imports of forages are expected to continue increasing to meet the greater demand generated by the government campaign. Government plans to continue increasing the cultivated area to 280,000 hectares (HA) in CY 2010 from 124,000 HA in 2006. This currently represents about 13 percent of total land designated for rice production. Therefore, total planting seed imports are expected to continue increasing in the near future.

U.S. Exports to Korea

In MY 2005/06, imports from the United States remained relatively stable due mainly to its ability to provide a broad array of seeds for the animal feed industry. Imports of rye seed have declined as the dairy industry has been restructured due to heavy stocks of milk. Even though government's "Green Manure Plan" expects the demand for rye seed to grow continuously in the near future, imports from the United States are forecast to decrease next year due to the lack of contracts with U.S. suppliers who have recently suffered from severe drought.

Competition

Australia supplies oat, corn, sorghum, herbaceous seed and Sudan grass. Japan supplies vegetable seed. Canada supplies rye, fescue seed and rye grass. China competes on the Korean market with Chinese Milk Vetch and Hairy Vetch (within the category of other grasses) used for green manure purposes. China also supplies herbaceous plants, fruit tree seed, vegetable seed, lawn seed and flower seed.

Intellectual Property Rights (Plant Variety Protection/Plant patents)

In 1997, Korea introduced a system of plant variety protection (PVP), which conformed to the provisions of the 1991 Act of the International Union for the Protection of New Varieties of Plants (UPOV) Convention and became the 50th member of UPOV in 2002. The PVP in Korea is based on the Seed Industry Law of December 6, 1995, as revised on December 11, 2003. The NSMO is responsible for the implementation of the PVP.

Since Korea joined the UPOV on January 7, 2002, the government has continued to add new species biennially to the IPR protection list. Korea plans to add 31 new species in 2006 and 24 in 2008. They will finalize the extension of protection to all plant genera and species by 2009. Currently 155 genera and species are eligible for protection. Granted varieties of PVP have reached 1,592 out of 96 genera and species as of May 31, 2006. Table 14 shows the chronological approval of species eligible for protection in Korea.

Total application for PVP has reached to 2,666 varieties to date, composed of 1,453 varieties of ornamental plants (54.5%), 495 of food grains (18.6%), 426 of vegetables (16%), 134 of fruits (5%) and 157 of others (5.9%).

Seed Certification

Seed certification is classified into national certification and internal certification. The national certification program is administered by the government and covers only the crops within the national list (NL), composed of five major staple crops such as paddy rice, barley, corn, soybeans and potato since 1998. NSMO administers the national certification for the five major crops.

The internal certification is given to NL seeds produced by a seed manager, who is qualified by a government agency based on a seed qualification test. The qualified seed manager can also produce a certified seed for crops other than those on the NL under the internal certification system.

Seeds that are not subject to seed certification can be distributed through seeds market with a label indicating seed quality. The indication of seed quality should contain the production year, packing date, seed guarantee duration, variety denomination, quantity, the place of production, germination rate, import date, importer's name etc.

Consequently, all seeds are traded in two ways in Korea; certified seeds under national or internal certification, and qualified seeds with a label indicating seed quality. Korea is not a signatory to the OECD Seed Schemes yet.

Plant Health Regulations

A phyto-sanitary certificate is required for the importation of all planting seeds into Korea. Ipomoea spp. is prohibited from all U.S. states and Puerto Rico and Solanum tuberosum (tuber as seed) is also prohibited from 18 states in the United States. Twelve weeds listed in the table 18 are currently prohibited from other countries. In CY 2005, 80 mt of U. S. rye

seed was rejected and shipped back to the United States because of fungal contamination (*Bipolaris specifera*), which was sharply declined from 30 percent of the total exports of 3,200 MT of U.S. rye seed in CY 2004.

It is recommended that any potential exporter contact the Animal and Plant Health Inspection Service (APHIS) office in Seoul before exporting new varieties to the Korean market. Regulations may vary in this area.

APO Address of APHIS/Seoul:

APHIS Attache
American Embassy-Seoul
Unit 15550
APO AP 96205-0001

Local Address:

APHIS Attache
146-1 Susong-dong, Chongro-ku
Rm. 303, Leema Building
Seoul, Korea 110-140

Phone: 82-2-397-4198, 82-2-725-5495

Fax: 82-2-725-5496

E.mail: george.a.ball@aphis.usda.gov

Variety Approval

There are three separate approval processes for introducing new varieties of planting seeds into Korea. The approval process depends on seeds classified by the national listed field crops, registration of plant variety protection and notification for seed production and sale.

The major five field crops under the national list are required to pass the Value for Cultivation and Use (VCU) test and the Distinctiveness, Uniformity and Stability (DUS) test. Registration of plant variety protection is required to pass the DUS, Novelty and Denomination tests. All seeds other than NL crops and PVP crops are required to submit to NSMO the Notification for Seed Production and Sale including variety denomination along with other documents such as variety characteristics, breeding genealogy, color photograph and sample of variety.

DUS tests take one to three years depending on the variety in accordance with test guidelines (TG) of UPOV or national TG. The VCU test for major field crops must go through a test of productivity and field adaptation before being approved. Depending on the seed type, the trial test for productivity takes two to three years. This test includes a one-year field adaptation test, which is conducted on sites in three or more provinces. Test fees are applied.

NSMO runs the seed-testing program. For further information on testing, contact NSMO at: Phone: (82-31) 467-0190, Fax: (82-31) 467-0160 or email: kjchoi@seed.go.kr. A test fee is required.

An adaptability test is required for all new imported varieties before introduction into Korea. To apply for an adaptability test, contact the relevant organization below

Korea Fruit Tree Nursery Growers Association (for fruit trees),

Phone: 82-417-575-5337, Fax: 82-417- 574-3855;

Korea Florist Association (for flower),
Phone: 82-2- 577-2014, Fax: 82-2- 579-1861;

Korea Spawn Cultivation Association (for mushroom),
Phone: 82-31-234-5201, Fax: 82-31- 234-5202;

Korea Medicine Herbal Association (for oriental herb)
Phone 82-2-967-8133, Fax: 82-2-965-0643

National Agricultural Cooperative Federation (for forage and grass),
Phone: 82-2- 2127-7438, Fax: 82-2-2224-7830;

Korean Seed Association (for vegetable seed and others),
Phone: 82-2-578-7637/8, Fax: 82-2-578-7639.

Development of Biotechnology Crops

The Ministry of Agriculture's Rural Development Administration (RDA) is conducting biotech research on development of transgenic crops. The National Institute of Agricultural Biotechnology (NIAB) under the RDA is currently developing 45 separate biotech traits among 18 crops and five traits in two animals. Included are rice, wheat, soybean, chili (red pepper), potato, Chinese cabbage, cabbage, Perilla seed, tomato, apple, watermelon, cucumber, lettuce, chrysanthemum, swine, chicken, alfalfa, tall fescue, lawn, tangerine etc. Herbicide tolerant rice, pepper, perilla seed, and virus resistant potatoes are expected to become the first domestically developed biotech crops to become commercially produced in Korea. Korea's first biotech crops are currently undergoing environmental risk assessments and could be produced commercially in three to four years. No official statistics on the development of biotechnology crops by private entities are available. Rough industry estimates indicate that approximately 60 varieties are under development although they are all still at the laboratory stage. (Please refer to KS6074 for general information on Biotechnology in Korea.)

SECTION II: STATISTICAL TABLES

Table 1: Demand for Grass and Forage Seed
(Unit: Metric Ton, Calendar year)

| Calendar Year | Animal Feed | | | Green Manure | Total |
|---------------|-------------|--------|-------|--------------|--------|
| | Grass | Forage | Total | | |
| 1999 | 145 | 5,363 | 5,508 | 367 | 5,875 |
| 2000 | 84 | 4,199 | 4,283 | 2,787 | 7,070 |
| 2001 | 79 | 3,667 | 3,746 | 4,404 | 8,150 |
| 2002 | 71 | 3,394 | 3,465 | 5,124 | 8,589 |
| 2003 | 67 | 3,228 | 3,295 | 5,732 | 9,027 |
| 2004 | 91 | 3,473 | 3,564 | 5,705 | 9,269 |
| 2005 | 83 | 3,346 | 3,429 | 8,929 | 12,358 |
| 2006 | 46 | 3,352 | 3,398 | 9,580 | 12,978 |

Source: National Agricultural Cooperative Federation (NACF)
Korea Dairy and Beef Farmers Association (KDBFA)

Table 2: Production of Government Certified Planting Seed
(Unit: Metric Ton, Calendar year)

| Commodity | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|-----------|--------|--------|--------|--------|--------|--------|--------|
| Rice | 15,986 | 14,883 | 15,160 | 16,000 | 17,000 | 18,000 | 21,002 |
| Barley | 2,250 | 2,403 | 2,120 | 1,974 | 1,918 | 1,700 | 1,600 |
| Soybean | 717 | 848 | 857 | 965 | 1,050 | 1,200 | 1,250 |
| Corn | 165 | 68 | 114 | 105 | 99 | 80 | 34 |
| Potato | 9,684 | 9,333 | 9,459 | 7,889 | 8,498 | 9,444 | 9,201 |
| Total | 28,802 | 27,535 | 27,710 | 26,933 | 28,565 | 30,424 | 33,087 |

Source: National Seed Management Office (NSMO)

**Table 3 - Korea: Distribution of Government Certified Planting Seed
(Unit: Metric Ton, Calendar year)**

| Commodity | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Rice | 12,982 | 12,952 | 10,782 | 13,464 | 14,028 | 15,732 | 16,799 |
| Barley | 2,177 | 2,345 | 1,967 | 1,903 | 1,853 | 1,664 | 1,520 |
| Soybean | 500 | 668 | 790 | 814 | 946 | 1,058 | 1,197 |
| Corn ^{1/} | 215 | 168 | 84 | 105 | 102 | 77 | 57 |
| Potato | 8,176 | 8,987 | 9,224 | 9,010 | 7,473 | 8,264 | 8,693 |
| Total | 24,050 | 25,120 | 22,847 | 25,296 | 24,402 | 26,795 | 28,266 |
| 1/Distribution of Corn Seed for Purpose | | | | | | | |
| Forage | 177 | 134 | 52 | 72 | 68 | 46 | 35 |
| Food | 38 | 34 | 32 | 33 | 34 | 31 | 22 |
| Total | 215 | 168 | 84 | 105 | 102 | 77 | 57 |

Source: National Seed Management Office (NSMO)

**Table 4: CY2006 Supply of Forage and Grass Seed for Animal Feed
(Unit: Kg)**

| Commodity | Spring Planting | Fall Planting | Total |
|----------------------------|-----------------|------------------|------------------|
| Orchard Grass | 8,000 | 19,080 | 27,080 |
| Tall Fescue | 2,400 | 5,620 | 8,020 |
| Timothy | 460 | 1,520 | 1,980 |
| Kentucky Bluegrass | 960 | 2,080 | 3,040 |
| Perennial Rye Grass | 0 | 0 | 0 |
| Reed Canary Grass | 140 | 300 | 440 |
| Alfalfa | 920 | 900 | 1,820 |
| White Clover | 540 | 1,720 | 2,260 |
| Red Clover | 340 | 240 | 580 |
| Grass Seed Total | 13,760 | 31,460 | 45,220 |
| Forage Rape | 2,600 | 4,040 | 6,640 |
| Forage Oat | 204,360 | 358,860 | 563,220 |
| Winter Rye | 0 | 1,690,860 | 1,690,860 |
| Italian Ryegrass | 7,380 | 458,980 | 466,360 |
| Sudan Grass F1 | 430,240 | 0 | 430,240 |
| Sorghum F1 | 12,560 | 0 | 12,560 |
| Corn | 167,200 | 0 | 167,200 |
| Forage Seed Total | 824,340 | 2,512,740 | 3,337,080 |
| Total Imported Seed | 838,100 | 2,544,200 | 3,382,300 |
| Domestic Corn | 15,576 | 0 | 15,576 |
| Grand Total | 853,676 | 2,544,200 | 3,397,876 |

Source: National Agricultural Cooperative Federation (NACF)
Korea Dairy and Beef Farmers Association (KDBFA)

**Table 5: CY2005 Supply of Forage and Grass Seed for Animal Feed
(Unit: Kg)**

| Commodity | Spring Planting | Fall Planting | Total |
|----------------------------|-----------------|------------------|------------------|
| Orchard Grass | 10,840 | 44,040 | 54,880 |
| Tall Fescue | 4,320 | 7,540 | 11,860 |
| Timothy | 620 | 1,560 | 2,180 |
| Kentucky Bluegrass | 2,400 | 3,060 | 5,460 |
| Perennial Rye Grass | 280 | 3,140 | 3,420 |
| Reed Canary Grass | 0 | 540 | 540 |
| Alfalfa | 580 | 720 | 1,300 |
| White Clover | 540 | 880 | 1,420 |
| Red Clover | 600 | 660 | 1,260 |
| Grass Seed Total | 20,180 | 62,140 | 82,320 |
| Forage Rape | 4,170 | 4,770 | 8,940 |
| Forage Oat | 179,640 | 329,680 | 509,320 |
| Winter Rye | 0 | 1,698,840 | 1,698,840 |
| Italian Ryegrass | 7,520 | 415,840 | 423,360 |
| Sudan Grass F1 | 470,940 | 0 | 470,940 |
| Sorghum F1 | 13,780 | 0 | 13,780 |
| Corn | 199,880 | 0 | 199,880 |
| Forage Seed Total | 875,930 | 2,449,130 | 3,325,060 |
| Total Imported Seed | 896,110 | 2,511,270 | 3,407,380 |
| Domestic Corn | 21,048 | 0 | 21,048 |
| Grand Total | 917,158 | 2,511,270 | 3,428,428 |

Source: National Agricultural Cooperative Federation (NACF)
Korea Dairy and Beef Farmers Association (KDBFA)

**Table 6: Rye Contracts for Green Manure
(Unit: Metric Ton)**

| Variety | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|
| Koolgrazer | 0 | 600 | 0 | 714 | 0 | 794 | 0 |
| G187 Ryegrazer | 0 | 0 | 400 | 0 | 0 | 0 | 0 |
| Wintergrazer 70 | 0 | 766 | 1,656 | 500 | 1,495 | 0 | 0 |
| Elbon | 0 | 0 | 0 | 0 | 0 | 80 | 532 |
| Maton | 0 | 0 | 0 | 700 | 210 | 933 | 400 |
| Wintermore | 591 | 0 | 0 | 0 | 0 | 0 | 0 |
| Danko | 1,037 | 1,888 | 0 | 0 | 0 | 540 | 772 |
| Homil22 | 0 | 0 | 1,888 | 0 | 0 | 0 | 0 |
| Wintergreen | 0 | 0 | 0 | 2,482 | 2,456 | 3,305 | 2,516 |
| Prima | 0 | 0 | 0 | 0 | 0 | 0 | 1,560 |
| Total | 1,628 | 3,254 | 3,944 | 4,396 | 4,161 | 5,652 | 5,780 |

Source: National Agricultural Cooperative Federation (NACF)

Table 7: Korean Imports of Planting Seeds
Unit: KG, July/June Marketing Year

| Commodity | Total World Imports | | Imports from the U.S. | | |
|----------------------------|---------------------|-------------------|-----------------------|------------------|------------------------|
| | 2004/05 | 2005/06 | 2004/05 | 2005/06 | Market Share 1/ (%) |
| Corn | 200,047 | 170,276 | 199,880 | 144,700 | 85 |
| Rye | 6,200,680 | 7,370,920 | 3,469,600 | 3,308,920 | 45 |
| Oats | 505,780 | 552,040 | 21,840 | 99,600 | 18 |
| Sorghum | 6,580 | 9,560 | 3,580 | 5,000 | 52 |
| Lucerne seeds | 43,911 | 47,348 | 17,602 | 24,159 | 51 |
| Clover seed | 15,340 | 28,726 | 11,960 | 20,200 | 70 |
| Fescue seed | 663,814 | 565,748 | 651,858 | 552,494 | 98 |
| Kentucky bluegrass | 346,981 | 355,747 | 346,981 | 350,077 | 98 |
| Ryegrass | 797,556 | 813,978 | 720,792 | 806,236 | 99 |
| Timothy grass | 5,520 | 2,020 | 4,981 | 2,020 | 100 |
| Sudangrass | 798,671 | 860,145 | 651,051 | 700,765 | 81 |
| Orchardgrass | 120,897 | 93,486 | 84,574 | 61,446 | 66 |
| Othergrass | 1,596,410 | 3,319,319 | 38,673 | 37,777 | 1 |
| Lawn seed | 865,551 | 795,725 | 793,297 | 708,328 | 89 |
| Sub. Total | 12,167,738 | 14,985,038 | 7,016,669 | 6,821,722 | 46 |
| Vegetable seeds | 1,919,772 | 2,382,941 | 244,465 | 362,314 | 15 |
| Herbaceous plants | 136,180 | 208,175 | 15,361 | 15,730 | 8 |
| Seeds of other forest tree | 37,541 | 24,289 | 3,170 | 6,697 | 28 |
| Seed of fruit tree | 91,042 | 82,153 | 35 | 58 | 0 |
| Seeds of oak | 2,427 | 1,500 | 0 | 0 | 0 |
| Other | 413,745 | 410,991 | 65,126 | 132,513 | 32 |
| Sub. Total | 680,935 | 727,108 | 83,692 | 154,998 | 21 |
| Total | 14,768,445 | 18,095,087 | 7,344,826 | 7,339,034 | 41 |

Source: Korea Customs Service
1/ in MY 2005/06

Table 8: Korean Imports of Planting Seeds
Unit: 1,000US\$, July/June Marketing Year

| Commodity | Total World Imports | | Imports from the U.S. | | |
|----------------------------|---------------------|---------------|-----------------------|---------------|------------------------|
| | 2004/05 | 2005/06 | 2004/05 | 2005/06 | Market Share 1/ (%) |
| Corn | 1,441 | 1,225 | 1,440 | 1,070 | 87 |
| Rye | 3,528 | 4,352 | 1,952 | 1,952 | 45 |
| Oats | 272 | 263 | 11 | 53 | 20 |
| Sorghum | 21 | 36 | 13 | 19 | 53 |
| Lucerne seeds | 186 | 140 | 106 | 70 | 50 |
| Clover seed | 62 | 114 | 43 | 72 | 63 |
| Fescue seed | 983 | 985 | 964 | 964 | 98 |
| Kentucky bluegrass | 1,402 | 1,382 | 1,402 | 1,353 | 98 |
| Ryegrass | 1,486 | 1,533 | 1,316 | 1,517 | 99 |
| Timothy grass | 15 | 7 | 14 | 7 | 100 |
| Sudangrass | 1,478 | 1,553 | 936 | 1,230 | 79 |
| Orchardgrass | 224 | 190 | 150 | 120 | 63 |
| Othergrass | 2,195 | 4,443 | 89 | 139 | 3 |
| Lawn seed | 1,952 | 2,395 | 1,686 | 1,939 | 81 |
| Sub. Total | 15,245 | 18,618 | 10,122 | 10,505 | 56 |
| Vegetable seeds | 33,036 | 38,018 | 1,991 | 2,449 | 6 |
| Herbaceous plants | 3,306 | 3,879 | 1,247 | 1,296 | 33 |
| Seeds of other forest tree | 317 | 311 | 103 | 175 | 56 |
| Seed of fruit tree | 31 | 72 | 4 | 7 | 10 |
| Seeds of oak | 24 | 5 | 0 | 0 | 0 |
| Other | 1,943 | 1,578 | 117 | 357 | 23 |
| Sub. Total | 5,621 | 5,845 | 1,471 | 1,835 | 31 |
| Total | 53,902 | 62,481 | 13,584 | 14,789 | 24 |

Source: Korea Customs Service
1/ In MY 2005/06

Table 9: Korean Exports of Planting Seeds
Unit: KG, July/June Marketing Year

| Commodity | Exports to Total World | | Exports to the U.S. | | |
|---------------------------|------------------------|---------|---------------------|---------|------------------------|
| | 2004/05 | 2005/06 | 2004/05 | 2005/06 | Market Share 1/ (%) |
| Fescue seed | 274 | 6,623 | 0 | 0 | 0 |
| Herbaceous plants | 73,767 | 19,389 | 1,935 | 8,334 | 43 |
| Vegetable seed | 349,718 | 447,131 | 14,064 | 9,454 | 2 |
| Seed of fruit tree | 23,426 | 4,080 | 0 | 0 | 0 |
| Seed of other forest tree | 37,534 | 3,799 | 189 | 0 | 0 |
| Other | 31,457 | 85,152 | 2 | 165 | 0 |
| Total | 516,176 | 566,174 | 16,190 | 17,953 | 3 |

Source: Korea Customs Service
 1/ in MY 2005/06

Table 10: Korean Exports of Planting Seeds
Unit: 1,000 US\$, July/June Marketing Year

| Commodity | Exports to Total World | | Exports to the U.S. | | |
|---------------------------|------------------------|---------|---------------------|---------|------------------------|
| | 2004/05 | 2005/06 | 2004/05 | 2005/06 | Market Share 1/ (%) |
| Fescue seed | 9 | 10 | 0 | 0 | 0 |
| Herbaceous plants | 779 | 253 | 31 | 69 | 27 |
| Vegetable seed | 14,367 | 18,320 | 1,912 | 1,784 | 10 |
| Seed of fruit tree | 11 | 16 | 0 | 0 | 0 |
| Seed of other forest tree | 254 | 101 | 19 | 0 | 0 |
| Other | 31,457 | 981 | 2 | 16 | 2 |
| Total | 516,176 | 19,681 | 16,190 | 1,869 | 9 |

Source: Korea Customs Service
 1/ in MY 2005/06

**Table 11: Vegetable Seed Production
(Kg, Calendar Year)**

| Commodity | CY 2004 | | | CY 2005 | | |
|-----------------|-----------|------------------|-----------------------------------|-----------|------------------|-----------------------------------|
| | Total | Local Production | Overseas Production ^{1/} | Total | Local Production | Overseas Production ^{1/} |
| White Radish | 699,969 | 257,314 | 442,655 | 862,183 | 267,199 | 594,984 |
| Chinese Cabbage | 117,252 | 94,812 | 22,440 | 212,948 | 150,991 | 61,958 |
| Cabbage | 31,337 | 4,675 | 26,662 | 79,246 | 5,649 | 73,598 |
| Onion | 28,879 | 3,208 | 25,671 | 34,764 | 5,442 | 29,322 |
| Welsh Onion | 98,399 | 3,234 | 95,165 | 44,079 | 3,632 | 40,447 |
| Carrot | 49,085 | 610 | 48,475 | 43,413 | 1,013 | 42,399 |
| Lettuce | 35,392 | 473 | 34,919 | 63,575 | 575 | 63,000 |
| Spinach | 220,770 | 1,220 | 219,550 | 223,501 | 6,258 | 217,243 |
| Red Pepper | 55,441 | 3,266 | 52,175 | 62,969 | 2,578 | 60,391 |
| Tomato | 1,172 | 20 | 1,152 | 1,663 | 34 | 1,629 |
| Melon | 2,231 | 1,263 | 968 | 2,165 | 397 | 1,768 |
| Cucumber | 6,308 | 695 | 5,613 | 11,446 | 1,019 | 10,427 |
| Water Melon | 16,501 | 1,051 | 15,450 | 12,443 | 889 | 11,553 |
| Squash | 34,404 | 1,238 | 33,166 | 98,068 | 2,657 | 95,411 |
| Total | 1,397,140 | 373,079 | 1,024,061 | 1,752,462 | 448,332 | 1,304,130 |

Source: Korean Seed Association

1/ Korea Seed Association includes overseas production in total vegetable seed production in Korea because local seed companies cultivated the seed abroad and then imported it into Korea.

**Table 12 - Korea: Vegetable Seed Imports
(Kg, Calendar Year)**

| Commodity | CY 2004 | | | CY 2005 | | |
|-----------------|---------------|--------------|-----------------------------------|---------------|--------------|-----------------------------------|
| | Total Imports | Pure Imports | Overseas Production ^{1/} | Total Imports | Pure Imports | Overseas Production ^{1/} |
| White Radish | 575,503 | 132,848 | 442,655 | 764,184 | 169,201 | 594,984 |
| Chinese Cabbage | 22,440 | 0 | 22,440 | 61,959 | 1 | 61,958 |
| Cabbage | 26,793 | 131 | 26,662 | 74,286 | 689 | 73,598 |
| Onion | 32,718 | 7,047 | 25,671 | 37,704 | 8,382 | 29,322 |
| Welsh Onion | 104,216 | 9,051 | 95,165 | 47,494 | 7,047 | 40,447 |
| Carrot | 56,765 | 8,290 | 48,475 | 48,726 | 6,327 | 42,399 |
| Lettuce | 35,553 | 634 | 34,919 | 63,152 | 152 | 63,000 |
| Spinach | 331,934 | 112,384 | 219,550 | 403,036 | 185,793 | 217,243 |
| Red Pepper | 52,296 | 121 | 52,175 | 60,450 | 58 | 60,392 |
| Tomato | 1,269 | 117 | 1,152 | 1,774 | 145 | 1,628 |
| Melon | 968 | 0 | 968 | 1,768 | 0 | 1,768 |
| Cucumber | 5,639 | 26 | 5,613 | 10,433 | 6 | 10,427 |
| Water Melon | 15,450 | 0 | 15,450 | 11,553 | 0 | 11,553 |
| Squash | 38,148 | 4,982 | 33,166 | 108,230 | 12,819 | 95,411 |
| Total | 1,299,692 | 275,631 | 1,024,061 | 1,694,750 | 930,620 | 1,304,130 |

Source: Korean Seed Association

1/ Imports that Korean seed companies cultivated abroad

**Table 13: CY 2006 List of National Recommended Cultivars of Grass and Forage
(As of end June 2006)**

| Grasses | |
|----------------------------|--|
| Orchard grass | Potomac, Frode, Frontier, Ambassador, Hallmark, Summer Green, Amba, Warrior, 93E. |
| Tall Fescue | Fawn, Alta, Festorina, Felopa, AU-Triumph, Cajun, Montebello. |
| Timothy | Climax, Clair, OdenWalder, Hokuo, Kunpu, Liphlea. |
| Perennialryegrass | Norlea, Taptoe, Reveille, Bastion, Ellett, Bison, Tetrelite, Friend. |
| Kentucky Bluegrass | Kenblue, Monopoly |
| Red Top | Streaker |
| Reed Canary Grass | Frontier, Venture, Vantage. |
| Meadow Fescue | Joma |
| Bromgrass | Regar |
| Legumes | |
| Alfalfa | Pacer, Scout, Team, Luna, Vernal, 5444, Drummor, Kitawakaba |
| White Clover | California Ladino, Regal. |
| Red Clover | Kenland, Titus, Atlas, TR2000. |
| Birdsfoottrefoil | Empire, Viking. |
| Forage Crops | |
| Corn | P3394, P3156, P3163, P3223, P3310, P3130, P36H36, P32P75, P33F18, P33J56, 32K26, 31A12, 32R42, 32K61, 31G20, DK689, DK729, DK713, DK501, DK720S, DK537, DK754S, DK697, DKC61-24, DK705, G4743, G4655, NC5514, NC7117, NC4880, NC6440, NC738, GW6959, GW737, GW5018, GW6300, GW785, Garst8342, Garst8396IT, Garst8285, Garst New 8640, N73-Q3, EXP874, PP3303, 34H31, 33D31, 31N27. |
| Sorghum-Sudan grass Hybrid | P855F, P877F, Jumbo, TE-Haygrazer, Sordan 79, GW9110G, GW104G, GW9161F, SX-17, Speed Feed, G-7, Turbo 9, Turbo10, TE-Evergreen, Betta Grazer, AG2501, Dairyman's Dream, PAC F 8350, Cow Pow, LF1. |
| Sorghum-Sorghum Hybrid | SS405, KF429, Mega Sweet. |
| Rye | Koolgrazer, Elbon, Vita-graze, Bonel, Athens-Abruzzi, Maton, Wrens abruzzo, Wintermore, Danko, Wintergrazer 70, Luchs, Olkon, Bates, Humbolt, MAC Blue, Barr Grazer, Barr Grain Master, G185Ryegraser, G187Ryegraser, Lovaszdatonai, Wintergreen, Jlee Select, 9909 Green Power, Spooner, Wheeler, Prima, Musketeer. |
| Oats | Cayuse, Magum, Foothill, West (Speed Oat), Murray, Swan, Ensiler, Yilgarn, Palinup, Cashel, Irwin, Dane, Troy, A.C. Juniper, Hayabusa, Enterprise, Nugene, Sesqui, Wabasha, AGL4101. |
| Forage Rape | Akela, Velox, Ramon, Sparta, Barnapoli, Ember. |
| Italian rye grass | Dalita, Tetrone, Barmultra, Tetraflorum, Gordo, Sikem, Bartissimo, Wilo, Combita, Tosca, Florida 80, Tachiwase, Marshall, Grazer, TAM90, Typhoon, Ribeye, Jivet. |

Source: National Agricultural Cooperative Federation (NACF)

Note: Entries in boldface are new as of June 2006.

Table 14: Genera and Species Eligible for Protection

| Effective Date | Genera and Species |
|--|--|
| December 31, 1997 (27 Genera/Species) | Paddy rice, Wheat, Barely, Soybean, Corn, Potato, Radish, Chinese cabbage, Cabbage, Water melon, Squash, Hot pepper, Tomato, Cucumber, Melon, Welsh onion, Onion, Carrot, Spinach, Lettuce, Apple, Pear, Peach, Plain cactus, Rye grass, Tall fescue, Red clover |
| May, 1, 2000 (30 Genera/Species) | Oat, Sweet Potato, Melon, Broccoli, Cauliflower, Grapevine, Yuzu (citrus), Lisianthus, Petunia, Godetia, Impatiens, Hyacinth, Cyclamen, Forsythia, Hibiscus, Alstroemeria, Snapdragon, Pansy, Daisy, Lisianthus, Ajuga Multiflora, Sesame, Perilla, Groundnut, Rape, Angelica Gigas, Astragalus Membranaceus, Pleurotus (Mushroom), Orchard Grass, Ginseng |
| July 1, 2001 (31 Genera/Species) | Dendrobium, Aerides japonicum, Neofinetia falcata, Calanthe discolor, Rose, Lily, Chrysanthemum, Iris, Gladiolus, Tulip, Poinsettia, Celosia, Stock, Zinnia, Myosotis alpestris, Senecio cruentus, Nasturtium, Pot marigold, Lobularia maritima, Ageratum, Hemerocallis, Rehmannia glutinosa, Lycium, Dioscorea, Bupleurum Falcatum, Platycodon grandiflorum, Cassia, Cnidium, Liriope Platyphylla, Angelica dahurica, Saposhnikovia |
| July 1, 2002 (25 Genera/Species) | Rye, Adzuki bean, Mungbean, pea, Egg plant, Gourd, Pakchoi, Sterelitzia, Cattleya, Oncidium, Hosta, Campanula, Pelargonium, Paeonia Suffruticosa, Kalanchoe, Chamecereus, Ganoderma, Angelica koreana, Pleuropterus, Alisma, Scutellaria, Paeonia lactiflora, Carthamus, Codonopsis, kiwi fruit |
| December 1, 2004 (42 Genera/Species) | Kidney bean, Job's tears, Mustard, Turnip rape, Kohlrabi, Edible chrysanthemum, Dahlia, Allium, Imperial fritillary, Gloxinia, Common calla, Blue grape hyacinth, Ornithogalum, Anthurium, Crocus, Amaryllis, Royal azalea, Common camellia, Hydrangea, Carnation, Gerbera, Gypsophila, Kaffir lily, Sea lavender, Begonia, Bachelor's button, Moth-orchid, Aquilegia, Campanula punctata lamarck, Campanula takesimana Nakai, Rough gentian, Gentiana, Aster, Spring orchid, Winter orchid, Chinese pink, Freesia, Schizandra, Angelica acutiloba, Atractylis, Cnidium, Phellinus |
| 2006 plan (31 Genera/Species) | Buck wheat, Strawberry, Chinese leek, Kale, Swiss chard, Whorlde mallow, Chicory, Endive, Aralia continentalis root, Tangshen, Coco grass, Common anemarrhena, Cape-jasmine, Alfalfa, Plumed thistle, Rocket larkspur, Drumond phlox, Ficus, Corn plant, Dracaena, Philodendron, Tillandsia, Cymbidium, Poppy anemone, Clematis, Common lantana, Cattail gayfeather, Desert rose, Trailing maidenhair, Osmunda, Peperomia |

Source: National Seed Management Office (NSMO)

**Table 15: Application and Registration Status of Plant Variety Protection
(As of May 31, 2006)**

| Item | Genera and Species | Application | Rejection | Registration |
|---------------|--------------------|--------------|------------|--------------|
| Total | 96 | 2,666 | 214 | 1,592 |
| Food Grains | 12 | 495 | 9 | 381 |
| Vegetables | 21 | 426 | 43 | 189 |
| Fruits | 6 | 134 | 9 | 81 |
| Flowers | 33 | 1,454 | 143 | 825 |
| Forage | 3 | 15 | 1 | 6 |
| Special Crops | 16 | 123 | 7 | 100 |
| Mushrooms | 3 | 19 | 2 | 10 |

Source: National Seed Management Office (NSMO)

**Table 16: Application and Registration Status of Plant Variety Protection
For 2001-2006**

| | By 2001 | | | 2002 | | |
|---------------|-------------|-----------|--------------|--------------------|-----------|--------------|
| Item | Application | Rejection | Registration | Application | Rejection | Registration |
| Total | 611 | 9 | 255 | 602 | 3 | 76 |
| Food Grains | 276 | 2 | 205 | 49 | 1 | 48 |
| Vegetables | 113 | 7 | 23 | 53 | 2 | 15 |
| Fruits | 65 | 0 | 26 | 10 | 0 | 2 |
| Flowers | 79 | 0 | 0 | 473 | 0 | 9 |
| Forage | 4 | 0 | 1 | 0 | 0 | 0 |
| Special Crops | 71 | 0 | 0 | 17 | 0 | 2 |
| Mushrooms | 3 | 0 | 0 | 0 | 0 | 0 |
| | 2003 | | | 2004 | | |
| Item | Application | Rejection | Registration | Application | Rejection | Registration |
| Total | 463 | 28 | 310 | 262 | 78 | 477 |
| Food Grains | 42 | 2 | 41 | 34 | 1 | 47 |
| Vegetables | 57 | 4 | 36 | 83 | 13 | 32 |
| Fruits | 18 | 4 | 19 | 9 | 2 | 5 |
| Flowers | 329 | 17 | 152 | 122 | 56 | 361 |
| Forage | 4 | 0 | 3 | 1 | 0 | 2 |
| Special Crops | 9 | 0 | 56 | 8 | 6 | 28 |
| Mushrooms | 4 | 1 | 3 | 5 | 0 | 2 |
| | 2005 | | | 2006 ^{a/} | | |
| Item | Application | Rejection | Registration | Application | Rejection | Registration |
| Total | 533 | 75 | 311 | 195 (194) | 21 | 163 |
| Food Grains | 48 | 3 | 27 | 46 (40) | 0 | 13 |
| Vegetables | 79 | 12 | 45 | 41 (33) | 5 | 38 |
| Fruits | 18 | 1 | 14 | 14 (17) | 0 | 15 |
| Flowers | 369 | 56 | 214 | 82 (92) | 14 | 89 |
| Forage | 2 | 1 | 0 | 4 (2) | 0 | 0 |
| Special Crops | 13 | 1 | 7 | 5 (8) | 0 | 7 |
| Mushrooms | 4 | 1 | 4 | 3 (2) | 0 | 1 |

Source: National Seed Management Office (NSMO)

a/ as of May 31, numbers in parentheses are application numbers in the same period of the previous year.

Table 17 - Korea: Number of Title Granted by Crop for CY 2000-2005 (top 10 crops)

| Order | By 2000 ^{a/} | | 2001 | | 2002 | |
|-------|-----------------------|-----|----------------------------|-----|----------------------|-----|
| 1 | Rice | 91 | Oriental melon | 5 | Rice | 22 |
| 2 | Soybean | 42 | Radish | 4 | Soybean | 10 |
| 3 | Barley | 39 | Chinese cabbage | 4 | Cactus | 9 |
| 4 | Corn | 16 | Pepper | 3 | Chinese cabbage | 8 |
| 5 | Pear | 15 | Soybean | 2 | Potato | 6 |
| 6 | Wheat | 12 | Water melon | 2 | Barley | 5 |
| 7 | Apple | 6 | Pumpkin | 1 | Radish | 5 |
| 8 | Peach | 5 | Lettuce | 1 | Corn | 4 |
| 9 | Potato | 3 | | | Ginseng | 2 |
| 10 | Radish | 1 | | | Sweet potato | 1 |
| | Cucumber | 1 | | | Pepper | 1 |
| | Pumpkin | 1 | | | Pumpkin | 1 |
| | Italian ryegrass | 1 | | | Apple | 1 |
| | | | | | Pear | 1 |
| | Total of the top 10 | 233 | Total of the top 10 | 22 | Total of the top 10 | 76 |
| | Total Titles Granted | 233 | Total Titles Granted | 22 | Total Titles Granted | 76 |
| Order | 2003 | | 2004 | | 2005 | |
| 1 | Rose | 80 | Rose | 194 | Rose | 71 |
| 2 | Sesame | 19 | Chrysanthemum | 100 | Chrysanthemum | 39 |
| 3 | Perilla | 16 | Gymnocalycium-mihanovichii | 26 | Petunia | 34 |
| 4 | Peanut | 16 | Rice | 14 | Kalanchoe | 33 |
| 5 | Poinsettia | 15 | Gladiolus | 11 | Impatiens | 13 |
| 6 | Cactus | 14 | Potato | 10 | Lily | 11 |
| 7 | Chrysanthemum | 11 | Soybean | 8 | Rice | 10 |
| 8 | Impatiens | 11 | Barley | 7 | Water melon | 10 |
| 9 | Rice | 10 | Pepper | 7 | Peach | 8 |
| 10 | Peach | 10 | Petunia | 7 | Soybean | 7 |
| | | | Perilla | 7 | Pepper | 7 |
| | | | | | Poinsettia | 7 |
| | Total of the top 10 | 202 | Total of the top 10 | 391 | Total of the top 10 | 250 |
| | Total Titles Granted | 310 | Total Titles Granted | 477 | Total Titles Granted | 311 |

Source: National Seed Management Office (NSMO)

a/ cumulative

Table 18: The Status of National Variety List

| Items | Application | Registration ^{1/} |
|---------|-------------|----------------------------|
| Rice | 123 | 163 (78) |
| Barley | 35 | 71 (40) |
| Soybean | 60 | 88 (42) |
| Corn | 58 | 32 (9) |
| Potato | 35 | 34 (7) |
| Total | 311 | 388 (176) |

Source: National Seed Management Office (NSMO)

1/ included variety numbers in parentheses that were registered into national recommendation list under old regulations.

Table 19: Regulated Weeds List

| | Scientific Name | Common Name |
|----|---|-----------------------|
| 1 | <i>Amsinckia intermedia</i> | Coast fiddleneck |
| 2 | <i>Cenchrus longispinus</i> (Hack.) Fern. | Longspine sandbur |
| 3 | <i>Centaurea repens</i> L. | Russian Knapweed |
| 4 | <i>Cirsium arvense</i> (L.) Scop. | Canada thistle |
| 5 | <i>Cirsium vulgare</i> | Spear thistle |
| 6 | <i>Conium maculatum</i> | Hemlock |
| 7 | <i>Cuscuta</i> spp. | Dodder |
| 8 | <i>Geranium dissectum</i> | Cut-leaved cranesbill |
| 9 | <i>Myosotis arvensis</i> | Field forget-me not |
| 10 | <i>Picris echioides</i> | Bristly ox-tongue |
| 11 | <i>Sherardia arvensis</i> | Field madder |
| 12 | <i>Xanthium spinosum</i> L. | Prickly burweed |

Source: National Plant Quarantine Service

**Table 19: Applied Tariff Schedule for Planting Seeds
(Percent)**

| Commodity | H.S. Code | 2005 | | | 2006 | | |
|---------------------------|--------------|--------------|---------------|-------------------|--------------|---------------|-------------------|
| | | General rate | In-Quota rate | Out-of-quota rate | General rate | In-Quota rate | Out-of-quota rate |
| Peas | 0713.10.1000 | 27 | na | na | 27 | na | na |
| Beans | 0713.31.1000 | 30 | 30 | 607.5 | 30 | 30 | 607.5 |
| Red Beans | 0713.32.1000 | 30 | 30 | 420.8 | 30 | 30 | 420.8 |
| Kidney Beans | 0713.33.1000 | 27.9 | na | na | 27 | na | na |
| Wheat | 1001.90.9010 | 1.8 | na | na | 1.8 | na | na |
| Rye ^{1/} | 1002.00.1000 | 3(0) | 3 | 108.7 | 3(0) | 3 | 108.7 |
| Oats ^{1/} | 1004.00.1000 | 3(0) | 3 | 554.8 | 3(0) | 3 | 554.8 |
| Forage Corn ^{2/} | 1005.10.0000 | 0 | 0 | 328 | 0 | 0 | 328 |
| Sweet Corn ^{2/} | 0712.90.2091 | 0 | 0 | 370 | 0 | 0 | 370 |
| Sorghum ^{1/} | 1007.00.0000 | 3(0) | 3 | 779.4 | 3(0) | 3 | 779.4 |
| Millet ^{1/} | 1008.20.1010 | 3(0) | 3 | 18 | 3(0) | 3 | 18 |
| All Seeds | 1209.xx.xxxx | 0 | na | na | 0 | na | na |

Source: Korea Customs Research Institute, Tariff Schedules of Korea

1/ Number in parentheses is a temporary duty. Commodity imported under the reduced tariff policy. CMA annual quota through 2004 for the respective commodity is as follows: Rye - 1,327.3 mt, Oats - 597.3 mt, Sorghum - 13.7 mt, Millet - 0.4 MT and Beans - 14,694 mt under unifying HS 0713.31.1000, 0713.31.9000, 0713.32.1000, and 0713.32.9000.

2/ Corn seed for forage and sweet corn is imported at free tariff rate for 247 MT of CMA quota.